

# OPERATOR AND INSTALLATION MANUAL



## Tron AIS TR-8000

AIS Class A transponder



[www.jotron.com](http://www.jotron.com)

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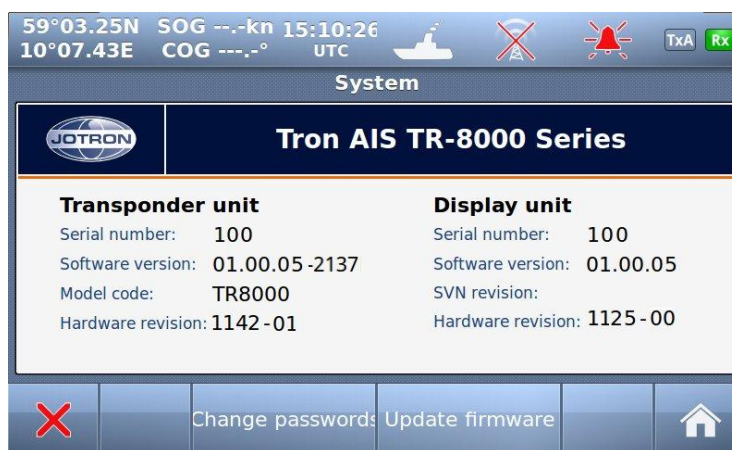
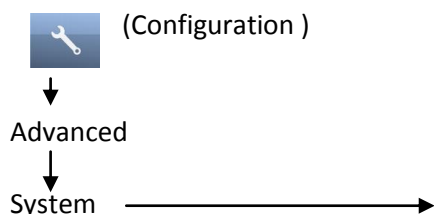
## 1 Revision History

Revision no.	By	Date	Page(s)	Versions	Reason for change
Initial	FIT	30.1.2012	All	Transponder Unit: HW: 1142-01 SW: 01.00.05 - 2141 Display Unit: HW: 1125-00 SW: 01.00.05 - 2140 Manual: A	Initial release
1	FIT	7.2.2012	6, 8, 53, 86, 96	Manual: B	Typographic errors, missing references, corrected screenshots
2	FIT	2.3.2012	17,37	Manual: C	“Default Brightness“ behaviour change
3	FIT	17.4.2012	all	Manual: D	Changes related to approval process
4	FIT	4.6.2012	many	Manual: E	- New screenshots -Optional items added -Added cable colour codes - Changes related to simplified zoom
5	FIT	19.6.2012	6,7	Manual: F	-New Firmware
6	FIT	26.6.2012	6,7,53,54	Manual: G	-New Firmware -Add cable sizes

## 2 Software revisions

The TR-8000 is delivered with SW version according to table below which is filled in by either Jotron, our Distributor, Dealer or Installation company. When SW update is done according to instructions in Jotron TB 01-2012 (Technical Bulletin), an additional line of information will be filled in to reflect the latest change. There will be no need for retraining after SW upgrade is performed.

The submeny that shows SW versions can be found selecting:



Transponder unit	Display unit	By	Date	Change
01.00.05 - 2141	01.00.05 - 2140	Jotron	30.1.2012	Initial release
01.00.05 - 2240	01.00.05 SVN: 2208	Jotron	4.6.2012	Transponder: - Improvements Display: - Simplified Zoom
01.00.05 - 2244	01.00.05 SVN: 2250	Jotron	19.6.2012	Transponder: - Memory Init. Display: - Added zoom - Fix: "Head up"
01.00.05 - 2255		Jotron	26.6.2012	Transponder: - Fix: "Test Comm." - Fix: "TX malf.log"

## 3 Introduction

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### 3.1 Safety Instructions

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- This equipment should be installed according to the instructions found in the installation part of this manual.
- The equipment should not be mounted in a way that exposes it for excessive heat from the sun or other sources.
- The equipment should not be mounted in a flammable environment.
- The equipment should not be mounted in a way that exposes it to direct rain or water.

### CAUTION!

This equipment contains CMOS integrated circuits. Observe handling precautions to avoid static discharges which may damage these devices.



- Do not open equipment. Only qualified personell should service the equipment.

### 3.2 Compass Safe Distance

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Transponder unit:

Standard Compass: 95cm

Steering compass: 65cm

Display unit:

Standard Compass: 30cm

Steering compass : 14cm

### 3.3 Copyright Notice

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### 3.4 Disclaimer Notice

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The information in this book has been carefully checked and is believed to be accurate.

However, no responsibility is assumed for inaccuracies.

Jotron AS reserves the right to make changes without further notice to any products or modules described herein to improve reliability, function or design.

Jotron AS does not assume any liability arising out of the application or use of the described product



### 3.5 Disposal Instructions

---

The TR-8000 Transponder and Display shall be disposed according to local regulations regarding Electronic Waste Recycling in the country the equipment is taken ashore.

At time of writing this manual (2012), there are some common regulations which allies:

**Europe:**

Directive 2002/96/EC (WEEE) Waste Electrical and Equipment Directive  
Equipment is labeled with this symbol:



**USA:**

Most states have implemented some kind of recycling act, but there is not yet a federal law about this issue.

**Elsewhere:**

Follow local regulations regarding disposal of electronic equipment

### 3.6 Software and Hardware revisions

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See chapter 1 & 2

### 3.7 Ingress protection

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Transponder unit:

- IP56
- IPx6
- IEC 60945, Exposed

Display unit:

- IP54
- IEC 60945, Protected

## 4 Operation general introduction

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**Thank you for purchasing this Jotron AIS Class A transceiver.**

The Jotron TR-8000 has been developed to offer you the highest level of performance and durability and we hope that it will provide many years of reliable service. This product has been designed to meet the highest possible quality standards and should you encounter any problems with this product, please contact your local dealer who will be pleased to offer any assistance.

### 4.1 About AIS in general

---

The system is based on the IMO regulation for AIS using Self Organized Time Division Multiple Access (SOTDMA) technology based on a VHF Data Link (VDL).

- The system operates in the following modes:
  - Autonomous (continuous operation in all areas)
  - Assigned (data transmission interval remotely controlled by authority in traffic monitoring service)
  - Polled (in response to interrogation from a ship or authority)
  - Silent (listening only, use with caution)
- The system is synchronized with GPS time (UTC) to avoid conflict among multiple users. If GPS data is not available, the system is self synchronized using the VDL.
- The VHF channels 2087 and 2088 are the main AIS channels in addition to local AIS frequencies.
- AIS transponders onboard ships exchange various data as specified by IMO and ITU on either frequency set up by :
  - The frequency management telecommand (DSC)
  - Special AIS messages sent from a AIS Base station.
  - Manual input of special region
- The normal transmit power is 12.5W, but under certain conditions, as during tanker loading (according to ISGOTT regulation), or the use of regional settings, a low power option (1W) is automatically selected.

## 5 Equipment List

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### 5.1 Standard Supply

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#### 85500 TR-8000 AIS Class A :

Stock No.	Name	Type	Qty.
85300	TR-8000 Transponder Unit		1
85400	TR-8000 Display Unit		1
85041	Mounting bracket, Display unit		1
85042	Locking ring, mounting bracket		2
85720	Curled knob, mounting bracket		2
86853	GPS Antenna, std	SANAV SA-200	1
86854	GPS Antenna stainless stand		1
86145	Cable, 5m Patch RJ45 waterproof		1
86848	Operator and Installation Manual		1
86581	Power cable, TR-8000 Display unit		1
	<b>Plug Kit consisting of:</b>		
	TNC connector for RG214 cable		
	BNC Connector “ RG214 cable		
	Power connector		
	.....		

