Saab TransponderTech

OPERATOR'S MANUAL
R4 AIS Class A
Transponder System

SAAB

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Software

This manual reflects the capabilities of R4 Display software version 5.0.x and R4 AIS Transponder software 5.0.x.

Operators Manual Part Number and Revision

Part number 7000 108-131, revision H.

This manual replaces earlier manuals from part number 7000 108-131 revision P9D onwards.

Safety Instructions

Note the following compass safe distances:

Equipment	**Standard magnetic compass**	**Steering magnetic compass**
R4 Display	0.6 m	0.3 m
R4 Transponder	0.2 m	0.1 m

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Please contact your R4 AIS Class A Transponder System dealer.

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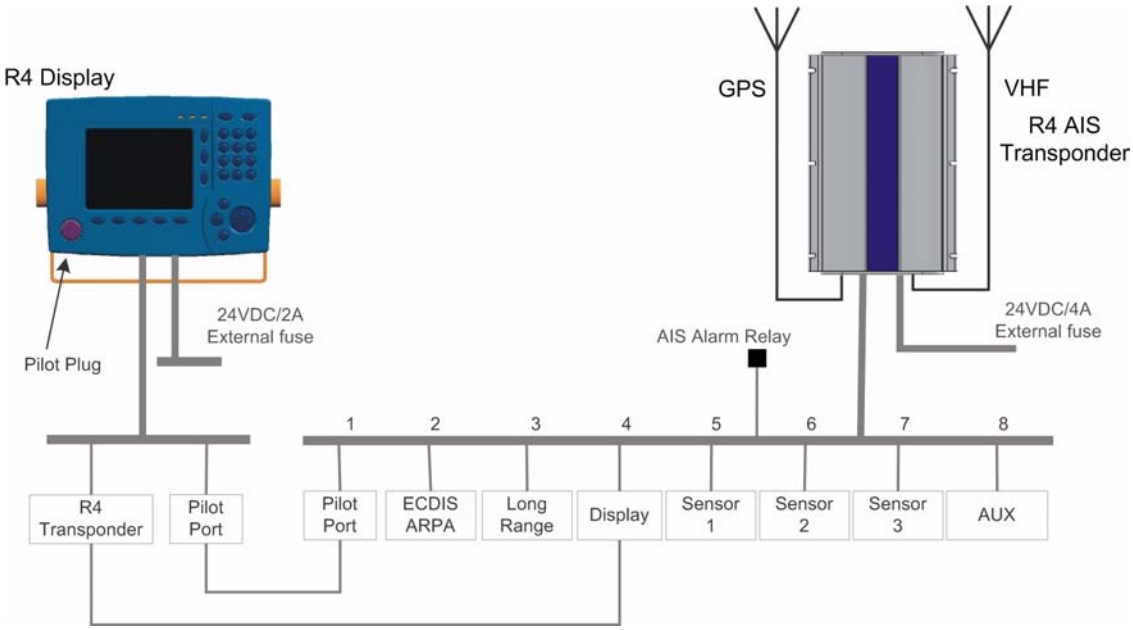
Product Description

System Overview

The R4 AIS Class A Transponder System consists of an R4 AIS Transponder and an R4 Display. The **R4 Transponder** consists of a radio transceiver unit, a GPS receiver and a controller unit. The transceiver consist of one transmitter and three independent VHF receivers, two tunable TDMA receivers and one DSC receiver. The transmitter alternates its transmissions between the two operating TDMA channels and can also be used to reply a DSC interrogation (ITU-R M.825-3, Annex 1). The controller unit creates and schedules data packets (containing dynamic, static and voyage related data) for transmission based on the IMO performance standard for AIS.

The R4 Transponder shall be connected to the ship's sensors as required by the installation guidelines published by IALA. The R4 Transponder can interface external navigation and presentation systems that support required IEC 61162-1 sentences as set out in the Installation Manual. The R4 Transponder is prepared for connection to Long Range systems like Inmarsat C.

The **R4 Display** provides a graphical user-friendly interface to the system. Via the display it is possible to plot the location of other ships, aids to navigation and search and rescue vessels. Information about other vessel can be listed sorted by range and optionally filtered showing only vessels within a specific sector. The display can also be used to send and receive messages, perform configuration as well as supervise the systems status.

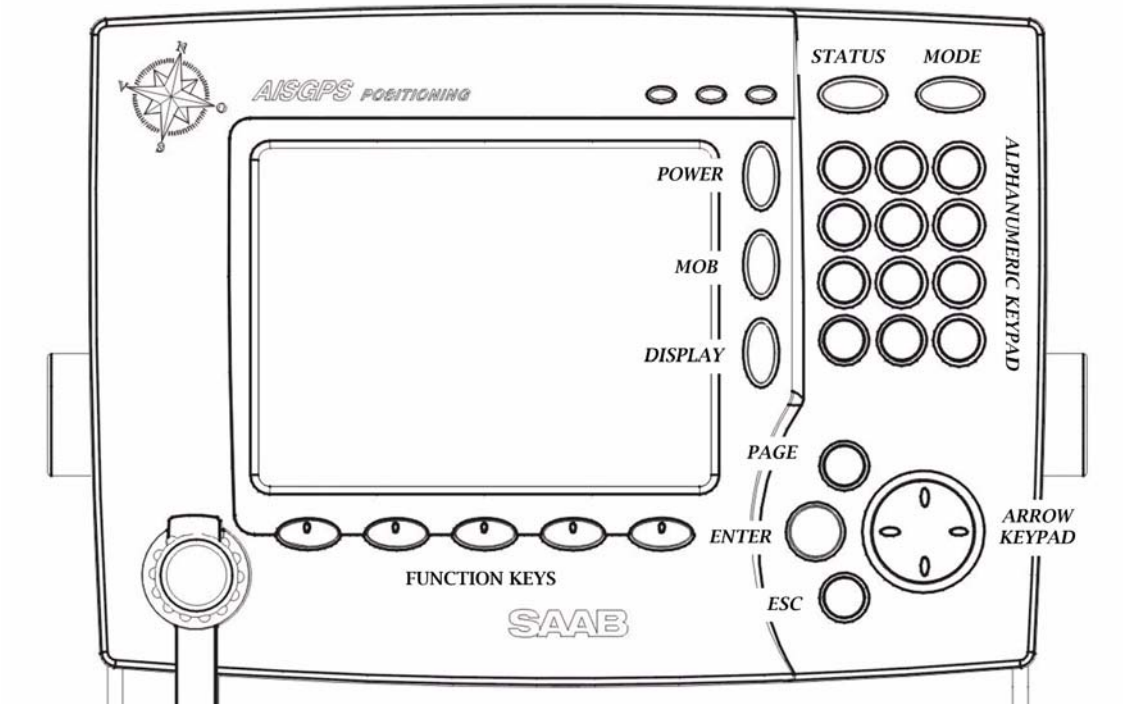


Main Features

- High resolution, sunlight readable, 6" graphic day and night display.
- User interface design centered around modes of operation corresponding to typical operator activities such as voyage planning and ship navigation.
- Broadcast of Dynamic, Static and Voyage related information.
- Standardized interface for connection to ship sensors e.g. GNSS, Gyro, Rate of Turn Indicator, ECDIS/ECS and ARPA.
- Plot capable of presenting up to 200 targets in vicinity of own ship and situation display with capability to view vessels in the most interesting bearing and range.
- Messaging views for generation and display of safety related messages and text messages.
- Mandatory pilot plug integrated in the display.
- VHF transceiver with one transmitter, three receivers.
- Channel management capability for areas without access to the worldwide allocated AIS frequencies.
- Possibility to generate Long Range AIS reply over satcom equipment for example Inmarsat C.
- 1W mode in accordance with requirements for tanker operations in port.
- Reception and processing of AIS messages 18,19 and 24A/B as transmitted by AIS Class B ‘CS’ Transponders
- Upgradeable without hardware modifications due to fully integrated DSP solution.

Getting Started

Front Panel Keys



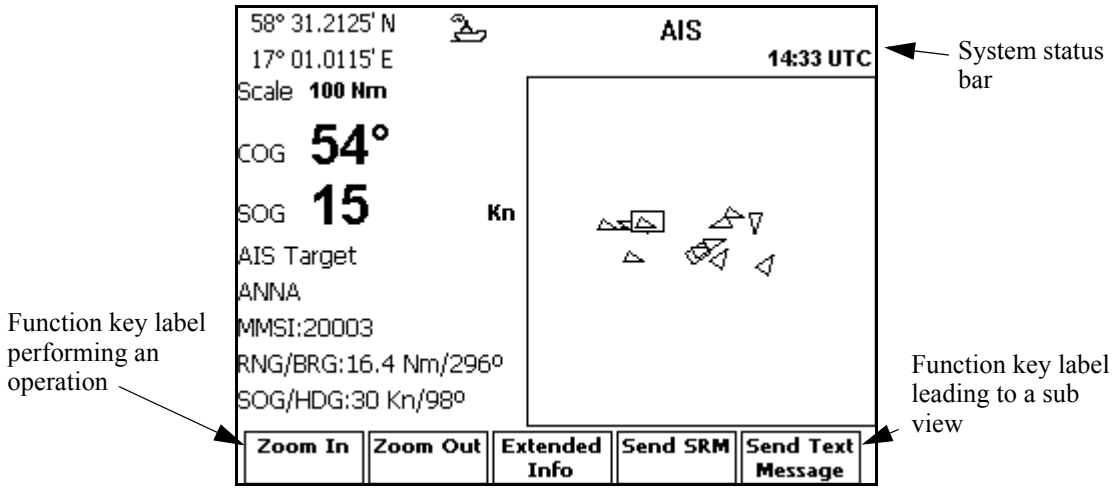
POWER Used for turning the R4 Display on and off. To turn the power off press and hold the key for 3 seconds.
MOB Not used in a R4 AIS Class A Transponder System.
DISPLAY Provides controls for fast configuration of backlight, contrast, LED illumination and button illumination. Two separate configurations are available, for day and night operation.
STATUS Used for fast change of the ship's navigational status.
MODE Used for changing mode of operation, which can be set to any of *Navigate*, *Plan Voyage*, *Alarms & Msgs* and *Config*.
ALPHANUMERIC KEYS These keys are used for entering text and numbers. To write a number in a numeric field press the key once. To write a character in a text field press once for the first character associated with the key, twice for the second character and so on.
PAGE Toggles page of function keys shown in views having more than 5 function keys, as indicated by a small arrow in the bottom right corner of the display.
ENTER Used to start editing a field and for confirming data entry.
ESC Returns display to previous page, or restores a data field's previous value.
$\wedge \vee$ (Up and down on ***ARROW KEYPAD***) Moves the field and list highlight up and down, and the cursor position when editing a field.
< > (Left and right on ***ARROW KEYPAD***) Jumps between pages in lists, moves the field highlight left and right and moves the cursor position when editing a field.
The ***ARROW KEYPAD*** also have four diagonal directions for changing targets in the plot.
FUNCTION KEYS These keys have different functions depending on current view. The function is displayed above each key on the screen.

How to Operate the R4 Display

Views and Function Keys

The user interface is built upon a number of *views*, organized in four different *modes*. The different views are reached with the *function keys* below the screen and the ***ESC*** and ***PAGE*** keys on the right side of the front panel. The mode is changed by pressing the ***MODE*** key followed by the function key corresponding to the desired mode.

Use the function keys to step into a specific view, and ***ESC*** to get back one level. Pressing ***PAGE*** will toggle function keys shown in views having several pages of function keys. An example view is shown below. In the following sections of the manual the views of the R4 AIS Class A Transponder System are described.



The function keys are view-specific and the function of each key is specified with a label on the screen. Note that unlabelled keys are not active in that specific view. Also, in some views the function keys might serve as switches, e.g. toggling a parameter.

The status bar of the system is present in all views at the top of the screen, and further described in section “Status Bar” on page 12.

Change Settings

Several of the views in the R4 AIS Class A Transponder System contain parameters that can be edited. To edit a parameter, select it by using the ∧ ∨ < > keys and press ***ENTER.*** Then enter data in one of four ways:

- **Numbers:** Press the ***ALPHANUMERIC KEY*** that corresponds to each digit. To delete a digit, press function key **Backspace**.
- **Text:** Press the ***ALPHANUMERIC KEY*** that corresponds to each character. Press the key once for the first character, twice for the second character and so on. Press the key marked with a dot twice to, where allowed, bring up a menu for entering special characters. To delete a character, press function key **Backspace**. To change between upper and lower case letters, press function key **Capslock** (if present).

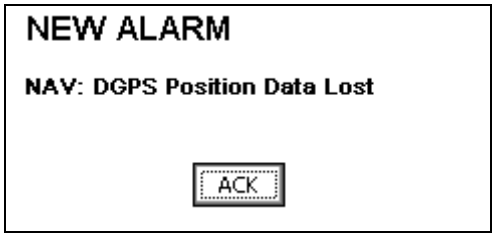
- **List of predefined values:** Use the ∧ ∨ keys to select between the predefined values.
- **Bar graph data:** Use the < > keys to increment or decrement the parameter.

Press ***ENTER*** when done. If desired, use the ∧ ∨ < > keys to select a new parameter to be edited, else press function key **Apply and Exit**.

Use the ***ESC*** key to undo changes and to return to the previous view.

Alarm and Alert Pop-ups

The R4 Display features alarm and alert pop-ups that can appear any time during operation. To acknowledge an alarm or alert message, press ***ENTER.*** Example of an alarm message is shown below.



For more information on alarms and alerts see the Reference, section “Alarm and Alert Pop-ups” on page 24. For alarm definitions see Appendix, section “Alarm Messages” on page 65.

Turning On and Off the R4 Display

To turn on the R4 Display, press the ***POWER*** key. The LEDs on the display will blink momentarily, indicating that the R4 Display is starting up. Any alarm active when the display is started will be indicated by Alarm pop-ups, as described above. Press ***ENTER*** to acknowledge any present alarm, and the corresponding pop-up will be removed.

The R4 Display will power up in the *Navigate* mode, showing the *Target List* view. The different modes and the basic operation of the R4 AIS Class A Transponder System are described in the following sections.

To power off the R4 Display, press and hold the ***POWER*** key for 3 seconds, until the screen goes black.

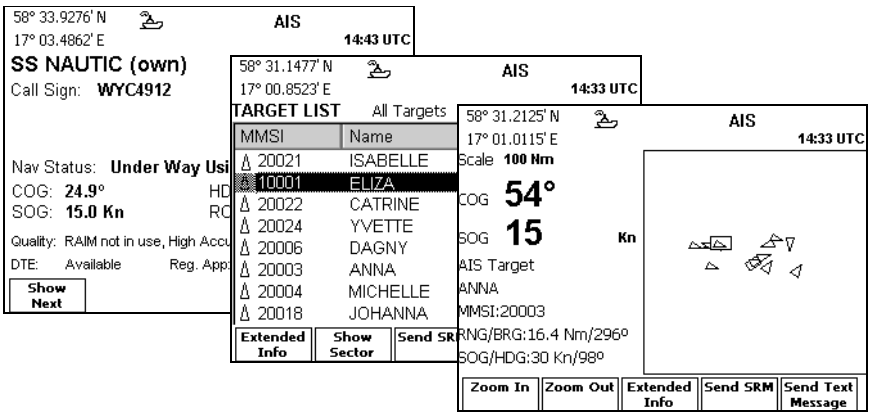
System Modes

The user interface of the R4 Display has four different *system modes,* which each correspond to different types of user activities.

The four modes are *Navigate, Plan Voyage, Alarms & Msgs* and *Config*. Current mode is changed by pressing the ***MODE*** key, which will bring up the function key labels illustrated below. Press the corresponding function key to enter the desired mode.

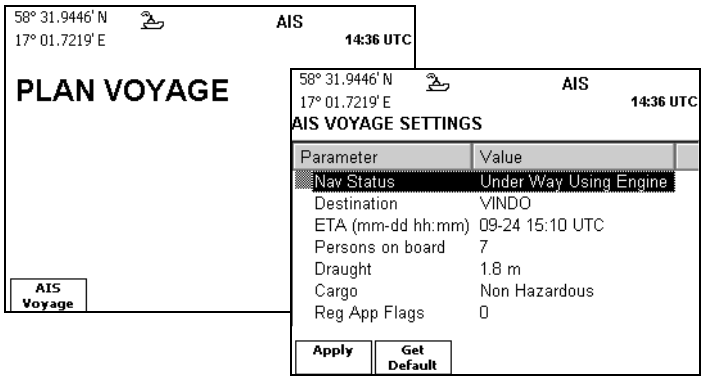
The different modes are described below, with illustrations of typical mode views.

