



KONGSBERG

Instruction manual

Multi Function Display





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DISP-D-MFD_INSTR/2.0

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Document history

Document number: DISP-D-MFD_INSTR / Revision 2.0		
Rev. 1.0	June 2015	First version.
Rev. 2.0	April 2016	Added information for SeaPos product.

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Warning

The equipment to which this manual applies must only be used for the purpose for which it was designed. Improper use or maintenance may cause damage to the equipment and/or injury to personnel. The user must be familiar with the contents of the appropriate manuals before attempting to operate or work on the equipment.

Kongsberg Seatex disclaims any responsibility for damage or injury caused by improper installation, use or maintenance of the equipment.

Comments

To assist us in making improvements to the product and to this manual, we welcome comments and constructive criticism.

e-mail: km.seatex@km.kongsberg.com

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About this manual

Purpose

This instruction manual provides you with the necessary information to install, configure and operate the Multi Function Display.

Target audience

This manual is intended for installation personnel, navigators and other personnel working on the bridge.

Software and hardware versions

The system is delivered with software version 1.00.xx and hardware version 1.

License information

The Multi Function Display is not a licensed product.

Maintenance purposes

This instruction manual is also intended as reference material for the maintenance personnel. Keep this manual for later use.

Multi Function Display

Display description

The Multi Function Display is a navigation display used for visualization and configuration of the connected navigation sensors and/or equipment.

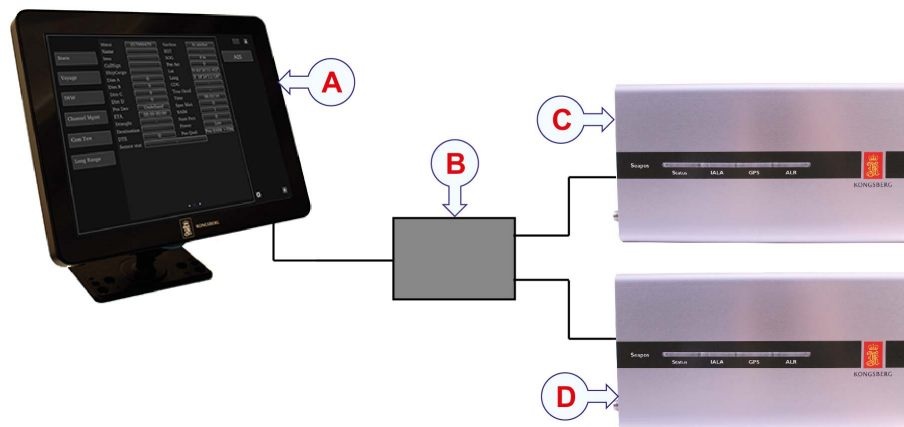
It is a touch display which is quick to install and easy to operate. Communication with the display is via LAN (local area network). The display can be mounted flush or on a bracket. The required software is pre-installed.

The display can be used together with the AIS 300, AIS 300BF and/or SeaPos products.



System diagram

A basic system diagram for the Multi Function Display.



A Multi Function Display

- B** Ethernet switch (if you have two or more systems)
- C** AIS/AIS BF unit
- D** SeaPos unit

Use a switch for the Ethernet cable if you have more than one system connected to the display.

Scope of supply

Please observe the standard and optional items provided with the Multi Function Display delivery.

Standard parts delivered

- 1 ea Multi Function Display (Maritime Panel Computer, 10, 4")
Part number DISP-E-MFD
- 1 ea Instruction manual, MFD
Part number DISP-D-MFD_INSTR

Optional items

Units

- Power supply, 24 V DC/1.75 A
Part number G072-13
- Mounting bracket, 10, 4" display
Part number DISP-M-BRACKET

Cables

- Power cable, AC, EU
Part number G071-80
- Phoenix patch panel RJ-45 CAT5e
Part number 95.937
- Ethernet cable, Cat6, 3 m
Part number G072-43_3m

Software and hardware versions

System delivered with	Software version, 1.00.xx	Hardware version, 1
-----------------------	---------------------------	---------------------

Revision table

Date	Software version	Hardware version

Support information

- **Company name:** Kongsberg Seatex AS
- **Address:** Havnegata 9, 7010 Trondheim, Norway
- **Switchboard:** +47 73 54 55 00
- **Telefax:** +47 73 51 50 20
- **Duty phone:** +47 33 03 24 07 (24 hours)
- **E-mail address:** km.support.seatex@km.kongsberg.com
- **Website:** <http://www.km.kongsberg.com/seatex>

Installing the display

This chapter describes how to install the display in a panel or bracket and how to connect the display.

Mounting the display in a panel

To mount the display in a panel you must make a suitable hole in the panel surface.

Note

Before you start cutting, make sure there is nothing behind the surface you want to cut through.

Prerequisites

We assume that you are equipped with a standard set of tools. This tool set must comprise the normal tools for electronic and electromechanical tasks, such as screwdrivers, pliers, spanners, a cable stripper etc. Each tool must be provided in various sizes. We recommend that all tools are demagnetized to protect your equipment.

Unless stated otherwise, all mounting equipment (such as bolts, nuts, washers, screws etc.) referred to within this document is to be supplied by the customer or the shipyard.

Context

The display must be located on the bridge.

Procedure

- 1 Cut a hole in the console, wall or similar surface where the display is to be mounted. Observe the cutout drawing provided with the display (in mm).
As an alternative, you can use the rubber gasket to mark the hole. Cut the hole according to the **inner** measurements of the gasket.
- 2 Mark and drill 10 holes according to the drawing or the gasket.
- 3 Place the rubber gasket over the hole.
- 4 Mount the display in the hole and secure with M4 screws and washers provided.

