User Manual AI80 Automatic Identification System

This manual is intended as a reference guide for operating the Simrad AI80 Automatic Identification System.

Document revisions

Rev	Date	Written by	Checked by	Approved by
0	17.09.04	ISt	KKr	KKr
1	12.11.04	ISt	KKr	KKr
2	17.11.04	ISt	KKr	KKr

Document history

Rev. 0 First edition.

Rev. 1 Type approval certificate and declaration of conformity included.

Rev. 2 FCC statements included.

To assist us in making improvements to this manual, we would welcome comments and constructive criticism. Please send all such - in writing to:

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About this manual

This manual is intended as a reference guide for operating the Simrad AI80 Automatic Identification System.

In this manual, references to buttons on the control unit are written in boldface, and in a different text style (e.g. **VIEW** button, **SHIFT** button, **ENTER** button).

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 to warn 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.**

FCC part 15 statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a marine and/or commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. The equipment is not inteded for operation in a residential area. Operation in such an area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Additional information to the user

Changes or modifications not expressly approved by Kongsberg Seatex AS will void the user's authority to operate the equipment.

This manual is divided in the following sections:

1. System overview

An overview of the AI80 system and its components.

2. User interface

An overview of the AI80 user interface, display pages and menus and the Minimum Keyboard and Display (MKD) unit.

3. Software setup procedure

Initial software parameters that have to be entered before the system is ready to use.

4. Operation

Main operating procedures for using the AI80 system.

5. Appendix A – Operating procedures optional MKD

Describes the operating procedure when using the optional MKD.

6. Appendix B – Software setup using optional MKD

Initial software parameters that have to be entered before the system is ready to use when using the optional MKD.

7. Appendix C – Type approval certificate

Copy of type approval certificate included.

8. Appendix D – Declaration of conformity

Copy of Declaration of Conformity included.

Abbreviations and acronyms

AIS	Universal Ship-borne Automatic Identification System
AIS 1	161.975 MHz (87B – 2087)
AIS 2	162.025 MHz (88B – 2088)
ALR	Alarm
ATN	Aids to Navigation
BS	Base Station
COG	Course Over Ground
DSC	Digital Selective Calling
ETA	Estimated Time of Arrival
GPS	Global Positioning System
HDG	Heading
ICMP	Internet Control Message Protocol
IMO	International Maritime Organisation
LED	Light Emitting Diode
LR	Long Range
MKD	Minimum Keyboard Display
MMSI	Maritime Mobile Service Identity
MSG	Message
N/A	Not Applicable
PI	Presentation Interface
PWR	Power
ROT	Rate of Turn
RTCM	Radio Technical Commission of Maritime Service
RX	Receive
SMS	Short Message Service
SOG	Speed Over Ground
SWR	Standing Wave Ratio
TX	Transmit
UTC	Universal Co-ordinated Time
VDL	VHF Data Link
VDO	VHF Data Link Own Vessel Message
VHF	Very High Frequency
VTS	Vessel Traffic Service

Contents

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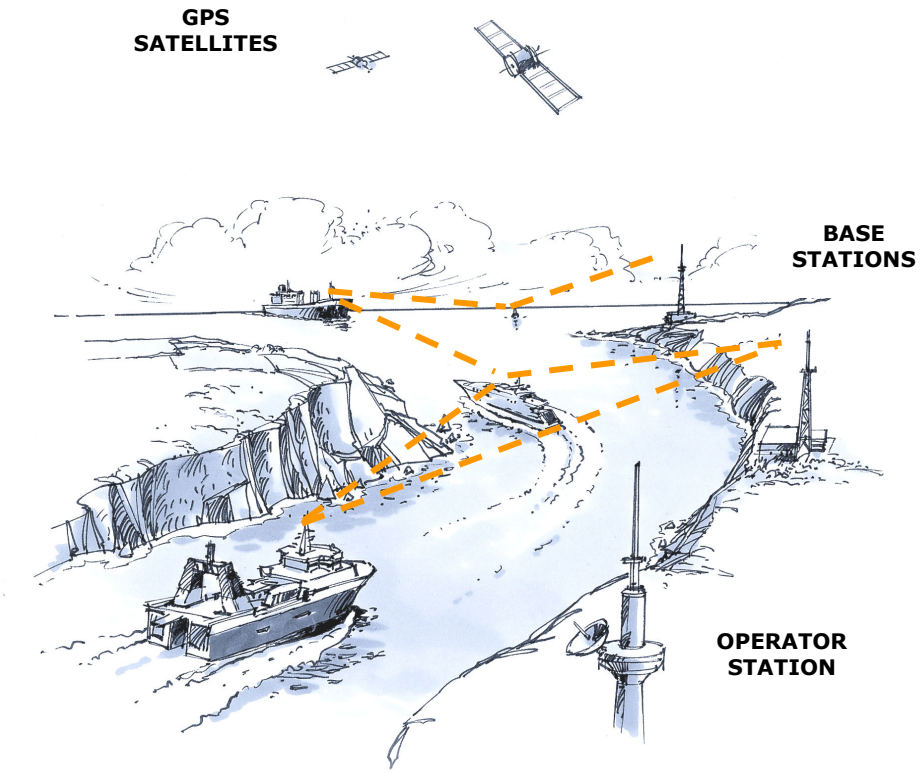
1 SYSTEM OVERVIEW

1.1 General

The Simrad AI80 Automatic Identification System (AIS) uses VHF communication to transmit and receive AIS data. An AIS system operates primarily on two dedicated VHF channels, AIS 1 – 161.975 MHz and AIS 2 – 162.025 MHz. Where these channels are not available regionally, the AIS can be set to alternate designated channels.

The system broadcasts the vessel's position, speed and course over ground as well as static and voyage related information. Short safety related text messages can be sent between vessels or broadcast from shore based AIS stations or Aids to Navigation like buoys and lighthouses. The on-board installed system is designed to operate automatically and as a stand-alone unit. In addition to transmission of AIS data, the system can continuously receive position information from other vessels or shore based stations.



Coverage

The system radio coverage range is similar to other VHF applications and is dependent on the height of the antenna. The propagation differs from that of a radar, due to the longer wavelength, so it is possible to "see" around bends and behind islands if the landmasses are not too high. A typical value to be expected at sea is 20 nautical miles.

AIS information content

AIS type of information is exchanged automatically between vessels, vessels and shore based stations and vessels and Aids to Navigation like buoys and lighthouses. The information transmitted by a vessel's AIS system is grouped in four categories:

Static data

MMSI (Maritime Mobile Service Identity) number

Call sign and name

IMO number

Length and beam

Type of ship

Location of position fixing antennas on the ship

Voyage related data

Ship's draught

Hazardous cargo type

Destination and ETA (at Master's discretion)

Dynamic data

Position with accuracy indication and integrity status

Time in UTC

COG (Course over ground)

SOG (Speed over ground)

Heading

Navigational status

Rate of turn

Safety-related messages

Reading and writing short safety related messages

Data reporting and transmission rates

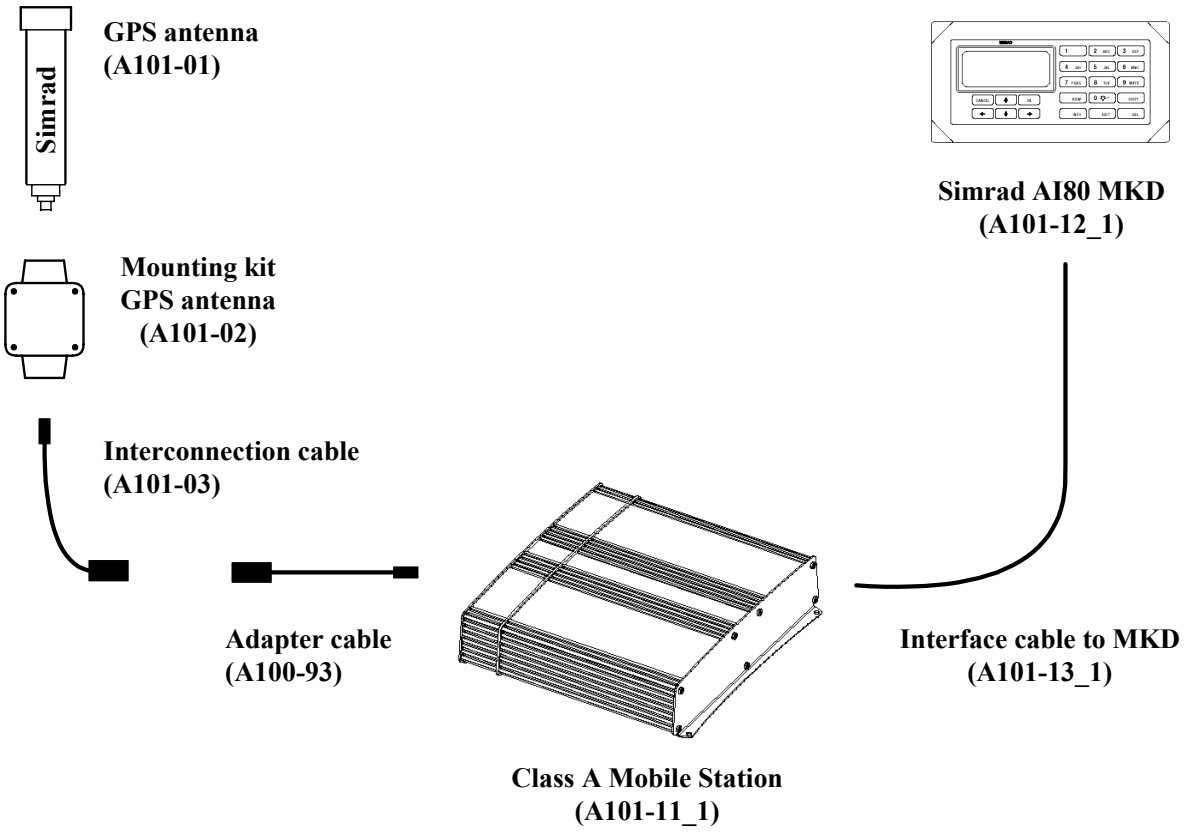
AIS data as stated above are autonomously sent at different update rates and thus reporting rates are dependent on the ship's navigational mode. Dynamic information is dependent on speed and course alteration while static and voyage related data are transmitted every 6 minutes or on request. Thus fast ferries will report their navigational data at a higher update rate than ships at anchor.

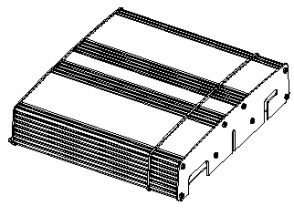
Ship's Manoeuvring Condition	Nominal Reporting Interval
Ship at anchor	3 min.
Ship 0 to 14 knots	10 sec.
Ship 0 to 14 knots and changing course	3 1/3 sec.
Ship 14 to 23 knots	6 sec.
Ship 14 to 23 knots and changing course	2 sec.
Ship > 23 knots	2 sec.
Ship > 23 knots and changing course	2 sec.

1.2 System components

An AI80 system includes the following units:

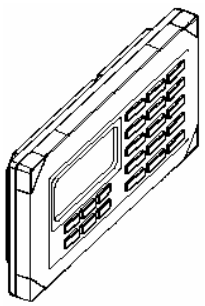
- AI80 Class A Mobile Unit
- GPS Antenna (GPS4)
- AI80 Minimum Keyboard and Display, 21-button with Pilot Port





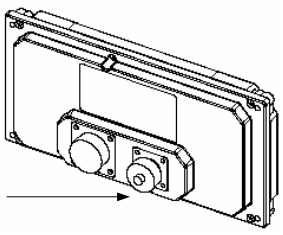
The Mobile Unit broadcasts the vessel's position, speed and course as well as static and voyage related information.

The unit incorporates two VHF receivers, one VHF transmitter, one DSC receiver, one GPS receiver and a processor. The internal GPS receiver is used for time synchronisation and for back-up position sensor.



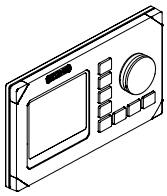
The MKD unit provides a simple user interface to the Mobile Unit with basic presentation of configuration data and position data in a 4x20 character display.

Buttons are used for selecting display pages, for input of data to the system, and for writing text messages transmitted to other vessels or shore based AIS stations.



A Pilot Plug is included in the AI80 system and is located at the rear of the MKD. The plug enables the pilot to connect a Personal Pilot Unit (PPU) to the AIS system.

The supplied L1 GPS antenna is delivered with a universal antenna mounting kit and an adapter cable with N connectors for connection to a customer supplied GPS antenna cable, e.g. RG-214.



The system may also be delivered with an optional, external MKD. This MKD provides either a 25x15 character display or a graphical view.

Note ! *A customer supplied VHF antenna must be included in the AI80 system. A qualified antenna must cover marine band (156 MHz - 164 MHz), have omni-directional vertical polarization and provide 2 to 5 dB gain.*

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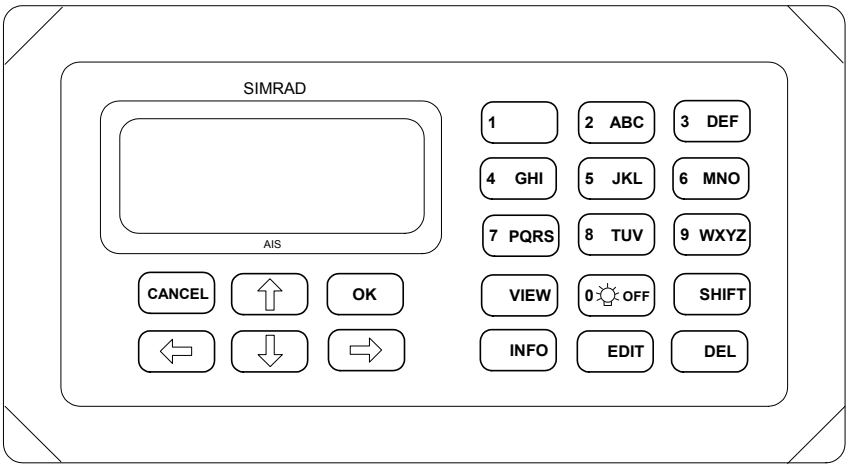
2 USER INTERFACE

2.1 AI80 user interface



Display

4 x 20 character display with LED backlight.

Keypad

21-button keypad, alpha numeric and navigation keys.

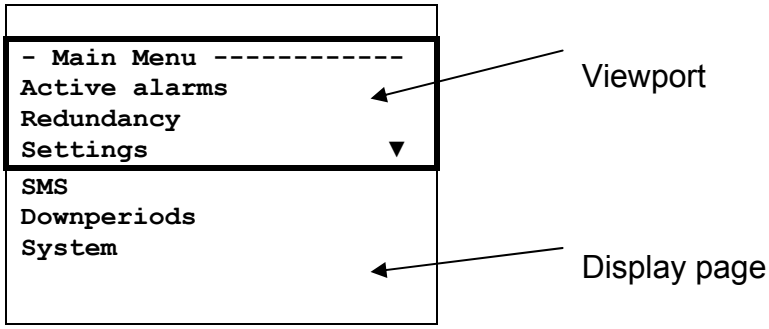
LED indicators

The LED indicators on the front of the Mobile Unit can be used to monitor status as well as data reception and transmission.

LED	Colour	Description
TX	Off	Transmitter idle
	Amber	Transmitting on AIS channel B
	Green	Transmitting on AIS channel A
	Red	Transmitter turned off
MSG	Off	No message/report being received
	Amber	Message/report received on channel B
	Green	Message/report received on channel A
GPS	Amber	Indirect synchronisation free run
	Green	Internal GPS OK, GPS synch selected
ALM	Off	No alarm
	Red	Alarm - alarm relay activated

2.2 Buttons

Manoeuvring in the display: move the "viewport" up, down, left and right using the **ARROW** buttons in order to display the text. A *display page* is not limited to 4x20 characters. The manoeuvring allows the user to move a "viewport" up/down and sideways in order to display the entire text. This "window" of 4x20 characters used for viewing the text, is called a **viewport** in this manual.

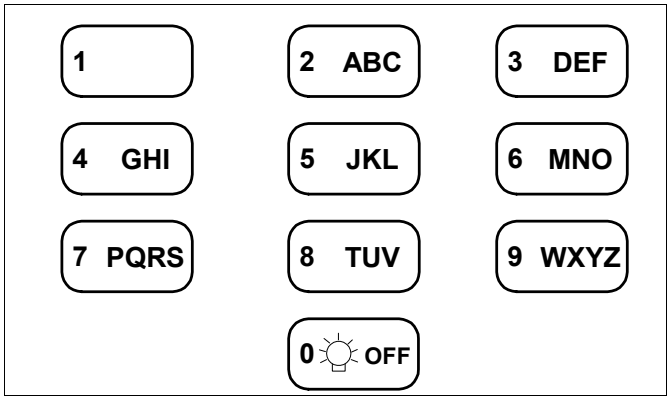


Entering data: by pressing the **EDIT** button when an editable parameter is selected allows input of text, numbers and symbols. Enter text by pressing the character buttons, enter numbers by first pressing **SHIFT** followed by the selected number. Press **SHIFT** again to return to character buttons. Enter **SPACE** and other non-alphabetic symbols by using the **Number 1** button in alpha numeric mode.

Selecting: by using the **ARROW** buttons the user can move the cursor when the correct parameter has been selected. Press **OK** to view or enter submenus.

Buttons are PRESSED to select the relevant functionality and HELD to select alternative functionality when relevant. Some buttons have toggle functionality that is triggered by repeatedly pressing this button.

By pressing the buttons below the user can enter text or numbers. Switch between characters and numbers by pressing the **SHIFT** button. SPACE and non-alphabetic symbols can be entered by using the **Number 1** button. When not in Edit mode, the **Number 0** button toggles the backlight on/off.