Navigate Mode



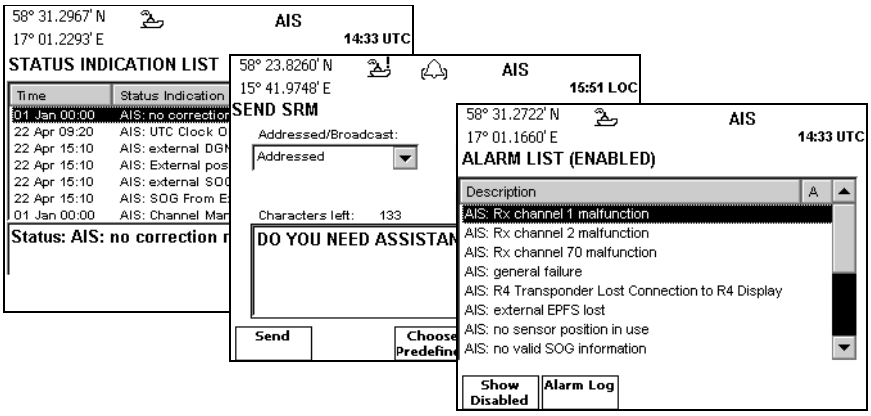
The *Navigate* mode is used under normal ship operation. It supports viewing AIS targets, plotting AIS targets, viewing extended information for a specific target, sending an AIS message (security related message or text message) to a specific target and viewing the own ship information being transmitted to remote targets. This mode is described in detail on page 27 and onwards in the Reference chapter.

Plan Voyage Mode



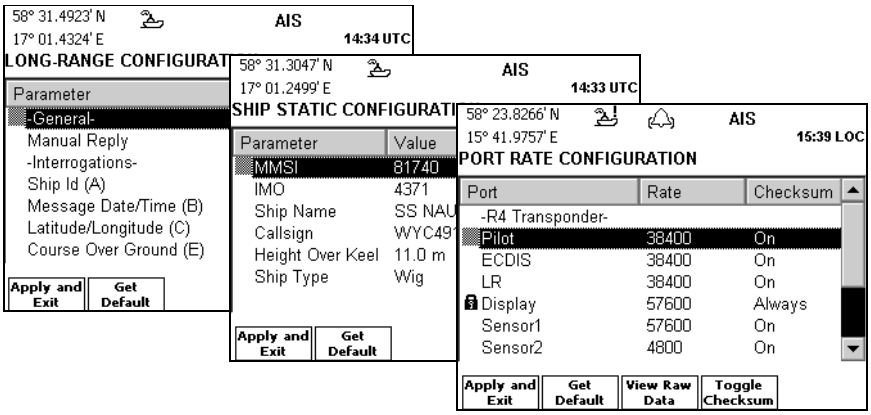
The *Plan Voyage* mode is used to enter voyage information when starting a new journey. This mode is described in detail on page 33 and onwards in the Reference chapter.

Alarms & Msgs Mode



The *Alarms & Msgs* mode provides functions for monitoring of current system status and message handling. This mode is described in detail on page 35 and onwards in the Reference chapter.

Config Mode



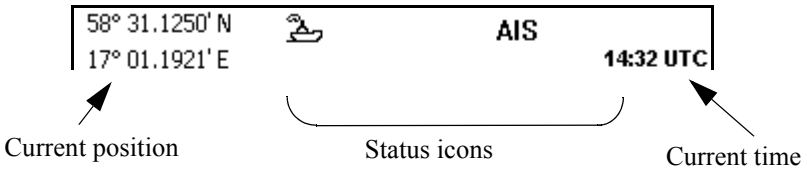
The *Config* mode comprises functions used to setup and configure the R4 AIS Class A Transponder System. This mode is described in detail on page 45 and onwards in the Reference chapter.

Functions Accessible Regardless of Mode

Functions associated with the ***MODE, DISPLAY, STATUS*** and ***POWER*** keys are accessible regardless of mode. These keys provide functionality for switching system mode, changing display settings, changing navigational status and for turning the display on and off.

Status Bar

The top of the screen of the R4 Display always displays a summary of the system's status. See illustration below.



If a valid navigation position is available, it is displayed to the left. The status icons are displayed in the middle, and to the right current time is shown. Time is either UTC or local (LOC).

Status Icons

The status icons that can be displayed are:

- Unread AIS message (safety related message or text message)
- Unread Long Range message (auto reply)
- Unread Long Range message (manual reply)
- Active alarms
- 1W mode (Available only if Ship Type = Tanker and Navigational Status = Moored)

AIS status, being one of:

- AIS functionality available
- No communication with the R4 AIS Transponder

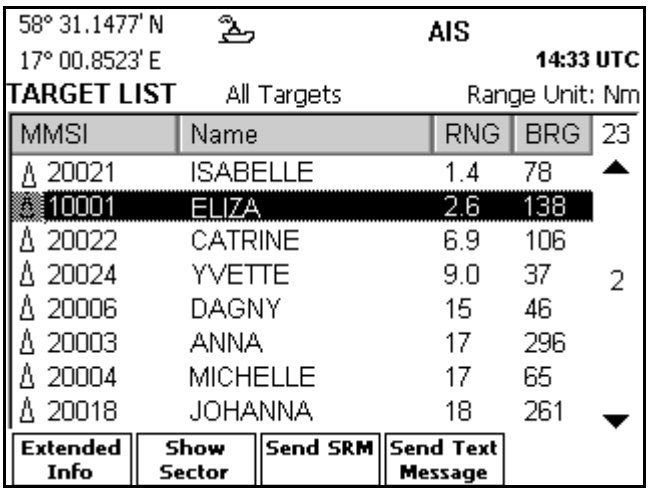
Navigational status, being one of:

- Navigational status is undefined
- At anchor or moored
- Under way using engine
- Navigational status is one of: Not under command, Restricted manoeuvrability, Constrained by her draught, Aground, Engaged in fishing, Under way sailing, Reserved for future use.

The icons are also described in section "Icon Description" on page 22 in the Reference chapter.

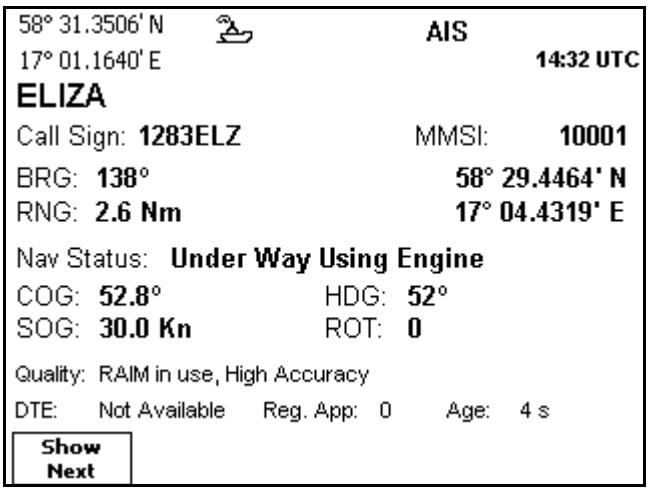
View Remote Ship Information

The R4 Display will power up in *Target List* view. This view, also referred to as the *minimal display*, is accessed by pressing function key **Target List** when in the top view of the *Navigate* mode. The mode is reached by pressing ***MODE*** followed by function key **NAVIGATE**. The view displays a list of all targets sorted by range from own ship (closest first). The list includes MMSI, ship's name, range (RNG) and bearing (BRG). The total number of ships in the list will be shown in the upper right corner of the list and the index of the currently selected ship will be shown on the right side. By pressing the **Show Sector** / **Show All Targets** function keys the list will show either the targets within a bearing interval, or all targets. When showing targets within a particular bearing sector, the start bearing will be close to own ship direction (HDG or COG if available). Each sector covers 30° and moving through the sectors is done in 15° steps by using the function keys **-15**° ← and **+15**° →.



For extended information about a target in the list, select the ship with the ∧ ∨ key and press function key **Extended Info** or ***ENTER***.

The *Extended Information* view includes static, dynamic and voyage related data for the selected target. The first page displays ship information for fast navigational decisions. Press **Show Next** to change the information shown in the view's lower part. For details, see section "Target List" on page 28 and section "Extended Info" on page 29.

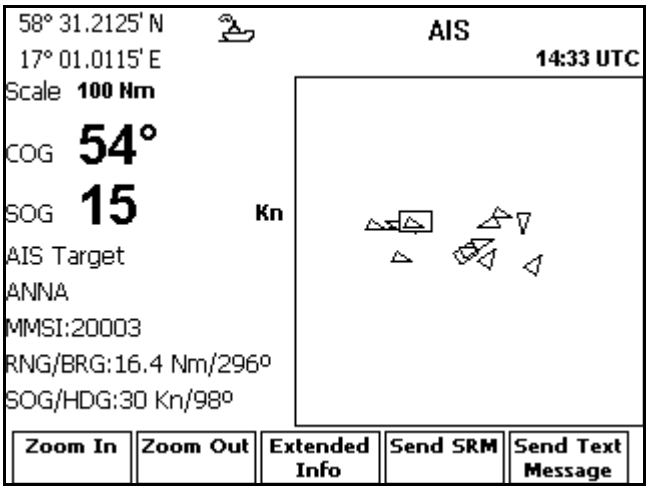


Press ***ESC*** to return to *Target List* view.

Function keys **Send SRM** and **Send Text Message** in the *Target List* view are used to send a safety related message (SRM) or a text message to the selected target. For more information about AIS messages, see Reference chapter section “AIS Messages” on page 38.

View Plot of Targets

The location of targets relative to your own ship are visualized in the *Plot* view. The view is accessed when in the top view of the *Navigate* mode by pressing function key **Plot**. Use the ***ARROW KEYPAD*** (∧ ∨ < >) to select any of the targets on the display. The arrow keys can also be used to select targets in diagonal direction. Brief information about the selected target is shown to the left. Use the **Zoom in** and **Zoom out** function keys to zoom in or out.



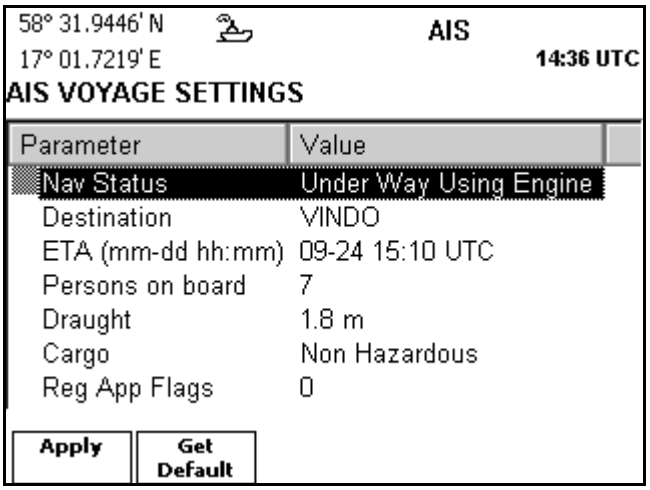
For extended information about a target select it using the ∧ ∨ < > key and press function key **Extended Info** or ***ENTER***.

The own ship target is displayed as a filled (black) target icon. Class B targets are indicated by a ‘B’ appended to the target icon (not shown in the figure above).

Press function key **Send SRM** or **Send Text Message** in order to send a safety related message (SRM) or a text message to the selected target. For more information about AIS messages, see Reference chapter, section “AIS Messages” on page 38.

Enter and Read Voyage Related Information

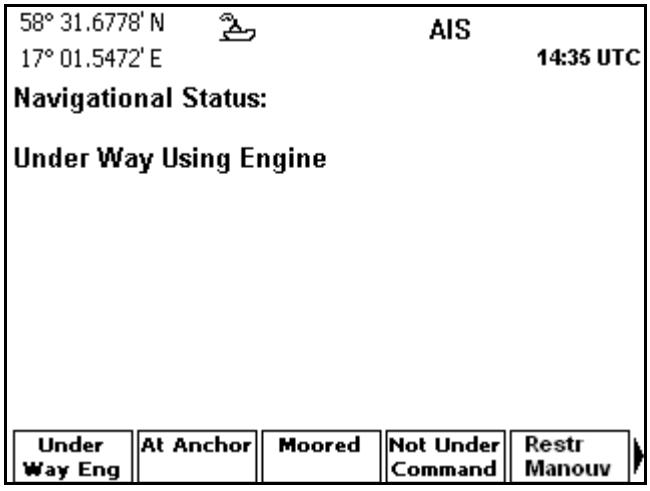
Voyage related information (for transmit via AIS) is displayed in the *AIS Voyage* view. The view is present in the *Plan Voyage* mode which is accessed by pressing the ***MODE*** key followed by function key **PLAN VOYAGE**. The view is then entered by pressing function key **AIS Voyage**. Voyage related data includes destination, estimated time of arrival (ETA) and number of people aboard.



The parameters “Cargo” and “1 W mode” are available for special ship types only. For more information see Reference chapter, section “AIS Voyage” on page 34.

Fast Setting of Navigational Status

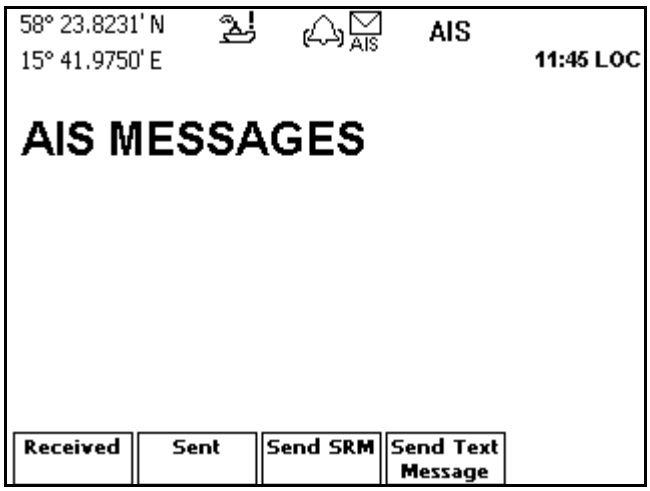
The ship’s navigational status can be quickly set in the *Navigational Status* view. This view is reached by pressing the ***STATUS*** key. The status is set by pressing the appropriate function key. Use the ***PAGE*** key to toggle between the different status messages alternatives.



Note: When ship type is “Tanker” and navigational status “Moored” this view also contains a function key for toggling “1 W mode”.

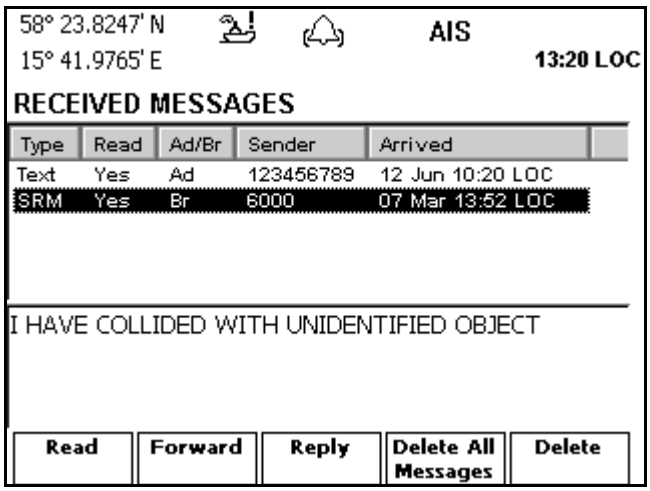
Handling Safety Related Messages (SRM) and Text Messages

Safety related messages (SRMs) and text messages can be sent to specific targets (addressed messages) or broadcast to all targets. Handling of messages is supported by the *AIS Messages* view accessible in the *Alarms & Msgs* mode. This mode is reached by pressing ***MODE*** followed by function key **ALARMS & MSGS**. The view is then reached by pressing function key **AIS Messages**



Read Received Messages

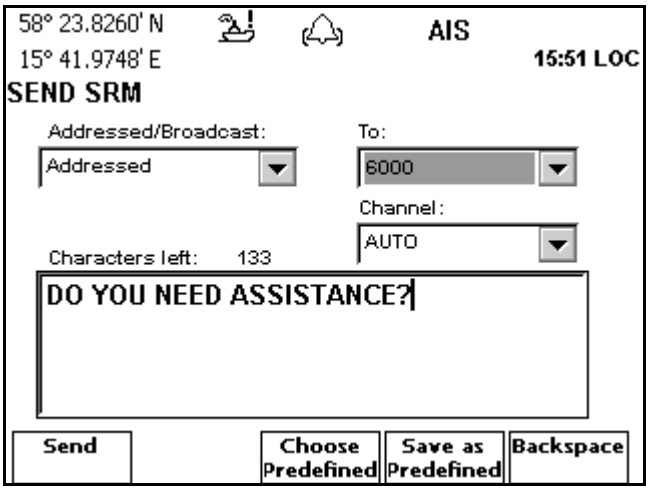
Received messages can be accessed in the *Received Messages* view. To enter the view, press function key **Received**.



Select a message with ∧ ∨, press function key **Read** to see the entire message. For more information, see Reference chapter, section “AIS Messages” on page 38.