Result

Once the display has been mounted, you can proceed with the cabling.

Related topics

- *Drawings* on page 54

Mounting the display in the bracket

Use the mounting bracket to install the display on a desktop, ceiling or similar surface. The mounting bracket consists of three sections: the two identical base plates and the centre section.

Prerequisites

We assume that you are equipped with a standard set of tools. This tool set must comprise the normal tools for electronic and electromechanical tasks, such as screwdrivers, pliers, spanners, a cable stripper etc. Each tool must be provided in various sizes. We recommend that all tools are demagnetized to protect your equipment.

Unless stated otherwise, all mounting equipment (such as bolts, nuts, washers, screws etc.) referred to within this document is to be supplied by the customer or the shipyard.

Context

The display must be located on the bridge.

Procedure

- 1 Place one of the mounting bracket base plates on the ceiling, desktop or similar surface where the mounting bracket is to be mounted.
- 2 Mark the screw holes.
- 3 Remove the base plate and drill holes for the screws.
- 4 Place the base plate over the holes and secure with screws and washers.
- 5 Attach the display to the other base plate using the four screws supplied with the bracket. 4 screws and plastic washers.
- 6 Assemble the centre section to the base plates.

Result

Once the display has been mounted, you can proceed with the cabling.

Related topics

- *Drawings* on page 54

Connecting the display

The display must be placed within three metres of the DC cable.

Prerequisites

A multimeter in order to measure voltage, current and resistance.

Procedure

- 1 Connect a network (Ethernet) cable to the LAN 1 port underneath the display.
- 2 Connect the other end of the network cable to the LAN port on the Kongsberg Unit or to a network switch/router where the Kongsberg Unit also is connected.
- 3 Connect the power cable with the appropriate power adapter, if needed, to supply power to the display.



Result

The display is now ready for use.

Default IP addresses

The display and the units are set up with a default IP address:

- **Display:** 10.0.21.62
- **AIS unit:** 10.0.21.60
- **SeaPos unit:** 10.0.21.64

You can change these addresses to suit your system.

Related topics

- *Setting the AIS Unit IP address* on page 23
- *Setting the display IP address for AIS* on page 18
- *Setting the display IP address for SeaPos* on page 37

Updating the software

To install the newest features and bugfixes, you should update the display whenever an update is available. Contact Kongsberg Seatex AS customer support to receive new software.

Procedure

- 1 Add the update package file to an empty USB stick.

Note

The package needs to be accompanied by the md5 checksum file which verifies the authenticity of the software update package.

- 2** Insert the USB stick with the update package into the display USB port. The **Update** dialog box appears.
- 3** Tap **Update** to start the update process. This will leave the display inoperable for a few seconds, and then the software will restart.

The software update is now completed and any consecutive dialog boxes can be dismissed.

Getting started

This chapter describes how to get started with the operation of the Multi Function Display.

Power on/off procedures

Powering on the display

Provide power to the display before you can start to operate the Multi Function Display.

Procedure

- 1 Connect the power cable with the appropriate power adapter, if needed, to supply power to the display.
- 2 The display will show a boot-screen, then go blank for 15 to 20 seconds before the display application starts up.

Rebooting the display

You may need to restart the display to recover from an error or to re-initialize the display.

Procedure

- 1 Enter the **Configuration** view → **System settings**.
- 2 Tap the **Device control** submenu item.
- 3 Tap the **Reboot** button to reboot the display device.

Powering off the display

Disconnect power to the display when it is not in use.

Procedure

- 1 Remove the power cable.
- 2 The display is now off.

User interaction principles

How the display works for the user.

This is a touch-display. Selection is done by tapping the screen with your finger. To scroll lists or views, swipe your finger across the screen, dragging the visible contents up or down or sideways.

Tap the **System** button in the control area to the right to toggle between the views and to exit the views which do not have a dedicated **Exit** button, .

Editing in text boxes

A keyboard is provided where you are prompted to enter text.

Confirming changes

When you have changed a value you are prompted to confirm this change with a save command.

Password protection

Some configuration dialogs are password protected. The default password is **1234**.

Decimal mark

A point "." is used as a decimal mark.

Presentation overview

Display organisation

How the display is organised depends on the system for which it is used. Refer to the sections for the specific product to see the display organisation for that particular system.

Related topics

- *Display organisation AIS* on page 17
- *Display organisation SeaPos* on page 36

Icons

The following icons appear in the display. Some icons may not appear for all systems.



Message icon



New message icon.



New alarm icon. The icon is only present if there is an active alarm.



Acknowledged alarm icon. The icon is only present if there is an active alarm.



Brightness icon.



New warning.



Acknowledged warning.



Silenced warning.



Rectified unacknowledged warning.



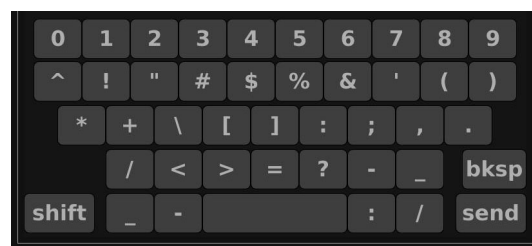
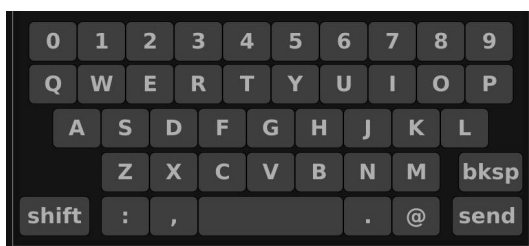
Active warning with transferred responsibility.