VIEW Press this button to enter the Main menu, Diagnostics menu and main Ship List view.

INFO Press this button to access the help system.

SHIFT Press this button to toggle between numeric and alphabetic layout on the keyboard while in Edit mode.

DEL When entering text or numbers, pressing this button deletes the characters to the left of the cursor. When entering text or numbers, holding this button deletes all characters to the left of the cursor.

EDIT By pressing this button the user can edit the selected parameter.

CANCEL When entering text or numbers, pressing this button cancels the editing. The entered value is discarded.

When interactive messages or requests are displayed, pressing this button answers the equivalent to No (if applicable), and exits the interactive message screen, returning to the viewport to the previous position and content.

OK Press this button to accept changes or selected parameters.

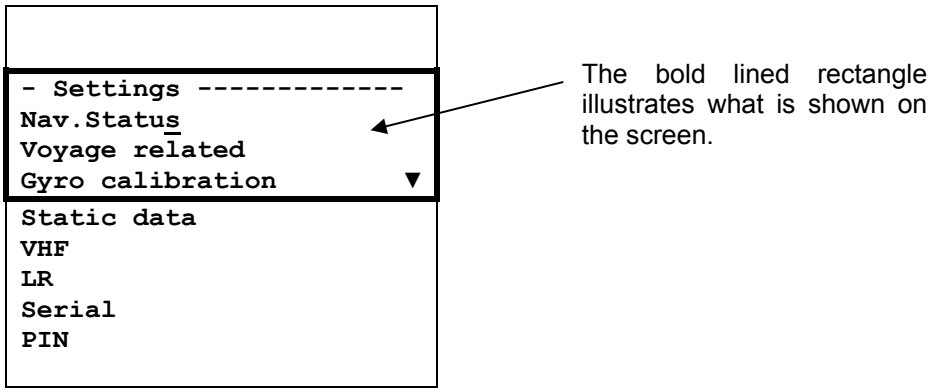
When predefined choices are displayed, pressing this button commits the selected choice to the system. When any kind of interactive message or request is displayed, pressing this button answers the equivalent to Yes (if applicable), and exits the interactive message screen, returning the viewport to the previous position and content.

Press the buttons below to move the viewport/cursor left, right, up, down (i.e. scroll the lines in the display respectively).

2.3 Using display and keypad

Manoeuvring and selecting

The uppermost line on the viewport is the page title. Select wanted line with the **UP/DOWN ARROW** buttons. The selected line is marked with an underscore character on the right side of the line content.



▲ ▼ symbols indicate that a page has more than three lines of content. Manoeuvre the viewport up and down with the **ARROW** buttons.

◄ ► symbols indicate that the page contains lines with more than 20 characters. Manoeuvre the viewport left and right with the **LEFT** and **RIGHT ARROW** buttons respectively.

Select a highlighted item by pressing the **OK** button.

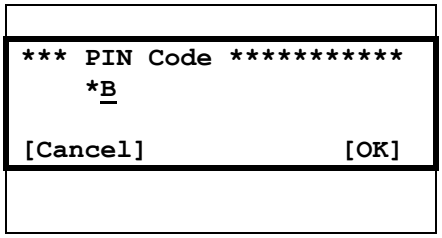
Dialogue boxes

Dialogue boxes inform the user about events or state changes that require user interaction. Such events are:

- Alarms
- SMS
- Enter PIN
- Edit error
- Item Help

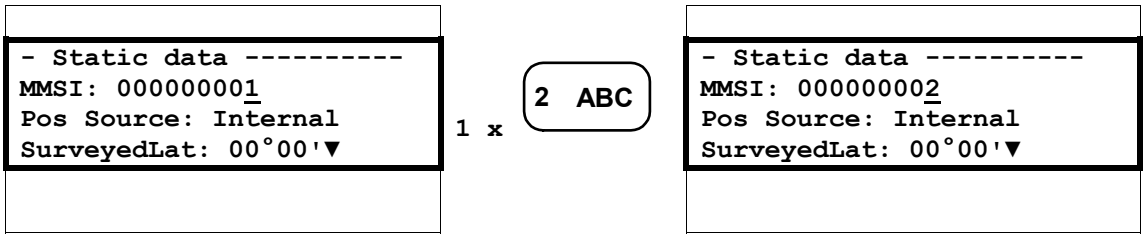
Dialogue boxes are shown as whole pages, i.e. they are displayed in the whole "viewport", and forces the user to press one or more buttons to continue. The dialogue box indicates the keys required to exit the dialogue box. This is indicated by the button name encapsulated in square brackets.

To facilitate recognition, the uppermost line on a dialogue box is composed of a start pattern of three * signs, and a post fixed pattern of * until the end of the line. A dialogue box prompting for PIN code appears like the figure below.

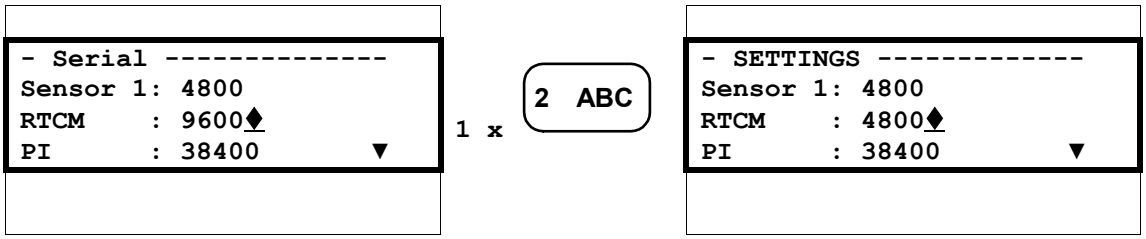


Editing

The user can edit a variable by pressing **EDIT** when highlighted. The value of the current variable is stored and the user can start editing the data. The user selects characters by repeatedly pressing numeric buttons,



or, in cases were there are predefined variables, chooses from a list of these by using the **UP** or **DOWN ARROW** buttons.

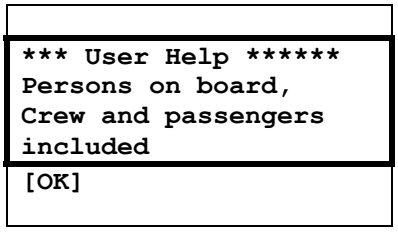


The button between the displays indicates that pressing this button when in the screen to the left, will result in the changes seen in the screen to the right.

After editing, press **OK** to confirm changes and exit **Edit** mode, or press **CANCEL** to discard changes. If the input exceeds the horizontal length of the display (20 chars), it automatically scrolls. When editing is completed and **OK** is pressed, it scrolls back. Values are saved by holding the **OK** button pressed.

Information

The **Info** functionality provides the user with information about the highlighted menu. A dialogue box with help text is provided if such a text is existent for the menu. If not, a default text is displayed. A user help dialogue box may look like this:



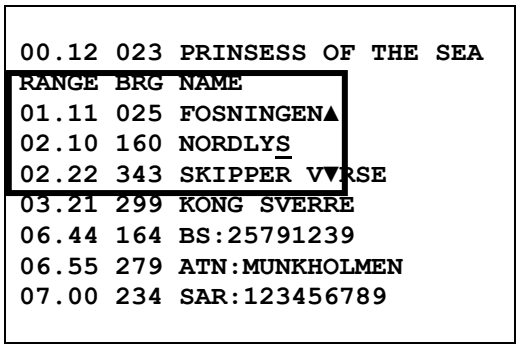
2.4 AI80 display pages and submenus

The table below shows the menu hierarchy. The **ARROW** buttons, **OK** and **CANCEL** buttons are used to navigate in the menu tree. Navigation between **Ship List**, **Main Menu** and **Diagnostics** is done by pressing the **VIEW** button. This chapter describes all the menu pages in the system.

Note ! *If optional MKD is connected to the AI80, the menus for optional MKD will also apply to the AI80.*

SHIP LIST		
MAIN MENU	**Alarms and LR**	- Active Alarms - LR Requests
	Dynamic Data	
	Settings	- Nav.Status - Voyage Related - Gyro Calibration - Static Data - VHF - LR - Serial - PIN
	SMS	- Inbox - Write Message - Outbox - Predefined - Write Predefined
	Downperiods	
	Chn.Management	- View Regions - Add Region - Edit Current Region
	System	- Software Version - System Control - Restart GPS - Software Upgrade - MAC Address
DIAGNOSTICS	**VHF**	
	Serial	
	Config File	

Ship list view

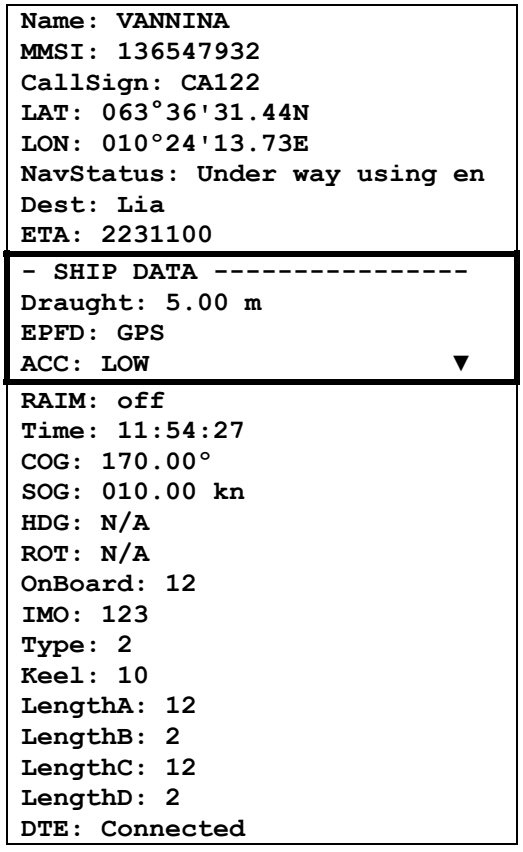


The default main page of the system is called **Ship list view** and contains information about nearby vessels. **Range**, **Bearing** and **Name** (MMSI if name not available) are shown.

BS: in front of the MMSI indicates an AIS base station.

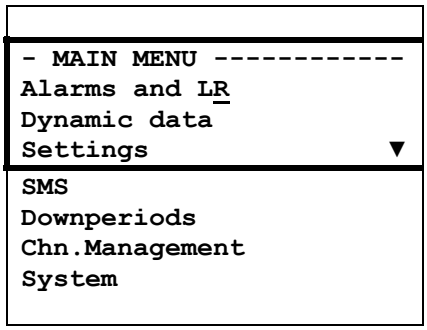
ATN: in front of the ship name indicates an Aids To Navigation target.

SAR: in front of an MMSI number indicates a SAR aircraft.



If the operator presses **OK** for the selected ship, a page displaying all information about that ship appears. The figure shows this page scrolled down. Press **CANCEL** to return to **Ship List View**. If the ship name cannot fit in the available space, press **OK** to view the name in the **Ship data** page. Horizontal scrolling is not available for the **Ship List View**. This is a read only page. The line indicator (underscore character) is present none the less to facilitate the **Info** function if the user presses **INFO**. Pressing **EDIT** has no effect on read only pages.

Main menu

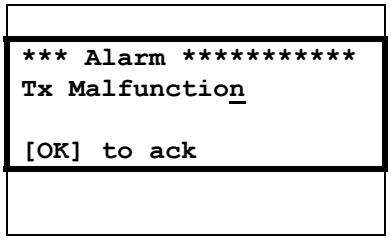


Press **VIEW** to enter the **Main** menu. The user can select between **Alarms and LR, Dynamic data**, **Settings**, **SMS**, **Downperiods**, **Chn.Management** or **System**. Select menu with **UP** and **DOWN ARROW** buttons and enter the menu with **OK**.

Alarms and LR

Alarms and LR involves two different modes:

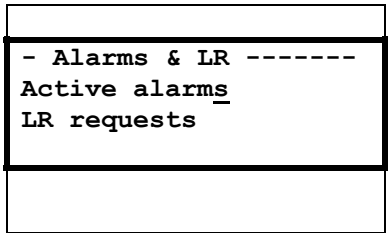
- New Alarm/LR received
- List of Alarms and List of LR



New alarm

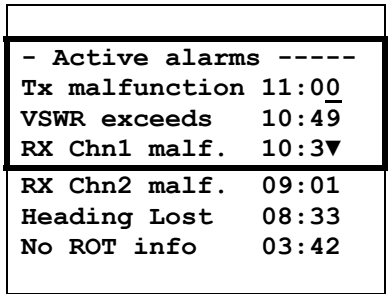
When a new alarm is received, a dialogue box will appear. Press **OK** to acknowledge the alarm. If the alarm condition disappears before it is acknowledged, the dialogue page and the viewport is relocated to the previous page and line.

As long as an alarm is active, it can be viewed by navigating to the **Active alarms** page.

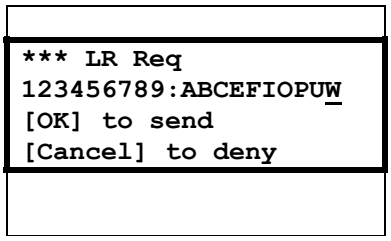


Active alarm

All active alarms can be viewed under the **Alarms and LR** menu by selecting them and pressing **OK**.

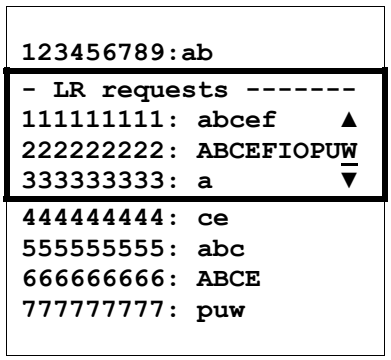


Active alarms are listed with the latest alarm on top. This is a read only page.



New LR

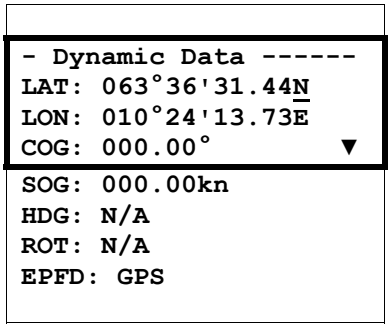
When an LR request arrives, a dialogue box prompts the user to send or deny the requested information. The dialogue box provides information about requester's MMSI and the codes for requested information (e.g. C means Position). The **Info** functionality can describe this upon request. If the user does not respond within the given timeout, the information is denied to the requester. All LR requests are also stored in LR history. Press **OK** to send the information or **CANCEL** to reject the information.



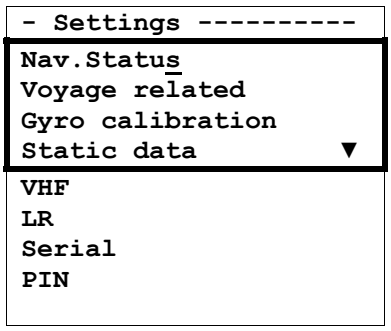
LR requests

LR requests contains history of the last 30 requests. This is also a read only page. The figure shows a list with eight requests. First the MMSI of the requestor followed by the information requested. If the requested information is displayed with small letters, the information is provided, otherwise denied.

Dynamic data



The **Dynamic Data** page shows sensor readings. This is a read only page. Press **CANCEL** to return to **Main Menu**.



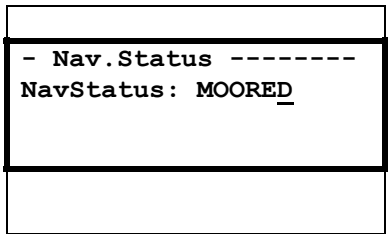
From the **Main Menu,** select **Settings,** press **OK** and the **Settings** page appears.

All parameters that can be edited are found here. The **INFO** button provides the user with additional information about each menu item.

In the **Settings** main menu the user can choose between **Nav.Status, Voyage related, Gyro calibration, Static data, VHF, LR, Serial** or **PIN**.

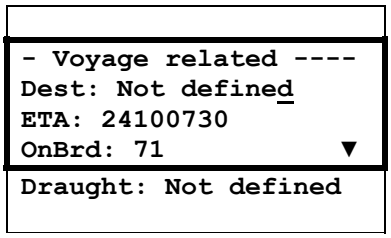
Editing parameters in these pages is always protected with a PIN-code.

To save edited parameters, press the **OK** button.



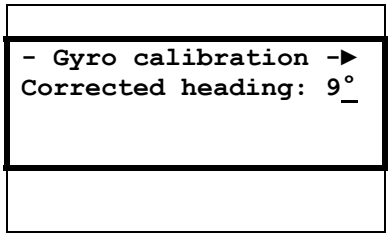
Nav.Status

In this page the user can set the appropriate navigation status. Choose from predefined list.



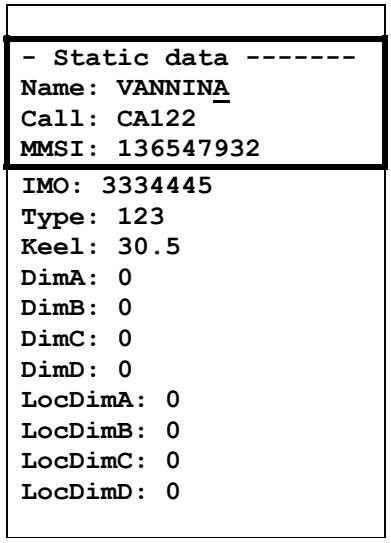
Voyage related

All voyage related settings can be viewed and altered in this page.



Gyro calibration

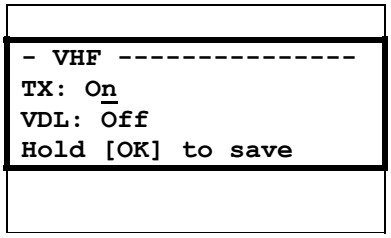
If a stepper or syncro gyro is used for heading input, the heading can be calibrated here. This is done by entering the actual heading. Ensure constant heading when entering correction.