Send SRMs

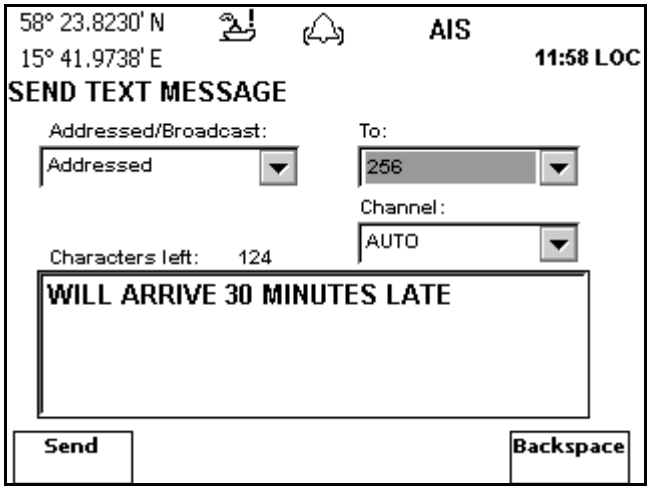
SRMs are composed and sent in the *Send SRM* view. To get to this view, press function key **Send SRM**.



The message can either be composed manually, or taken from a predefined list. For more information about how to create and send a safety related message see Reference chapter, section “Send SRM” on page 40.

Send Text Messages

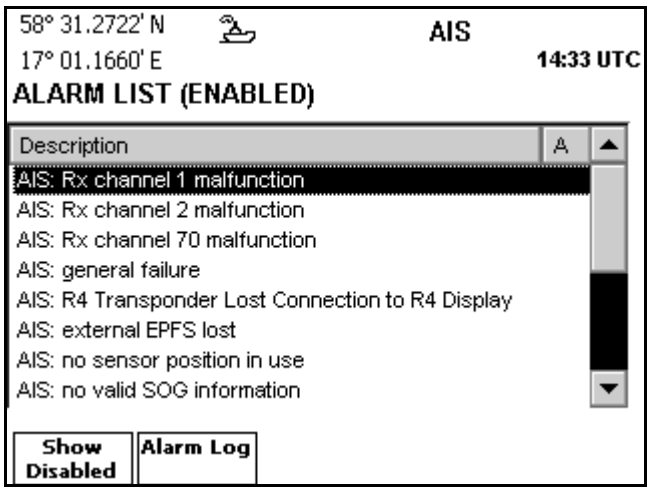
Text messages are composed and sent in the *Send Text Message* view. To get to this view, press function key **Send Text Message**



Adressed text messages can not be received by Class B targets. For more information see Reference chapter, section “Send Text Message” on page 42.

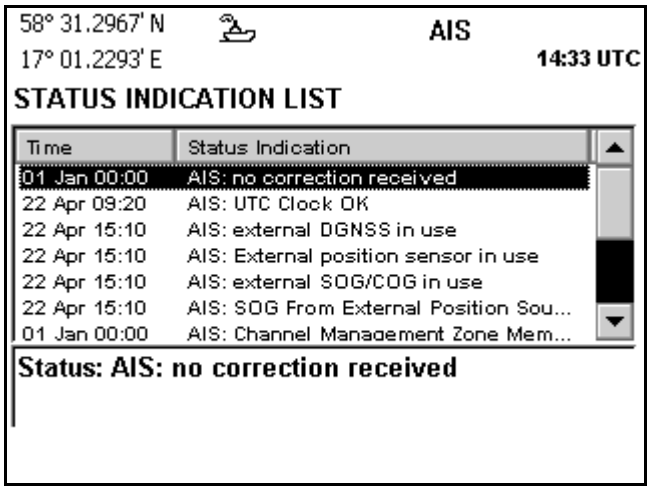
Alarm and Status Lists

Current alarm status can be viewed under the *Alarm List* view, in the *Alarms & Msgs* mode. To enter the mode, press the ***MODE*** key followed by the **ALARMS & MSGS** function key. Then press function key **Alarm List** to enter the view. Active alarms are marked with an exclamation mark (!).



On entrance, the view only shows status of enabled alarm. To show alarms that have been disabled, press the function key **Show Disabled.** For more information on alarm messages see Appendix, section “Alarm Messages” on page 65. The *Alarms & Msgs* mode and associated views are described on page 35 and onwards.

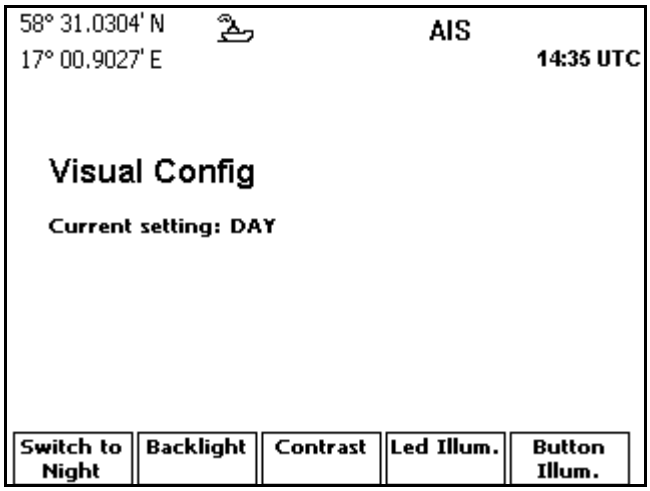
Current status of indications and the latest events are listed in the *Status List*. To enter this view press function key **Status List** in the *Alarms & Msgs* mode. For a list of status messages see Appendix, section “Indication Messages” on page 67.



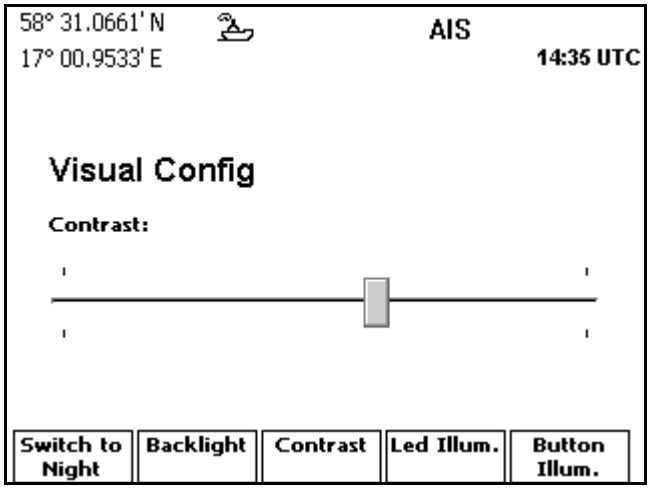
Visual Settings

The display backlight, contrast, LED illumination, button illumination and day or night settings can be changed in the *Visual Config* view. Changes made in this view directly effect the corresponding visual setting.

To enter this view, press the ***DISPLAY*** key. The following view is shown.



To change between day and night settings, press **Switch to Day** or **Switch to Night**. The day and night settings are stored separately, so different settings can be specified for day and night operation. To change backlight, contrast, LED illumination or button illumination, press the corresponding function key. Regardless if the **Backlight, Contrast, Led Illum.** or **Button Illum.** function key is pressed, a view with a bar graph is shown as illustrated below.



Use < > to decrease or increase the value of the selected setting. The corresponding screen or illumination setting is directly affected as the bar is moved.

To exit the *Visual Config* view, press ***DISPLAY*** or ***ESC***.

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Reference

Status LEDs

The following section describe the status indicating light emitting diodes (LEDs) of the R4 Transponder.

R4 Transponder LEDs

The following LEDs, located on the front of the R4 Transponder, indicates its current status and radio link activity.

Green LED

The green LED indicates that power is applied to the R4 transponder.

Yellow LED

A flashing yellow LED indicates that the R4 Transponder is receiving data.

Red LED

A flashing red LED indicates that the R4 Transponder is transmitting on the radio link (transmission starts approximately 1 minute after power on).

Icon Description

Message Symbols

Unread SRM or text message

Unread Long Range messages (auto reply)

Unread Long Range messages (manual reply)

AIS Status Symbols

AIS functionality available

No communication with the R4 AIS Transponder

Navigational Status Symbols (Own Vessel Icons)


Navigational status is undefined


At anchor or moored


Under way using engine


Navigational status is one of: Not under command, Restricted manoeuvrability, Constrained by her draught, Aground, Engaged in fishing, Under way sailing, Reserved for future use.

Miscellaneous Symbols


Active Alarm(s)

1W mode active

Target Symbols (Target List and Plot)


Own ship (plot view)


Ship (class A)


Ship (class B)


Base Station


SAR


Aids-to-Navigation

Adjusting Settings

If desired, some presentation and navigation characteristics of the R4 Display can be adjusted to the user's preferences. The most central parameters that can be adjusted are briefly described below.

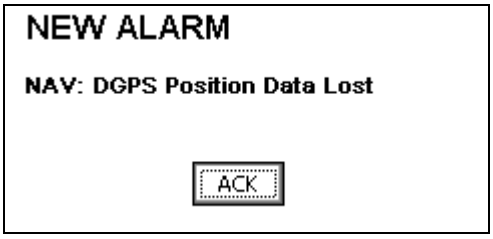
Maximum number of targets in Target List and Plot
The maximum number of targets that can be shown in the *Target List* and *Plot* views can be adjusted. See section "AIS Display" on page 53.

Adjust enabled and disabled alarms
Enable alarms for those alarm conditions that indications are desired for. Per default, several of the alarms are disabled. Alarms that are invalid in the specific system configuration can remain disabled. If not, such alarms will always be active. Adjusting alarms is described in section "Alarm Config" on page 57.

Range, speed and depth units
The units used for displaying range, speed and depth values can be configured. Configuration of units is described in section "Units Config" on page 57.

Alarm and Alert Pop-ups

There are two types of pop-up windows, alarms and alerts. Pop-up windows can appear any time during system operation to notify the user of an event or alarm condition. To acknowledge an alarm or an alert and close the pop-up window, press ***ENTER***. Active alarms are listed in the *Alarm List* view described on page 37. For explanation of different alarms, see Appendix, section “Alarm Messages” on page 65.



It is possible to disable alarms that are invalid for the specific system configuration. If not disabled, such alarms will otherwise always be active.This is described in section “Alarm Config” on page 57.

Changing System Mode

The R4 Display has four system modes: *Navigate, Plan Voyage, Alarms & Msgs* and *Config*. The system modes corresponds to the kind of operation the user is performing. An overview of the different modes is present in section "System Modes" on page 10. Each mode is also described in detail in the following sections of this chapter.

Accessing Navigate mode views when in a different mode

1. Press ***MODE*** key.
2. Press function key **NAVIGATE**.
3. Press the function key associated with the desired view.

Accessing Plan Voyage mode views when in a different mode

1. Press ***MODE*** key.
2. Press function key **PLAN**.
3. Press the function key associated with the desired view.

Accessing Alarms & Msgs mode views when in a different mode

1. Press ***MODE*** key.
2. Press function key **ALARMS & MSGS**.
3. Press the function key associated with the desired view.

Accessing Config mode views when in a different mode

1. Press ***MODE*** key.
2. Press function key **CONFIG**.
3. To show the second page of main views, press ***PAGE***.
4. Press the function key associated with the desired view.

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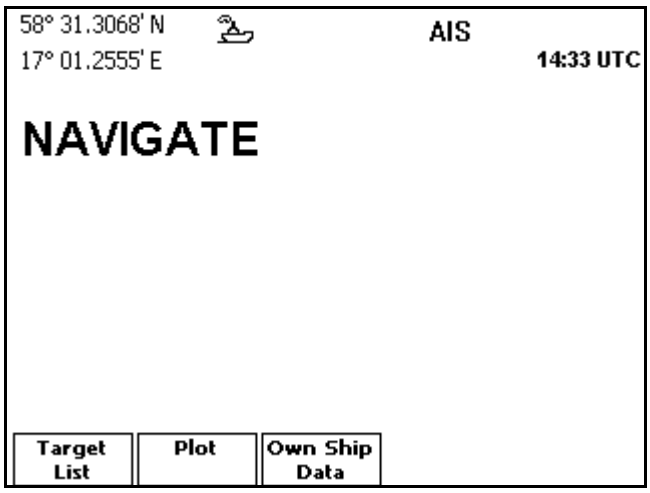
Navigate Mode

The *Navigate* mode contains a set of views for performing tasks for normal voyage operation. This includes: showing list and plot of AIS equipped vessels in range as well as showing extended information for a specific vessel.

The mode is entered by pressing the ***MODE*** key followed by function key **NAVIGATE**.

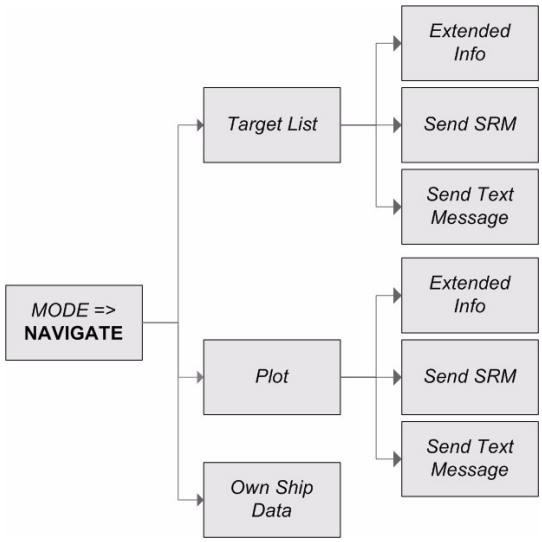
Overview

The top level function keys of the *Navigate* mode are illustrated below.



- *Target List* lists brief information about the closest targets.
- *Plot* views the closest targets and displays information for a marked target.
- *Own Ship Data* shows the ships own data which is transmitted to other vessels.

Below is a graphical overview of the different views present in *Navigate* mode.

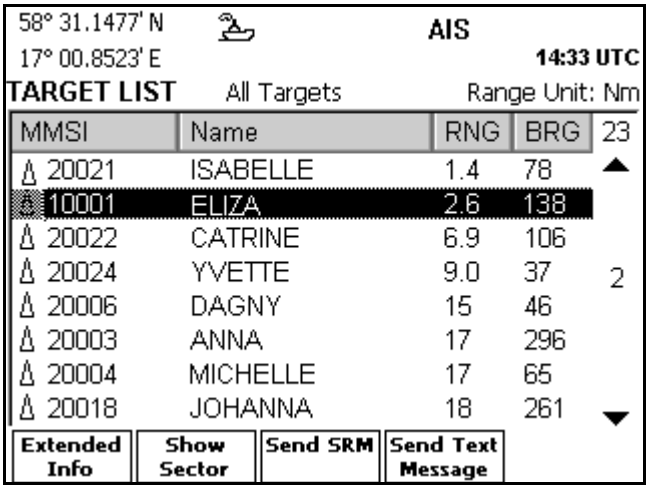


Target List

The *Target List* view displays a list of targets sorted by range from own ship (closest first). The list includes MMSI, ship's name, range (RNG) and bearing (BRG). The total number of ships in the list will be shown in the upper right corner of the list and the index of the currently selected ship will be shown on the right side. The maximum number of targets that can be shown in the list is controlled by the *Max. Targets in List* parameter, as set in the *AIS Display* view described on page 53.

By pressing the **Show Sector** / **Show All Targets** function key the list will show either the targets within a bearing interval, or all targets. Starting sector is in own ship heading direction if heading is available, or else in own ship COG direction. Each bearing sector covers 30°.

To get detailed information about a target, to send an SRM to a specific target or to send a text message to a specific target, enter subview *Extended Info*, *Send SRM* or *Send Text Message*.



Get extended information about a selected target

1. Select the target using ∧ ∨.
2. Press function key **Extended Info** or ***ENTER***.
3. The *Extended Info* view is shown, described on page 29.

Send an SRM to a selected target

1. Select the target using ∧ ∨.
2. Press function key **Send SRM**.
3. To send SRMs, refer to "Send SRM" on page 40.

Send a text message to a selected target

1. Select the target using ∧ ∨.
2. Press function key **Send Text Message**.
3. To send text messages, refer to "Send Text Message" on page 42.

Show only targets within a sector (when showing all targets)

1. Press function key **Show Sector**.

Show all targets (when showing only targets within sector)

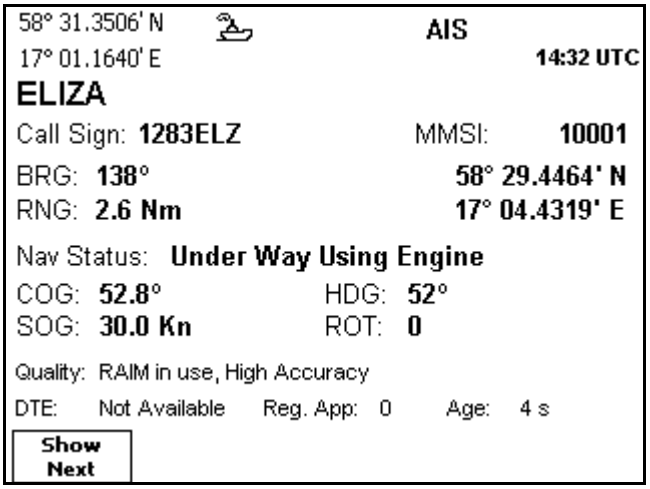
1. Press function key **Show All.**

Changing displayed sectors (when showing only targets within sector)

1. Use the function keys **-15°** ← and **+15°** → to step through the sectors counter-clockwise or clockwise. Starting sector is in own ship heading direction if heading is available, or else in own ship COG direction.