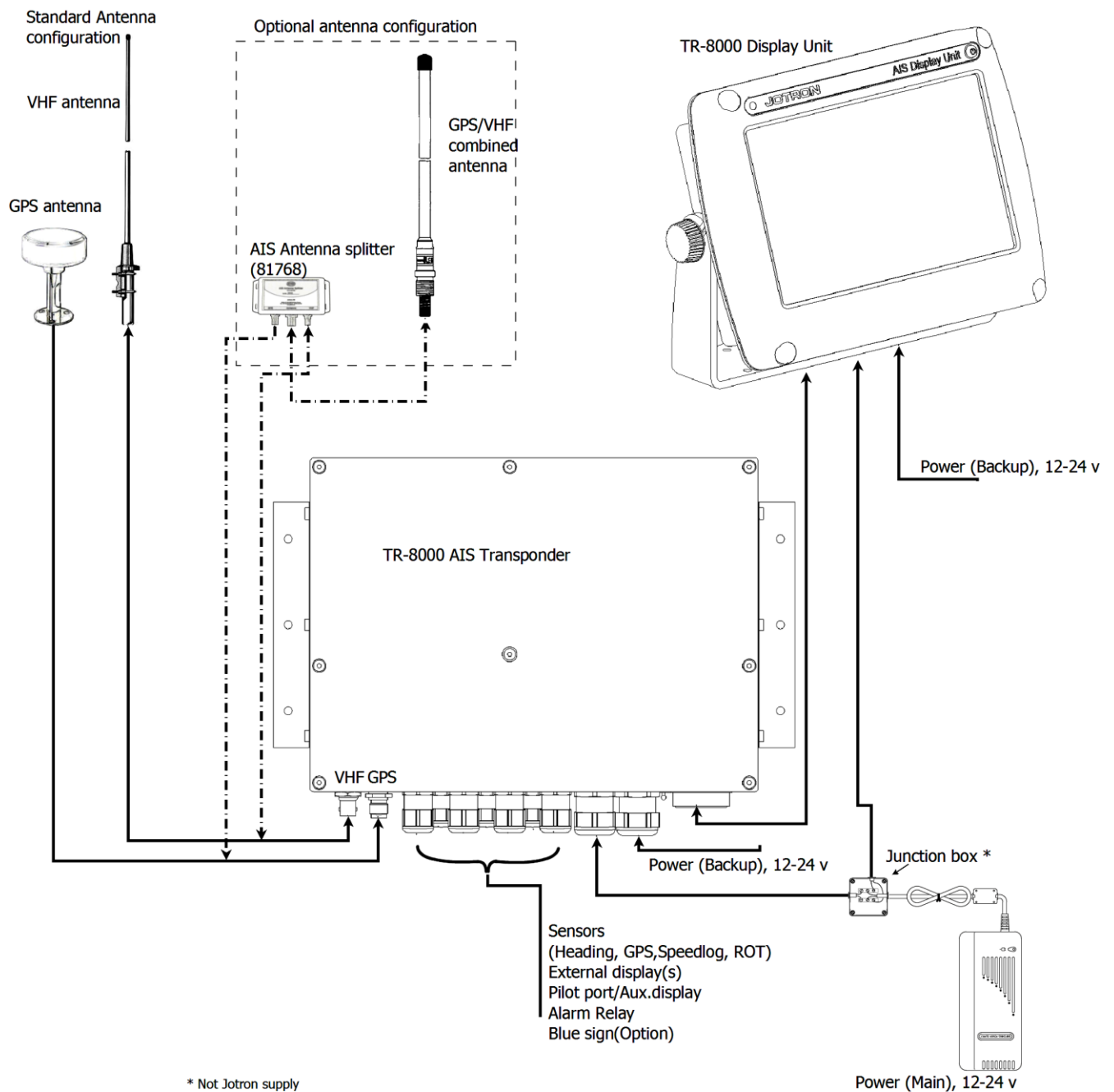
### 5.2 Optional Supply

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Stock No.	Name	Type
82484	VHF Antenna	Procom CXL 2-1LW/h
84401	GPS/VHF combined antenna	AC Marine AIS/GPS-B
81768	Jotron Signal Splitter	
86870	Pilot cable for TR-8000 display	Jotron
80665	AC/DC Power 100-240 VAC/ 24V DC	Jotron
92375	240V AC cable, Europe (for 80665)	Jotron
97521	AC Power cable, UK. (for 80665)	Jotron
81986	AC Power cable, USA (for 80665)	Jotron

## 6 TR-8000 Description

The Tron AIS TR-8000 consists of two separate units interconnected by Ethernet. The Transponder is the main unit, handling the basic AIS functionality, including sensors and RF functions, while the Display unit is used for setup and display of the AIS data.



## 6.1 Functionality

### The main features are:

Safety of navigation by automatically exchanging navigational data between ships (Class A transponders), coast stations, Class B transponders and receiving positional data from AIS-SARTs (Search and Rescue beacons) and AtoNs (Aids to Navigation).



- Class A AIS transmitter and receiver (transponder)
- Class B compatible (receives all Class B messages)
- Short safety related messages and other short messages.
- 7" color LCD panel with LED backlight connects to transponder unit using Ethernet.
- Interfaces for AIS compatible radar, ECDIS/ECS/Chart plotter and/or PC selectable through RS422 (IEC 61162-2), RS232 or Ethernet (UDP).
- GPS and VHF antenna separate or combined, for easy installation available.
- Built-in GPS receiver for time synchronization and backup position.
- SD-Card slot for future upgrades.

### The information exchanged between ships using AIS transponders are:

#### Static data:

- MMSI (Maritime Mobile Service Identity).
- IMO number (where available).
- Call sign and name.
- Length and beam.
- Type of ship.
- Location of position-fixing antenna on the ship.

#### Dynamic data:

- Ships position with accuracy indication and integrity status.
- UTC.
- Course over ground (COG).
- Speed over ground (SOG).
- Heading.
- Navigation status (manual input).
- Rate of turn (where available).

#### Voyage related data:

- Ships draught.
- Hazardous cargo (type).
- Destination and ETA (at masters discretion).

## 6.2 Transponder Unit

The Transponder Unit contains all the core functionality of the AIS system and can function as a separate unit connected to other display solutions confirming with the AIS message format. It consists of a splash proof Alumina casing with the following connection possibilities:

- VHF antenna and GPS antenna
- Display connector (Ethernet)
- External display connections (“Ecdis Port” and “Pilot/Aux Port”).
- Sensor connections
- DGNSS/DGPS
- Beacon receiver connection
- Alarm relay



Front View



Side View

Complies with the environmental requirements specified in IEC 60945 Ed.4 Exposed, and is certified for IP56 /IPX6. The operating temperature is from -25°C to +55°C and storage temperature from -30°C to +70°C

The receiving section of the Transponder consists of three VHF receiver circuits, for continuous reception on both AIS channels (configurable from 154MHz-164MHz) and the DSC channel (ch70). The transmitter circuitry is connected to the same antenna terminal and is switched internally.

Functionality for direct reporting with satellites (Long-range AIS broadcast) is implemented and operates when so configured by the competent authorities.

The internal power supply of the Transponder is galvanically isolated in order to protect the internal circuitry and operates in a wide voltage input range from 10.8V – 31.2V. A backup power source can be connected if available. Automatically switching to backup power source will take place if the main source of power is lost.