Static data

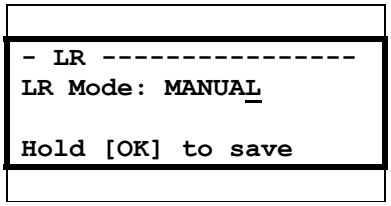
All static ship data can be viewed and altered here.

If MMSI number is changed, the unit should be restarted, see chapter 4.3.



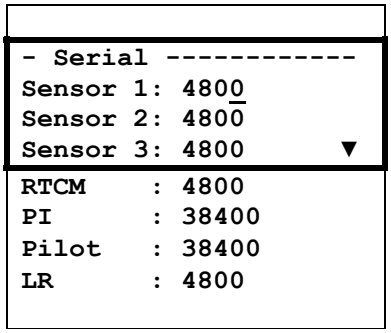
VHF

In this page the transmission (TX) can be turned ON/OFF, and also the VDL answer mode can be set.



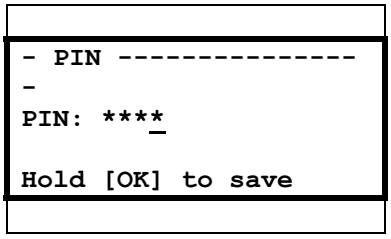
LR

In this page the LR mode can be set. Choose between Manual and Automatic.



Serial

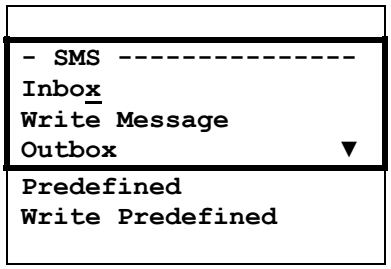
In this page the baud rate for the serial ports can be set.



PIN

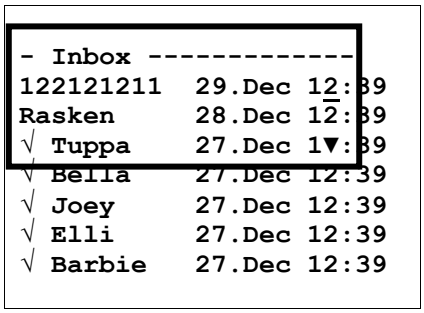
In this page the PIN code can be changed.

SMS



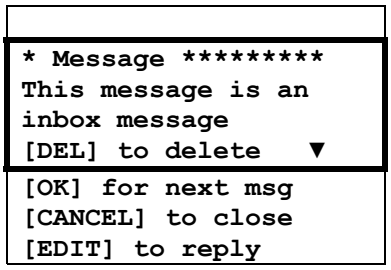
In the **SMS** main menu the user can choose between **Inbox**, **Write Message**, **Outbox**, **Predefined** or **Write Predefined**.

Select with **UP/DOWN ARROW** buttons and enter page with **OK**.



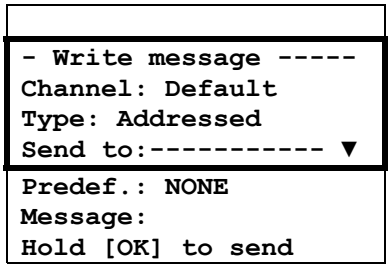
Inbox

Inbox contains received messages (max 30) with the most recent message at the top.



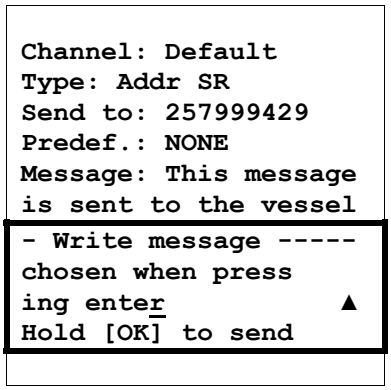
Press **UP/DOWN ARROW** to select message. **OK** displays the message to the user. If the message is previously read, a check-sign is shown in front of that line.

If the message is more than four lines, **UP** and **DOWN** are used to scroll lines. Press **DEL** to delete the message. Press **OK** to see next message without deleting. Pressing **CANCEL** takes the user back to the **Inbox** without deleting the message.

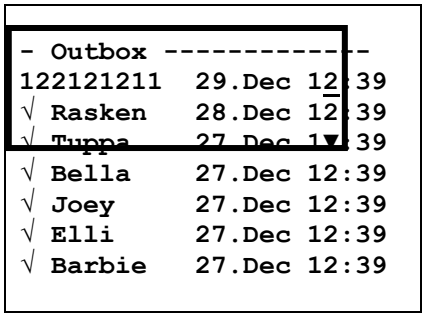


Write message

Select **Write message** in the **SMS** menu to write a message and the following screen appears.

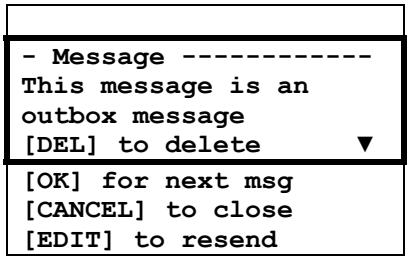


Select channel (A, B, Both, Default), type of message to send (Addressed, Addressed Safety related, Broadcast Safety related) and receiver (from list of available stations). In addition the user can choose a predefined message to appear. When all data are entered, press **OK** to send message as configured.

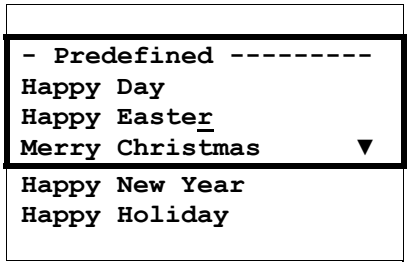


Outbox

Outbox contains all sent messages. If the receiver acknowledged the message, a check-sign is shown in front of that line. The latest message is on top. If the user wants to re-send or read a message, select message with **UP/DOWN** and press **OK**. The page shown in the figure is displayed.



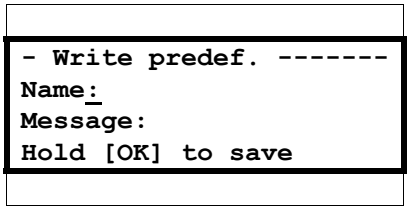
Selecting **EDIT** resends the message with the same parameters as last time.



Predefined messages

In this page the user can edit, view or delete a previously defined message. Press **OK** to view or edit a message, press **DEL** to delete a message.

Reading a predefined message has the same functionality as reading a message in **Inbox**, except that **EDIT** allows the user to edit the predefined message.



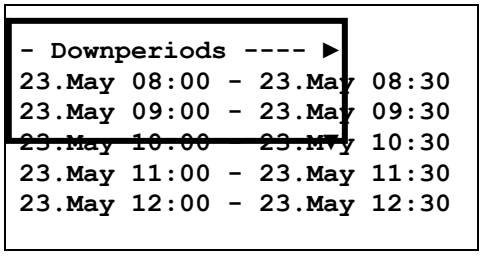
Write predefined

In the **Write predefined** page only the required data are available for entry, e.g. the name of the predefined message and the message text.

New SMS received

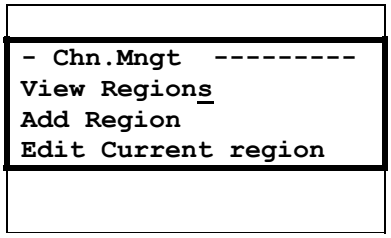
When an SMS is received, the user is notified through a dialogue box that appears on the screen. Press **OK** to read the message immediately or **LEFT ARROW** to delete the dialogue box. The message can be found in **Inbox.**

Downperiods

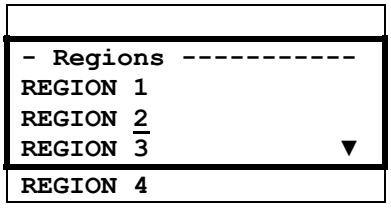


This page shows the last ten downtimes (start and stop) for the Base Station on the format DD/MM hh:mm - DD/MM hh:mm. It is a read only page. Press **CANCEL** to return to **Main Menu**.

Channel Management

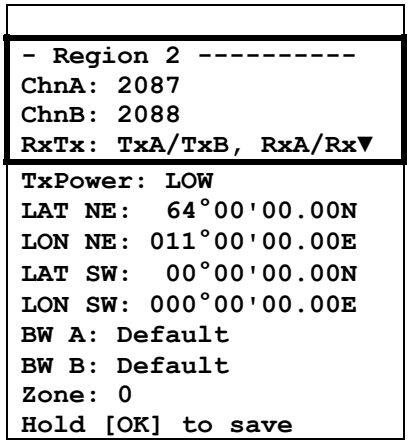


In the **Chn. management** menu the user can choose between editing current region, viewing all regions or adding a new region.



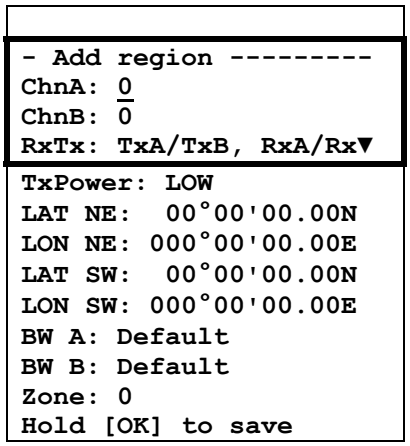
View regions

In this page all regions (max 8) are shown. This is a read only page. Use **UP/DOWN ARROW** to select the region of interest. The figure shows a list with three regions.



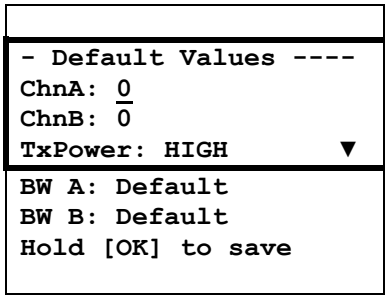
Region

In this page the selected region is displayed. This page is read only and shows each region's parameters.



Add region

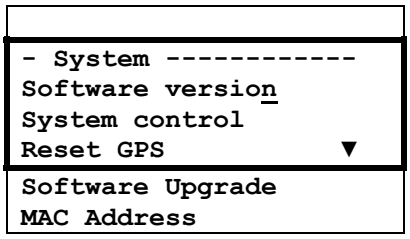
In this page the user can add a region manually. Refer chapter 3.6.



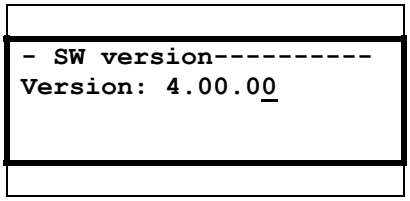
Edit Current region

In this page the user can edit current region settings. Select parameter with **UP/DOWN**, press **EDIT** to start editing and **OK** when finished. Hold **OK** button to save changes to region. If the user presses **CANCEL**, he is informed that cancelling will delete his entered region. If the region entered is not a valid region, the user is notified about this through a dialogue box.

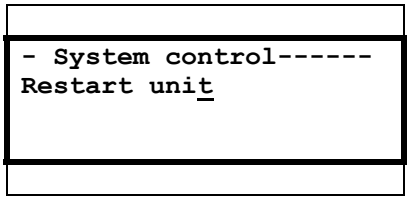
System



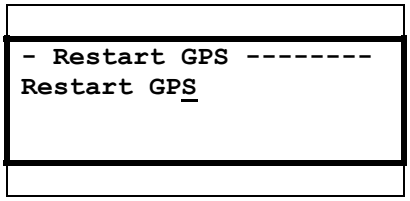
From the **System** page the user can see the current software version, restart the unit, reset the internal GPS receiver, upgrade the software and view the MAC Address.



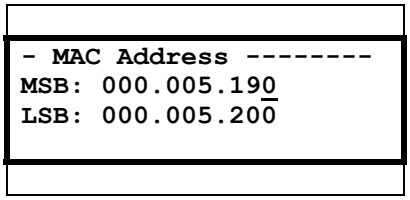
This is a read only page for information purposes only.



If a system restart is required, select Restart unit and press **OK**. The unit will now initiate the restarting process.



If GPS tracking problems are experienced, restarting the GPS may solve these problems.



In this page the MAC Address is viewed. This is a read only page.

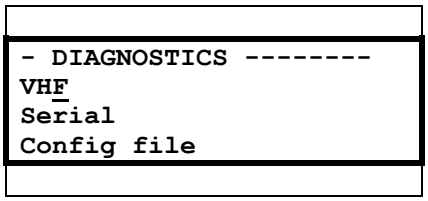
When pressing OK on this page, the configuration data are stored for later retrieval. The unit enters an SW upgrade mode where no other activities are performed until power is cycled.

If performing software upgrade, turn off power and insert CF card with new software before power-on of the unit. Upon power-on, the configuration data are automatically retrieved. Thus enabling software upgrade without loss of configuration data.

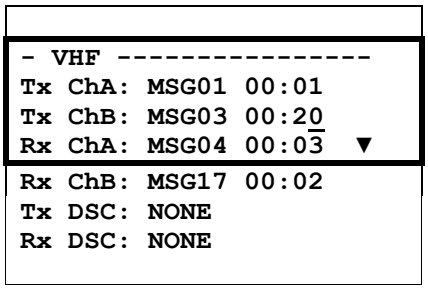
If software upgrade is initiated by accident, simply cycle power, to restart the unit.

NOTE! *Software Upgrade should only be performed by qualified personnel*.

Diagnostics

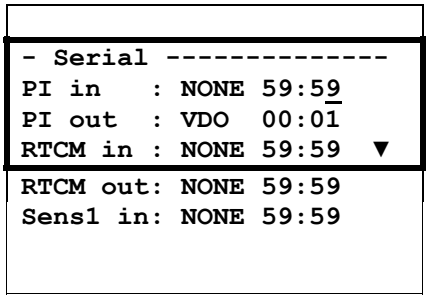


The **Diagnostics** page shows the submenus available to display, test and debug the communication links and configuration settings.



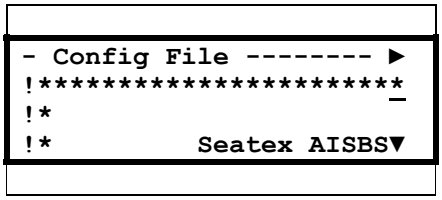
VHF

The **VHF** page displays which messages have been transmitted and received on the VDL interface. This page will automatically be updated every second.



Serial

Diagnostics of serial interfaces, type of sentence and time elapsed since last transmission/reception on each port.



Config.File

Read-out of config. file. For service purposes only.

Pin code protection

The functionality in the mobile unit is protected by a PIN code. If the user wants to edit a protected variable, e.g. Tx On/Off, he is presented with a dialogue box. **The default pin code for AI80 is 1234**.

```
*** PIN CODE ********
    **
[Cancel]          [OK]
```

Use numeric buttons to write PIN code, press **OK** to confirm. If the PIN code is correct, the user can start editing the variable. If incorrect code is entered, a dialogue box prompting the user to retry, is presented.

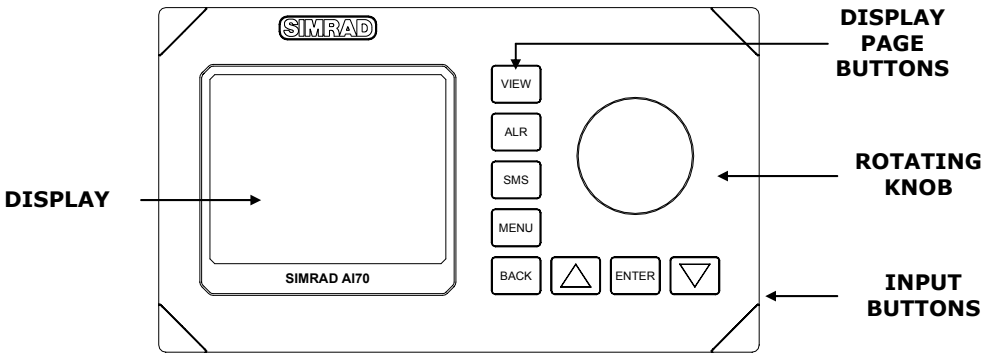
```
*** Wrong PIN *******

[OK] to try again
[Cancel] to cancel
```

Press **OK** to retry or **CANCEL** to cancel.

2.5 Optional MKD unit

The MKD unit includes the following elements:



Display

The display presents information pages and menus used for data input. Refer ***Optional MKD - display*** pages and submenus, page 26.

Rotating knob

The rotating knob is used for highlighting the different menu items on the display.

Display page buttons

ALR

SMS

MENU

Used for activating the **Alarm** page, the **SMS** page and the **Menu** page.

Refer ***Optional MKD - display*** pages and submenus, page 26 onwards.

Input buttons

ENTER

Used for entering a highlighted sub-menu selected by the rotating knob, and for confirming a highlighted selection.

△

▽

Used for paging to previous/next page in submenus where more than one page are available.

Also used for moving one line up/down in the keyboard function when data is entered.

BACK

Used to save new settings and return to previous display.

Refer Entering Data, page 28.