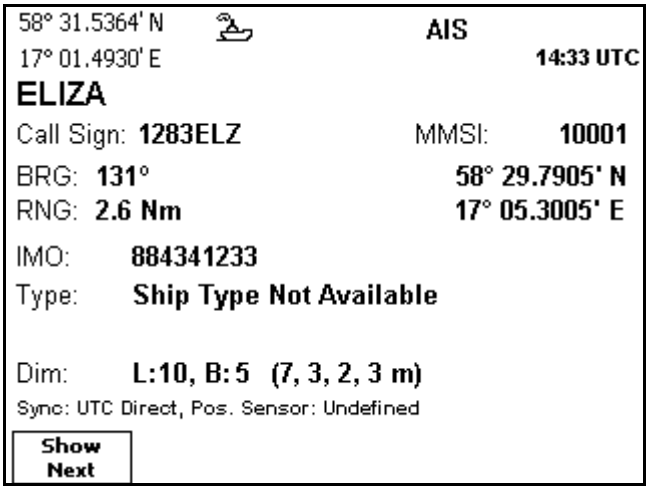
Extended Info

The *Extended Info* subview is used to show extended information for a specific target. The upper part of the view always show central information of the selected target including call sign, MMSI and bearing and range to target. The lower part of the view can be toggled showing three different sets of information. When first entered, the following view is shown.



Pressing function key **Show Next** once displays the following fields.

Pressing function key **Show Next** again shows the following fields.



As long as all messages from the specific target not yet have been received, it is possible to perform a manual interrogation for the missing information with function key **Query**. This function key will only be available until all static and voyage related data have been received from the target.

It is also possible to enable a manual request for number of persons on board from a specific target. In this case, a function key **Persons On Board** will be available and a datafield added on the second page of the *Extended Info* view. This function is enabled by the *Persons On Board Query* parameter in the *AIS Display* view as described on page 53.

For a Class B target the *Extended Info* subview will look somewhat different due to the smaller amount of data transmitted from Class B transponders. The following parameters will not be available:

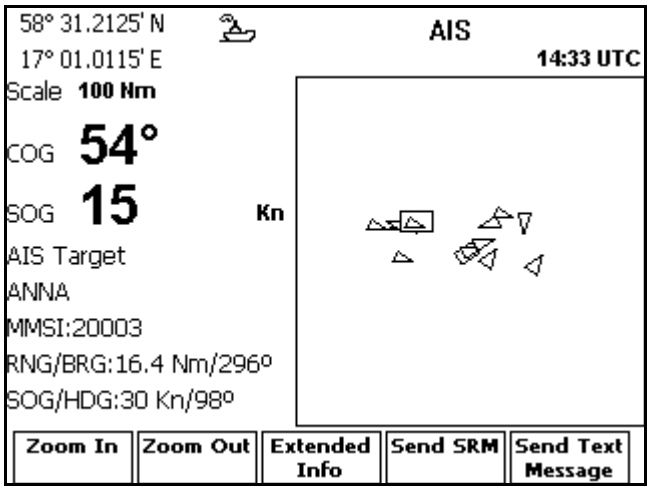
- Nav Status
- Destination
- ETA
- Draught
- IMO number
- Persons on Board

A 'display' parameter will indicate whether the Class B transponder is capable to process and display AIS safety related messages (SRM:s). Only two *Extended Info* pages are required to display all data for a Class B target.

Plot

The *Plot* view displays the targets closest to your ship and brief information (MMSI, range, bearing, heading and SOG) about the currently selected target. To get detailed information about a target, to send an SRM to a specific target or send a text message to a selected target, enter subview *Extended Info*, *Send SRM* or *Send Text Message*.

The maximum amount of targets shown in the plot is controlled by the *Max Targets in Plot* parameter configured in the *AIS Display* view described on page 53.



The own ship is displayed as a filled (black) target icon in the plot view. Class B targets have a 'B' appended to the target symbol (not shown in the figure above).

Show more details in the plot

1. Press function key **Zoom In**.

Show less details in the plot

1. Press function key **Zoom Out.**

Select a target

1. Choose a target using ∧ ∨ < >. The diagonal directions of the arrow keypad can also be used.

Get extended information about the selected target

1. Press ***ENTER*** or function key **Extended Info**.
2. The *Extended Info* view is shown, described in page 29.

Send a SRM to the selected target

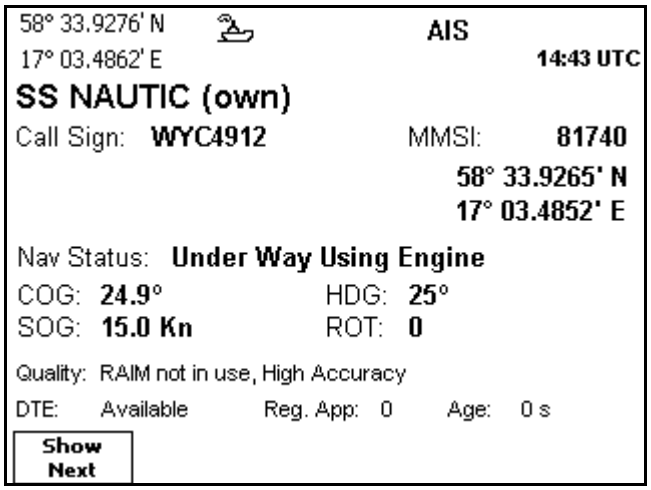
1. Press function key **Send SRM.**
2. This brings forth the *Send SRM* view, described in more detail on page 40.

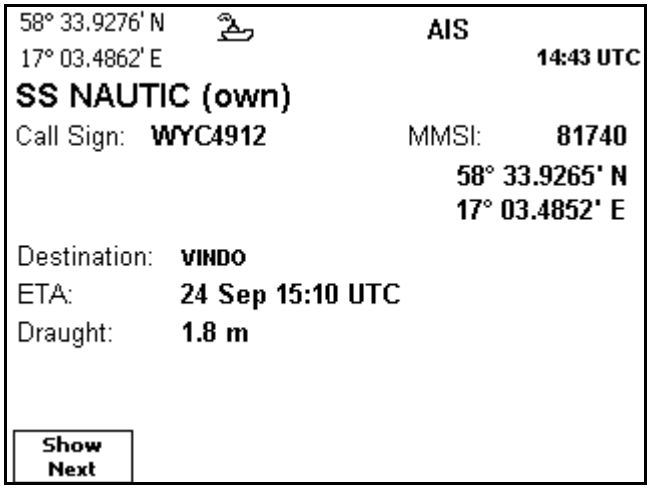
Send a text message to the selected target

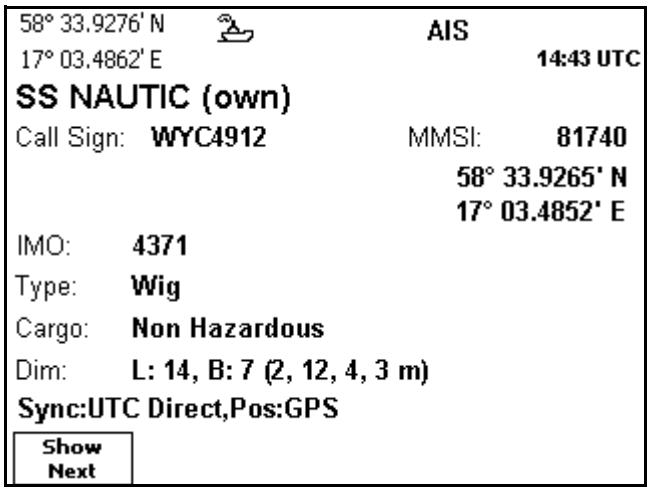
1. Press function key **Send Text Message.**
2. This brings forth the *Send Text Message* view, described in more detail on page 42.

Own Ship Data

The *Own Ship Data* view shows your ships own data, which is transmitted to other vessels. The upper part of the view always displays the most central information being MMSI, call sign and position. The lower part of the view consists of three different pages which can be toggled by pressing the function key **Show Next** one or more times. See illustrations below.





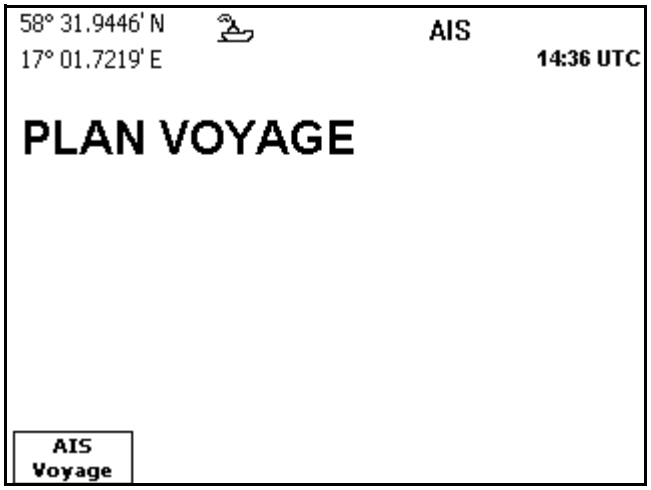


Plan Voyage Mode

The *Plan Voyage* mode contains the *AIS Voyage* view used for planning the AIS part of a voyage. The view is used to enter information such as cargo, destination and ETA for the current voyage. To get to the *Plan Voyage* views, press ***MODE*** followed by function key **PLAN VOYAGE**.

Overview

The mode only contains one view, the *AIS Voyage* view.

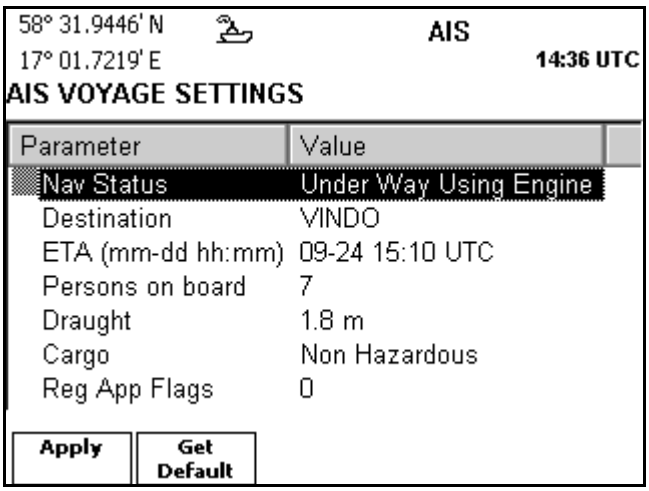


Below is a graphical overview of the *Plan Voyage* mode.

The view is further described below.

AIS Voyage

The *AIS Voyage Settings* view is used to view and edit voyage related data such as navigational status, estimated time of arrival (ETA), draught, number of people aboard, destination and cargo. These settings are used when transmitting information about the current voyage to remote ships. The *Cargo* parameter is only present when ship type is one of Wig, High-Speed Craft, Passenger Ship, Cargo Ship, Tanker or Ship Type Other. The ship type is set in the *Ship Static Configuration* view described on page 50.



Change settings

1. Select parameter to change using ∧ ∨ and press ***ENTER***.
2. Enter the desired value using the alphanumeric keypad or if it is a drop down list, select a value using ∧ ∨. Use function key **Backspace** to erase data where applicable. Press ***ENTER*** when done.
3. Repeat step 2 and 3 for each setting to change.
4. Press function key **Apply** when done.

Reg. app. flag is intended for use in regional applications only and should be set to zero (0) in other applications. Definitions of values 1 to 15 shall be provided by a competent regional authority if used.

A special function called “1 W mode” is made available when ship type is defined as a tanker (in the *Ship Static Configuration* view described on page 50) and navigational status is “Moored”. This mode is automatically disabled whenever any of these conditions no longer applies and also at speeds exceeding 3 knots. While enabled, ‘1W mode’ operation can be manually controlled by a setting the *AIS Voyage Settings* view and also by a function key in the *Navigational Status* view. A ‘1 W’ icon is displayed in the Status Bar while this mode is active. For further information about the “1 W mode” see International Safety Guide for Oil Tankers & Terminals (ISGOTT).

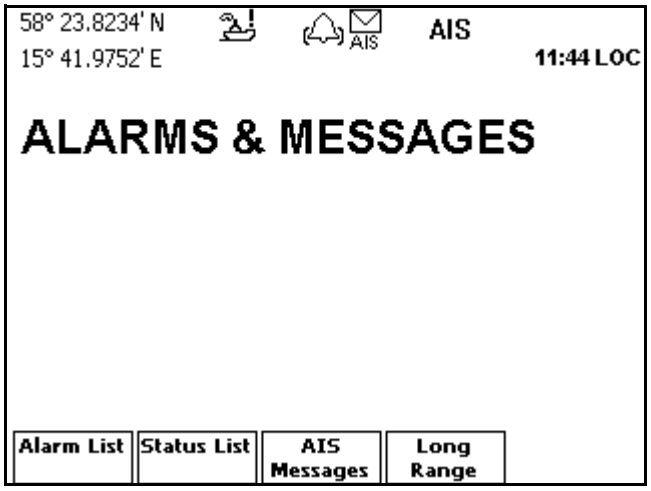
Alarms & Msgs Mode

The *Alarms & Msgs* mode is used to view the status of the R4 AIS Class A Transponder System. It contains views and functions for current and past alarms, current status of indications and events, safety related messages (SRMs), text messages and long range (LR) interrogations.

To reach *Alarms & Msgs* mode, press ***MODE*** followed by function key **ALARMS & MSGS**.

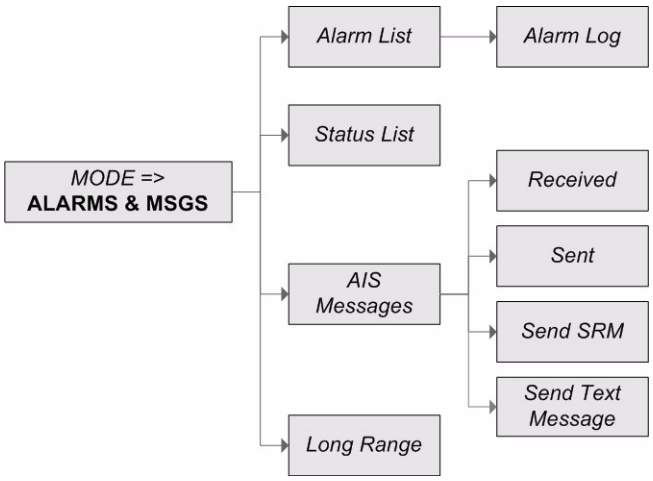
Overview

The top level functions keys of the mode are illustrated below.



- *Alarm List* indicates active alarms in the system. It also contains logs of past and present alarms.
- *Status List* provide current status of indications and the latest events.
- *AIS Messages* supports transmissions of safety related messages (SRMs) and text messages.
- *Long Range* lists received long range (LR) interrogations and transmitted replies. It also supports manual replies to unacknowledged interrogations.

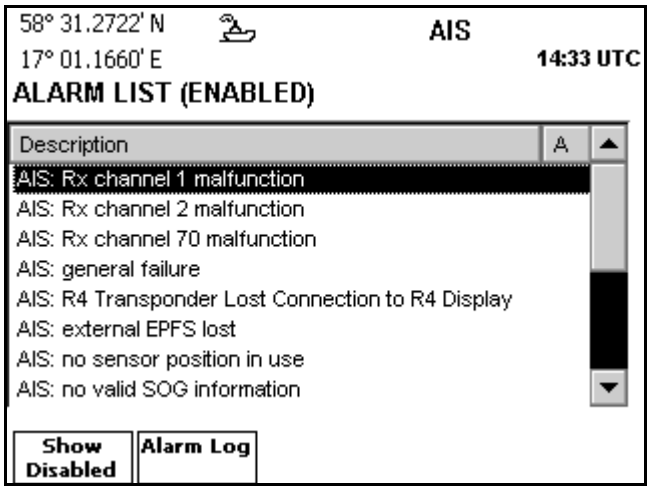
Below is a graphical overview of the different views present in *Alarms & Msgs* mode.