### 6.2.1 LED Indicators:

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- Transmission
- Reception
- Alarm
- Status



### 6.2.2 Main functionality:

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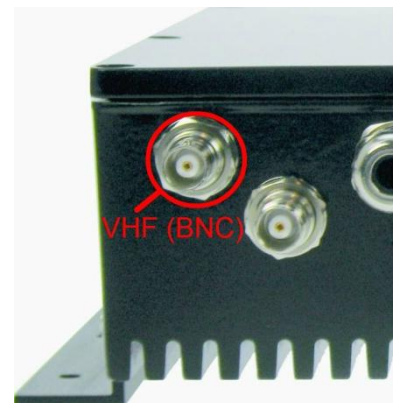
- Transmit and receive AIS data packets over the VHF link
- Receive DSC messages
- Provide time and position data from internal GPS
- Receive and handle data from external sensors.
- Provide information about own and other ships positions to the display units, both the TR-8000 Display unit, and to high speed ports like “External Display” and “Pilot/Aux Display”.

### 6.2.3 VHF Antenna Connector

---

This is a BNC type antenna connector to be connected directly to an external VHF antenna or antenna splitter to receive and transmit VHF frequencies.

For more information see section **8.2.2**

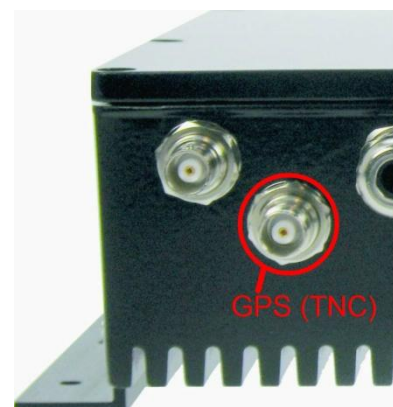


### 6.2.4 GPS Antenna Connector

---

This is a TNC type antenna connector to be connected directly to an external GPS antenna or antenna splitter to receive GPS information.

For more information see section **8.2.1**



## 6.2.5 External Display (Ethernet) Connector

RJ45 type waterproof Ethernet connection

For more information see section **8.3.1.5**



## 6.2.6 Multipurpose Cable Glands

The Transponder Unit is fitted with up to 9 multipurpose cable glands for waterproof, shielded connection with the unit. There are 3 different sizes in order for the best possible fit for different cable types. All wiring should be



drawn in shielded cables connected to the chassis of the Transponder by the cable glands.

The multipurpose connection glands are provided as in .

Max Quantity	Min Cable Outer Ø [mm]	Max Cable Outer Ø [mm]	Minimum Ø above braiding [mm]	Recommended use
3	3.5	7	2	Sensors
4	4.5	9	4	Communication
2	7	12.5	5	Power

Table 1: Quantity and specification of multipurpose cable glands.



## 6.3 Display Unit



Front View

The Display unit is the user interface for the AIS system on the bridge. It is used to configure the TR-8000 system and to present AIS data about own and other ships, both graphically and in list form. The Display Unit consists of a splash proof housing with a 7 inch LCD colour display with touch screen. Splash proof connections for Main and Backup power, Pilot plug and Transponder (Ethernet) are present on the back side of the unit. The internal power supply is switched in order to obtain a high efficiency over the whole voltage input range from 10.8V – 31.2V. A Backup power source can be connected if available. This will be automatically switched in if the main source of power is lost.



Rear View

The main features of the Tron AIS Display Unit are:

- Give the user information about other ships with AIS in the vicinity.
- Enable the user to obtain information about other ships and send and receive safety messages to other ships with AIS Transponders.

- CPA/TCPA
- Enable the user to configure the AIS System.
- Alert the user about alarms from the AIS system.
- Pilot Port connection directly to the Display Unit.

Certified to IP54 and IEC 60945 Ed.4 "Protected".

Operating temperature from -25°C to +55°C and storage temperature from -30°C to +70°C

## 7 Operational description

The operational description chapter assumes that the TR-8000 Ais Transponder is fully installed using the instructions found in the Installation chapter.

### 7.1 On/Off button

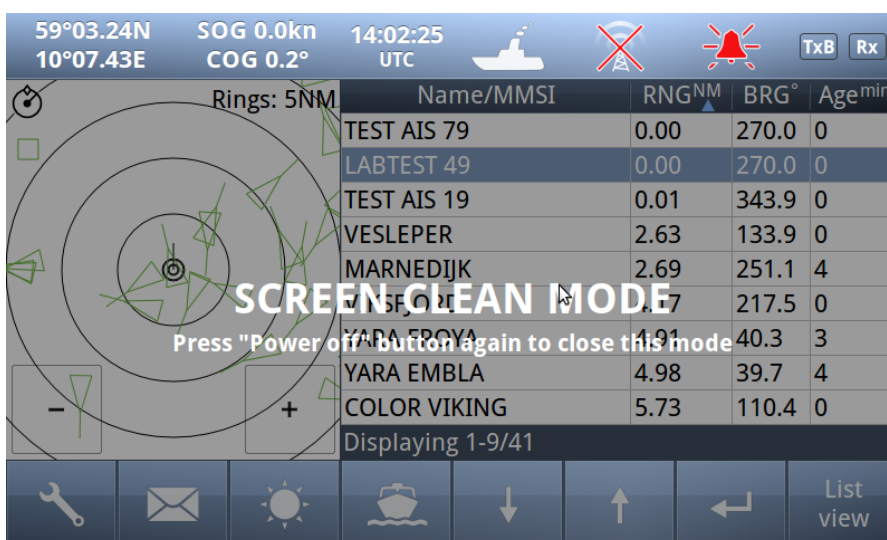
ON/OFF button handles 3 different options



When ON/OFF is pushed, a popup menu is displayed with some display Options. Additionally, if the brightness is low, it will automatically be increased. This feature can be used if the user by some reason has too low visibility to adjust the brightness the regular way. If the Default Brightness button is pressed, the brightness will be set to a 50% value. Otherwise the current brightness level will be restored when the dialog is closed.

#### 7.1.1 Clean Screen

*Clean Screen* is a function which turns off all touch sensitivity, enabling the user to clean the screen without pushing buttons unintentionally.



### 7.1.2 Power off Display

---

If the **Power off Display** is selected, only the Display Unit is turned OFF and the AIS functionality of the Transponder will still be active. Note that the ship list will need some time to recover when turning the Display unit on again. This is dependent on when the messages from the different vessels are received. The message logs for sent and received messages will also be lost.

Note that the Transponder unit will issue an alarm when the display is shut down, and there may be no means to acknowledge this alarm if the display is turned off!

## 7.2 Display Unit menu system.

The screenshot shows the main window of the Display Unit menu system. It is divided into three main sections:

- Status Bar:** Located at the top, it displays navigation data (59°03.25N, 10°07.41E), speed (SOG 0.0kn), heading (COG 233.5°), and time (11:46:03 UTC). It also includes a ship icon, a red alarm bell icon, and Tx/Rx buttons.
- Content Section:** This section contains a radar display on the left showing concentric rings (8NM) and a table of vessel data on the right. The table lists vessel names, MMSI numbers, ranges, bearings, and ages.
- Button Bar:** Located at the bottom, it contains several icons for navigation and control, including a wrench, an envelope, a sun, a ship, a down arrow, an up arrow, a left arrow, and a 'List view' button.

Name/MMSI	RNG <sup>NM</sup>	BRG <sup>°</sup>	Age <sup>min</sup>
M/S BOHUS	5.38	36.5	0
SOUTHERN ACTOR	5.44	37.0	0
LOS 112	10.28	80.5	0
257137700	12.43	268.6	2
SIVA	12.49	201.5	2
HELENE	14.48	214.7	0
SD191 SILVERON	15.61	170.3	0
STANGHOLM	16.28	131.2	0
DANAVIK	16.39	117.1	0

Displaying 7-15/33

The main window contains three main sections.