Caution.

Changing the keyboard layout

The keyboard appears automatically when you are prompted to enter text in a box. For special characters you can change the keyboard layout by tapping the **shift** button. Tap **shift** again to return to normal characters.



Adjusting the display brightness

You can adjust the brightness of the display to suit your current light conditions.

Procedure

- 1 Tap the **Brightness** icon at the bottom of the control area to activate the brightness slider.
- 2 Drag the slider up and down to adjust the brightness.

Note

In case accidentally decreasing the brightness to an unreadable black screen, the brightness can be increased by tapping and holding in the centre part of the control area.



Resetting the display brightness for AIS

You can reset the brightness to the default setting which is 50 %.

Procedure

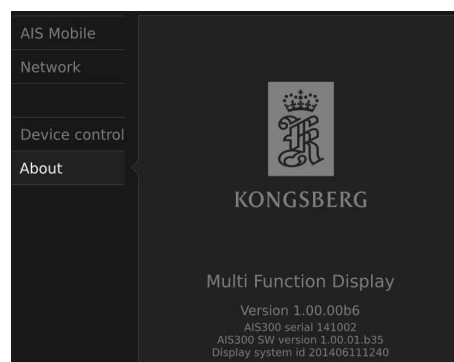
- 1 Enter the **Own vessel** view.
- 2 Tap the **Def Brightness** submenu item.

Checking the display product and software version

For software updates or contact with customer support it is useful to know the product and/or the software version of the display.

Procedure

- 1 Enter the **Configuration** view
- 2 Tap the **System settings** button
- 3 Tap the **About** submenu item to check the display product and software version.



MFD for AIS 300

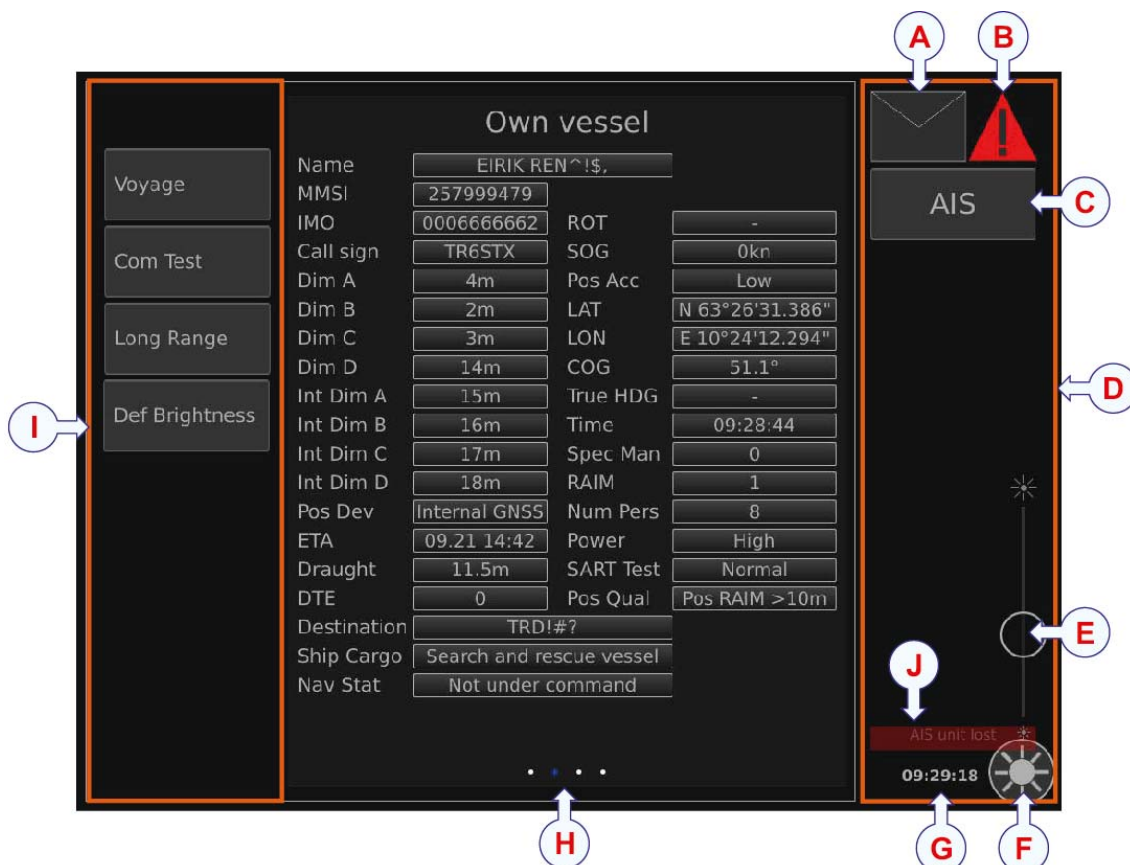
This chapter provides you with information on how to configure and operate the Multi Function Display for AIS.

Note

AIS 300BF specific functionality is described in MFD for AIS 300BF on page 32

Display organisation AIS

The illustration shows how the display is organised.