Alarm List

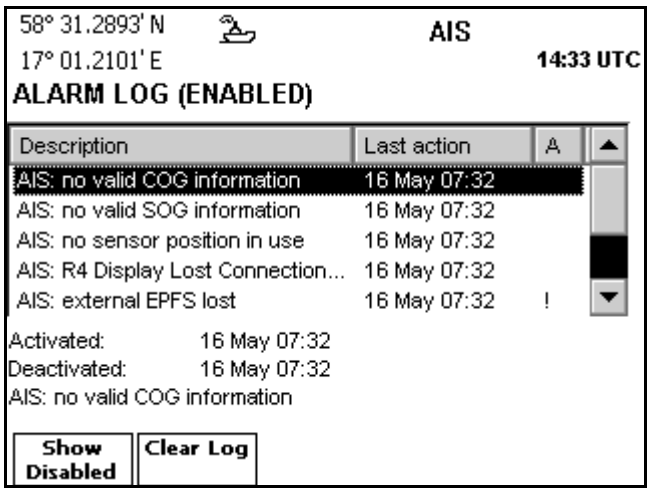
The *Alarm List* view lists current status of all alarms. Active alarms are presented in the top of the list and are marked with an exclamation mark (!). The view contains the *Alarm Log* subview which shows the log of all alarms that has been activated in the system. In addition, it is possible to toggle between showing the enabled or the disabled alarms, by in each view pressing the function key **Show Disabled**. All alarms are described in section “Alarm Messages” on page 65 in the Appendix.

The *Alarm List* view is illustrated below.



View the log of all alarms

1. Press function key **Alarm Log.**
2. The following view is displayed. The view contains an entry for each time an alarm has been active, and shows the time of activation and deactivation (if the alarm has been deactivated).



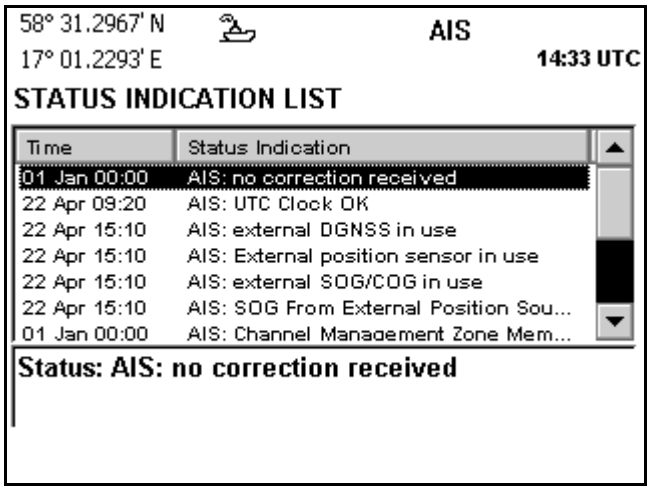
3. Press function key ***ESC*** to return to the main view.

Clear the alarm log

1. Press function key **Alarm Log.** The above view is displayed.
2. Press function key **Clear Log.** The entire alarm history will be erased.

Status List

The *Status List* view lists current status of indications and the latest events. The different status indications are listed in section “Indication Messages” on page 67 in the Appendix.



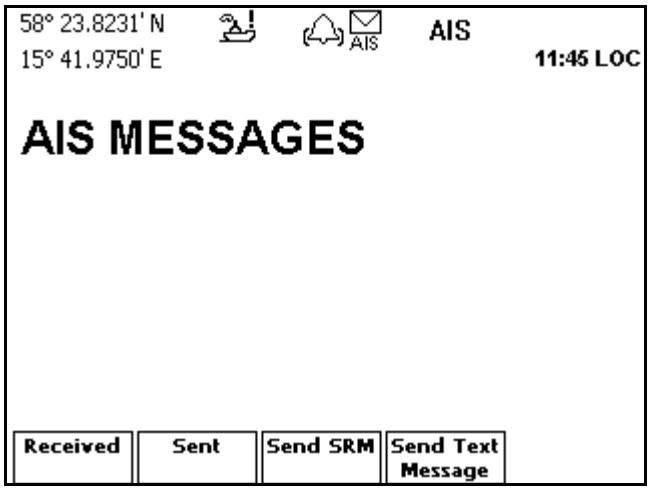
AIS Messages

The system supports transmission of safety related messages (SRMs) as well as text messages for undefined purposes over the AIS data link. Messages can be broadcast to all targets within range or adressed to a particular AIS target. Maximum length of each message is 156 characters for an addressed SRM and 161 characters for a broadcast SRM. For text messages, the maximum lengths are 151 and 156 characters respectively. An AIS Message Icon will be displayed in the status bar whenever a new SRM or text message has been received.

Note that Class B transponders are allowed to, but not required to, process SRMs and boadcast text messages. Thus it can not be expected that a message sent to a Class B target will be received. Adressed text messages are not processed by Class B transponders

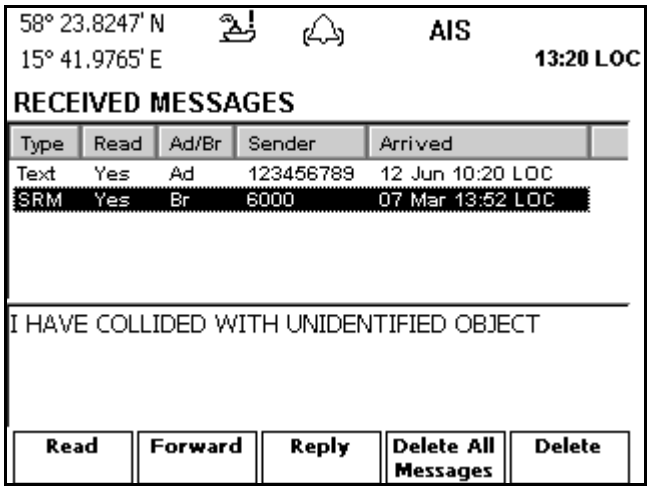
When sending an adressed message, a warning will be displayed if no acknowledge is received from the adressee. For text messages, it may be configured whether a warning also shall be provided if the message not has been interpreted by the receiving equipment. Refer to “AIS Display” on page 53.

The *AIS Messages* view contains the subviews *Received Messages, Sent Messages, Send SRM* and *Send Text Message.*



Received Messages

The *Received Messages* view allows the user to read, delete, reply or forward a received SRM or text message.



Read a received SRM or text message

1. Select message from the list using ∧ ∨.
2. If necessary press function key **Read** to see the entire message.

Reply to a received SRM or text message

1. Select message from the list using ∧ ∨.
2. Press function key **Reply**.
3. Continue as described under “Send SRM” on page 40 or “Send Text Message” on page 42.

Forward a received SRM or text message

1. Select message from the list with ∧ ∨.
2. Press function key **Forward**.
3. Continue as described under “Send SRM” on page 40 or “Send Text Message” on page 42.

Delete a received SRM or text message

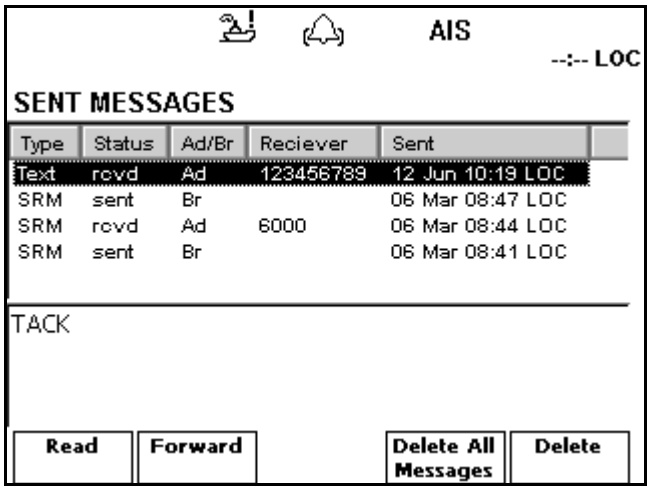
1. Select message from the list using ∧ ∨.
2. Press function key **Delete**

Delete all received SRMs and text messages

1. Press function key **Delete All Messages**
2. Acknowledge the displayed request for confirmation.

Sent Messages

Sent SRMs and text messages are stored and can be retrieved in the *Sent Messages* view. A sent message can also be used as source for a new message by selecting the desired message followed by the function key **Forward**. The selected sent messages text field is then copied into the new messages text field.



Send an SRM or text message based on a previously sent message

1. Select message from the list using ∧ ∨.
2. Press function key **Forward**.
3. Continue as described under “Send SRM” on page 40. or “Send Text Message” on page 42.

Delete a sent SRM or text message

1. Select message from the list using ∧ ∨.
2. Press function key **Delete**.

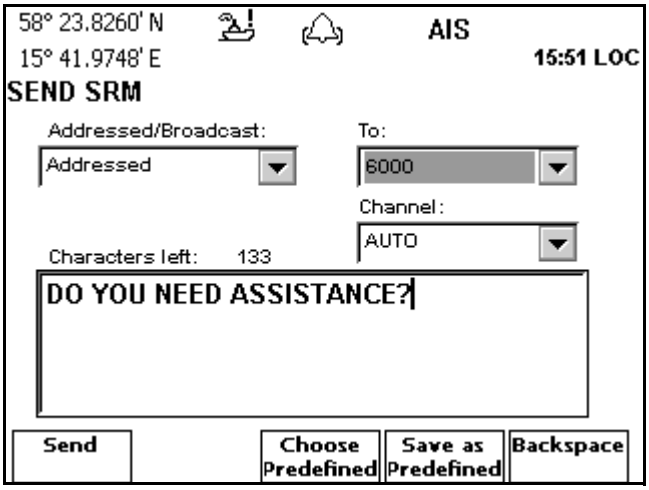
Delete all sent SRMs and text messages

1. Press function key **Delete All Messages**
2. Acknowledge the displayed request for confirmation.

Send SRM

The *Send SRM* view allows the user to create and send an addressed or broadcast SRM. The message text can be taken from a predefined list or entered manually. A manually entered text can be stored in the list of predefined SRM texts as a user predefined SRM.

A user predefined SRM can also be removed from the list. The factory predefined messages cannot be removed.



Send a SRM with manually entered text

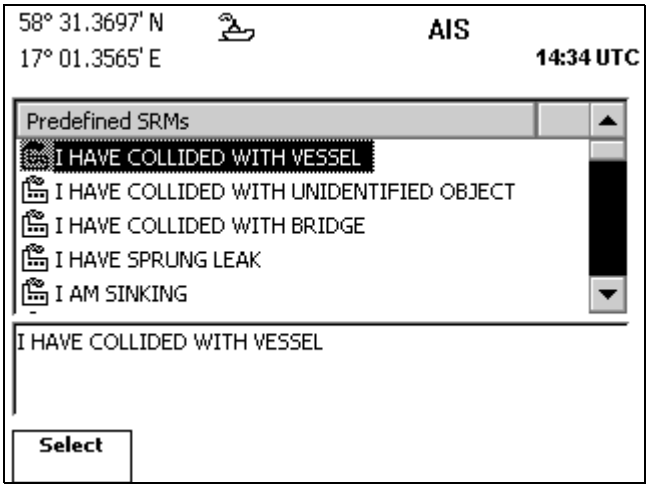
1. Enter message text using the alphanumeric keypad and press ***ENTER***. Use the **Backspace** function key to erase characters.
2. Select the **Addressed/Broadcast** field and press ***ENTER***.
3. Use ∧ ∨ to choose **Addressed** if you want to send the SRM to a specific target, and **Broadcast** if you want to send the SRM to all targets. Press ***ENTER*** when done.
4. If **Addressed** is selected: Press **>** to select the **To:** field and then press ***ENTER***. Type in the target address and press ***ENTER*** again. If you are sending a SRM from the *Target List* or *Plot* view, the target address is already filled in.
5. Select the **Channel** field and press ***ENTER***.
6. Select between **AUTO**, **A**, **B** or **A+B** with ∧ ∨ and press ***ENTER***.
7. Send the SRM by pressing function key **Send**.

Save as predefined SRM

1. Enter message text and select addressed/broadcast and channel, as described in the previous section.
2. Press the function key **Save as Predefined**.

Send a predefined SRM

1. Press function key **Choose Predefined**. The below view is shown.



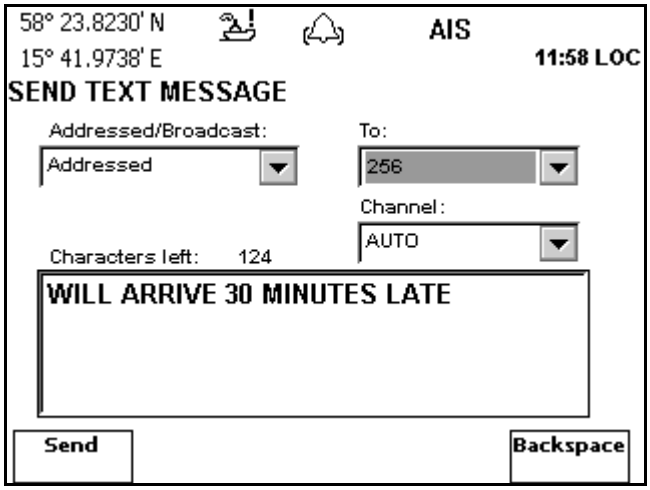
2. Choose SRM text with ∧ ∨.
3. Press the function key **Select** or ***ENTER***.
4. The message field is now entered and the mesage can be sent as described for SRM with manually entered text above.

Delete a user predefined SRM

1. Press function key **Choose Predefined**.
2. Choose the user predefined SRM using ∧ ∨.
3. Press the function key **Delete**.

Send Text Message

The *Send Text Message* view allows the user to create and send an addressed or broadcast text message.



Send a text message with manually entered text

1. Enter message text using the alphanumeric keypad and press ***ENTER***. Use the **Backspace** function key to erase characters.
2. Select the **Addressed/Broadcast** field and press ***ENTER***.
3. Use ∧ ∨ to choose **Addressed** if you want to send the message to a specific target, and **Broadcast** if you want to send to all targets. Press ***ENTER*** when done.

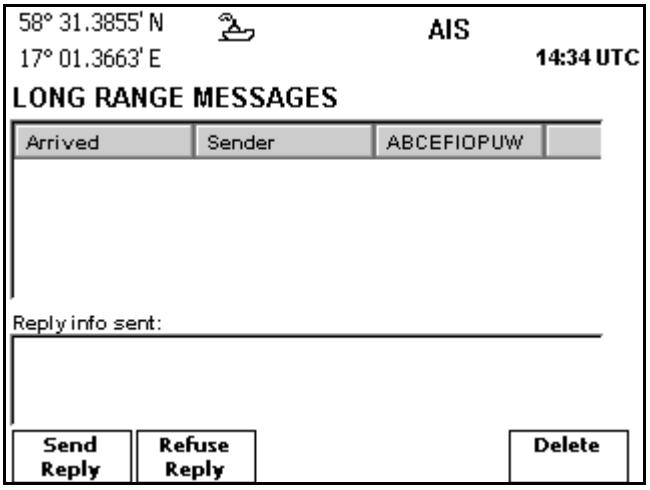
4. If **Addressed** is selected: Press > to select the **To:** field and then press ***ENTER***. Type in the target address and press ***ENTER*** again. If you are sending a message from the *Target List* or *Plot* view, the target address is already filled in.
5. Select the **Channel** field and press ***ENTER***.
6. Select between **AUTO**, **A**, **B** or **A+B** with ∧ ∨ and press ***ENTER***.
7. Send the message by pressing function key **Send**.

Long Range Messages

Received long range (LR) interrogations and transmitted replies are displayed in the *Long Range* view. The user can delete LRs and manually send replies to LRs that have not been acknowledged. Below is a list of definitions for information that can be requested via long range.

A = Ship's name, call sign, and IMO number
B = Date and time of message composition
C = Position
E = Course over ground (COG)
F = Speed over ground (SOG)
I = Destination and Estimated Time of Arrival (ETA)
O = Draught
P = Ship/Cargo
U = Ship's length, breadth, type
W = Persons on board

Note that the reply mode for the R4 can be set up to automatically acknowledge, or to let the user manually acknowledge any LR interrogation. To change the LR reply mode, refer to the description of the *Long Range Configuration* view on page 54.



Reply to a LR interrogation (only when current LR reply mode is set to manual)

1. Select LR message using ∧ ∨.
2. Press function key **Send Reply**.

Refuse to reply to a LR interrogation (only when current LR reply mode is set to manual)

1. Select LR message using ∧ ∨.
2. Press function key **Refuse Reply**.

Delete a LR interrogation/message

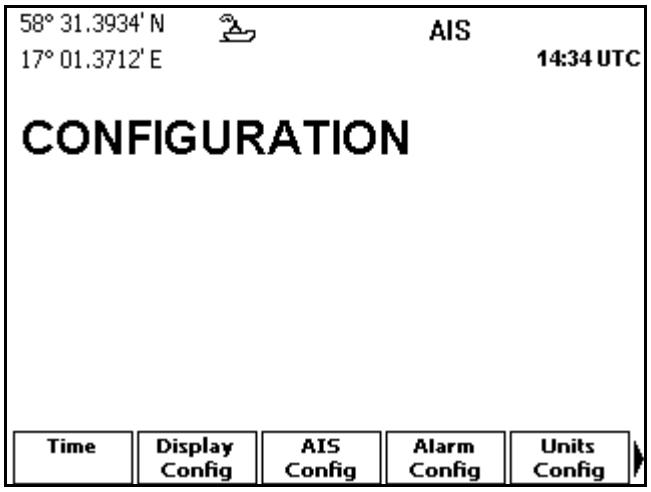
1. Select LR message using ∧ ∨.
2. Press function key **Delete**.