### 7.2.1 Status Bar

The Status Bar is shown in a close-up view, highlighting its components:

- Dynamic navigational data:** Displays position (59°03.25N, 10°07.44E), speed (SOG 0.0kn), heading (COG 274.8°), and time (14:03:54 UTC).
- Clock:** Shows the current time (14:03:54 UTC).
- Other informative icons:** Includes a ship icon, a crossed-out antenna icon, a red alarm bell icon, and Tx/Rx buttons.

The **Status bar** is visible in all the sub menus.

## 7.2.2 Content Section

Displays the current selected window and the corresponding data  
 Example below shows **Main View**:

**Main View** is a combination of **Graphical** and **List** view:

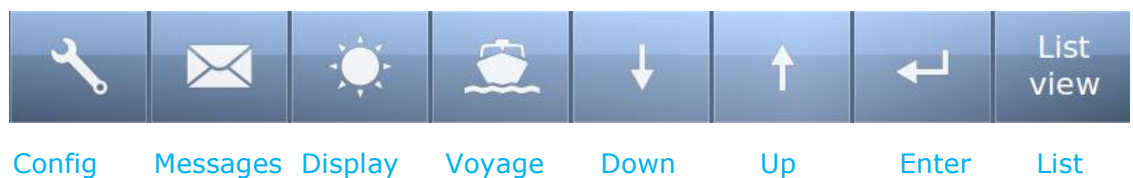
Name/MMSI	RNG <sup>NM</sup>	BRG <sup>°</sup>	Age <sup>min</sup>
M/S BOHUS	5.38	36.5	0
SOUTHERN ACTOR	5.44	37.0	0
LOS 112	10.28	80.5	0
257137700	12.43	268.6	2
SIVA	12.49	201.5	2
HELENE	14.48	214.7	0
SD191 SILVERON	15.61	170.3	0
STANGHOLM	16.28	131.2	0
DANAVIK	16.39	117.1	0

Displaying 7-15/33

All menus, menu buttons and settings are displayed in this section.

## 7.2.3 Button Bar

Contains all the functional buttons for above window:



The functionality of the buttons on the **Button Bar** is dependent on the content of the **Content Section**.

## 7.2.4 Important Buttons shown in different Views:



Return to last menu **without saving**.



**Confirm, save data** and return to last menu.  
If the Icon is not highlighted, indicates no data has changed



The **Home button** will take you to **Main view** without saving.



**Enter** – Show detailed information (“Page 1”) on selected item



Will be shown when vessel is selected with **Enter** button and will show “Page 2” of information about vessel

SPEED/SIN	COG	ISCRUD	NAME	BRG	RA
10°07.45E	→	W			
SUPERSPEED 2					
Call sign	MMSI	TEST AIS 19	0.00	270.0	0
JWNE	258092000	TEST AIS 19	0.00	270.0	0
RMG: 2.66NM	HRG: 252.5°	VESLEPER	2.62	133.8	0
DOE: 0.0kn	COG: 120.0°	SUPERSPEED 2	2.70	252.8	0
ROT: 0°/min	HRG: 263°	VISFORD	4.17	217.5	1
LOX:	LAT:	ASKERBAERENGEN	4.17	217.7	0
10°02.51E	59°02.45N	YARA PROVA	4.92	40.4	0
Speed		YARA EMBLA	4.98	39.7	2
Under way using engine		COLOR VIKING	5.37	38.4	0



When “Page 2” of Vessel information is shown, this button can be used to switch back to “Page 1”



**Arrow Down** –Select next item on a list



**Arrow Up** –Select previous item on a list



**Arrow Right** – Select item to the right



**Arrow Left** – Select item to the left



**Configuration** – of Own ship, Display, Regions, Alarms, Indicators and Advanced



**Messages** – See **Received** and **Sent** messages, **Reply** to received and send **New**



**Display setting** – Adjust **Brightness** or select **Day/Night** mode



**Voyage settings** – Nav. Status, Destination, ETA, Draught, Cargo, Persons aboard

Some of the functions cannot be altered without entering a password. There are two levels of passwords, a user password and an administrator password. The default passwords are “OP” and “SE”.

## 7.2.5 Indicating ICONS

---



Receive data on either of the two AIS channels. If **Inactive**, shown as



Transmit on either channel A or B shown as **TxA** or **TxB**. Icon shown is **Inactive**. **Active** is shown with Green color as the Rx icon above.

### Alarm Status:



No alarms



Alarm caused by one or more incidents from Table 3

### Navigation Status:



Under way using Engine



At Anchor



Not Under Command



Restricted Manoeuvrability



Constrained by her draught



Moored



Aground



Fishing



Sailing

### Transmission Modes :



Silent Mode - Transmission is turned OFF



Normal transmission mode (12.5W)



Low Power (1 W) if

- Vessel type = "Tanker" and
- speed is below 3 knots and
- Navigation Status = "Moored"

## 7.2.6 Ship List

List  
view

59°03.25N 10°07.44E		SOG ---kn COG ---.°		14:04:42 UTC				TxB Rx	
Name/MMSI	RNG <sup>NM</sup>	BRG <sup>°</sup>	SOG <sup>kn</sup>	COG <sup>°</sup>	Age <sup>min</sup>				
TEST AIS 79	0.00	219.9	0.0	---	0				
TEST AIS 19	0.01	320.6	0.2	96.0	0				
VESLEPER	2.62	133.9	0.0	338.0	0				
COLOR VIKING	3.90	87.8	15.7	352.5	0				
ASKERBAERINGEN	4.17	217.7	0.0	177.6	0				
VIKSFJORD	4.17	217.5	0.0	275.6	1				
YARA FROYA	4.91	40.3	0.0	184.0	4				
YARA EMBLA	4.98	39.7	0.1	272.5	1				
257137700	12.21	267.2	7.9	325.2	3				

Displaying 1-9/32

Graphical view

The display unit receives data about all the ships with an active AIS transmitter in the area and presents this data in a list in the main window. The list displays the name or MMSI, range to own ship, bearing and age of presented data. When the graphical view is off, course and speed are also displayed. The list can be sorted on any of these criteria, but an AIS SART will always be presented at the top of the list.

The columns “Name/MMSI”, “RNG”, “BRG” and “Age” are always present, but “SOG” and “COG” may be replaced by “CPA” and “TCPA” or added in addition (See paragraph 10.2.3 )

Example of all listed:

59°03.25N 10°07.43E		SOG ---kn COG ---.°		09:51:04 UTC				TxB Rx	
Name/MMSI	RNG <sup>NM</sup>	BRG <sup>°</sup>	SOG <sup>kn</sup>	COG <sup>°</sup>	CPA <sup>NM</sup>	TCPA <sup>min</sup>	Age <sup>min</sup>		
LOS 112	10.39	79.9	7.3	5.0	10.2	0:06:07	0		
LOS 110	10.82	248.4	9.7	77.7	4.9	-1:19:01	0		
CSL BERGEN	10.97	248.4	10.0	61.0	9.5	2:56:17	0		
WILSON ROUGH	11.55	266.4	10.6	289.4	1.6	1:18:09	0		
259622000	13.20	269.4	0.0	236.3	---	---	0		
BROVIG BORA	14.01	270.2	8.5	285.0	5.1	-1:02:18	8		
CYGNUS	14.30	227.0	3.8	359.8	7.1	2:00:54	0		
GLOBAL MOON	15.60	93.2	1.4	309.6	13.7	-1:33:21	0		
M/T BROVIG WIND	16.52	114.5	4.7	43.0	15.8	-0:25:00	0		