- A Message icon
- B Alarm icon
- C System button
- D Control area
- E Brightness slider
- F Brightness icon
- G Clock showing UTC time
- H Page indicator
- I Submenu items
- J No connection message

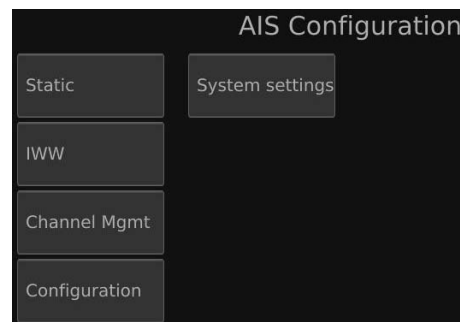
Display settings

The **Configuration** view holds the system setting parameters.

Enter the **Configuration** view → **System settings** to set up the display for operational use.

Setting the display IP address for AIS

Set the Internet Protocol (IP) address for the display to be able to communicate on the network.



Procedure

- 1 Enter the **Configuration** view
- 2 Tap the **System settings** button
- 3 Tap the **Network** submenu item to activate the IP configuration page.
- 4 Type the IP address for the display.
- 5 Tap **Save** when finished.

Display views

The display has three main views:

- **Target list** view
- **Own vessel** view
- **AIS configuration** view

The **Own vessel** view holds the operational parameters and the **AIS configuration** view holds the system configuration parameters.

Tap the **System** button in the control area to the right to toggle between the views and to exit the views which do not have a dedicated **Exit** button, .

Target list view

The initial screen is the **Target list**.

The number of targets is displayed after the dialog box heading. The clock at the bottom of the **Control area** shows UTC time and works as an alive indicator.



The screenshot shows the 'Targets (6)' dialog box. It contains a table with 8 columns: Range, Bearing, Name, Heading, COG, SOG, Type, and Elapsed. The table lists 6 targets. To the right of the table is a control area with an envelope icon, a red warning triangle icon, an 'AIS' button, and a clock showing '08:40:06' with a sun icon.

Range	Bearing	Name	Heading	COG	SOG	Type	Elapsed
0.00NM	318.2°	BS:2579969	-	-	-	BaseStation	0s
0.00NM	6.4°	BSC:257999399	-	0°	0kn	Class B	14s
0.04NM	176.5°	ATN:METOCEAN BUOY	-	-	-	AtoN	65s
0.22NM	215.2°	257347700	-	303.1°	0kn	Class A	12s
1.98NM	294.1°	ATN:TESTATON2_WITH	-	-	-	AtoN	15s
9.39NM	48.8°	ATN:TESTATON1	-	-	-	AtoN	5s

Tap a row in the list to open the **Details** dialog box which displays details about the target.

Vessel details

Name	BSC:ER STX CB		
MMSI	257999399	NavStat	-
IMO		ROT	0°/min
Call sign	OTAC	SOG	0kn
Ship Cargo	Pleasure craft	Pos Acc	Low
Dim A	20	LAT	N 63°26'31.53"
Dim B	5	LON	E 10°24'12.408"
Dim C	2	COG	0°
Dim D	2	True HDG	-
Pos Dev	Undefined	Time	09:28:31
ETA	00.00 00:00	Spec Man	-
Draught	-	RAIM	0
DTE	-	Num Pers	0
Display	No	Pos Qual	Pos >10m
Destination			



AIS

09:32:16



Own vessel view

The **Own vessel** view has four pages. Swipe to the left to flick the pages. The page indicator at the bottom indicates which page you are on.

The left part of the **Own vessel** view holds the submenu items for the operational parameters: Voyage, ComTest, LongRange and Def Brighthness.

The first page, **Summary**, contains status information: number of targets, which target is furthest away and the nearest search and rescue transponder.

Voyage

Com Test

Long Range

Def Brightness

Summary

Number of targets	5
Most distant	9.39NM
Nearest SART	-



AIS

08:00:59

The second page, **Own vessel**, shows static and voyage related data.

Voyage

Com Test

Long Range

Def Brightness

Own vessel

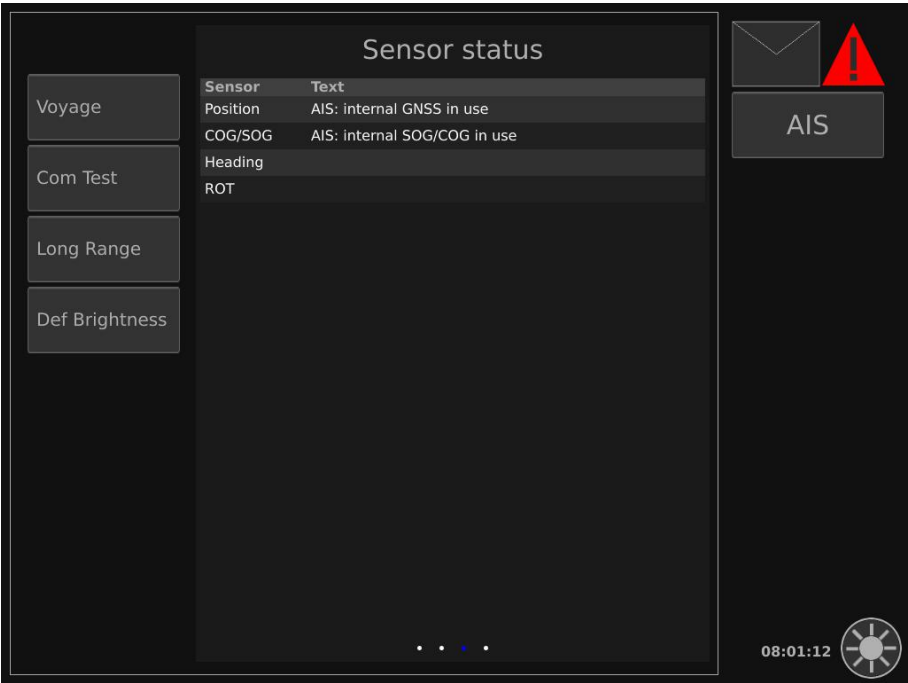
Name	UNIT1		
MMSI	257999479		
IMO	0006666662		
Call sign	TR6STX	ROT	-
Dim A	4m	Pos Acc	Low
Dim B	2m	LAT	N 63°26'31.428"
Dim C	3m	LON	E 10°24'12.18"
Dim D	14m	COG	-
Int Dim A	15m	True HDG	-
Int Dim B	16m	Time	08:01:06
Int Dim C	17m	Spec Man	0
Int Dim D	18m	RAIM	1
Pos Dev	Internal GNSS	Num Pers	8
ETA	09:21 14:42	Power	High
Draught	11.5m	SART Test	Normal
DTE	0	Pos Qual	Pos RAIM >10m
Destination	TRD!#?		
Ship Cargo	Search and rescue vessel		
Nav Stat	Not under command		