Config Mode

The *Config* mode is used to configure the R4 AIS Class A Transponder System. To get to the *Config* views, press ***MODE*** followed by function key **CONFIG**.

Overview

Use the ***PAGE*** key to toggle between the two pages of top level function keys.



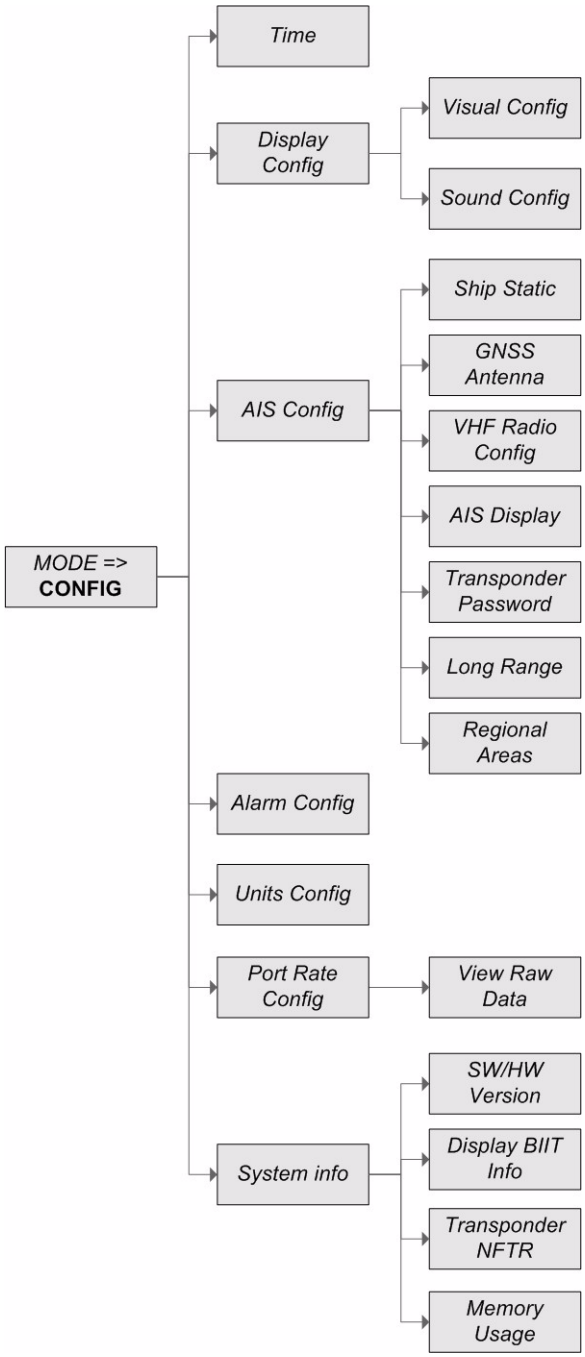
First Page

Second Page

The main views of *Config* mode are introduced below.

- *Time* allows the user to define a local time offset from UTC and choose if times displayed shall be in local or UTC time frames.
- *Display Config* allows the user to configure settings for the R4 Display, both visual and sound settings.
- *AIS Config* allows the user to configure AIS functionality.
- *Alarm Config* allows the user to configure which alarms that should be used and if they should trigger the external alarm signal.
- *Units Config* allows the user to configure the used units.
- *Port Rate Config* allows the user to configure port communication rates.
- *System Info* allows the user to view current system information including software and hardware versions as well as memory usage.
- *Restore Sys.Conf.* allows the user to restore the whole or parts of the system.

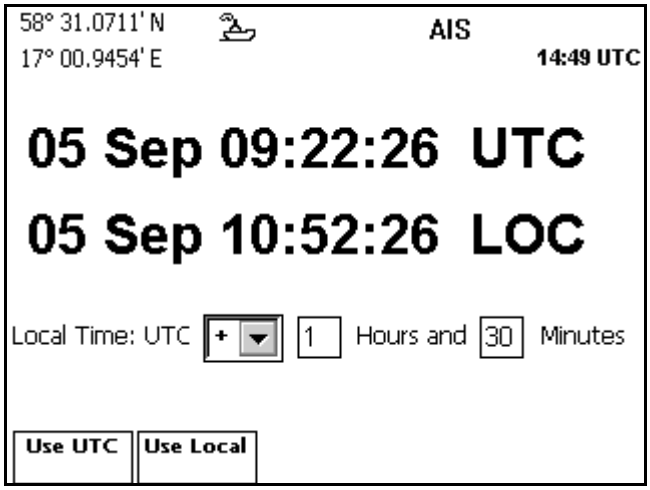
Below is a graphical overview of the different views present in the mode.



The views are further described below.

Time Config

The *Time Configuration* view is used to define a local time offset from UTC and to select whether times displayed shall be in local or UTC timeframes. The *Time Configuration* view is illustrated below.



Change local time offset

1. Edit the +/- field if required by selecting it using < > and press ***ENTER***. Use ∧ ∨ to set the desired sign and press ***ENTER*** again.
2. Edit the hours field if required by selecting it using < > and press ***ENTER***. Use the numeric keyboard together with function key **Backspace** to enter the desired value. Press ***ENTER*** when done.
3. Repeat the procedure to edit the minutes field if required.

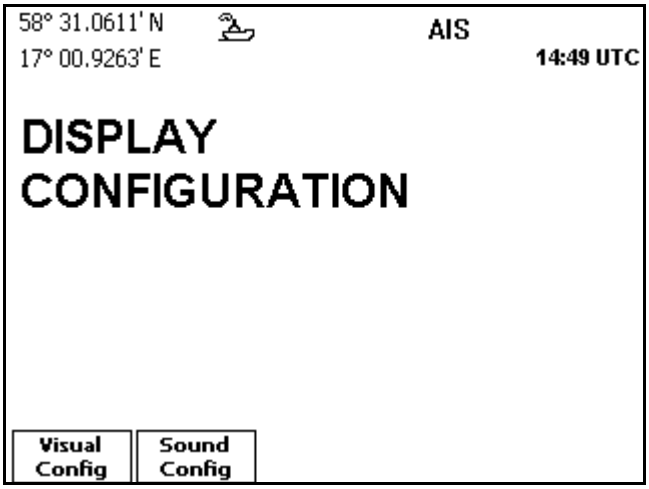
Select timeframe for display

1. Press function key **Use UTC** to display all times in UTC. Press function key **Use Local** to display all times with the current local offset from UTC. This will be indicated by 'LOC'displayed after the time values instead of 'UTC'.

Note: Times output on the serial interface will always be in UTC regardless of the time setting for display.

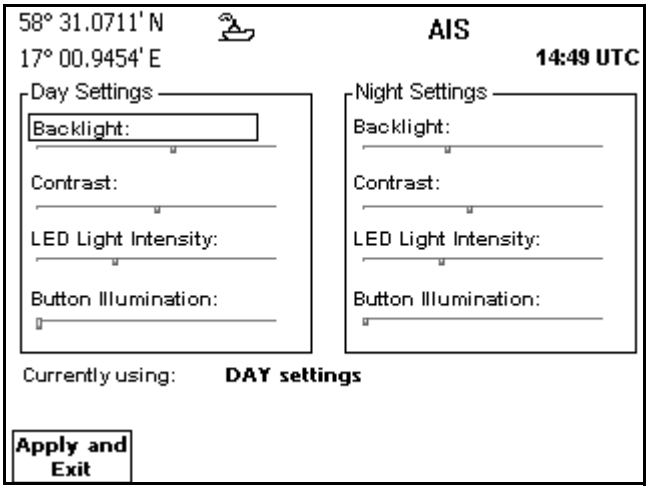
Display Config

The *Display Configuration* view contains two subviews, the *Visual Configuration* and *Sound Configuration* views. The former is used to configure display illumination settings and the latter the sounds played at different events.



Visual Config

The *Visual Configuration* view allows the user to adjust display back light, contrast, LED intensity and button illumination. Two separate settings are provided, for day and for night operation.



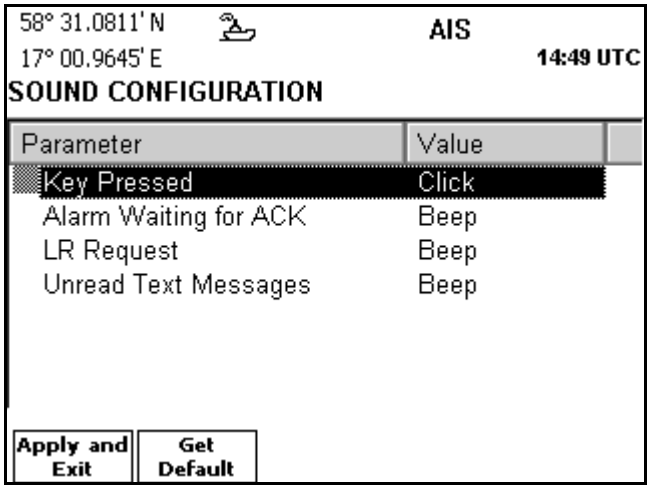
Change display setting

1. Select *Day Settings* or *Night Settings* with < >.
2. Select the setting you want to change using ∧ ∨ and press ***ENTER***.
3. Modify the setting with < > and press ***ENTER***. Repeat step 1 to 3 if necessary.
4. Press function key **Apply and Exit**.

Note: As described in section “Visual Settings” on page 19, it is also possible to change visual settings by pressing the ***DISPLAY*** key.

Sound Config

The *Sound Configuration* view allows the user to associate an event with a specific sound. The settings can be restored to their default values.



Change settings

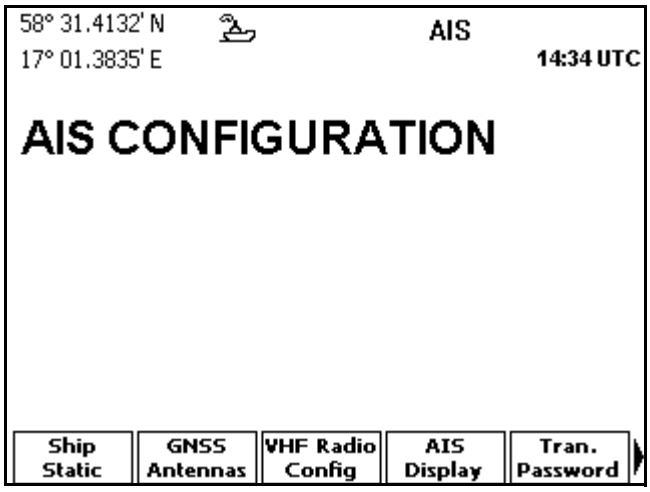
1. Select the setting you want to change using ∧ ∨ and press ***ENTER***.
2. Select the desired value in the drop-down list using ∧ ∨, and press ***ENTER.***
3. Press function key **Apply and Exit**.

Restore a parameter to factory default setting

1. Use ∧ ∨ to select the parameter to return to the factory default setting.
2. Press function key **Get Default.**
3. Press function key **Apply and Exit** to save the changes.

AIS Config

The *AIS Configuration* view contains subviews for configuration of AIS parameters. The view contains two pages of function keys, as illustrated below. To show the second page, press the ***PAGE*** key.

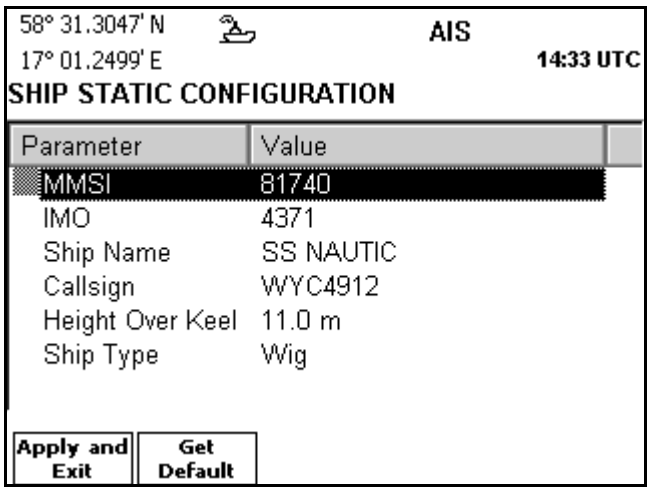


First Page

Second Page

Ship Static

The *Ship Static Configuration* view is used to configure the static information for the current ship, including MMSI, IMO number, ship name, callsign, height over keel and ship type.



Change setting

1. Select the parameter to edit using ∧ ∨ and press ***ENTER.***
2. If the parameter is selected using a drop-down box, use ∧ ∨ to select the desired option in the drop-down box.
   If the parameter is a numeric or text value, use the alphanumeric keypad to enter the desired value. Use the **Backspace** function key to erase entered values.
3. Press ***ENTER*** when the correct parameter value has been entered.
4. Press function key **Apply and Exit.**
5. Enter the user password using the alphanumeric keypad. Use **Capslock** to change between upper- and lowercase letters. Press ***ENTER*** when done.

Restore a parameter to factory default setting

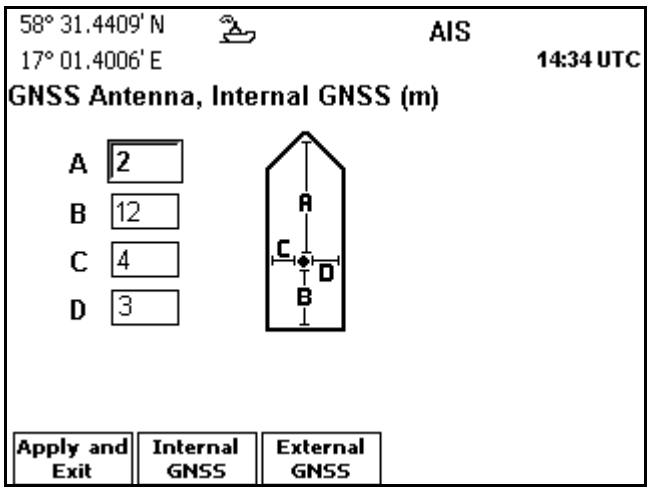
1. Use ∧ ∨ to select the parameter to return to the factory default setting.
2. Press function key **Get Default.**
3. Press function key **Apply and Exit** to save the changes.
4. Enter the user password using the alphanumeric keypad. Use **Capslock** to change between upper- and lowercase letters. Press ***ENTER*** when done.

Restore all parameters to factory default

1. Press function key **Restore Defaults.**
2. Press function key **Apply and Exit** to save the changes.
3. Enter the user password using the alphanumeric keypad. Use **Capslock** to change between upper- and lowercase letters. Press ***ENTER*** when done.

GNSS Antennas

The *GNSS antennas* position view allows the user to configure antenna positions.



Change GNSS position

1. Select the GNSS to change position for, by pressing either the function key **Internal GNSS** or **External GNSS**.
2. Select the field to edit using ∧ ∨ and press ***ENTER.***
3. Use the alphanumeric keypad to enter the desired value. Use the **Backspace** function key to erase digits.
4. Press ***ENTER*** when the correct value has been entered.
5. Repeat step 2 - 4 to change more fields. Press function key **Apply and Exit** when done.
6. Enter the user password using the alphanumeric keypad. Use **Capslock** to change between upper- and lowercase letters. Press ***ENTER*** when done.

Restore all antennas to factory default settings

1. Press function key **Restore Defaults.**
2. Press function key **Apply and Exit** to save the changes.
3. Enter the user password using the alphanumeric keypad. Use **Capslock** to change between upper- and lowercase letters. Press ***ENTER*** when done.