Displaying 12-20/26

Graphical view



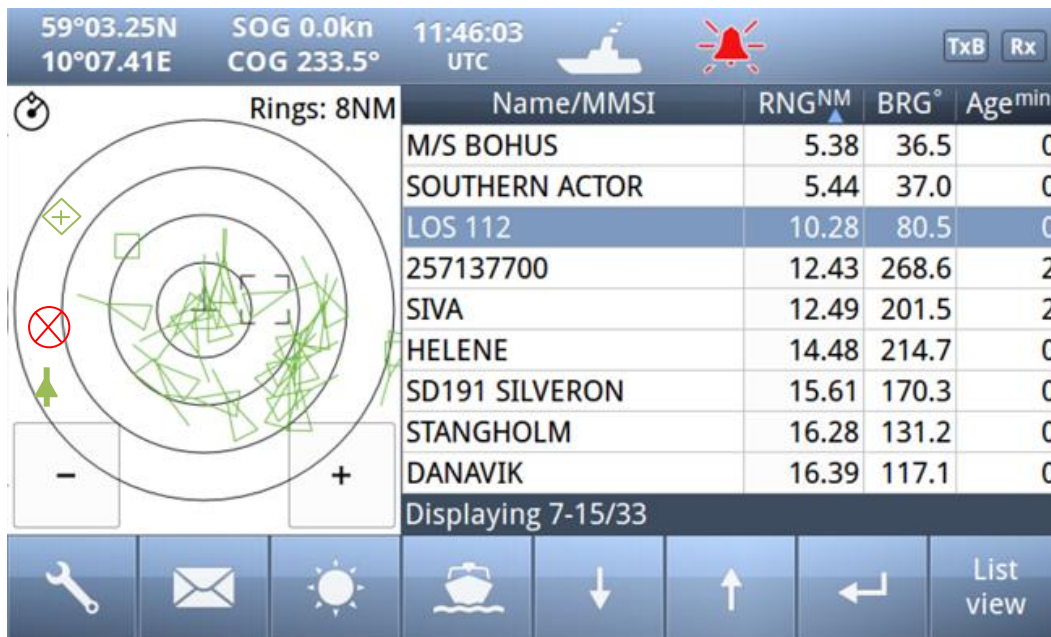
### 7.2.6.1 Column description

---

- **Name/MMSI :**  
Shows the MMSI (**Maritime Mobile Service Identity**) of the ship until its Name is received. Name is transmitted more seldom than MMSI numbers
- **RNG<sup>NM</sup>:**  
Is the Range to the Vessel in Nautical Miles (NM)
- **BRG°:**  
Bearing to the Vessel in degrees from your position
- **SOG<sup>kn</sup>:**  
Speed Over Ground in Knots
- **COG°:**  
Course Over Ground in degrees
- **CPA<sup>NM</sup>:**  
Closest Point of Approach : An estimated point in which the distance between you and the other vessel are at its minimum value
- **TCPA<sup>min</sup>:**  
Time To Closest Point of Approach : The time (in Minutes) until you reach the **CPA**
- **Age<sup>min</sup>:**  
Shows how many minutes since last reception from this vessel

## 7.2.7 Graphical View

Graphical  
view



The *graphical display* of the ship list plots the positions of other AIS targets relative to your own position in a frame on the left side.







A vessel with neither a reported heading nor COG will be oriented toward the top of display area.

The user is able to switch between North Up and Head Up, but if no heading or COG is available, or if the ship is anchored/moored, the North Up configuration will automatically be chosen. If a valid heading is received from external heading sensor (Gyro, Satellite compass or similar), own ship will be oriented according to this. If heading is lost, Course Over Ground (COG) will be second choice for own ships orientation on the display.

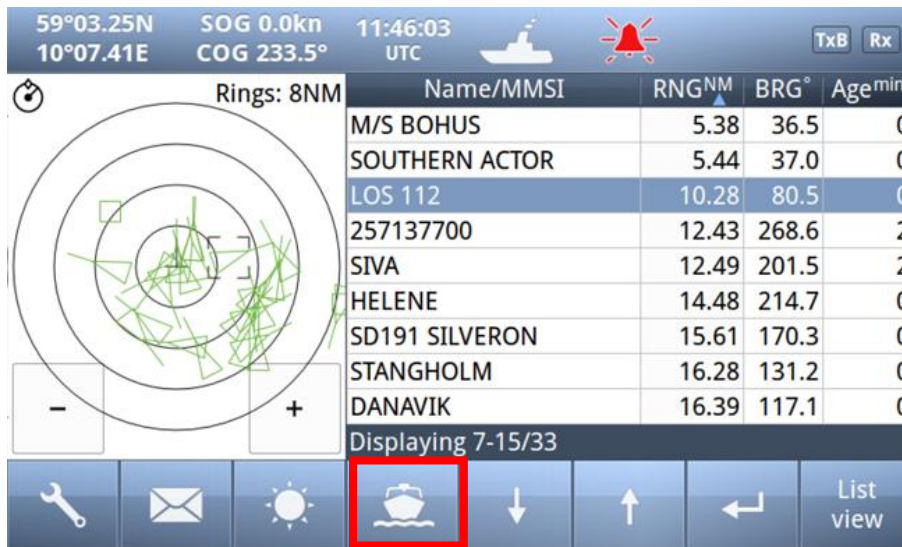
The setup is done in the *Display Settings* menu. In this menu, it is also possible to toggle between Graphical and List view as default.

In the display menu, the user can choose not to return to the graphical view when exiting menus.

Different types of targets are displayed with different icons.

	<p><b>Active Vessel</b>          If the CPA/TCPA system is activated, ships on collision course are displayed with a red color and double thickness of the lines.          Own ship is indicated in the same way as other ships, but is always in center.</p>
	<p><b>Sleeping target</b>          Smaller symbol than “Active Vessel” without a beam line          Sleeping targets are defined based on either:</p> <ul style="list-style-type: none"> <li>• Range more than X Nautical miles</li> <li>• Class B</li> </ul> <p>Activation can be either of the definitions above and can be visible or not</p>
	<p><b>AIS base station</b></p>
	<p><b>AtoN</b>          An Aids to navigation buoy indicating that it is off position is indicated with a red color.</p>
	<p><b>AIS SART.</b> Will be displayed with a red color.          AIS TEST will be displayed with normal color.</p>
	<p><b>SAR Aircraft</b></p>

## 7.3 Voyage Settings



Red square shows button selected to get to this menu

The **Voyage Settings** contains all the ship data to be entered or changed before or on each voyage. In order for the AIS system to function correctly, it is important to keep these parameters up to date.

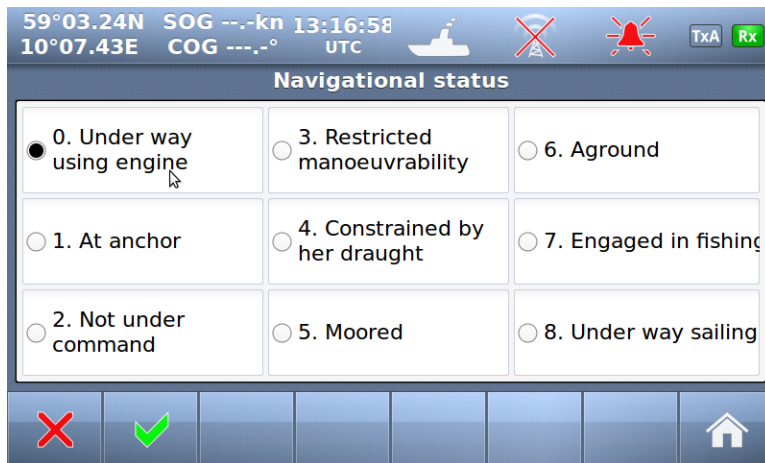


You may use one of these buttons:

- Navigational Status
- Destination
- ETA (Estimated Time of Arrival)
- Draught
- Cargo Category
- Persons Aboard

to set correct information for the Voyage

### 7.3.1 Navigational Status



The options available for the navigational status are as follows.