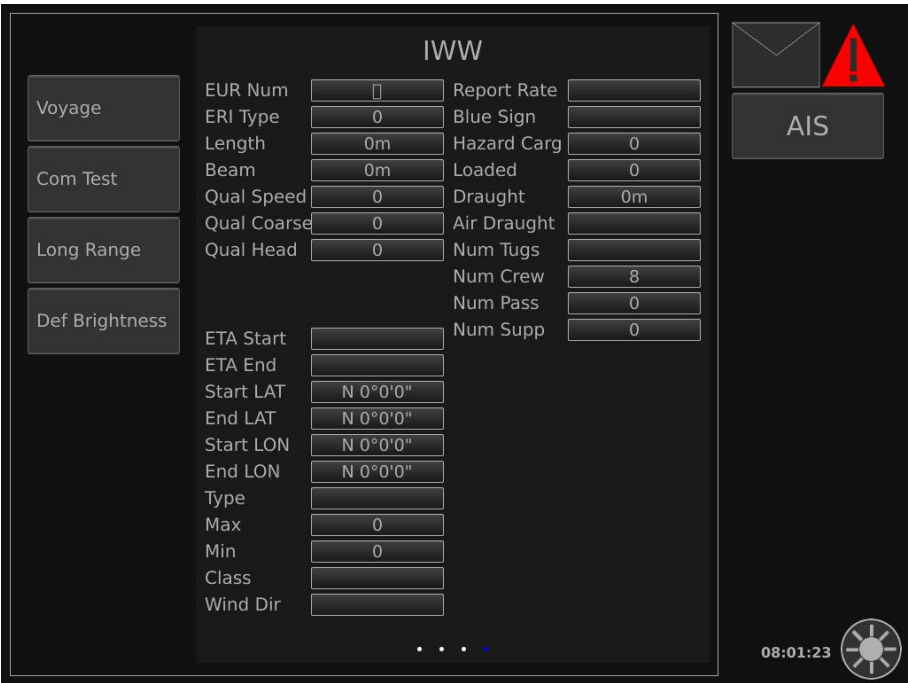
AIS

08:01:06

The third page, **Sensor status**, shows the sensor status.

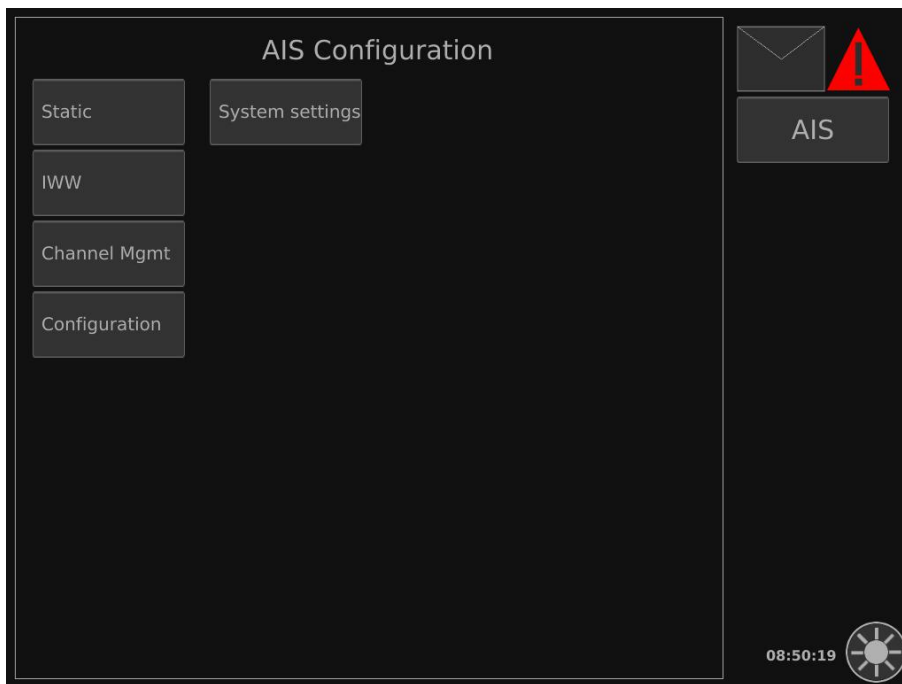


The fourth page is only relevant for IWW (Inland Waterway).