2.6 Optional MKD - display pages and submenus

In addition to the default **View** page (refer page 29, three different display pages with corresponding submenus may be activated on the MKD display:

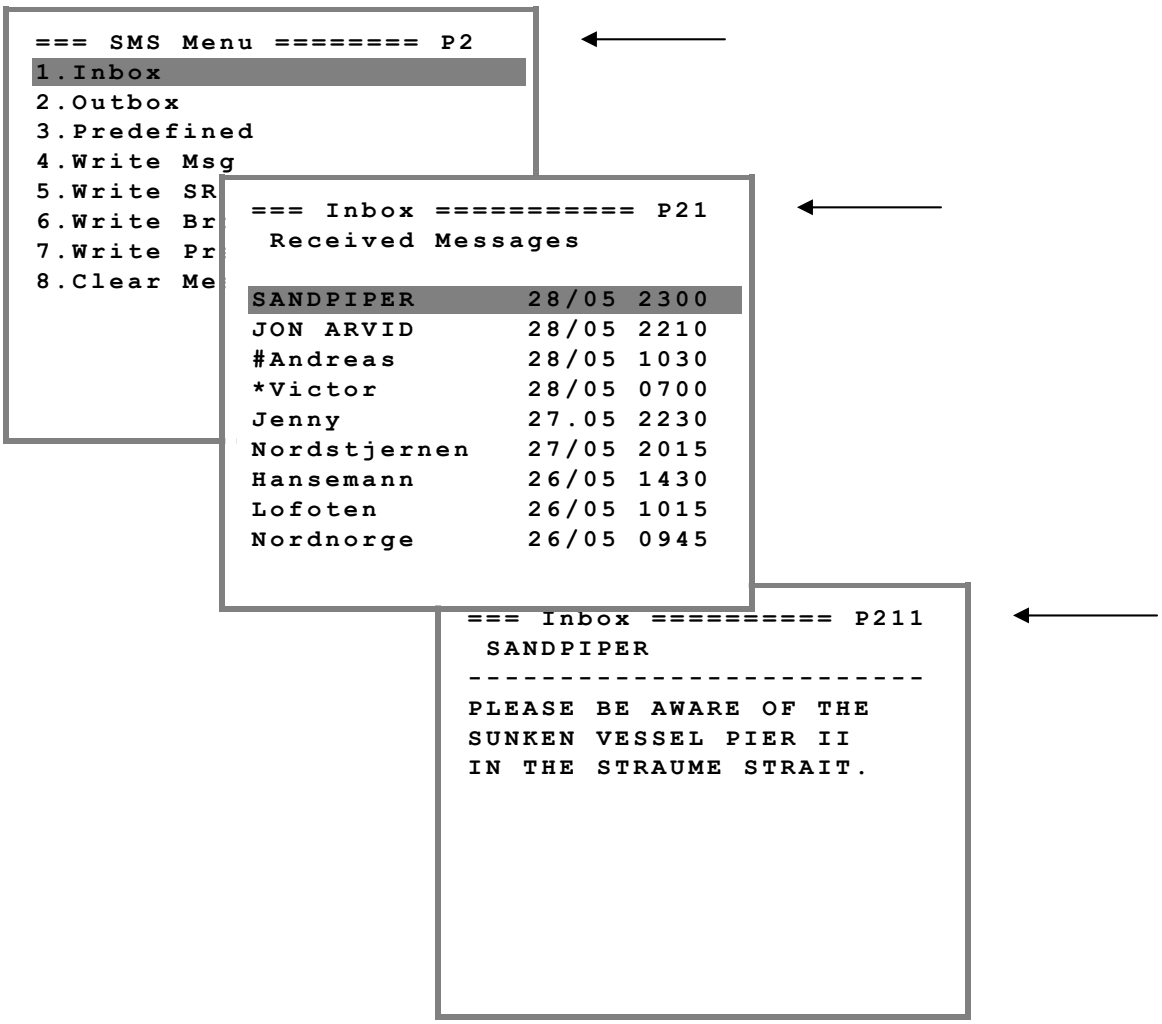
Menu page (P1). Refer page 29

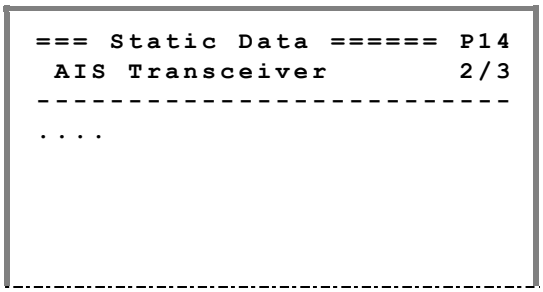
SMS page (P2). Refer page 31

Alarm page (P3). Refer page 31

The display pages are identified with P1, P2 and P3 in the upper right corner.

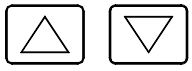
When a submenu is activated, this submenu will be identified with a second digit corresponding to the selected submenu's number in the display page. If more sublevels are available, a third digit will be added as shown in the example below.





If a page or a submenu contains more than one page, current page number and number of pages will be shown below the page identification (e.g. 2/3).

In addition, ▲ ▼ symbols will be added to the lower part of the display.



If more than one page are available, the **UP**/**DOWN** buttons on the MKD are used for paging through available pages.

Displaying submenus

A highlighted selection in a page or a menu indicates that the selection may be entered, either for displaying data or for entering parameter values.

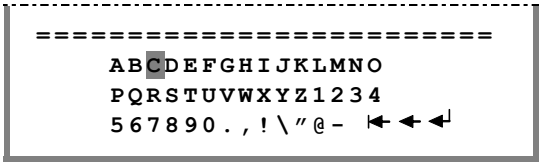
ENTER

Rotate the knob to move the highlight to the submenu that is to be entered, and press the **ENTER** button to display the submenu.

Menus where no selections are highlighted are only used for displaying information.

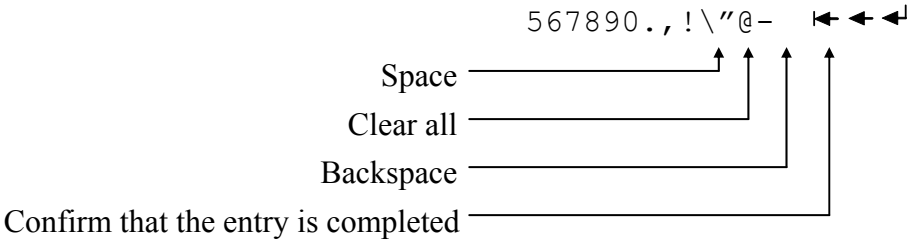
Entering Data

A submenu that is used for entering data will include a keyboard function in the lower part of the display as shown on the figure.



Use the rotating knob for moving the highlight to the selected character, and enter the character by pressing the **ENTER** button. The arrow buttons on the MKD may be used for jumping up/down a line in the characters.

The last four keyboard symbols are used as follows:

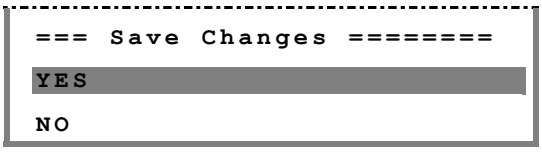


Note ! *If the field where data is to be entered already has a value, the **clear all** symbol ⇤ must be selected before new data may be entered.*

Continue entering characters until the entry is completed, and confirm the complete entry by moving the highlight to the ↵ symbol and pressing the **ENTER** button.

BACK

When all data are entered, the **BACK** button is pressed to activate the entry. The operator will be requested to accept or reject entries/changes.



ENTER

Use the rotating knob to accept or reject the entries, and press the **ENTER** button to accept the selection and return to previous page.

View page

VIEW

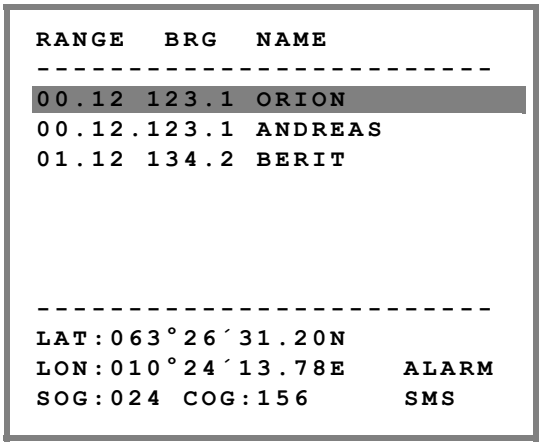
The **View** page is the default page on the MKD. This page will be displayed when the system is turned ON and the initialisation sequence is completed. The page is also activated by pressing the **VIEW** button.

The **View** page shows range, bearing and name of other vessels in ascending order relative to own vessel position. The vessel name could be either MMSI (Maritime Mobile Service Identity) number or name.

A base station would be identified with an asterisk in front of the base station's name or MMSI number.

Depending on the number of other vessels within range, the number of pages will change dynamically.

The lower part of the **View** page contains own vessel's information. If an alarm is active or a message unread, this is indicated as shown below.



When a vessel name is highlighted and the **ENTER** button pressed, the display will show static, dynamic and voyage data for the selected vessel.

Menu page

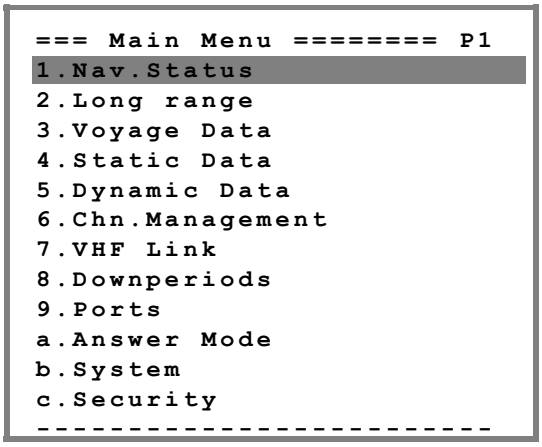
MENU

The **Menu** page is accessed by pressing the **MENU** button.

The page gives access to 12 submenus, used for displaying information and for entering data.

Software version is shown in the lower part of the display.

Entries in the submenus selected from **Main** menu may be protected by a security code. Refer **Security settings** , page 61.



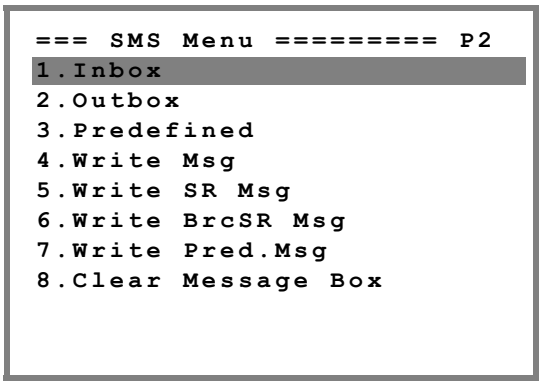
The **Menu** page includes the following selections:

Menu item	Function	Ref. page
1.Nav.Status	Used for setting the navigational status.	41
2.Long range	Displays active and resolved Long Range interrogation requests (Option).	59
3.Voyage Data	Used for entering information about the current voyage.	41
4.Static Data	Used under installation for entering static vessel data.	64
5.Dynamic Data	Displays current data for the vessel. The information is obtained from sensors, and no manual entries are possible.	-
6.Chn.Management	Used for configuring different radio channels for different chart zones.	68
7.VHF Link	Used for displaying and changing current VHF settings.	49
8.Downperiods	Displays periods where the AI80 system has been out of operation.	-
9.Ports	Gives access to configuration settings for external serial ports.	65
a.Answer Mode	Configures the polling operation for the AI80 system.	67
b.System	Used for displaying system information, and for restarting the AI80 system.	60
c.Security	Used for configuring the security level for data entries in the AI80 system.	61

SMS page

SMS

In the SMS page the operator may select functions available in the AI80 Short Message System.



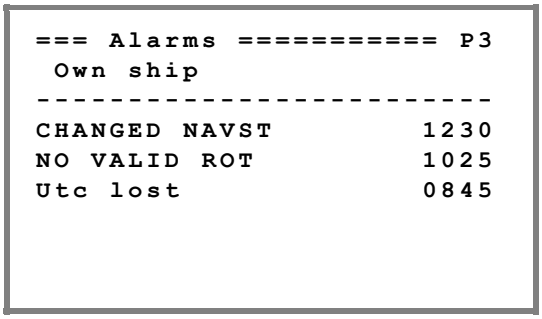
Refer Using the AI80 message system, page 50.

Alarm page

ALR

The **Alarm** page displays active alarms in the system.

Active, not acknowledged alarms are displayed in capital letters, while acknowledged alarms are displayed in lowercase. When an alarm condition ceases, the alarm is removed from the list.



Refer The alarm system, page 57.

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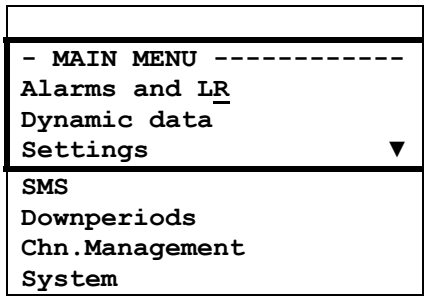
3 SOFTWARE SETUP PROCEDURE

3.1 General

The AI80 system is set up with factory settings during testing. The software setup must be performed as a part of the AI80 installation procedure.

The software setup is performed from sub-menus available from the **Main Menu** page, activated by pressing the **VIEW** button. The respective **Main Menu** pages are shown below.

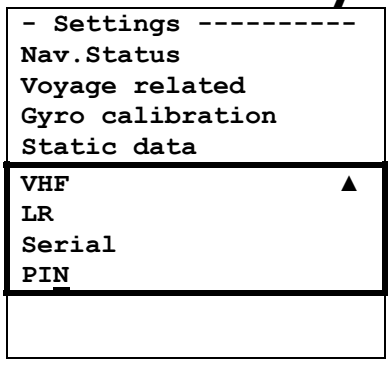


This is the **Main Menu** page for the AI80 with sub-menus. All settings that need to be changed can be found in the **Settings** sub-menu.

For manoeuvring in the menus and for entering data, refer to ***AI80 user interface*** on page 7.

Note ! *The software settings may be protected by a security code. When entering parameters defined with a security level other than 0, the access code has to be entered before these settings can be changed. Refer* ***Security settings AI80*** *in the next pages and page 61.*

3.2 Security settings AI80



Security PIN code

All entries on this page are protected by a PIN code.

Initially, a default authorisation code is used for altering data fields in the **Settings** page. The default PIN code is: *1234*. We recommend to change to a vessel specific PIN code.

Enter new four digit PIN code by selecting PIN and PIN: **** on the **Settings** menu.

Note! *Based on the MAC Address a master PIN code can be handed out from Custom Support.*

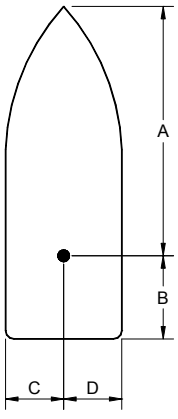
3.3 Entering static data

```
- Static data -------
Name: VANNINA
Call: CA122
MMSI: 136547932
IMO: 3334445
Type: 123
Keel: 30.5
DimA: 0
DimB: 0
DimC: 0
DimD: 0
LocDimA: 0
LocDimB: 0
LocDimC: 0
LocDimD: 0
```

Static data are specific ship data that do not change from one voyage to another. In order to input static data, select parameters by pressing **EDIT** and press **SHIFT** to access text mode.

If MMSI number changes, the unit should be restarted, seethe *Simrad AI80 Installation Manual* for details.

Name: The vessel name (text).
Call: The vessel call sign (text).
MMSI: The Maritime Mobile Signal Identifier number.
IMO: The vessel IMO number.
Type: Type of vessel.
Keel: Height over keel. Total height of vessel in metres.
DimA: External GPS antenna location
DimB: External GPS antenna location
DimC: External GPS antenna location
DimD: External GPS antenna location
LocDimA: Internal GPS antenna location
LocDimB: Internal GPS antenna location
LocDimC: Internal GPS antenna location
LocDimD: Internal GPS antenna location



External GPS/GNSS antenna dimensions. Since the vessel's primary GPS receiver is used as reference for the transmitted AIS position, the physical location (horizontal plan only) of the vessel GPS antenna should be input to the AIS in metres.

Setup by entering: DimA, DimB, DimC & DimD.

Internal GPS antenna dimensions. The AIS internal GPS receiver is backup position sensor for the vessel primary GPS receiver. The AIS internal GPS antenna's physical location (horizontal plane only) also needs to be input to the AIS in metres.

Setup by entering: LocDimA, LocDimB, LocDimC & LocDimD.

3.4 Configuring external serial ports

The serial port baud rate must be set up according to external instrumentation. The sensor interfaces comply with the NMEA 0183, version 3.0. Change the baud rates accordingly.

Enter the **Serial** page by selecting **Settings** in the **Main Menu**, and **Serial** in the **Settings** menu. In the **Serial** page, press **EDIT** to start editing the baud rate. Hold **OK** to save.

3.5 VHF data link

The VHF page includes ON/OFF status for transmitter and VDL answer mode.

ON/OFF status: The transmitter setting is recommended set to TX: ON.

Note ! *The transmitter may be turned OFF at Master's discretion should an emergency situation occur. However, the AIS receiver will still be functioning and thus AIS data from other vessels will still be received.*

VDL answer mode: VDL answer mode allows the configuration of the AIS unit with regard to how it responds to inquiries by binary messages (messages 6 and 8).

An inquiry of this type could be a request for information regarding number of persons onboard, draught etc. If turned OFF, the AIS will ignore the inquiry.

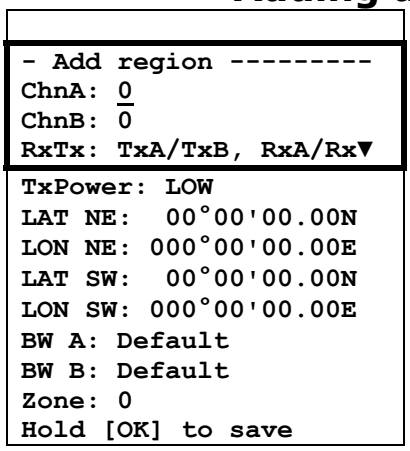
Note ! *The VDL setting "ON" indicates that answer mode to interrogator is enabled when message 6 or 8 containing interrogation functional identification, is received.*

3.6 Configuring radio channels

Viewing a region's settings

Under this option a list of all registered regions is displayed. By using the **ARROW** buttons, regions can be individually selected. Selecting a region is done by pressing the **OK** button and region parameters will be shown. This is a read-only page.