- Under way using engine,
- At anchor,
- Not under command <sup>1</sup>,
- Restricted manoeuvrability <sup>2</sup>,
- Constrained by her draught <sup>3</sup>,
- Moored,
- Aground,
- Engaged in fishing <sup>4</sup>
- Under way sailing <sup>5</sup>
- Not Defined (Default) <sup>6</sup>

<sup>1</sup> **Vessel not under command** means a vessel which through some exceptional circumstance is unable to maneuver as required by these Rules and is therefore unable to keep out of the way of another vessel.

<sup>2</sup> **Vessel restricted in her ability to manoeuvre** means a vessel which from the nature of her work is restricted in her ability to manoeuvre as required by these Rules and is therefore unable to keep out of the way of another vessel. The term “vessels restricted in their ability to manoeuvre” shall include but not be limited to:

- A vessel engaged in laying, servicing or picking up a navigation mark, submarine cable or pipeline;
- A vessel engaged in dredging, surveying or underwater operations;
- A vessel engaged in replenishment or transferring persons, provisions or cargo while underway;
- A vessel engaged in the launching or recovery of aircraft;
- A vessel engaged in mine clearance operations;
- A vessel engaged in a towing operation such as severely restricts the towing vessel and her tow in their ability to deviate from their course.

<sup>3</sup> **Vessel constrained by her draught** means a power-driven vessel which, because of her draught in relation to the available depth and width of navigable water, is severely restricted in her ability to deviate from the course she is following.

<sup>4</sup> **Engaged in fishing** means any vessel fishing with nets, lines, trawls or other fishing apparatus which restrict manoeuvrability, but does not include a vessel fishing with trolling lines or other fishing apparatus which do not restrict manoeuvrability.

<sup>5</sup> **Under ways sailing** means any vessel under sail provided that propelling machinery, if fitted, is not being used.

<sup>6</sup> **Not Defined (Default)** is used when TR-8000 is delivered from factory. Then none of above selections are made

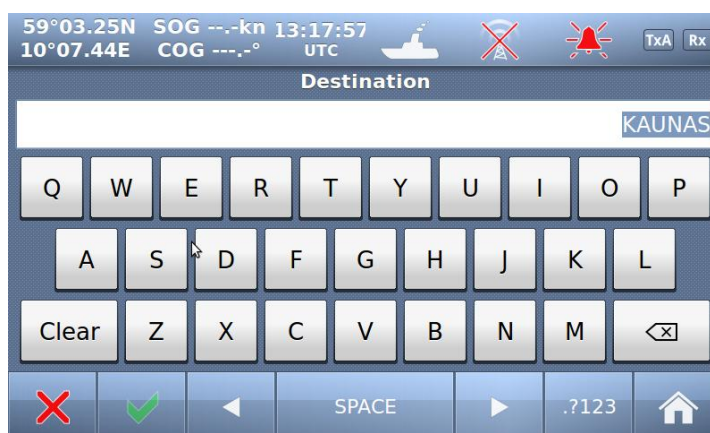
## 7.3.2 Destination

The destination of the voyage is to be entered here using a maximum of 20 characters.

### NOTE!

Many countries require destination input is according to **GUIDANCE ON THE USE OF THE UN/LOCODE IN THE DESTINATION FIELD IN AIS MESSAGES** from [IMO SN/Circ.244](#)

Text from the Guidance:



### Recommended use of the UN/LOCODE

6. The recommended format is to indicate the port of departure at the first six positions of the data field followed by a separator and then the code for the next port of call.

7. In order to identify that it is a LOCODE, to separate the locations and to indicate the 'from' and 'to' ports, a '>' symbol should be used as a separator. See example below.

*A ship is leaving Dubai bound for Rotterdam. Use of the UN/LOCODE would represent this voyage as below:*

**"AE DXB>NL RTM"**

8. If the next port of call is unknown, "?? ???" should be entered instead of the UN/LOCODE in the corresponding place in the data field. See example below:

**"AE DXB>?? ???"**

9. If the port of departure does not have a designated UN/LOCODE then "XX XXX" should be entered instead of the UN/LOCODE in the corresponding place in the data field. See example below:

**"XX XXX>US PBI"**

10. If the next port of call does not have a designated UN/LOCODE the commonly accepted English name of the destination port should be entered, preceded by "===" (3 "equals signs"). If no such name is known, the locally used name should be entered. In this case, there may not be enough space available to indicate the port of departure. See example below:

**"===Orrviken"**

11. If only the general area of destination is known the name or accepted abbreviation of the area preceded by "===" ("three equals signs") should be entered. See example below:

**"NL RMT> === US WC"**

*Indicating a destination on the United States West Coast.*

### 7.3.3 ETA

The Estimated Time of Arrival is displayed to other AIS units and should be updated if the expected arrival time is changed.

59°03.25N SOG ---kn 13:18:33  
10°07.44E COG ---° UTC

Arrival date and time

Month: 01 day: 02 time: 03:04

1 2 3  
4 5 6  
7 8 9 0

✗ ✓ ⏪ ⏩ 🏠

### 7.3.4 Persons Aboard (optional)

This parameter indicates the number of persons aboard the ship at the given moment.

**This parameter is not sent to other ships or base stations, only through the Long Range Port which is normally not used (in 2011)**

59°03.25N SOG ---kn 13:23:32  
10°07.44E COG ---° UTC

No of Persons

0

1 2 3  
4 5 6  
7 8 9 0

✗ ✓ ⏪ ⏩ 🏠

### 7.3.5 Cargo Category

Identifies Hazardous cargo, depending on the ship class. See chapter 10.1.1.1 <Type of Vessel> for reference.

59°03.24N SOG ---kn 13:22:39  
10°07.43E COG ---° UTC

Cargo category

No information  
 Hazard or pollutant cat X  
 Hazard or pollutant cat Y  
 Hazard or pollutant cat Z  
 Hazard or pollutant cat OS

✗ ✓ ⏪ ⏩ 🏠

### 7.3.6 Draught

---

The Draught parameter specifies the maximum depth of the ship in meters and decimeters.





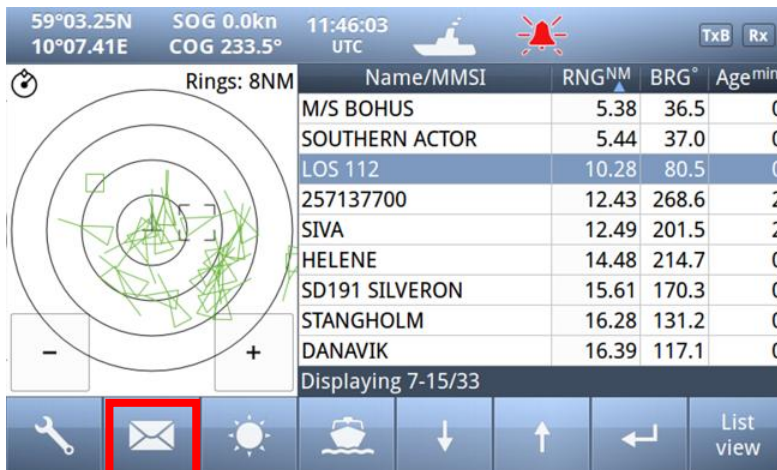
## 7.4 Messages


### WARNING!

Use of AIS text messages between ships must not be used to avoid collisions when time is critical. AIS systems are not required to have an audible alarm to indicate the arrival of all text messages.