AIS configuration view

The **AIS configuration** view holds the system setting and configuration parameters.



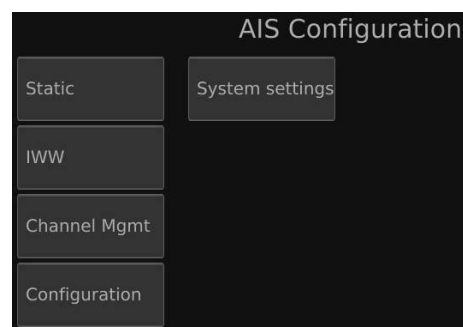
Related topics

- *Configuring the AIS Unit* on page 23

Configuring the AIS Unit

This section describes how to configure the AIS Unit.

The **AIS configuration** view holds submenu items for configuration of the AIS Unit. Some of these are password protected with the default password **1234**. Tap a submenu item to open a corresponding page where the values can be edited.



Tap **Save** to save the changes. For some parameters, a drop-down list of valid values is used instead on a text input box.

A point "." is used as a decimal mark.

Setting the AIS Unit IP address

Set the Internet Protocol (IP) address for the unit to be able to communicate on the network.

Procedure

- 1 Enter the **Configuration** view
- 2 Tap the **System settings** button
- 3 Tap the **AIS Mobile** submenu item to activate the IP (internet protocol) configuration page.
- 4 Type the IP address for the Unit.
- 5 Tap **Save** when finished.

Creating a new region

Create a new region if parameters which deviate from standard AIS parameters shall be used. Normally, the region will be received automatically from an AIS base station but the user can create such an area manually. Such a parameter could for example be low power.

Procedure

- 1 Enter the **AIS configuration** view.
- 2 Tap the **Channel Mgmt** submenu item to open the **Regions** page.
- 3 Tap the plus sign in the top left corner to enter the values for a new region.
- 4 Tap each parameter value to edit the value from an edit dialog box.
- 5 Tap **Save** when finished. This will transmit the region data to the AIS Unit.

Refresh the **Channel management list** by tapping the **AIS** button and then the **Channel Mgmt** button, to see if the new region has been applied.

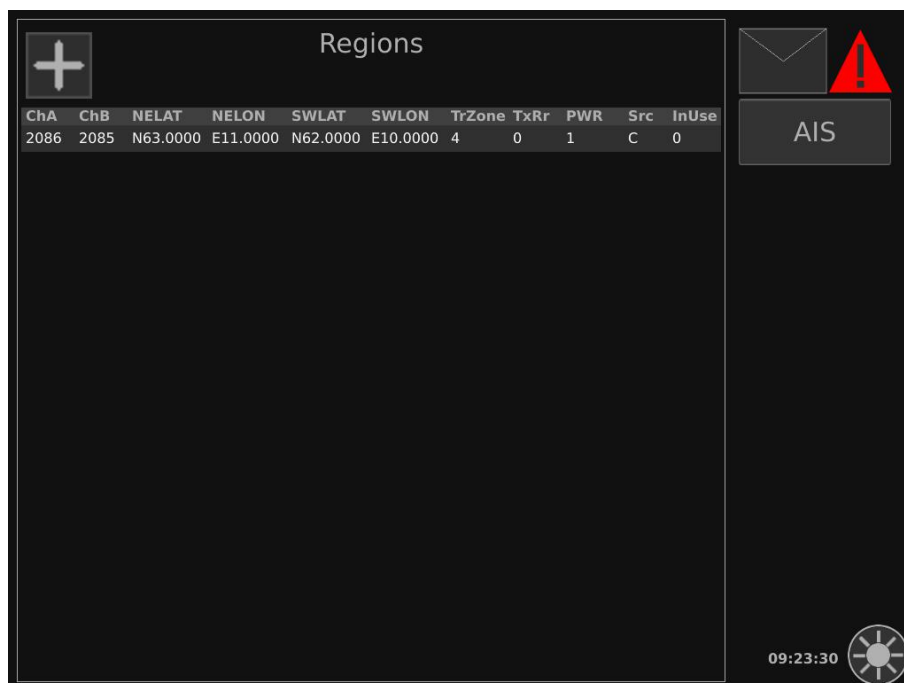
The screenshot displays the 'Region' configuration screen. On the left, a list of parameters is shown with corresponding input fields: Channel A (2086), Channel B (2085), NE LAT (63.0000), NE LAT Q (N), NE LON (11.0000), NE LON Q (E), SW LAT (62.0000), SW LAT Q (N), SW LON (10.0000), SW LON Q (E), Tr Zone Size (4), TxRx Mode (0), and Power (1). A 'Save' button is located at the bottom left. On the right side, there are three icons: a close button (X), an envelope icon, and a red warning triangle icon. Below these icons is a button labeled 'AIS'. The bottom right corner shows the time '09:09:57' and a sun icon.

Editing a region

The area can be edited if the area is moved, increased and/or decreased.

Procedure

- 1 Enter the **AIS configuration** view.
- 2 Tap the **Channel Mgmt** submenu item to open the **Regions** page.
This page holds a list of the regions.
- 3 Tap the row for the region you want to edit. The **Region** dialog box appears.
- 4 Tap each parameter value in the dialog box to edit the value from an edit dialog box.
- 5 Tap **Save** when finished.