Adding a region



To edit these parameters, use the **ARROW** buttons to manoeuvre to the parameter of interest and press **EDIT**. Use the **DEL** button if necessary, and enter the new value. If non-digits are required, press the **SHIFT** button to change to alpha mode. Press the **SHIFT** button again to return to digit mode.

While in alpha mode, letters and special characters can be entered (e.g. the degree symbol °).

Note ! *If the user tries to enter a region which parameters locates the region more than 500 nautical miles away from the vessel, the region will automatically be discarded. Also when the vessel position is further than 500 nautical miles from the region, this region is automatically discarded by the AIS unit.*

ChA: The radio channel to be used as channel A.

ChB: The radio channel to be used as channel B.

RxTx: Transmission/reception mode. This parameter indicates whether or not the AIS should transmit and receive on both channels, or on only a subset of these.

TxPower: The transmission power of the radio. Low equals 2W, and High equals 12W.

Lat/Lon: The rectangular area to which the radio parameters apply. The area is specified by entering the coordinates for the north-east corner and the south-west corner.

BW A: Bandwidth for the selected channel A.

BW B: Bandwidth for the selected channel B.

Zone: Transition zone for the region. This parameter is given in nautical miles, and provides information about the transition zone of the region in which the AIS should change radio parameters to the ones specified for the region.

Edit current region

This function is used to change the current radio parameters and is similar to **Add Region**, the only difference being that by changing these values the default parameters for the current region are altered and take effect immediately.

Note ! *For software setup procedure using optional MKD see Appendix B - Software setup using optional MKD, page 61 .*

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4 OPERATION

4.1 General

The AI80, once activated, will continuously and autonomously broadcast the vessel's position and all the static and dynamic information as required by IMO.

However, while the vessel's speed and rate of turn manoeuvres will automatically determine the update rate, there remains a need for the Master or an authorized person to manually input, at the start of the voyage and whenever changes occur, the following voyage related data:

- ship's draught
- type of hazardous cargo (most significant hazard carried)
- destination and ETA (at master's discretion)
- the correct and actual navigational status
- safety related short messages, when appropriate

Refer **Changing parameters during operation**, page 41 onwards.

Caution! ***The Officer on Watch (OOW) should always be aware that other ships and, in particular, leisure craft, fishing boats and warships, and some coastal shore stations including Vessel Traffic Service (VTS) centres, might not be fitted with AIS. The OOW should also be aware that AIS fitted on other ships as a mandatory carriage requirement, might, under certain circumstances, be switched off on the Master's professional judgment.***

An AIS system should always be in operation. It is recommended that the AIS is not switched off during port stays because of the value of the ship information to port authorities.

Whether at sea or in port, if the Master believes that the continued operation of AIS might compromise the ship's safety or security, the VHF transmitting may be switched off as described in **Turning the VHF transmitter OFF**, page 41. This might be the case in sea areas where pirates and armed robbers are known to operate.

However, the VHF transmitting should be re-activated as soon as the source of danger has disappeared.

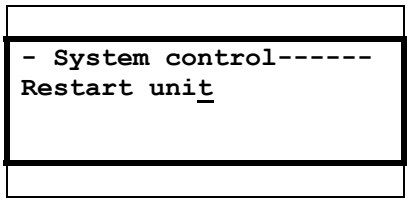
It may be necessary to switch off AIS or to reduce the transmission power during some cargo handling operations. Actions of this nature should always be recorded in the ship's logbook.

4.2 Turning the AI80 system ON

The system is turned ON when power is connected to the AI80. After a two-minute initialisation period the unit will have full functionality. No ON/OFF switch is included on the unit. The system is turned OFF when power is disconnected.

4.3 Restarting the AI80 system

The AI80 Mobile Unit may be restarted by using the following procedure:



1. Press the **VIEW** button to activate the **Main** menu, and select **System.** The **System** menu will be displayed.
2. Select **System Control**, and **Restart Unit** will be highlighted.
3. Press the **OK** button to restart the Mobile Unit. After a two-minute initialisation period the unit will have full functionality.

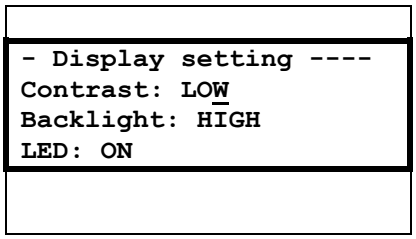
4.4 Adjusting brightness and contrast

AI80 display settings

Press **SHIFT** and **0** buttons simultaneously to adjust brightness and contrast. Select **Display contrast** and the **Display setting** view appears. Select wanted setting (Contrast or Backlight) by pressing **EDIT**. Scroll selections with **UP/DOWN ARROW**. Press **OK** to confirm change.

Press the **Number 0** button to toggle the backlight ON/OFF.

The front LEDs may be switched off from this menu.



4.5 Changing parameters during operation

Updated information about the navigational status and the current voyage data should always be entered into the AI80 system.

If the **Nav.Status** or **Voyage Data** parameters are defined with a security level other than 0, the access code has to be entered before these settings can be changed. Refer **Security settings AI80**, pages 33 and 61.

Setting the Navigational Status

It is important to set the navigational status with regard to the current vessel status as this affects the reporting rate and information transmitted to other vessels.

For **AI80** press the **VIEW** button to activate the **Main Menu**, select **Settings** and **Nav.Status**. Press **EDIT** to activate the predefined list. Select wanted status, hold **OK** to save.

Entering Voyage Data

For **AI80** press **VIEW** to enter **Main Menu**, select **Settings** and **Voyage related**. The **Voyage related** page will be displayed showing previously set voyage navigational data. Hold **OK** to save.

4.6 Turning the VHF transmitter OFF

In situations where transmission would endanger the ship, e.g. in war situations, piracy etc, the VHF transmitter may be turned OFF.

For **AI80** press **VIEW** button to activate **Main Menu**, select **Settings** and **VHF**. Select **TX**, press **EDIT** and choose ON/OFF. Hold **OK** to save.

4.7 Using the AI80 message system

The AI80 system includes an SMS function, making it possible to send text message to other vessels or to shore based stations.

Using SMS in AI80

All SMS functions are selected from the **SMS** page, activated by selecting **SMS** in the **Main Menu**.

New SMS received

When an SMS is received, the user is notified through a dialogue box that appears on the screen. Press **OK** to read the message immediately or **LEFT ARROW** to delete the dialogue box. The message can be found in the **Inbox.**

See page 19 onwards for more SMS dialogue boxes.

The Inbox

The user can enter the **Inbox** by pressing **OK** on the **New SMS received** dialogue or by entering the **SMS** menu under **Main Menu** and selecting **Inbox**.

Press **UP/DOWN ARROW** to select message. **OK** displays the message to the user. If the message is previously read, a check-sign is shown in front of that line.

If the message is more than four lines, **UP** and **DOWN** are used to scroll lines. Press **DEL** to delete the message. Press **OK** to see next message without deleting. Pressing **CANCEL** takes the user back to **Inbox** without deleting the message.

Write Message

Select **Write Message** in the **SMS** menu and press **OK**. This allows the user to prepare a message for transmission to another vessel.

Select channel for transmission (A, B, Both, Default), type of message to send (Addressed, Addressed Safety related, Broadcast Safety related) and receiver (from list of available stations). In addition the user can choose a predefined message to appear. If a predefined message is not used, the user can enter a specific message after **Message**. Enter a message by pressing **EDIT** and the cursor starts to

blink. Enter text by pressing the character buttons, enter numbers by first pressing **SHIFT**. Press **SHIFT** again to return to character buttons. Enter **SPACE** and other non-alphabetic symbols by using the **Number 1** button. When all data are entered, press **OK** to send message as configured.

Many AIS manufacturers do not implement the full set of AIS SMS messages. The AI80 has a complete set of AIS SMS messages including Addressed, Safety related addressed and Safety related broadcast messages accessible from the display. Please note that Addressed (addressed binary message 6) is often excluded by other AIS manufacturers. Therefore it is recommended that the user uses Safety related messages instead of Addressed.

The Outbox

Outbox contains all sent messages. If the receiving AIS unit acknowledged the message, a check-sign is shown in front of that line. The latest message is on top. If the user wants to re-send or read a message, select a message with **UP/DOWN** and press **OK**.

Viewing and editing predefined messages

Select **Predefined** and press **OK** to enter the **Predefined** page. Here the user can edit, view or delete a previously defined message. Press **OK** to view, **EDIT** to change and **DEL** to delete a message. Reading a predefined message has the same functionality as reading a message in **Inbox**, except that **EDIT** allows the user to edit the predefined message.

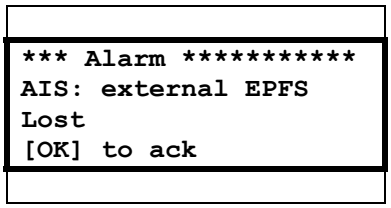
How to write a predefined message

Enter the **Write Predefined** page by selecting it and pressing **OK**. Press **EDIT** to write a new predefined message. Every predefined message is identified by a name. Write this identifier under **Name** and continue with the predefined message under **Message**. Enter text by pressing the character buttons, enter numbers by first pressing **SHIFT**. Press **SHIFT** again to return to character buttons. Enter **SPACE** and other non-alphabetic symbols by using the **Number 1** button. When the message is completed, hold **OK** to save.

4.8 The alarm system

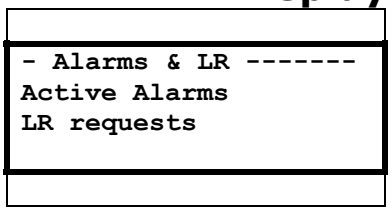
The AI80 system does not include an internal acoustic alarm. It is, however, possible to connect an external alarm to the system. See the *Simrad AI80 Installation Manual* for details.

AI80 alarms

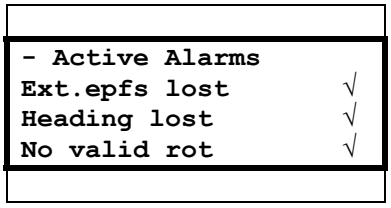


If an alarm situation occurs, the **Alarm** menu will appear and display the latest alarm. This alarm will be displayed until it is acknowledged by pressing the **OK** button or the alarm condition ceases to exist. If further alarms exist, they will be displayed in turn, starting with the latest. As long as there are unacknowledged alarms, the **ALM** LED will be red and the alarm relay will engage, see the *Simrad AI80 Installation Manual*.

Displaying and acknowledging alarms



In the **Main Menu** there is an entry for **Alarms & LR**. By selecting it, the user can select between viewing active alarms and LR requests.

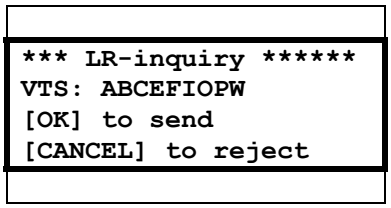


By selecting the **Active Alarms** entry, the user can view all active alarms registered in the AIS unit. A check mark after the alarm indicates that the alarm has been acknowledged.

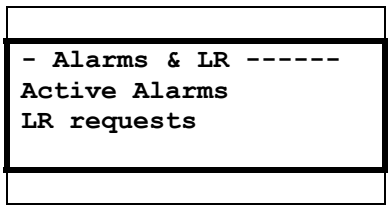
4.9 Long-Range messages (option)

The AI80 contains a long-range interface for connection to an external communication system like Inmarsat. If long-range equipment is included in the system, it is possible to poll AIS system data from anywhere within the Inmarsat coverage area.

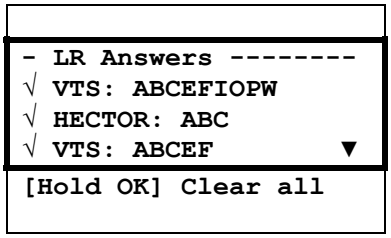
AI80 long-range



Upon a reception of an LR inquiry, the **LR inquiry** menu appears. It contains the name of the inquirer and the function request string. By pressing the **OK** button the AIS unit responds to the inquiry and by pressing **CANCEL** the AIS unit sends a rejection message to the inquirer.



To view a list of all the long-range inquiries that have been received, access the **Main Menu** and enter the **Alarms & LR** option.



Under **LR requests** there is a complete list of all LR requests (inquiries). The check mark before the name of the inquirer indicates that the request has been processed.

Deleting a long-range request

By holding the **OK** button pressed, the LR list will be cleared.

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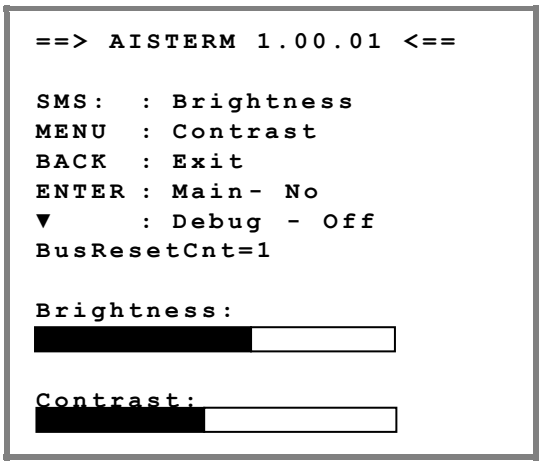
5 APPENDIX A - OPERATING PROCEDURE OPTIONAL MKD

Optional MKD display settings

BACK ENTER When the **BACK** and **ENTER** buttons are pressed simultaneously, the **AIS TERMINAL** view will be displayed.



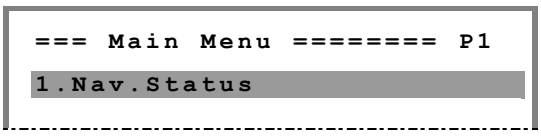
SMS Press the **SMS** button to activate the brightness settings, and adjust the brightness by turning the rotating knob.

MENU Contrast is adjusted by pressing the **MENU** button, and then using the rotating knob.

BACK All changes are accepted and the display returned to the **VIEW** page by pressing the **BACK** button.

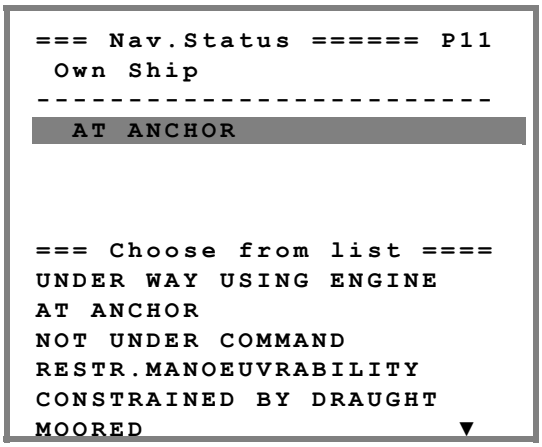
Note! *The other functions in this display are not used.*

Setting the navigational status



1. Press the **MENU** button to activate the **Main** menu, select **Nav.Status** and press the **ENTER** button**.** The **Nav.Status** page will be displayed, showing previously selected navigational status.

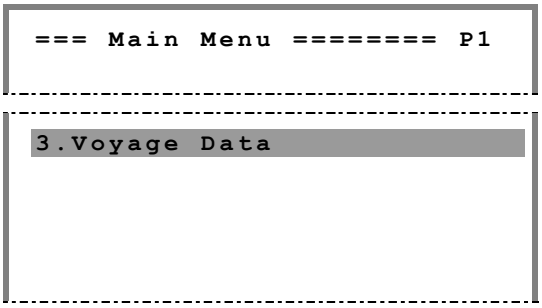
2. Repress the **ENTER** button to activate the predefined list.



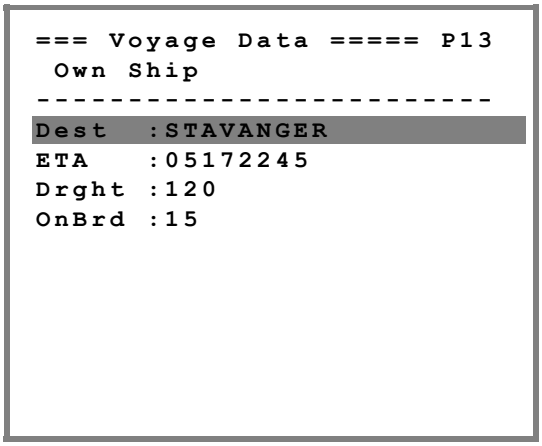
Additional selections are available by pressing the arrow down button.

Use the rotating knob to select the vessel's current status, and confirm the entry with the **ENTER** button. Activate the setting by pressing the **BACK** button.

Entering voyage data



1. Press the **MENU** button to activate the **Main** menu, select **Voyage Data** and press the **ENTER** button**.** The **Voyage Data** page will be displayed, showing previously set voyage navigational data.