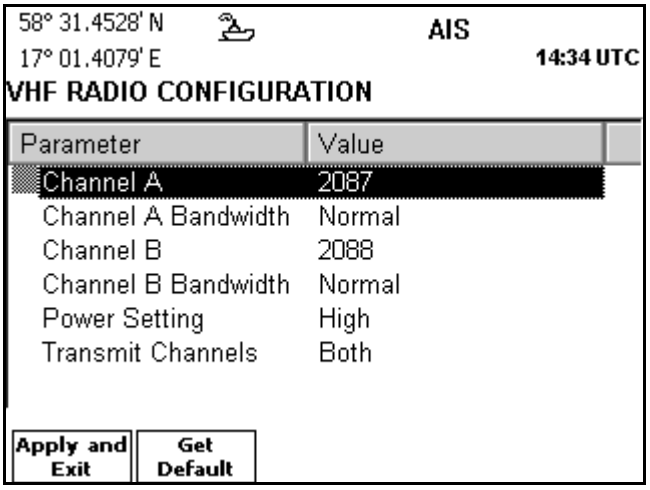
Note:

Dimension	Distance (m)
A	0 - 511; 511 = 511 m or greater
B	0 - 511; 511 = 511 m or greater
C	0 - 63; 63 = 63 m or greater
D	0 - 63; 63 = 63 m or greater

The dimension A should be in the direction of the transmitted heading information (bow).
Reference point of reported position not available, but dimensions of ship are available:
A = C = 0 and B ≠ 0 and D ≠ 0.
Neither reference point of reported position nor dimensions of ship available:
A = B = C = D = 0 (= default)

VHF Radio Config

The *VHF Radio Configuration* view allows an administrator to configure the systems radio parameters.



Change setting

1. Select the parameter to edit using ∧ ∨ and press ***ENTER.***
2. If the parameter is selected using a drop-down box, use ∧ ∨ to select the desired option in the drop-down box.
   If the parameter is a numeric value, use the alphanumeric keypad to enter the desired value. Use the **Backspace** function key to erase entered digits.
3. Press ***ENTER*** when the correct parameter value has been entered.
4. Press function key **Apply and Exit.**
5. Enter the administrator password using the alphanumeric keypad. Use **Capslock** to change between upper- and lowercase letters. Press ***ENTER*** when done.

Restore a parameter to factory default setting

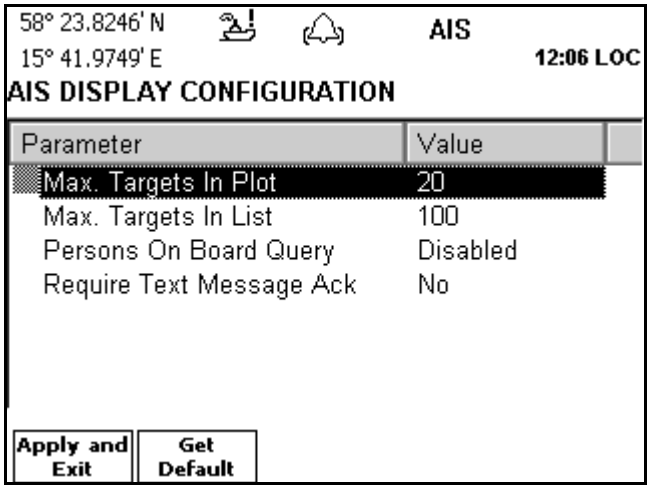
1. Use ∧ ∨ to select the parameter to return to the factory default setting.
2. Press function key **Get Default.**
3. Press function key **Apply and Exit** to save the changes.
4. Enter the administrator password using the alphanumeric keypad. Use **Capslock** to change between upper- and lowercase letters. Press ***ENTER*** when done.

Restore all parameters to factory default

1. Press function key **Restore Defaults.**
2. Press function key **Apply and Exit** to save the changes.
3. Enter the administrator password using the alphanumeric keypad. Use **Capslock** to change between upper- and lowercase letters. Press ***ENTER*** when done.

AIS Display

The *AIS Presentation Configuration* view allows the user to set a number of AIS display related parameters.



The *Max Targets In Plot* and *Max Targets In List* parameters define the maximum number of targets displayed in the *Plot* and *Target List* views respectively.

The *Persons On Board Query* parameter enables or disables functionality for manual interrogation of number of persons on board from the *Extended Information* view.

The *Require Text Message Ack* parameter is related to transmission of adressed text messages. If this parameter is set to "Yes", a warning will be displayed if the message not was received and interpreted by the addressee. If set to "No", no warning will be displayed if the message was received, regardless of whether it was interpreted by the receiving equipment or not.

Change setting

1. Select the parameter to edit using ∧ ∨ and press ***ENTER***.
2. Use the alphanumeric keypad to enter the desired value. Use the **Backspace** function key to erase entered digits. Press ***ENTER*** when done.
3. Press function key **Apply and Exit.**

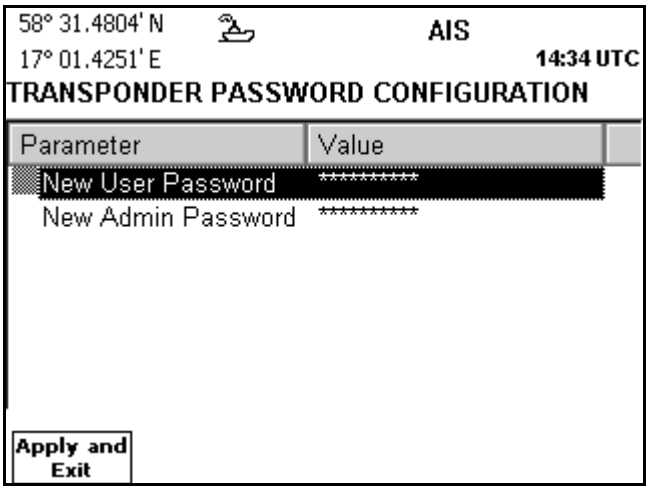
Restore a setting to factory default setting

1. Use ∧ ∨ to select the parameter to return to the factory default setting.
2. Press function key **Get Default.**
3. Press function key **Apply and Exit** to save the changes.

Tran. Password

WARNING! It is strongly recommended that passwords are never changed.

The *Transponder Password* view allows the operator to change the user and administrator transponder password. The user password is used to confirm changes made to the installation of the R4 Transponder, while the administrator password is used to confirm extra sensitive changes such as a complete system restore and changing VHF radio parameters. The administrator password can also be used to set a new user password.



Change a transponder password

1. Select the password to edit using ∧ ∨.
2. Press ***ENTER*** and type the new password (4-8 characters) using the alpha-numeric keypad. Use function key **Capslock** to change between upper- and lowercase letters. Use function key **Backspace** to erase characters.
3. Press ***ENTER*** when done.
4. Enter the password again to confirm it. Press ***ENTER*** when done.
5. Press function key **Apply and Exit** to store the new password.
6. If having only changed the user password, a dialog will appear. Answer *Yes* to confirm the new password using the administrator password. Answer *No* to confirm it using the user password.
7. Enter the existing password of the required type to confirm the change of password. Press ***ENTER*** when done.

Note: Store the new password in a safe place. Do not forget it!

Long Range

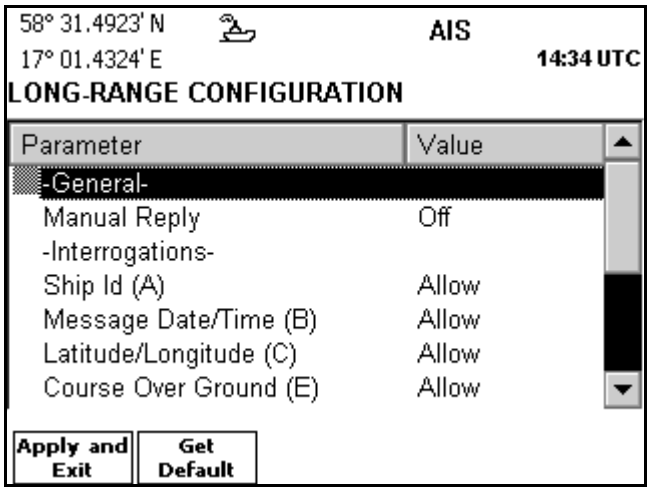
The *Long Range Configuration* view allows the user to configure long range interrogation parameters.

Manual Reply

The parameter specifies if manual or automatic long range reply should be used. When *on*, each response to received long range interrogations need to be manually confirmed or conformed by an external application. When set to *off*, replies are automatically sent for allowed interrogations.

Interrogations

Each interrogation parameter specifies if responses should be sent to interrogation requests of that type. No response will be sent to interrogation types which are *Disallowed,* regardless if manual reply mode is turned *off* or *on*.



Change setting

1. Use ∧ ∨ to select the parameter to modify and press ***ENTER.***
2. Select the desired value in the drop-down list using ∧ ∨**,** and press ***ENTER.***
3. Press function key **Apply and Exit** to save the changes.

Restore a parameter to factory default

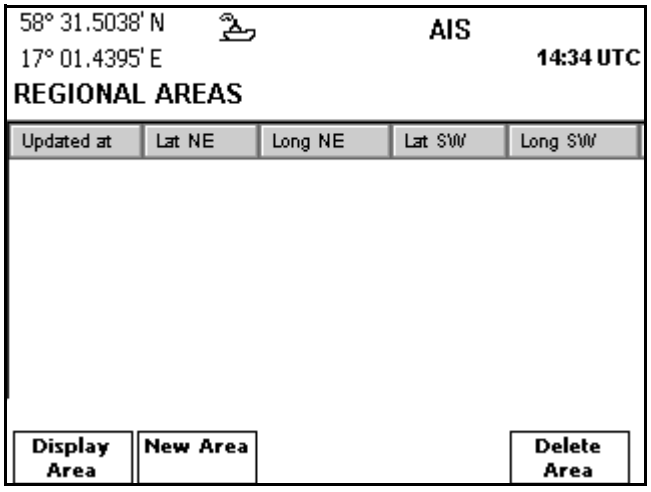
1. Use ∧ ∨ to select the parameter to return to the factory default setting.
2. Press function key **Get Default.**
3. Press function key **Apply and Exit** to save the changes.

Restore all parameters to factory defaults

1. Press function key **Restore**.
2. Answer yes to the confirmation dialog by pressing ***OK.***

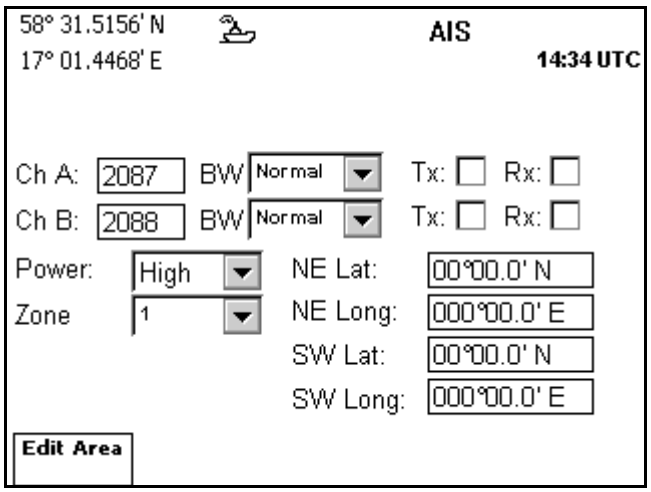
Regional Areas

The *Regional Areas* view allows the user to list, add and edit regional areas definitions.



Create a new Regional Area

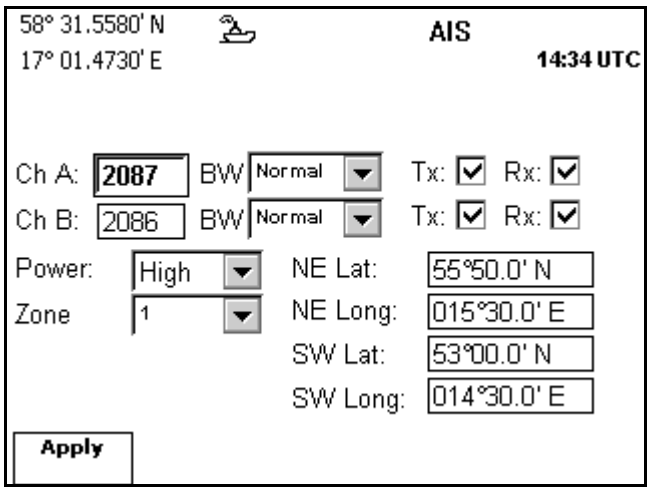
1. Press function key **New Area**. The below view is shown.



2. Press function key **Edit Area** to enter information for the new area.
3. Use ∧ ∨ < > to select the parameter to be entered and press ***ENTER***.
4. Enter the value using the keypad, or if it is a drop down list, select a value using ∧ ∨ and press ***ENTER***. To check the Tx and Rx check boxes, press ***ENTER*** when having the correct check box selected.
5. Repeat steps 3 and 4 for each parameter to enter.
6. Press function key **Apply** when done.
7. Press **OK** to confirm the entry of the area.
8. Press ***ESC*** to return to the *Regional Areas* view.

Edit a Regional Area

1. Select the Regional Area to edit using ∧ ∨.
2. Press function key **Display Area**.
3. Press function key **Edit Area**. The below view is shown.



4. Use ∧ ∨ < > to select the parameter to be edited and press ***ENTER***.
5. Enter the new value using the keypad, or if it is a drop down list, select a value using ∧ ∨ and press ***ENTER***. To check the Tx and Rx check boxes, press ***ENTER*** when having the correct check box selected.
6. Repeat steps 4 and 5 for each parameter to edit.
7. Press function key **Apply** when done.
8. Press **OK** to confirm the entry of the area.

9. Press ***ESC*** to return to the *Regional Areas* view.

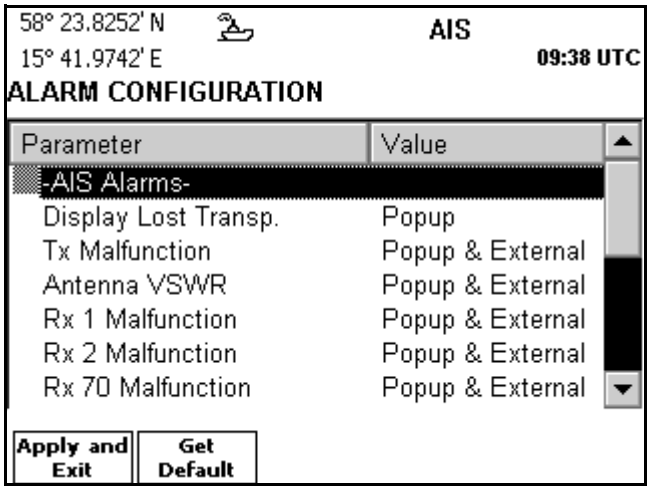
Alarm Config

The *Alarm Configuration* view is used to configure the action the system should perform when a specific alarm is raised. The possible settings for each alarm is:

- *Disabled.* The alarm will not be indicated when active.
- *Popup*. An alarm pop-up will be displayed when the alarm becomes active. See section "Alarm and Alert Pop-ups" on page 24.
- *External.* The AIS Alarm Relay will be activated when the alarm is active.
- *Popup & External.* The alarm will result in both an alarm pop-up dialogue and the AIS Alarm Relay being activated.

It is possible to disable alarms that are of no interest for the operator by setting them to *Disabled.*

The view shows abbreviations for some alarms with long alarm names. The different alarms and their abbreviations (if any) are described in the Appendix on page 65.



Change setting

1. Use ∧ ∨ to select the parameter to modify and press ***ENTER.***
2. Select the desired value in the drop-down list using ∧ ∨**,** and press ***ENTER.***
3. Press function key **Apply and Exit** to save the changes.

Restore factory default setting

1. Use ∧ ∨ to select the parameter to return to the factory default setting.
2. Press function key **Get Default.**
3. Press function key **Apply and Exit** to save the changes.

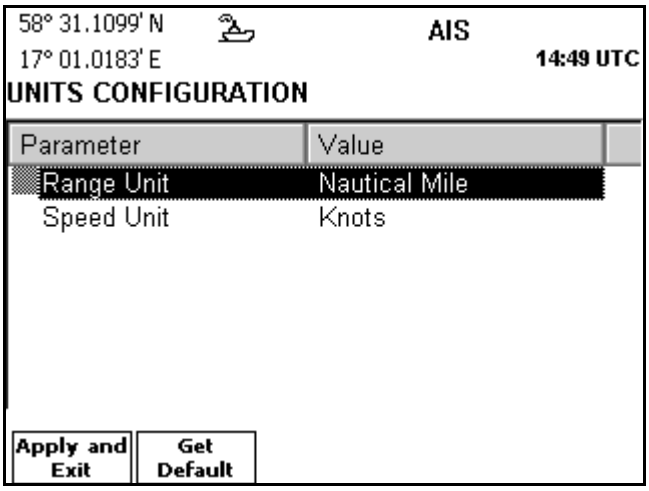
Units Config

The *Units Configuration* view is used to configure the used units of measurements in the system. The configurable types of units are described below.

Range Unit

The unit used when displaying range values. Can be set to one of *Nautical Mile, Kilometers* and *Statute Mile.*

Speed Unit
The unit used when displaying speed values. Can be set to one of *Knots, kilometers per hour (km/h)* and *miles per hour (mph).*



Change setting

1. Use ∧ ∨ to select the parameter to modify and press ***ENTER.***
2. Select the desired value in the drop-down list using ∧ ∨**,** and press ***ENTER.***
3. Press function key **Apply and Exit** to save the changes.