Operational procedures

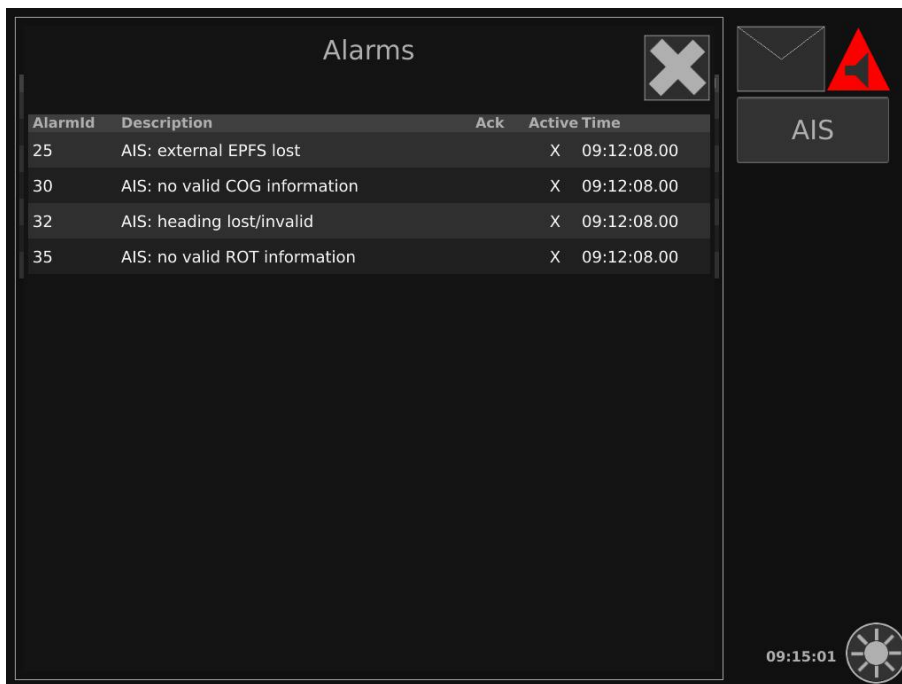
This section contains several operational procedures explaining how you can use the information in the display.

Checking and acknowledging alarms

If the system experiences deviations from normal operation, the system will respond with an alarm. You can view and acknowledge the alarms. Even though you have acknowledged an alarm it will be present in the alarm list until the situation which caused the alarm to be raised has been removed.

Procedure

- 1 Tap the **Alarm** icon at the top of the control area to open the **Alarms** page.
This page holds a list of the active alarms.
- 2 To acknowledge an alarm, tap the row with the alarm you want to acknowledge. A dialog box appears, prompting you to acknowledge the alarm. The alarm will be present in the list as long as it is active.
- 3 Tap the **Close** button to close the **Alarms** page.



Alarm icons



The **New alarm** icon indicates that you have new alarms in the alarm list.



The **Acknowledged alarm** icon indicates that you have acknowledged the new alarms.

Note _____

The alarm icons are only present if there is an alarm situation.

Checking sent and received messages

Messages are used to communicate various information between vessels and between vessels and onshore installations.

Procedure

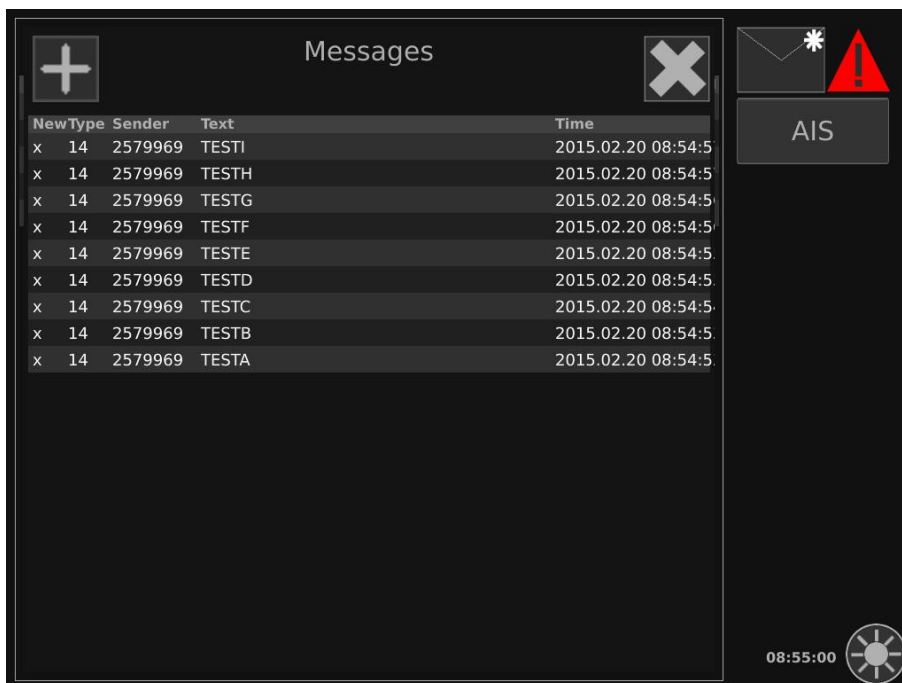
- 1 Tap the **Messages** icon at the top of the control area to open the **Messages** page.

This page holds a list of sent and received messages.

- 2 Tap a row in the message list. A dialog box with the full contents of the message appears.
- 3 Delete the message by tapping the **Discard** button.
- 4 Close the dialog box by tapping the **Close** button. The message will still appear in the message list.