The following information should be entered:

Dest: Voyage destination

ETA: Estimated time of arrival, entered as month, day, hour and minutes (MMDDHHmm)

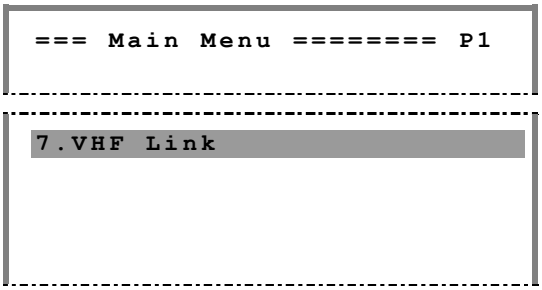
Drght: Vessel draught [1/10 m]

OnBrd: Total number of people on board

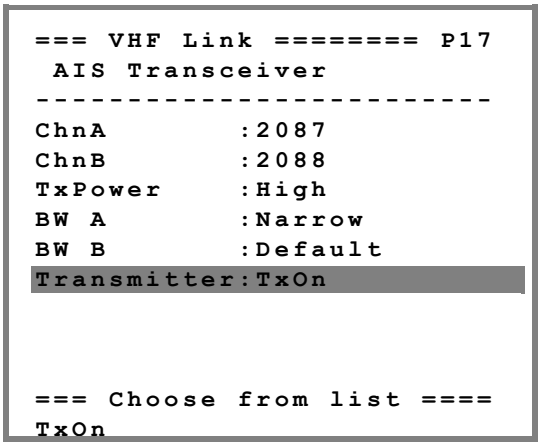
Enter voyage data as described in ***Entering Data***, page 28.

Activate the setting by pressing the **BACK** button.

Turning the VHF transmitter OFF



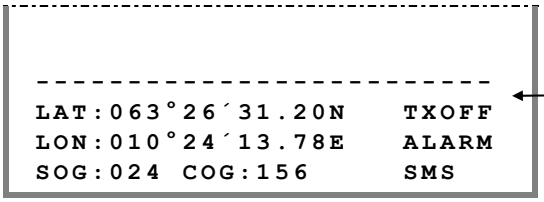
1. Press the **MENU** button to activate the **Main** menu, select **VHF Link** and press the **ENTER** button**.** The **VHF Link** page will be displayed, showing current VHF settings.



2. Select **Transmitter:TxOn**, and press the **ENTER** button.

   In the lower part of the display it will now be possible to select **TxOff**.

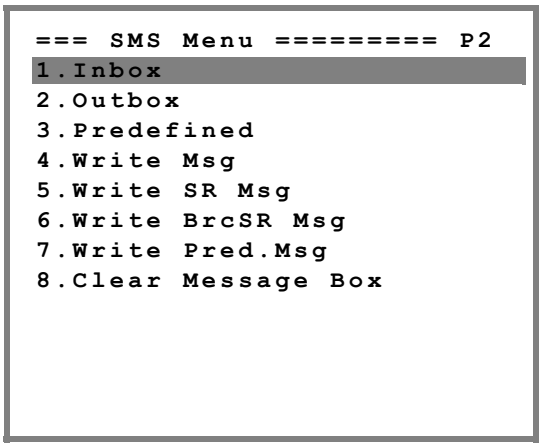
3. Confirm the selection by pressing the **ENTER** button, and save the changes by pressing the **BACK** button.



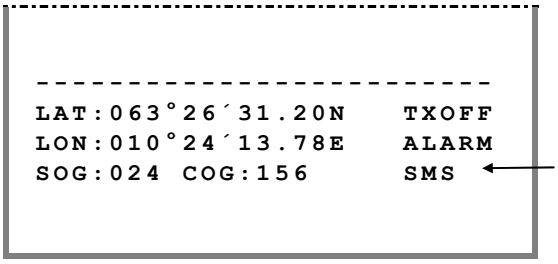
When the VHF transmitter is turned OFF, this will be indicated in the **View** page as shown on the figure.

Using SMS in AI80 - optional MKD

All SMS functions are selected from the **SMS** page, activated by pressing the **SMS** button.



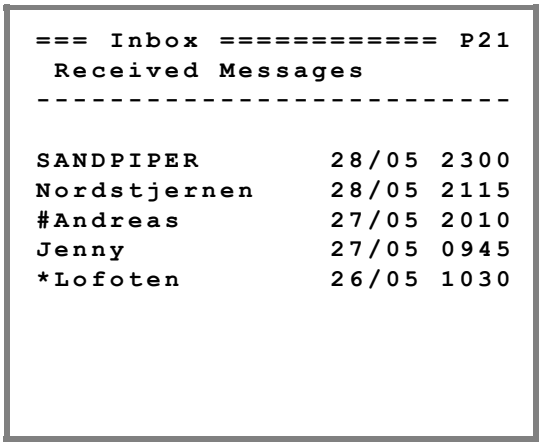
Receiving and reading an SMS message



When an SMS message is received, this will be indicated in the lower part of the **View** page. When the message is opened, this indication will be removed from the **View** page.

To read the message, Press the **SMS** button to open the SMS page, select **Inbox** and press the **ENTER** button.

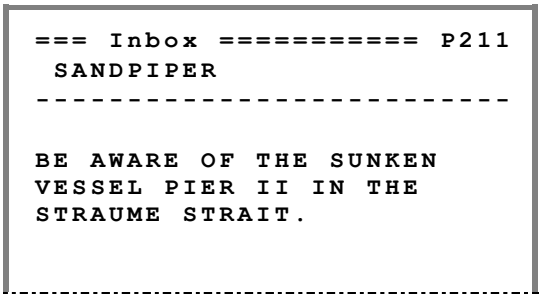
The **Inbox** view will be displayed.



The **Inbox** contains all messages received from other AIS systems, both from base stations and from other Mobile Units. The latest received message will be displayed on top of the list.

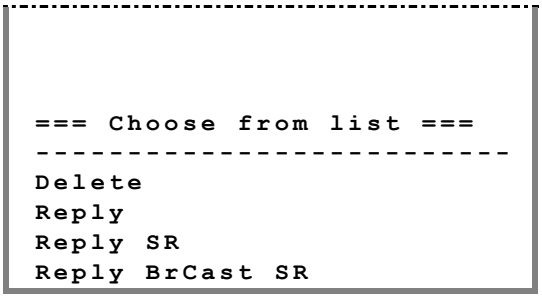
The following notations are used in the **Inbox** page:

- Unread messages: Vessel name with capital letters
- Security messages: *
- Broadcast messages: #



The message is displayed by highlighting the sender's name and pressing the **ENTER** button.

When the message text is displayed and the **ENTER** button repressed, the following list of options appears:



Delete:	Delete the message
Reply:	Reply as text message
Reply SR:	Replay as safety related text message
Reply BrCast SR:	Reply as broadcast related message

Writing and sending SMS messages

When writing a message in the AI80 system, the message can be defined as:

- General text message
- Safety related message
- Broadcast message

In addition to this, predefined messages may be written and saved for re-use.

Writing general text messages and safety related messages

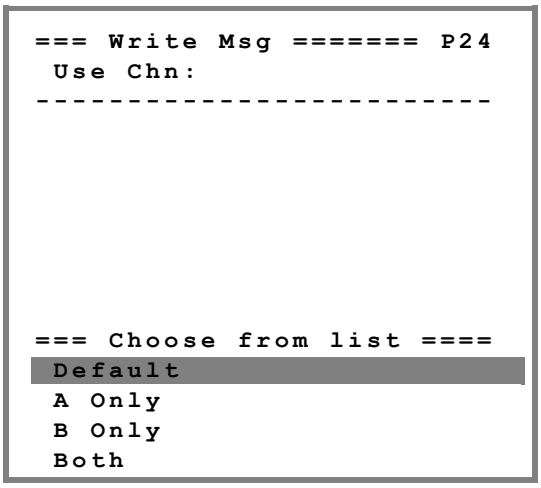
General and safety related text messages could be sent to any vessel within reach, e.g. vessels presented in the **View** page.

A safety related message will be transmitted with higher priority than a general text message, and will be transmitted before any other pending general message.

1. Press the **SMS** button to activate the **SMS** menu, select **Write Msg** for writing a general text message, or **Write SR Msg** for

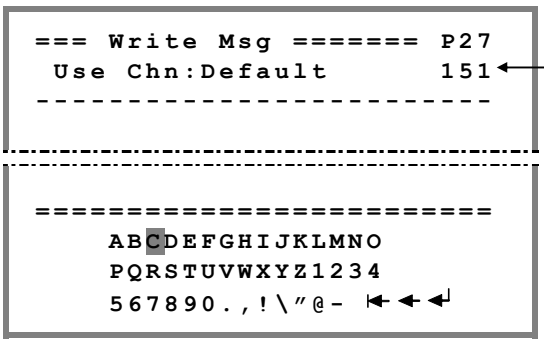
writing a safety related message. Confirm the selection by pressing the **ENTER** button.

The **Write Msg** menu (P24) or **Write SR** Mgs (25) menu will be displayed.



2. Select the channel that is to be used when sending the message, and confirm with the **ENTER** button.

The display will change to the **Write Msg** menu:



A text message may consist of up to 151 characters. As characters are entered, the display will show remaining number of characters that may be entered.

3. Use the rotating knob and the **ENTER** button to enter characters.

4. When the message is completed, the entry is confirmed by moving the highlight to the ↵ symbol and pressing the **ENTER** button.

   The display will now show vessel and base station names that may be selected as receiver for the message.

5. Use the rotating knob to highlight the receiver for the message, and confirm with the **ENTER** button to send the message.

All sent messages will be displayed in the **Outbox** view. Refer page 56.

Writing broadcast messages

Broadcast messages must be safety related, and they will be sent without any specific destination. Text entry is similar to entering general or safety related messages.

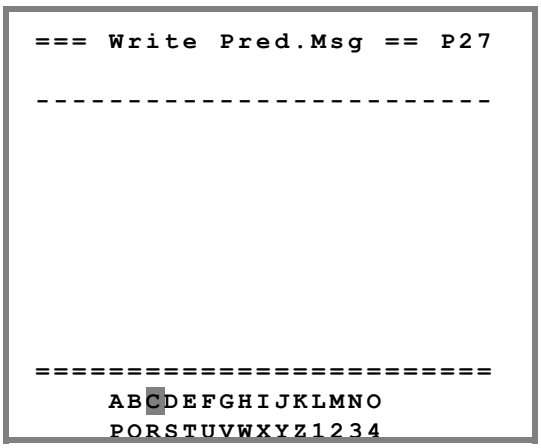
Any sent broadcast message will be displayed in the **Outbox** view labelled with a # prefix.

Writing predefined messages

A predefined message may be defined and saved for re-use. When a predefined message is to be sent, it may be defined as a general text message, a safety related message or a broadcast message.

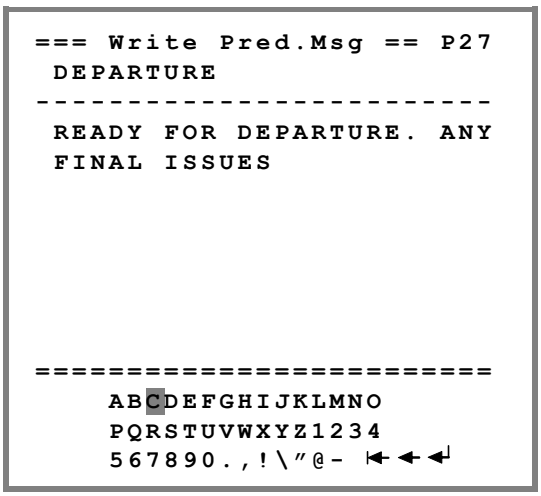
1. Press the **SMS** button to activate the **SMS** menu, select **Write Pred.Msg** and press the **ENTER** button.

   The **Write Pred.Msg** menu (P27) will be displayed:



2. Enter a name for the predefined message, and confirmed the name by moving the highlight to the ↵ symbol and pressing the **ENTER** button.

   The display is now ready for entering the predefined message text.



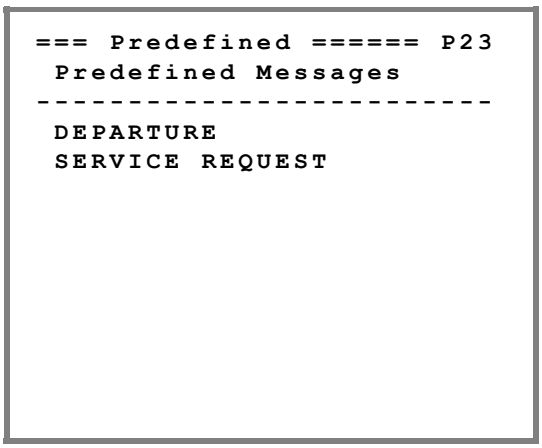
3. Use the rotating knob and the **ENTER** button to enter characters.

When the message is completed, the entry is confirmed by moving the highlight to the ↵ symbol and pressing the **ENTER** button.

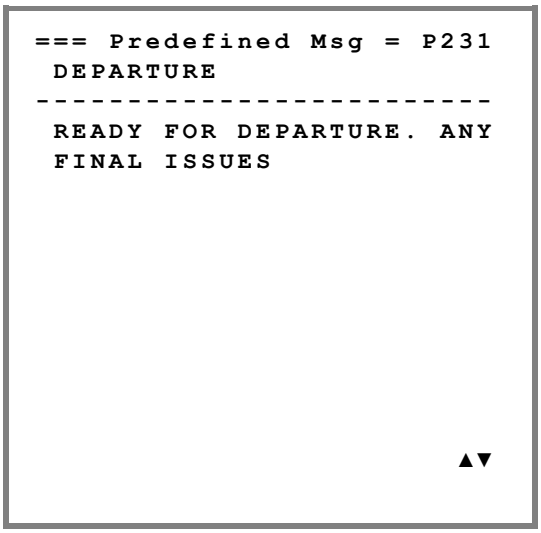
The display will now return to the **Predefined Message** view, showing all predefined messages.

Sending a predefined message

When the **Predefined Message** view is active, one of the predefined messages may be selected, eventually edited, and then sent.



Select the message that is to be sent, and press the **ENTER** button.



The predefined message will be opened.

If more predefined messages are defined, it is possible to scroll to previous/next message by using the ▲▼ buttons.

When the correct message that is to be sent is displayed, press the **ENTER** button.

The following selections will now be available in the lower part of the display:

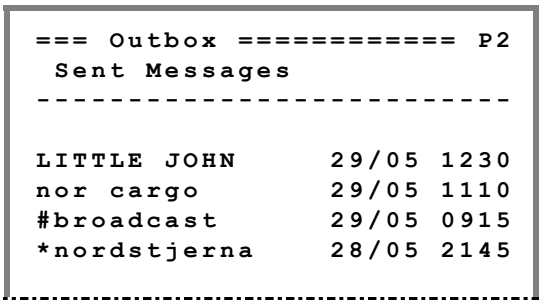
Edit	Edit the current message before it is sent.
Send	Send the message as a general text message to any vessel in reach.
Send Sr	Send the current message as a Safety related message. Refer page 52.
Send BrCast Sr	Send the current message as a Broadcast message. Refer page 53.
Delete	Delete the current message.

The Outbox

All sent messages will be automatically moved to the **Outbox** view.

As for the **Inbox**, the following notations are used in the **Outbox** view:

- Messages not transmitted: Vessel name with capital letters
- Security messages: *
- Broadcast messages: #



Before a general message or a safety related message is transmitted, the AI80 system will automatically check that the selected vessel or base station is able to receive the message. If not, the system will try to resend the message three times. In this period the message will be displayed with capital letters in the **Outbox**.

If a message is not accepted by the receiver, the message will remain in the **Outbox** written with capital letters. The operator may then resend the message manually by selecting the message, pressing the **ENTER** button twice and then selecting **Send** again.

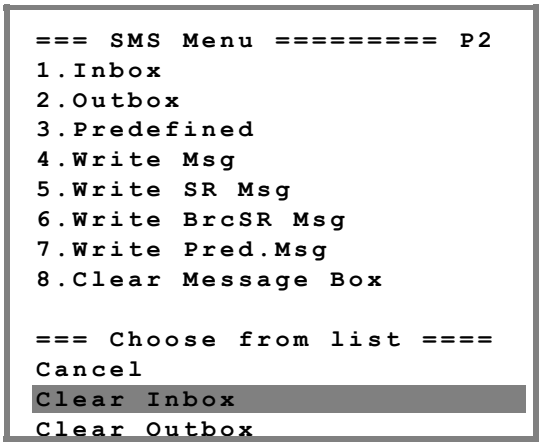
Removing messages

The AI80 system may save up to 30 different messages. This includes messages both in the **Inbox** and the **Outbox,** as well as predefined messages.

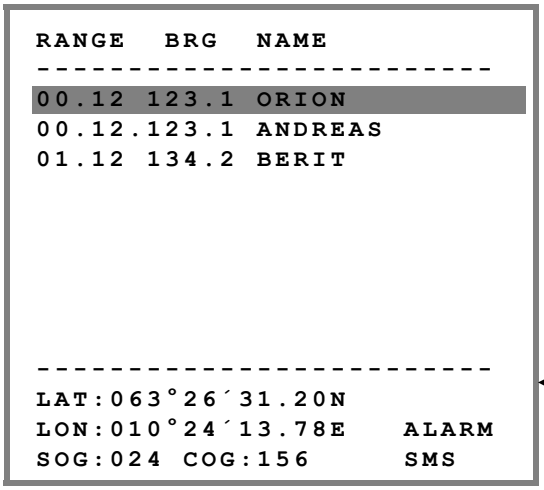
To make sure that no messages are deleted unintentionally by the system, the operator should regularly remove messages from the AI80 system manually.

The messages can be deleted one by one from the **Inbox** and the **Outbox** as described in page 55, or from the **SMS** menu by selecting **Clear Message Box.**

When **Clear Message Box** is selected, it will be possible to delete all messages from the **Inbox**, the **Outbox** or all predefined messages.