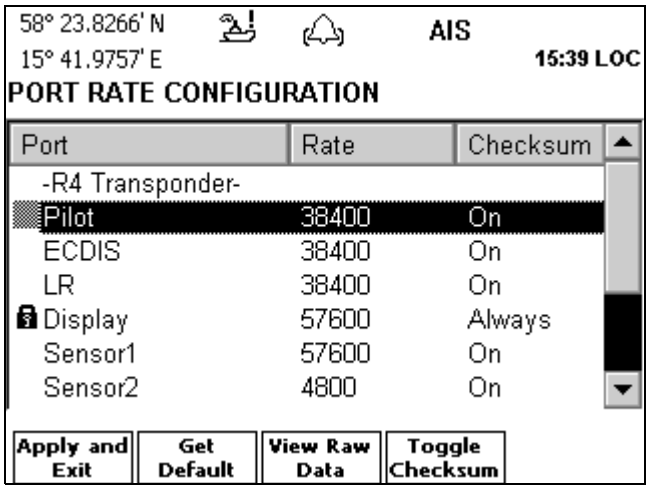
Restore factory default setting

1. Use ∧ ∨ to select the parameter to return to the factory default setting.
2. Press function key **Get Default.**
3. Press function key **Apply and Exit** to save the changes.

Port Rate Config

The *Port Rate Configuration* view allows the user to configure the communication rate used for the serial ports in the R4 AIS Class A Transponder System. The view also makes it possible to view the data that is received on the different serial ports.

The communication rate for the ports are locked if no response is received from the R4 Transponder.



Change communication rate

1. Select port to change communication rate (baud rate) for using ∧ ∨ and press ***ENTER.***
2. Use ∧ ∨ to select the desired communication rate in the drop-down box and press ***ENTER***.
3. Press function key **Apply and Exit.**

Restore factory default setting

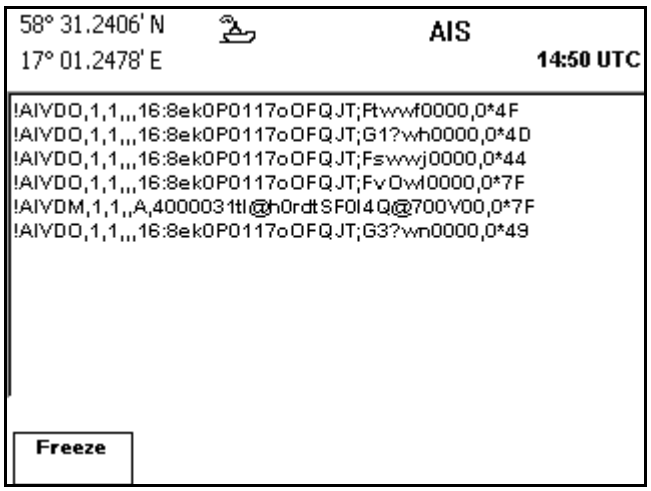
1. Use ∧ ∨ to select the port to return to the factory default setting.
2. Press function key **Get Default.**
3. Press function key **Apply and Exit** to save the changes.

Disable checksum verification for a specific input port

1. Use ∧ ∨ to select the port to disable checksum verification for.
2. Press function key **Toggle Checksum.**
3. Press function key **Apply and Exit** to save the changes.
4. Enter the user password using the alphanumeric keypad. Use **Capslock** to change between upper- and lowercase letters. Press ***ENTER*** when done.

View received data

1. Select serial port to view received data on using ∧ ∨.
2. Press function key **View Raw Data.** The following view is displayed.



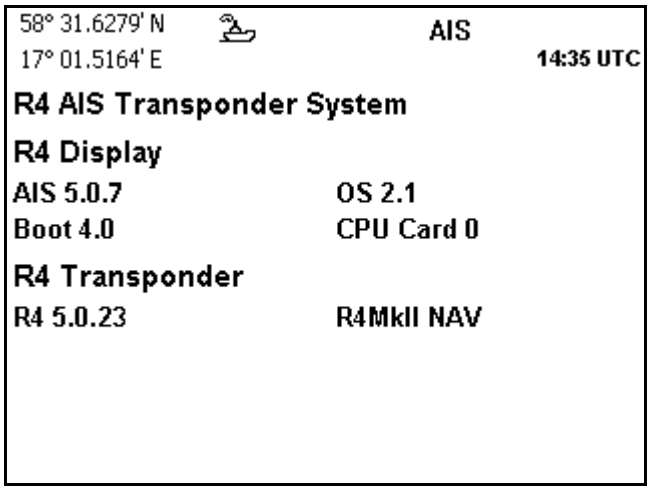
3. Use function key **Freeze** to stop the update of raw data on the screen. Use **Resume** function key to view more data.
4. Press ***ESC*** when done.

System Info

The *System Information* view provides subviews for general system information. It contains subviews for: viewing software and hardware versions, displaying the results of the R4 Display's last performed built-in integrity tests, showing the R4 Transponder non-functioning times and for viewing the current memory usage of the R4 Display.

View software and hardware versions

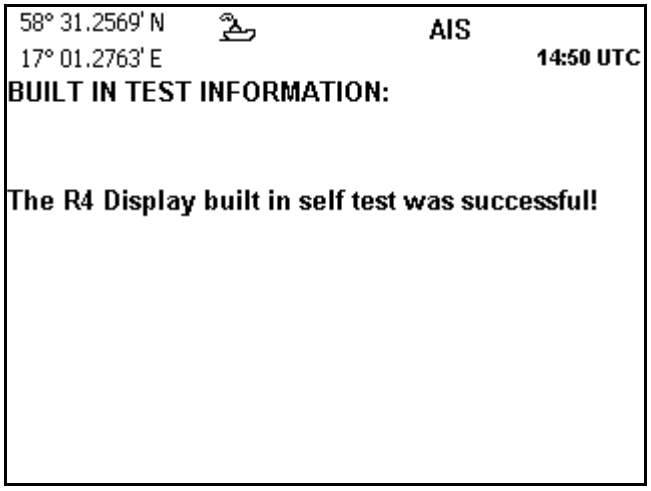
1. Press the function key **SW/HW Versions**.
2. The below view is displayed.



The view shows the software versions of the different components present in the R4 Display and R4 Transponder, and the display's hardware revision.

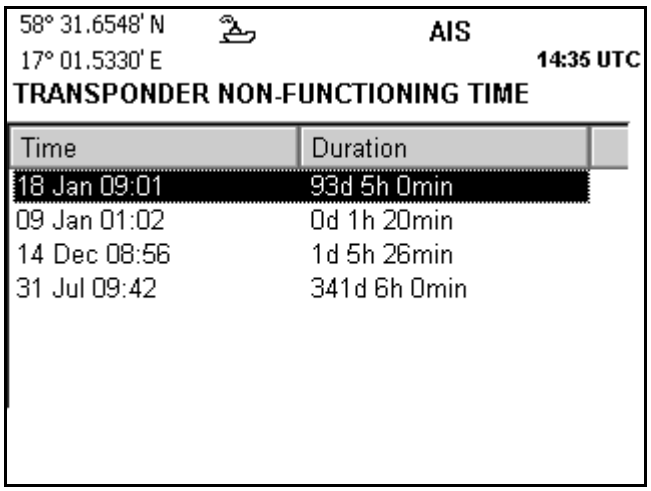
View the result of the R4 Display's last performed built-in integrity tests

1. Press function key **Display BIIT Info**.
2. A view displaying the built in test result is shown, as illustrated below.



Show R4 Transponder non-functioning time

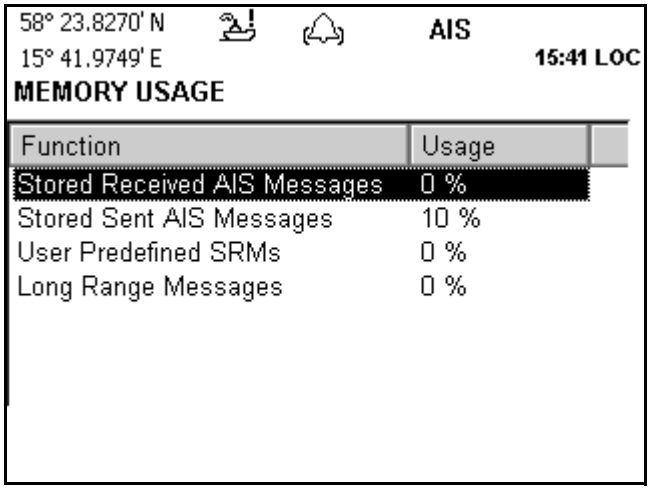
1. Press function key **Transp. NFTR**.
2. The *Transponder NFTR* view is shown, as illustrated below.



The view displays information about times where the R4 Transponder has been turned off or in silent mode for more than 15 minutes.

View current memory usage of the R4 Display

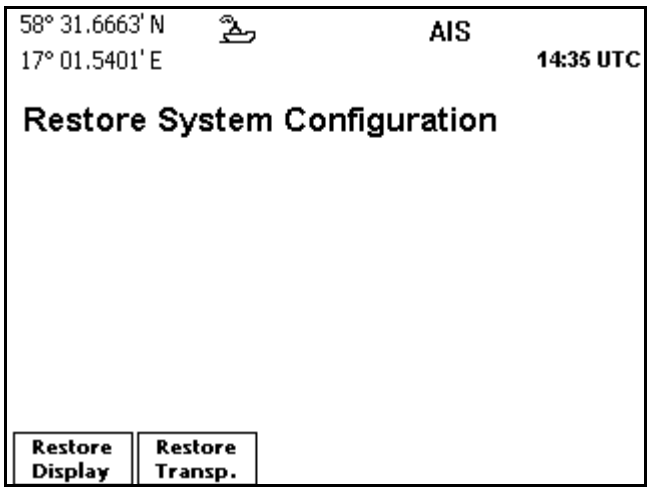
1. Press function key **Memory Usage**.
2. The *Memory Usage* view is shown, as illustrated below.



The memory usage is displayed for individual parameters as shown in the view.

Restore Sys. Conf.

The *Restore System Configuration* view allows the user to restore the default settings for either the R4 Display or the R4 Transponder.



Restore display configuration

1. Press function key **Restore Display.**
2. Answer **Yes** to the confirmation message if confident in restoring all configuration parameters of the R4 Display.

Restore transponder configuration

1. Press function key **Restore Transp**.
2. Use the alphanumeric keypad to enter the administrator password. Use function key **Capslock** to change between upper and lowercase letters. Press ***ENTER*** when done.

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Appendix

Alarm Messages

The alarm messages that can occur in a R4 AIS Class A Transponder System are listed below.

Table 1: AIS Alarm Messages

ID	Message	Abbreviation (in *Alarm Config*)
001	AIS: Tx malfunction	
002	AIS: Antenna VSWR exceeds limit	*Antenna VSWR*
003	AIS: Rx channel 1 malfunction	*Rx 1 Malfunction*
004	AIS: Rx channel 2 malfunction	*Rx 2 Malfunction*
005	AIS: Rx channel 70 malfunction	*Rx 70 Malfunction*
006	AIS: General failure	
008	AIS: R4 Transponder Lost Connection to R4 Display	*Transp. Lost Display*
025	AIS: External EPFS lost	*No external EPFS*
026	AIS: No sensor position in use	*No Sensor Position*
029	AIS: No valid SOG information	*No Valid SOG Info.*
030	AIS: No valid COG information	*No Valid COG Info.*
032	AIS: Heading lost/invalid	
035	AIS: No valid ROT information	*No Valid ROT Info.*
165	AIS: R4 Display Lost Connection to R4 Transponder	*Display Lost Transp.*

AIS Alarms Description

AIS: Tx Malfunction
A Tx Malfunction alarm is generated if there is a malfunction in the radio transmitter hardware or if the antenna VSWR exceeds an allowed ratio. If the radio transmitter returns to normal operation or if VSWR returns to a value below the allowed threshold, the alarm is cleared.

AIS: Antenna VSWR Exceeds limit
The VSWR (Voltage Standing Wave Ratio) of the antenna is checked for every transmission and if it exceeds a given ratio then a VSWR alarm is generated. If the VSWR goes below the allowed threshold, the alarm is cleared.

AIS: Rx Malfunctions
The radio receivers are continuously monitored and if any part of the receivers hardware should malfunction, a Rx Malfunction alarm is generated for that receiver. If the radio receiver returns to normal operation, the alarm is cleared.

AIS: General Failure
This alarm is generated if the R4 AIS Transponder fails to initiate the radio. If this alarm occurs, contact your retailer.

AIS: R4 Transponder Lost Connection to R4 Display
This alarm is active if the communication between the R4 AIS Transponder and the R4 Display does not work. The alarm indicates that the Transponder does not receive any data from the Display.

AIS: R4 Display Lost Connection to R4 Transponder
This alarm is active if the communication between the R4 AIS Transponder and the R4 Display does not work. The alarm indicates that the Display does not receive any data from the Transponder.

AIS: External EPFS Lost
This alarm is generated if the position from the external Electronic Position Fixing System is invalid (i.e. no external GNSS). Due to the fallback arrangement for the positioning sensor this alarm can be inactive up to 30 seconds (during which the internal GNSS is used) before the alarm is activated.

AIS: No Sensor Position In Use
This alarm is active if the R4 AIS Transponder does not have a valid position (latitude/longitude) from any sensor.

AIS: No Valid SOG Information/No Valid COG Information
These alarms are active if the R4 AIS Transponder does not have a valid SOG (Speed Over Ground) or a valid COG (Course Over Ground) from any sensor. The SOG and COG is based on the speed log (if external GNSS is used and a valid heading is available) or the GNSS currently in use.

AIS: Heading Lost/Invalid
This alarm is generated if either the heading information is lost/invalid (from external sensors) or if the heading is undefined.

AIS: No Valid ROT Information
This alarm is active if ROT (Rate Of Turn) is undefined or if no valid ROT information is available from external sensor or internal calculations.

Indication Messages

The indication messages, with identity and type information, are listed below:

ID	Type	Message text
007	Status	UTC clock lost
021	Status	External DGNSS in use
022	Status	External GNSS in use
023	Status	Internal DGNSS in use (beacon)
024	Status	Internal DGNSS in use (msg 17)
025	Status	Internal GNSS in use
027	Status	External SOG/COG in use
028	Status	Internal SOG/COG in use
031	Status	Heading valid
033	Status	Rate of Turn Indicator in use
034	Status	Other ROT source in use
036	Event	Channel management parameters changed
053	Status	SOG from external position source
054	Status	SOG from log sensor
055	Status	UTC clock OK
056	Event	Channel management zone memory changed
061	Status	Enter semaphore mode
061	Event	Leave semaphore mode
063	Event	NVM Checksum error
064	Event	RATDMA overflow
066	Status	Tanker Low VHF Power Mode

Long Range Definitions

A = Ship's name, call sign, and IMO number
B = Date and time of message composition
C = Position
E = Course over ground (COG)
F = Speed over ground (SOG)
I = Destination and Estimated Time of Arrival (ETA)
O = Draught
P = Ship/Cargo
U = Ship's length, breadth, type
W = Persons on board

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Glossary

AIS . . . . . Automatic Identification System

ARPA . . . . Automatic Radar Plotting Aid

BRG . . . . . Bearing

COG . . . . . Course Over Ground

DGNSS . . Differential Global Navigational Satellite System

DSC . . . . . Digital Selective Calling

ECDIS . . . Electronic Chart Display and Information System

EGNOS . . European Geostationary Navigation Overlay Service

EPFS . . . . Electronic Position Fixing System

ETA . . . . . Estimated Time of Arrival

GNSS . . . . Global Navigational Satellite System

GPS . . . . . Global Positioning System

HDG . . . . . Heading

HDOP . . . . Horizontal Dilution Of Precision

IALA . . . . International Association of Lighthouse Authorities

IEC . . . . . International Electrotechnical Commission

IMO . . . . . International Maritime Organization

ITU . . . . . International Telecommunications Union

LR . . . . . Long Range

MKD . . . . Minimum Keyboard and Display

MSAS . . . . MTSAT Satellite Augmentation System (Japan)

NMEA . . . National Marine Electronics Association

MMSI . . . . Maritime Mobile Service Identity

NVM . . . . Non-Volatile Memory

RAIM . . . Receiver Autonomous Integrity Monitoring

RNG . . . . Range

RATDMA Random Access Time Division Multiple Access

ROT. . . . . Rate Of Turn

Rx . . . . . Receive

SAR. . . . . Search And Rescue

SBAS. . . . Satellite Based Augmentation System

SNR. . . . . Signal to Noise Ratio

SOG. . . . . Speed Over Ground

SRM . . . . Safety Related Message

TDMA. . . Time Division Multiple Access

Tx . . . . . Transmit

UTC. . . . . Universal Time Coordinated

VHF. . . . . Very High Frequency

VSWR. . . Voltage Standing Wave Ratio. (A low value indicates a problem with the antenna or connections/cables to the antenna.)

WAAS. . . Wide Area Augmentation System (United States)

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