*The use of AIS text messaging does not relieve the vessel of other requirements, such as the Vessel Bridge-to-Bridge Radiotelephone regulations or of the requirements to sound whistle signals and display lights or shapes in accordance with the International or Inland Navigation Rules.*

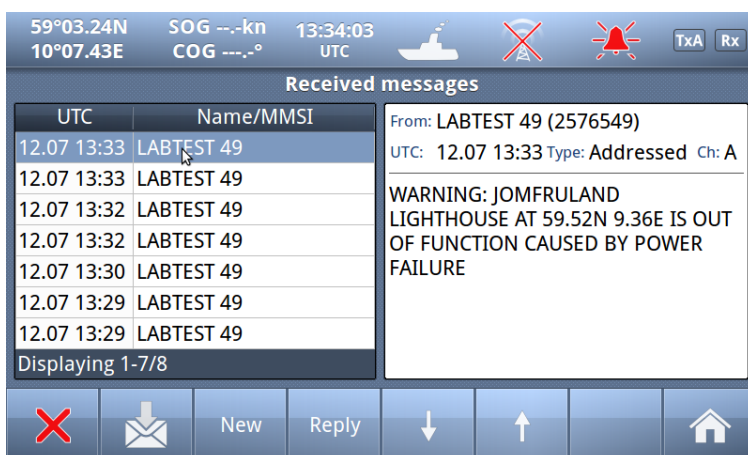
**Usage During Emergencies - With respect to using AIS safety related text messages in emergency situations, users must be aware that they may not be received, recognized or acted upon as Global Maritime Distress Safety Systems (GMDSS) messages would be by the Coast Guard, other competent authorities or maritime first responders. Thus AIS must not be relied upon as the primary means for broadcasting distress or urgent communications, nor used in lieu of GMDSS such as Digital Selective Calling radios which are designed to process distress messaging. Nonetheless, AIS remains an effective means to augment GMDSS and provides the added benefit of being 'seen' (on radar or chart displays), in addition to being 'heard' (via text messaging) by other AIS users within VHF radio range (Ref: USCG Safety Alert 05-10).**



Red square shows  button selected to get to this menu

The messages icon opens the

### 7.4.1 Received messages



By pushing the buttons on the bottom bar, you can switch to:

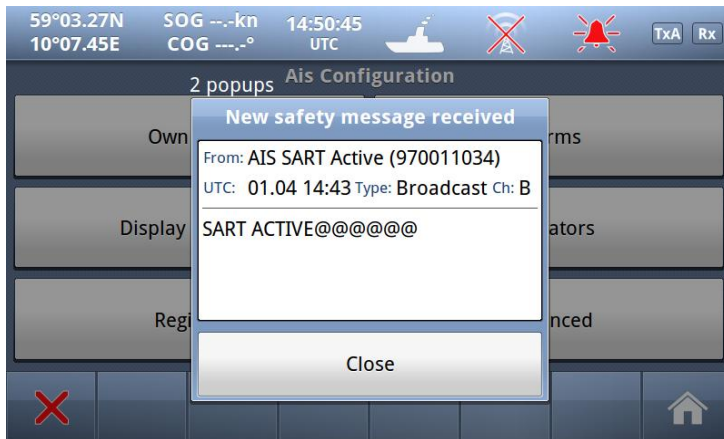
- Sent messages
- Write New
- Reply
- Scroll up or down through received messages

When you select one of the messages in the list, you will see the content in the right window

If you press the button, the display will swap to:



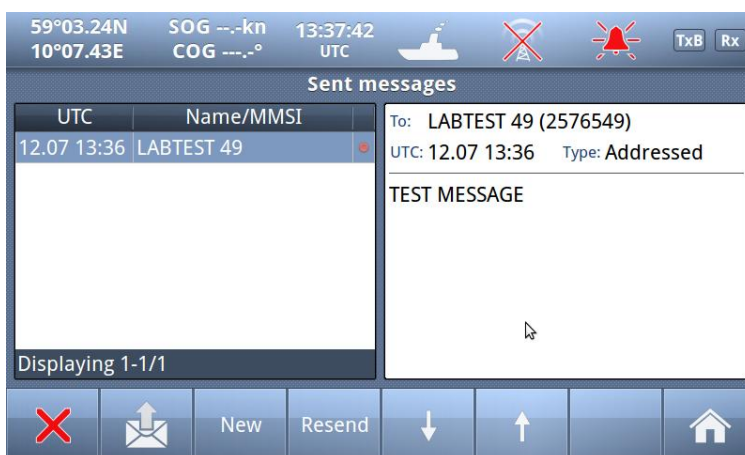
## 7.4.2 Popup when received message



Example showing “Popup” of received “Safety message” from AIS SART

The message must be acknowledged by pressing “Close” button

## 7.4.3 Sent messages



By pushing the buttons on the bottom bar, you can switch to:

- Received messages
- Write New
- Resend
- Scroll up or down through sent messages

When you select one of the messages in the list, you will see the content in the right window

There is also a “Status” field on each line showing:



Message SENT OK



Message transmission in PROGRESS



Message transmission FAILED

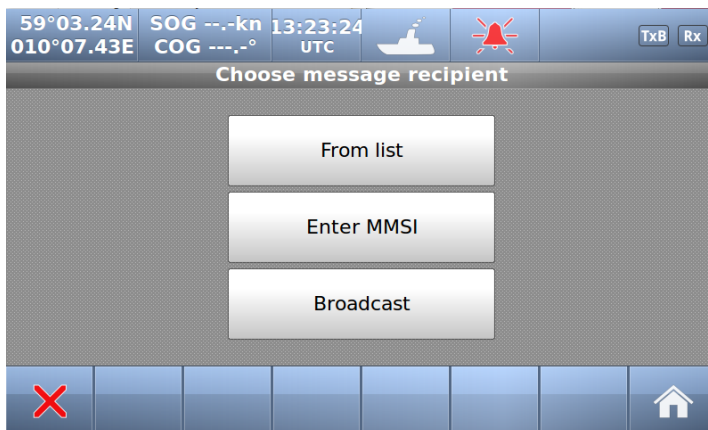
## 7.4.4 Write New message



Be advised, all messages in this context are SAFETY RELATED and should not be used for other purposes.

For this reason, this functionality is protected by a user password.