Optional MKD alarms



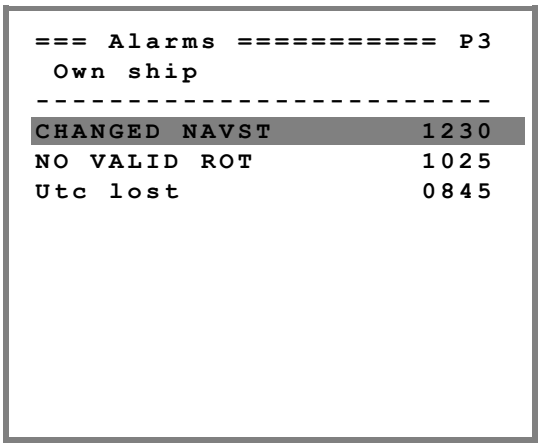
If an alarm situation occurs, this will be indicated in the lower right corner of the **View** page.

The alarm indication will be active as long as the alarm situation is present or until the alarm has been acknowledged.

Displaying and acknowledging alarms

When an alarm situation has been indicated in the **View** page, the alarm code may be displayed in the **Alarms** menu.

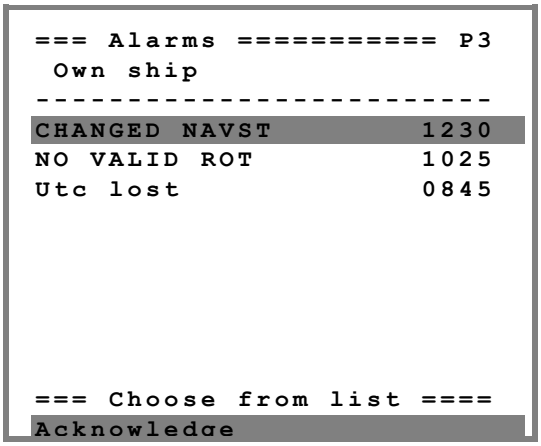
Press the **ALR** button to display the **Alarms** menu.



In this menu, all present alarms will be listed with the latest reported alarm on the first line.

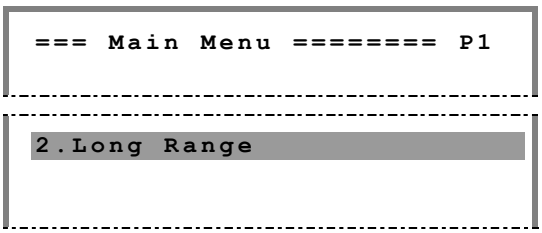
Active, not acknowledged alarms are displayed in capital letters, while acknowledged alarms are displayed in lowercase.

When the alarm situation ceases, the alarm will be removed from the list.

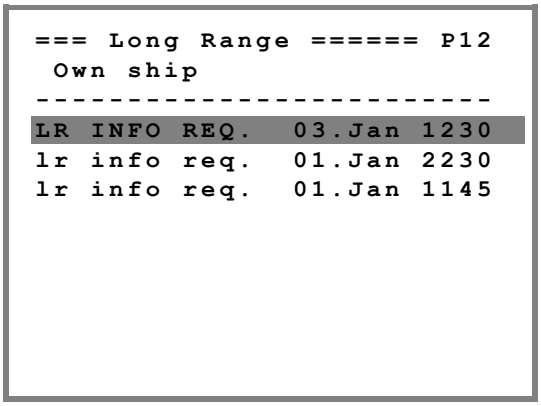


An alarm is acknowledged by highlighting the line, pressing the **ENTER** button and then selecting **Acknowledge** or **Acknowledge All**.

Optional MKD long-range



The **Long Range** menu is displayed by pressing the **MENU** button, selecting **Long Rang** and then pressing the **ENTER** button.



In the **Long Range** menu, both active and resolved long range requests will be listed with the latest request first.

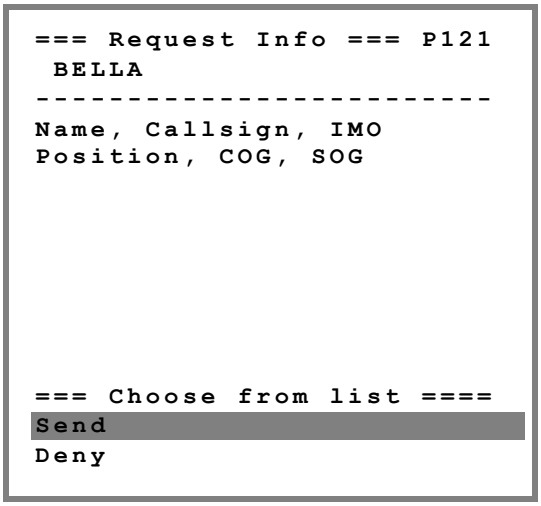
Active, not resolved request are displayed in capital letters, while resolved requests are displayed in lowercase.

This menu will also be displayed by pressing the **ALR** button twice.

Resolving a long-range request

The AI80 Mobile Unit may be set up to answer a long range request automatically or manually. Refer **Answer mode** , page 67.

If the system is set up to manually answer a long range request, the request displayed in the **Long Range** menu should be highlighted and the **ENTER** button pressed.



The **Request Info** page will be displayed, showing the name of the requesting station.

The lower part of the display will show actions to perform.

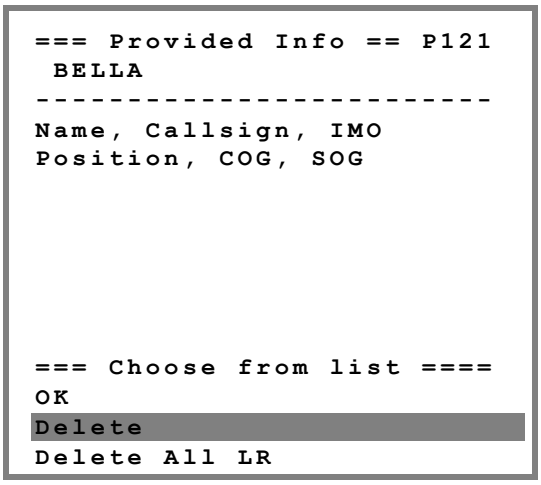
If **Send** is selected, a message containing vessel information will be sent from the AI80 system.

If **Deny** is selected, no respond will be given to the request.

Independent of which action selected, the request will be displayed in the **Long Range** menu. It will now be identified as a resolved message written in lower case.

Deleting a long-range request

If a resolved request is selected in the **Long Range** menu and the **ENTER** button pressed, the lower part of the display will give the following options:



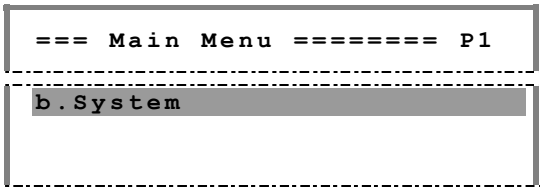
OK: Keeps the message and exits the page

Delete: Deletes the active message

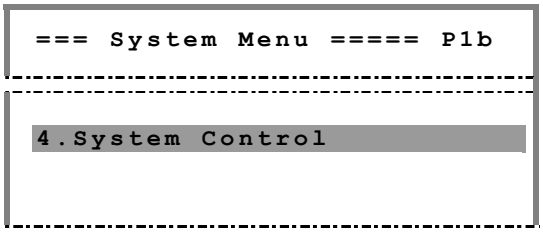
Delete All LR: Deletes all long-range messages.

Restarting the AI80 system using optional MKD

The AI80 Mobile Unit may be restarted by using the following procedure:



1. Press the **MENU** button to activate the **Main** menu, and select **System.** The **System** menu will be displayed.



2. Select **System Control** in the **System** menu (P1b). The **Restart/Reset** page (P1b4) will be displayed, and **Restart Unit** will be highlighted.

3. Press the **ENTER** button to restart the Mobile Unit. A short initialization sequence will be started, indicated with stationary amber light in the **TX**, **MSG**, **GPS** and **ALM** LEDs on the Mobile Unit.

6 APPENDIX B - SOFTWARE SETUP USING OPTIONAL MKD

6.1 Security settings optional MKD

To avoid unauthorised input of data in the menus accessed from the **Main** menu, the AI80 system should be set up with security codes and different access levels.

3 different access levels may be defined:

Level 0: No security code required

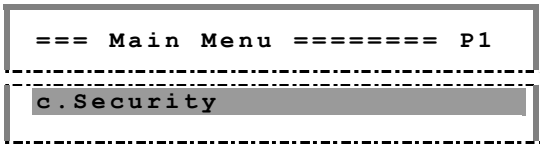
Level 1: Access controlled by L1 PIN Code or L2 PIN Code

Level 2: Access controlled by L2 PIN Code

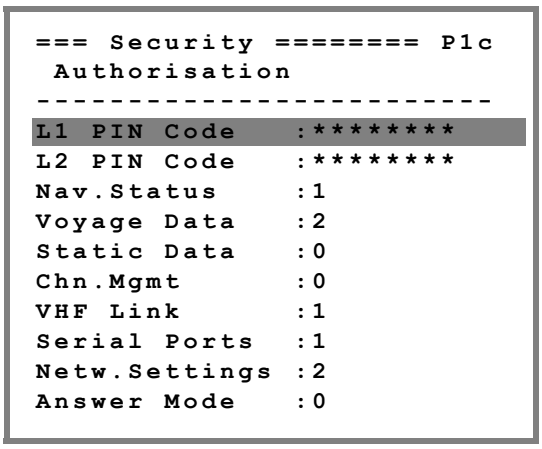
Access levels for the different menus are defined in the **Security** submenu, activated from the **Menu** page.

Setting the security codes

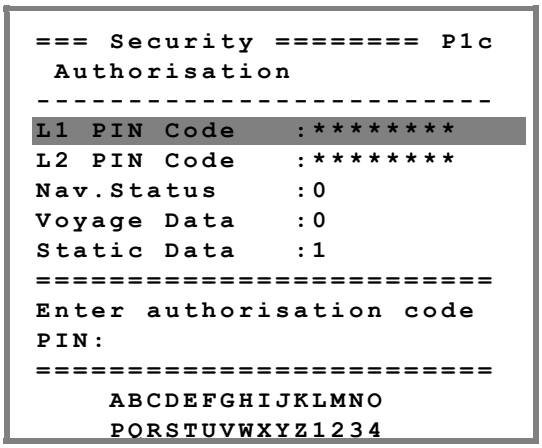
When using the external, optional MKD the default security code delivered with the Mobile Unit is "AIS" as for both Level 1 and Level 2. These security codes should be changed when the system is configured for the first time. Use the following procedure to change the security codes:



1. Press the **MENU** button to activate the **Main** menu, and select **Security.** The **Security** menu will be displayed.



2. Press **ENTER** when the **L1 PIN Code** line is highlighted. The keyboard function will be displayed in the lower part of the **Security** menu.



3. Enter **AIS** (default security code), and confirme the entry by moving the highlight to the ↵ symbol and pressing the **ENTER** button.
4. Now enter the new security code for Level 1, and confirmed the entry by moving the highlight to the ↵ symbol and pressing the **ENTER** button.

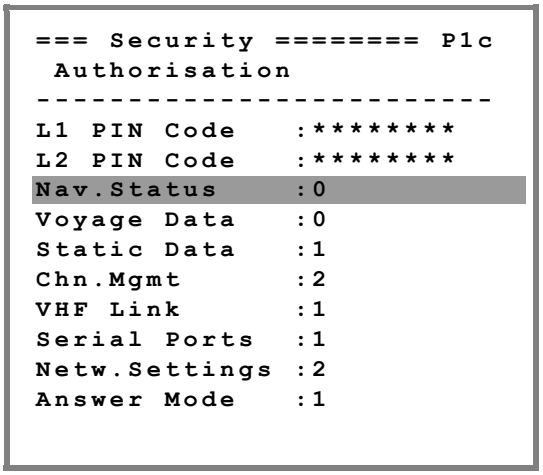
5. Highlight the **L2 PIN Code** and repeat the procedure above to change the security code for Level 2.
6. Record the new codes and keep them in a safe location. If the new codes are lost, a master code can be obtained from Customer Support by supplying the MAC address, see page 65.

Changing the security levels

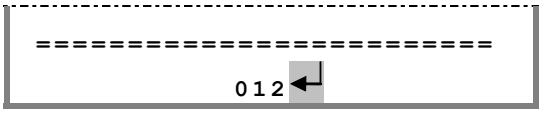
To avoid unauthorised input of data in the menus accessed from the **Main** menu, the AI80 system should be set up with security codes and different access levels.

Note ! *All entries on the Security page are protected by L2 security code. This code has to be entered before any parameters can be changed. Refer item 3 below.*

1. Activate the **Security** menu from the **Main** menu.



2. Highlight the parameter group for which the security level is to be changed, and press the **ENTER** button. The lower part of the display will now show the keyboard function.
3. Enter the security code for Level 2, move the highlight to the ↵ symbol and press the **ENTER** button. In the lower part of the display it will now be possible to change security level for the selected parameter.



4. Select security level, and confirm by highlighting the ↵ symbol and pressing the **ENTER** button.
5. Continue entering security levels for the remaining parameter groups.

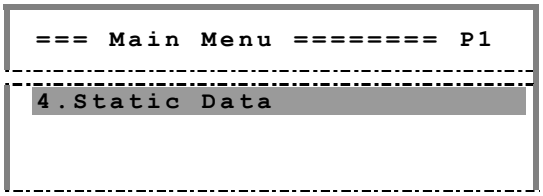
Note ! *To ease the operation of the system, all parameters that have to be changed during normal operation should be set to Level 0.*

Note ! *Once authenticated with L1 or L2 PIN code, the authentication is valid until the View page has been displayed for 5 seconds. To protect the AI80 security systems, the MKD returns to the View page when not used for 15 minutes. In high security applications we recommend manually returning to the View page when a change that required authentication is completed.*

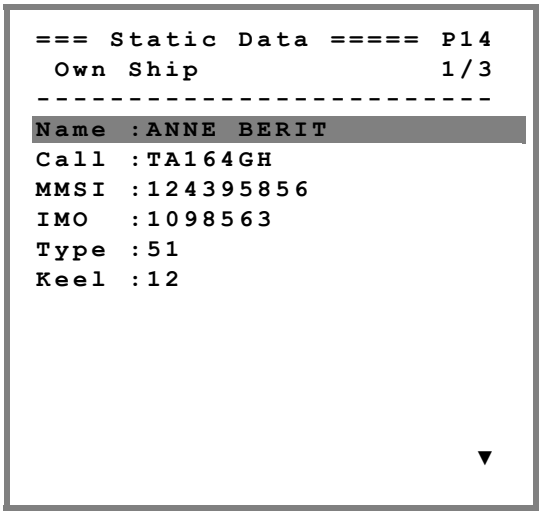
6.2 Entering static data optional MKD

All vessel data that do not change from one voyage to another should be entered during installation.

If MMSI number is changed, the unit should be restarted, see chapter 4.3.



1. Press the **MENU** button to activate the **Main** menu, and select **Static Data.** The **Static Data** menu will be displayed.



The following information should be entered:

Name: Vessel name

Call: Vessel's call signal

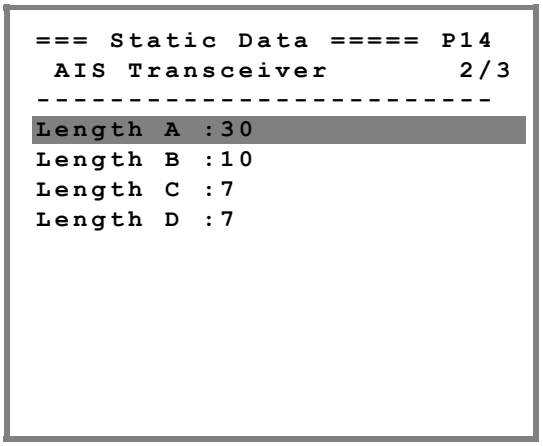
MMSI: The vessel's Maritime Mobile Signal Identifier number

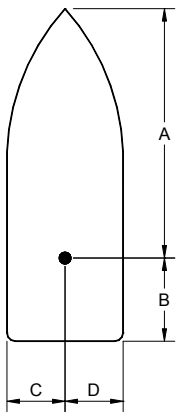
IMO: Vessel's IMO number

Type: Type of vessel. Refer Vessel Identifiers in the *Simrad AI80 Installation Manual*.

Keel: Vessel height over keel in metres. Total height from keel to mast.

Use the arrow-down button to move to next page where horizontal location for the GPS antenna included in the AI80 system should be entered. Refer to the *Simrad AI80 Installation Manual*.





Page 3 in the **Static Data** menu, entered by pressing the Arrow-down button, is used for entering horizontal location for the vessel's main GPS antenna.

```
=== Static Data ===== P14
 GNSS                 3/3
-------------------------
Length A :20
Length B :20
Length C :9
Length D :5
                         ▲
```

6.3 Configuration external serial ports optional MKD

The baud rate for each serial port used for interfacing external equipment has to be configured from the **Serial ports** submenu.

```
=== Main Menu ======== P1
-------------------------
9.Ports
```

1. Press the **MENU** button to activate the **Main** menu, and select **Ports**.

```
=== Ports ============ P19

1.Serial Ports
2.MAC adr.
```

2. Select **Serial Ports** in the **Ports** menu. The **Serial Ports** page will be displayed.

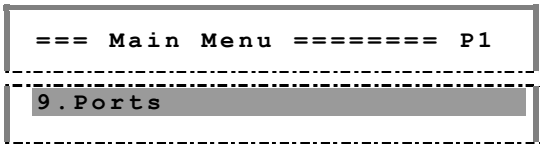
```
=== Serial Ports === P191
 External Ports
-------------------------
PILOT       :38400
PI          :38400
LongeRange  :4800
RTCM        :4800
SENSOR-1    :4800
SENSOR-2    :4800
SENSOR-3    :4800
```

3. Highlight the port that is to be configured, and press the **ENTER** button. The lower part of the display will now show baud rates available for the selected port.