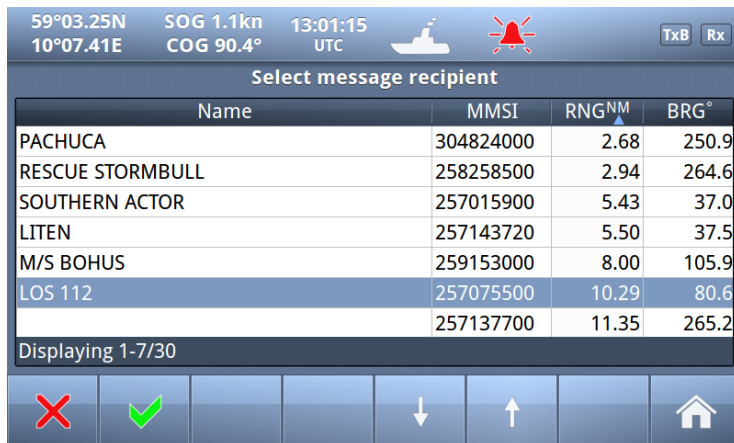
Default Password = OP




Select here message recipients:

- From list (Of received ships)
- Enter MMSI (directly)
- Broadcast (to all)

### 7.4.4.1 Message recipients "From list"



Select

1. Which ship
2. Confirm with 

Then a new window opens:

#### 7.4.4.1.1 Write text

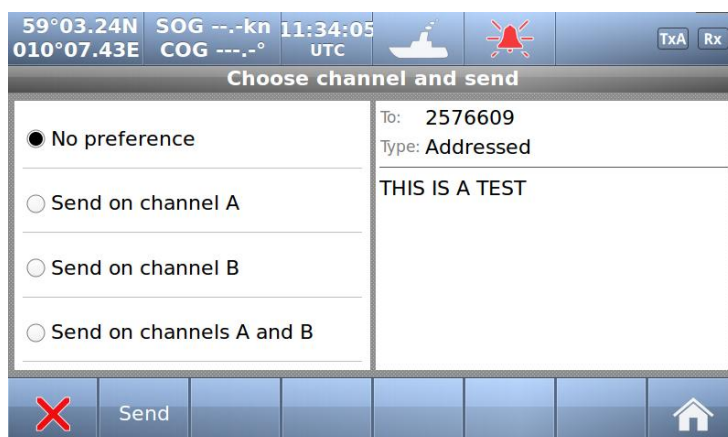



When a target is selected, the keyboard window opens, and allows the user to write a message. The total allowed length is 156 characters.

Confirm with 

Which opens the


#### 7.4.4.1.2 Choose channels and SEND



- Select preference
- Send : 

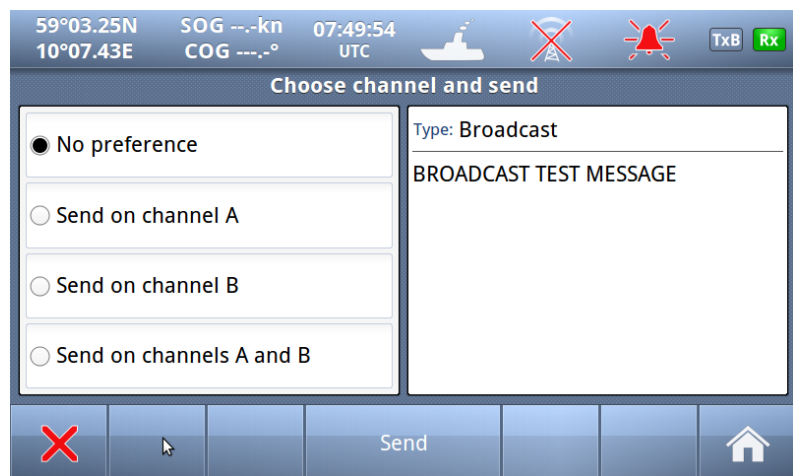
#### 7.4.4.2 Message recipients "Enter MMSI"



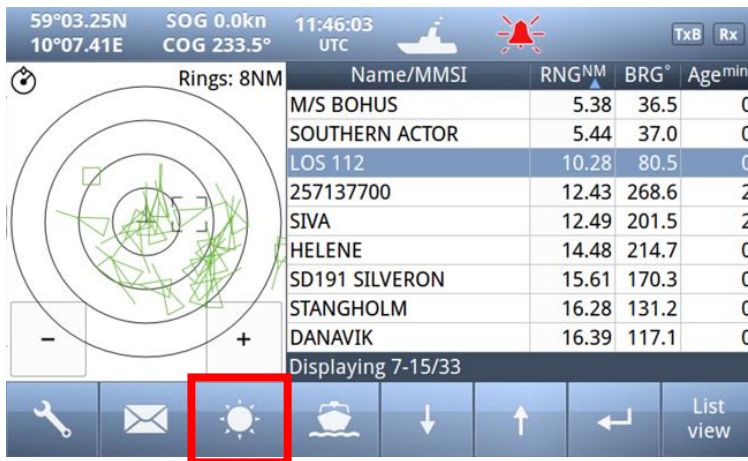
1. Enter MMSI
2. Confirm with 
3. Write Text (as described above)
4. Select Channel and Send (-""-)

#### 7.4.4.3 Message recipients "Broadcast"

1. Write Text (as described above)
2. Select Channel and Send

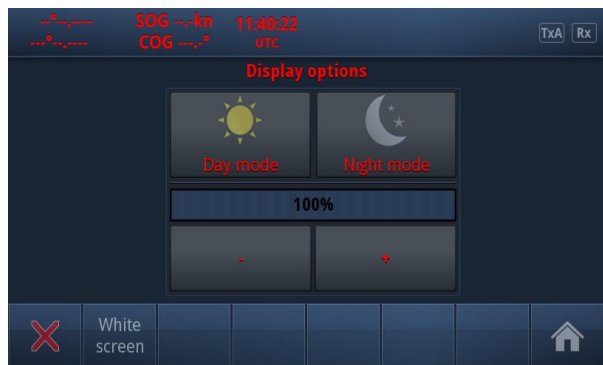
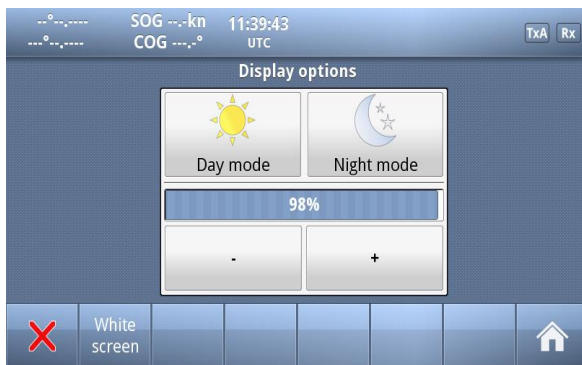


## 7.5 Display Settings

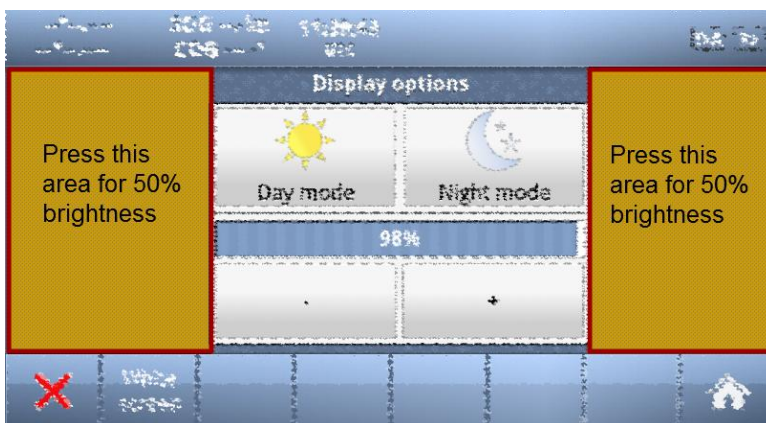


Red square shows button selected to obtain to this menu

In the **Display settings** menu, you can adjust Brightness level and switch between night and day mode. Each mode has its own brightness level.




In the low brightness end of the scale, the steps are more accurate to adapt to very low intensity levels.



Touching the empty area at the left or right side of the display restores a 50% brightness level if the display gets too dark to see the actual buttons for this purpose.

Restoring of 50% brightness level is also accessible by pressing the on/off button (see chapter 7.1)

Press "Home"  to return to Main Window again