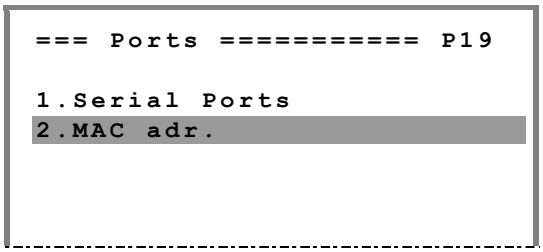
Refer Connecting and configuring external equipment in the *Simrad AI80 Installation Manual*.

6.4 Port settings and MAC address optional MKD

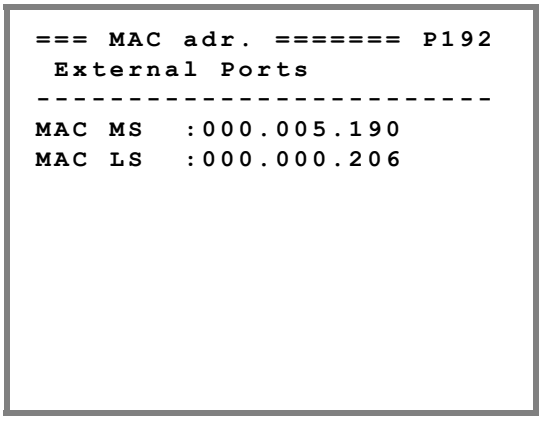
The **Ports** menu is used by the operator to change serial parameters and view the MAC address.



1. Press the **MENU** button to activate the **Main** menu, and select **Ports**.

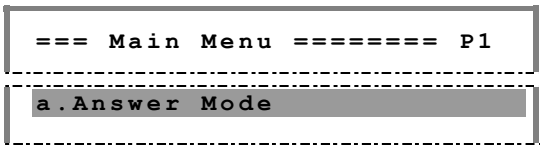


2. Select **MAC adr.** in the **Ports** menu. The **MAC adr.** page will be displayed.

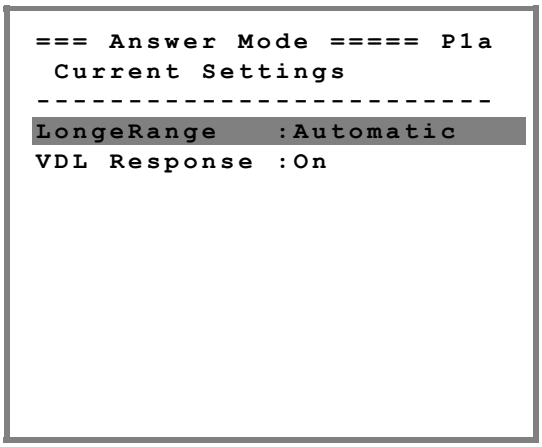


6.5 Answer mode optional MKD

The **Answer mode** page configures the polling operation for the AI80 system.



1. Press the **MENU** button to activate the **Main** menu, and select **Answer Mode**.



The following parameters may be defined:

LongRange Configures the long-range polling. The following selections are available:

Automatic: The AI80 system will automatically reply to a long-range request. The request will however be listed in the **Long Range** view.

Manual: The operator will have to manually reply to a request.

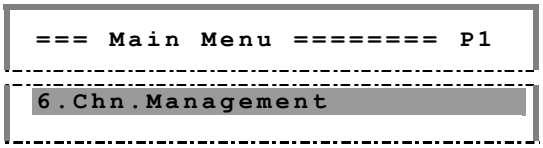
The long-range function is optional and requires additional external equipment. Refer Long-Range messages (option), page 45.

VDL Response Configures the normal VHF polling. Could be set to **ON** (default) or **OFF**.

Note ! *The VDL setting "ON" indicates that answer mode to interrogator is enabled when message 6 or 8 containing interrogation functional identification, is received.*

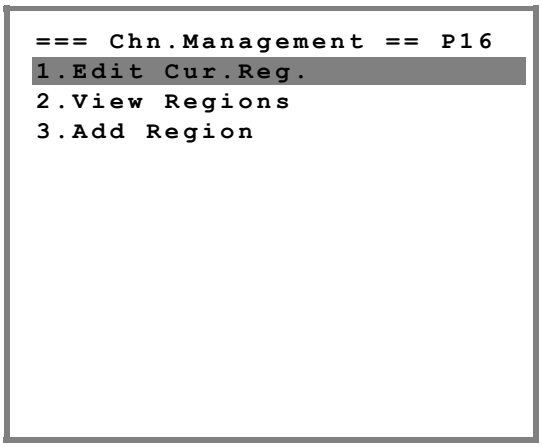
6.6 Configuring radio channels optional MKD

AIS systems normally operate on two AIS channels: channel 2087 and channel 2088. Where these channels are not available regionally, other channels may be configured by using the **Chn.Management** submenu. Maximum 8 regions may be configured.



Press the **MENU** button to activate the **Main** menu, and select **Chn.Management**.

The **Chn.Management** submenu has three options for channel management, described in the next pages.



Adding a region

```
=== Add Region ===== P163
 REGION-1
-------------------------
ChnA     :143
ChnB     :144
RxTxMode:TxA/TxB/RxA/RxB
TxPower  :High
LAT NE   :000°00´00.00N
LON NE   :000°00´00.00E
LAT SW   :000°00´00.00N
LON SW   :000°00´00.00E
BW A     :Default
BW B     :Default
Zone     :2
```

The **Add regions** option is used for defining new regions.

When regions are defined, the AI80 system will automatically jump to the defined VHF channels when the vessel enters this region.

The following parameters have to be defined:

ChnA/ChnB: VHF channels used for transmitting.

RxTxMode: Channels (A/B) used for transmitting/receiving

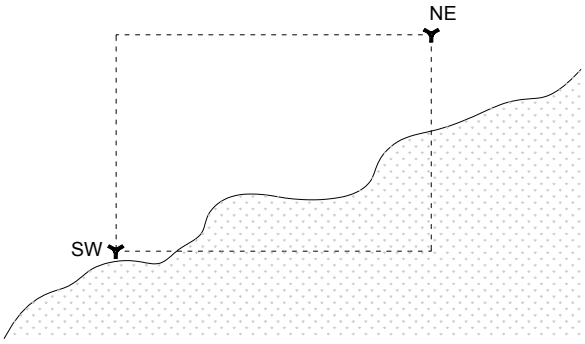
TxPower: Transmission power. Selectable options: **High** (12.5 W) and **Low** (2 W).

LAT NE: North-East latitude coordinates for the defined area.

LON NE: North-East longitudinal coordinates for the defined area.

LAT SW: South-West latitude coordinates for the defined area.

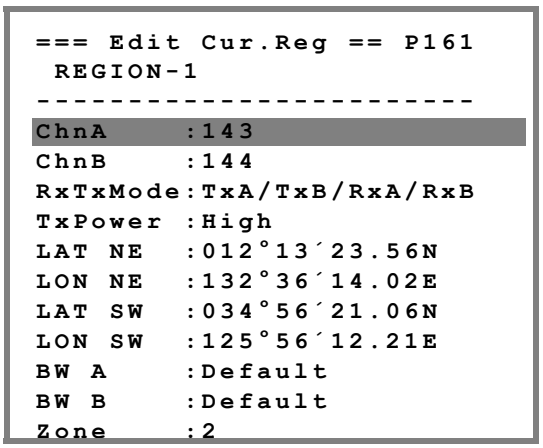
LON NE: South-West longitudinal coordinates for the defined area.



BW A/BW B: Bandwidth for the VHF channels used in this area. Selectable options: **Default** (maximum bandwidth allowed in this area) and **Narrow** (12,5 kHz).

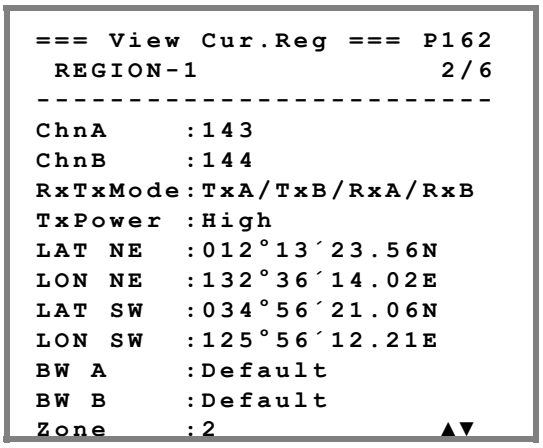
Zone: The size of the transition area in nautical miles inside the region.

Editing current region



The **Edit Cur.Reg.** option enables the operator to change parameters for the current AIS channels.

Viewing a region's settings



The **View Regions** option displays all defined regions. This is a read only page and no configuration changes can be made.

The view regions may consist of up to 8 pages, indicated in the upper left corner as e.g. 2/6. The ▲ and▼-buttons are used for displaying available regions.

7 TYPE APPROVAL CERTIFICATE

Bundesrepublik Deutschland
Federal Republic of Germany

Bundesamt für Seeschifffahrt und Hydrographie
Federal Maritime and Hydrographic Agency

BUNDESAMT FÜR SEESCHIFFFAHRT UND HYDROGRAPHIE

EC TYPE EXAMINATION (MODULE B) CERTIFICATE

This is to certify that:

Bundesamt für Seeschifffahrt und Hydrographie, specified as a "notified body" under the terms of „Schiffssicherheitsgesetz" of 9. September 1998 (BGBl. I, p. 2860) modified last 25. June 2004 (BGBl. I, p. 1391), did undertake the relevant type approval procedures for the equipment identified below which was found to be in compliance with the Navigation requirements of Marine Equipment Directive (MED) 96/98/EC as modified by Directive 2002/75/EC.

Applicant	**Kongsberg Seatex AS**
Address	Pirsenteret N-7462 Trondheim, Norway
Manufacturer	**Kongsberg Seatex AS**
Address	as above
Annex A.1 Item (No & item designation)	**4.32 Automatic Identification System (AIS)**
Product Name	**AIS 110, AIS 200**
Trade Name(s)	**SIMRAD AI 70, AI 71, AI 80** **(see appendix 1)**

Specified Standard(s)

IMO MSC.74(69) Annex 3	IEC 61993-2 (2001)
ITU-R M.1371-1 (Class A)	IEC 61162-1 (2000), -2 (1998)
IALA Technical Clarifications of Rec. ITU-R M.1371-1 (Edition 1.3)	IEC 60945 (2002)
ITU-R M.825-3	IEC 61108-1 (1996)
ITU-R M.1084-3	

This certificate remains valid unless cancelled, expired or revoked.

Date of issue: 15.10.2004
Expiry date: 14.10.2009

Issued by: **Bundesamt für Seeschifffahrt und Hydrographie**
Bernhard-Nocht-Str. 78, 20359 Hamburg, Germany
Notified body 0735

Certificate No.: 734.2/0047-6/2004
USCG Approval No.: 165.155/EC0735/0047-6

This certificate consists of 3 pages.

BUNDESAMT FÜR SEESCHIFFFAHRT UND HYDROGRAPHIE Siegel 16

on behalf
Preuss

BUNDESAMT FÜR SEESCHIFFFAHRT UND HYDROGRAPHIE NOTIFIED BODY

This certificate is issued under the authority of the „Bundesministerium für Verkehr, Bau- und Wohnungswesen".

EC TYPE EXAMINATION CERTIFICATE No. 734.2/0047-6/2004 Page 2 of 3

Components necessary for operation:

component / AIS110 version	part no.	remarks
AIS Transponder unit AIS 110	A101-05	software version tested: 2.00.0x
VHF Antenna	A100-58	Comrod AV7N or equivalent
GPS Antenna	A101-01	Trimble PN-41555-00 or Procom GPS4 (SIMRAD GPS4) or equivalent

component / AIS200 version	part no.	remarks
AIS Transponder unit AIS 200	A101-11	software version tested: 4.00.0x
Keyboard and display unit AIS 200 MKD	A101-12	
VHF Antenna	A100-58	Comrod AV7N or equivalent
GPS Antenna	A101-01	Trimble PN-41555-00 or Procom GPS4 (SIMRAD GPS4) or equivalent

AIS 110 and AIS 200 are different in mechanics, but functionally identical.

The internal GPS sensor of the AIS 110 / AIS 200 is used as a backup sensor for position reporting.

Optional components:

component	part no.	remarks
external Keyboard and display unit SIMRAD AIS MKD	A101-07	for AIS 110 and AIS 200

Documentation:

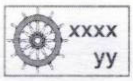
Instruction Manual: AIS 110 / AI 70 / AI 71 AIS systems Rev.1 , 2004-02-25
Instruction Manuals AIS 200 / AI 80: SIMRAD AI 80 User manaul, Ed 0, 2004-09-17
SIMRAD AI 80 Installation Manual, Ed 0, 2004-09-17

Limitations on the acceptance or use of the product: ---

Places of production: ---

Notes:

The manufacturer shall inform Bundesamt für Seeschifffahrt und Hydrographie, as the notified body, of any modifications to the type-tested product(s) that may affect compliance with the requirements or conditions laid down for use of the product(s).
In case the specified regulations or standards are amended during the validity of this certificate, the product(s) must be re-certified before being placed on board vessels to which such amended regulations or standards apply.
The Mark of Conformity (wheelmark) may only be affixed to the type approved equipment, and a Manufacturer´s Declaration of Conformity may only be issued, if the product quality system fully complies with the Marine Equipment Directive and is certified by a notified body against ANNEX B module D, E, or F of the Directive.
Example for the Application of the "Mark of Conformity":



xxxx number of the Notified Body responsible for quality surveillance module
yy Last two digits of the year in which the mark is affixed.

U.S. Coast Guard Approval:

The Manufacturer is allowed to affix the U.S. Coast Guard approval number (USCG approval number) as allowed by the „Agreement between the European Community and the United States of America on Mutual Recognition of Certificates of Conformity for Marine Equipment" signed February 27th , 2004.
The AIS radio transmitter is required to be authorized by U.S. Federal Communications Commission (FCC).

Notice on legal remedies available:

Objection to this document may be filed within one month after notification. The objection must be filed in writing to, or put on record at, Federal Maritime and Hydrographic Agency, Bernhard-Nocht-Str. 78, 20359 Hamburg, Germany

Appendix 1 to certificate 734.2/0047-6/2004

The equipment is also available under the following trade names:

SIMRAD AI 70:

components necessary for operation	part no.	remarks
SIMRAD AI 70 mobile station	A101-06	software version tested: 2.00.0x
Keyboard and display unit SIMRAD AIS MKD	A101-07	
VHF Antenna	A100-58	Comrod AV7N or equivalent
GPS Antenna	A101-01	Trimble PN-41555-00 or Procom GPS4 (SIMRAD GPS4) or equivalent

The SIMRAD AI 70 is technically and functionally identical to the AIS 110 except there is no internal MKD. For that reason the external SIMRAD AIS MKD is a required component.

SIMRAD AI 71:

components necessary for operation	part no.	remarks
SIMRAD AI 71 mobile station	A101-05	software version tested: 2.00.0x
VHF Antenna	A100-58	Comrod AV7N or equivalent
GPS Antenna	A101-01	Trimble PN-41555-00 or Procom GPS4 (SIMRAD GPS4) or equivalent
optional components	**part no.**	**remarks**
Keyboard and display unit SIMRAD AIS MKD	A101-07	

The SIMRAD AI 71 is technically and functionally identical to the AIS 110.

SIMRAD AI 80:

components necessary for operation	part no.	remarks
SIMRAD AI 80 mobile station	A101-11	software version tested: 4.00.0x
Keyboard and display unit SIMRAD AIS 80 MKD	A101-12	
VHF Antenna	A100-58	Comrod AV7N or equivalent
GPS Antenna	A101-01	Trimble PN-41555-00 or Procom GPS4 (SIMRAD GPS4) or equivalent

The SIMRAD AI 80 is technically and functionally identical to the AIS 200.

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8 DECLARATION OF CONFORMITY

KONGSBERG

DECLARATION OF CONFORMITY

(according to ISO/IEC Guide 22 and EN 45014)

Manufacturer's Name: **Kongsberg Seatex AS**
Manufacturer's Address: **Pirsenteret, 7462 Trondheim, Norway**

declares that the product

Product Name: **AIS 200**

Trade names: **SIMRAD AI 80**

Product Items/Part Numbers:
- **SIMRAD AI 80 Mobile station, part A101-11**
- **Minimum keyboard and display unit AI 80 MKD, part no A101-12**
- **VHF antenna, part A100-58**
- **GPS antenna Trimble PN-41555-00, or**
- **Procom/Simrad GPS4 antenna, part A101-01**
- **Optional external MKD unit SIMRAD MKD, part A101-07**

is in conformity with the navigation equipment requirements of **Marine Equipment Directive (MED) 96/98/EC** as modified by directive **2002/75/EC (Annex A1, 4.32)** and **US-EC MRA on Marine Equipment.**

Reference is made to the following Product Standards:

IMO MSC.74(69) Annex 3	IEC 61993-2 (2001)
ITU-R M.1371-1 (Class A)	IEC 61162-1 (2000), IEC 61162-2 (1998)
IALA technical Clarifications of Rec. ITU-R M1371-1 (Edition 1.3)	IEC 60945 (2002)
ITU-R M.825-3	IEC 61108-1 (1996)
ITU-R M.1084-3	

Certificate references:
- EC type examination module B: Certificate no.: 734.2/0047-6/2004
- EC quality system certificate module D: Registration no.: BSH-014-06-2003-4.32-4
- USCG approval no.: 165.155/EC0735/0047-6

Issued by:
Bundesamt für Seeschifffart und Hydrographie (BSH, notified body identification number 0735)
Address: Bernhard-Nocht-Str. 78, 20359 Hamburg, Germany

Supplementary Information
All the technical documents are held by Kongsberg Seatex AS.

Date and signature
2004-10-21

Gard Ueland, Vice President R&D

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