An asterisk on the **Message** icon,  indicates unread messages.

In the **Messages** page, an **X** in front of a row indicates an unread message. A row without an **X** indicates that a message has been read.

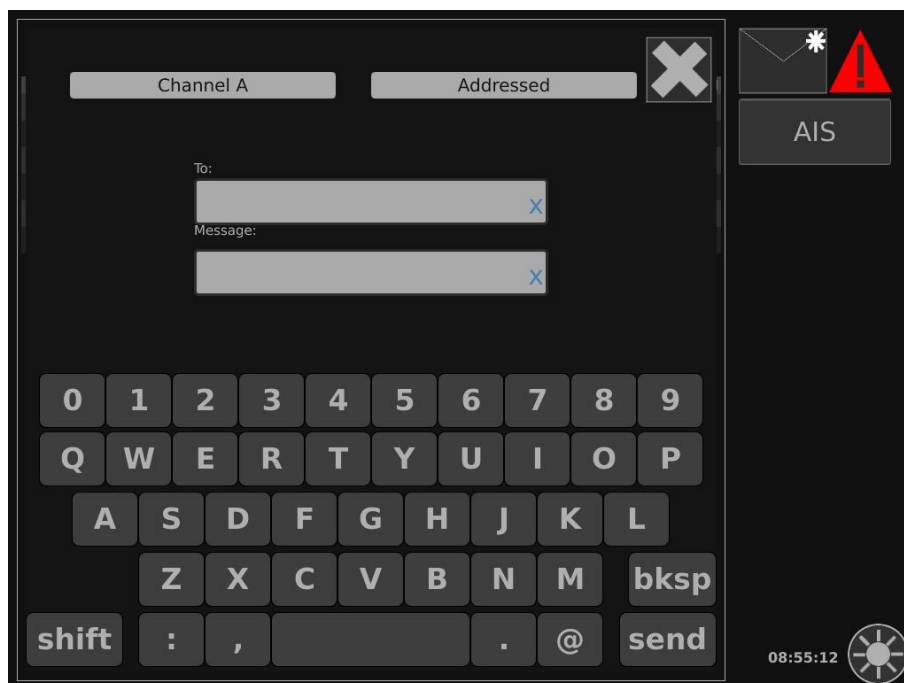


Creating a new message

Messages are used to communicate various information between vessels and between vessels and onshore installations. You need the MMSI number of the receiving vessel to send an addressed message.

Procedure

- 1 Tap the **Messages** icon at the top of the control area to open the **Messages** page.
- 2 Tap the **plus** button on the top left to create a new message.
- 3 Select channel, select type of message, type recipient (for addressed messages) and type the message content.
- 4 Tap **Send** when finished.



- 5 When the message is sent, a receipt with the transmission status will appear on the screen. **Broadcast sent**, **Addressed message delivered** or **Failed to send message**. Tap **OK** to close the receipt.

Running a communication test

It is a built-in test function in the VHF radio in the AIS Unit. Use this function to check that other vessels receive your transmission. It is recommended to use this procedure in connection with the installation.

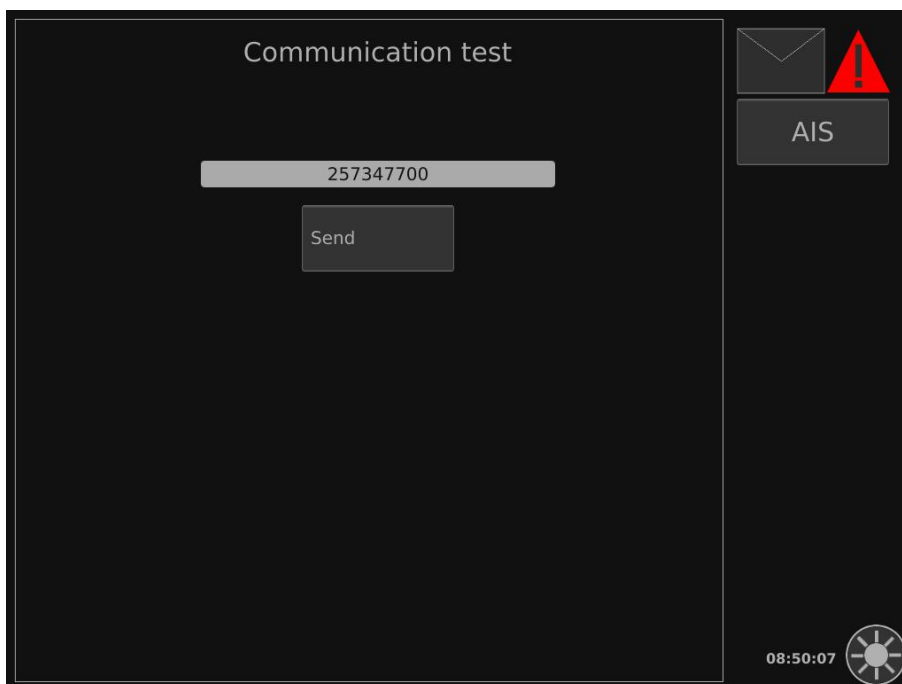
Procedure

- 1 Tap the **Com Test** submenu item in the **Own vessel** view to open the **Communication test** page.

A drop-down list of valid targets is presented as well as a **Send** button for initiating a test.

- 2 Select the target for which you want to run a test from the drop-down list.
- 3 Tap the **Send** button.

If a response is received, this is indicated on the same screen with a text saying `Response received successfully`.

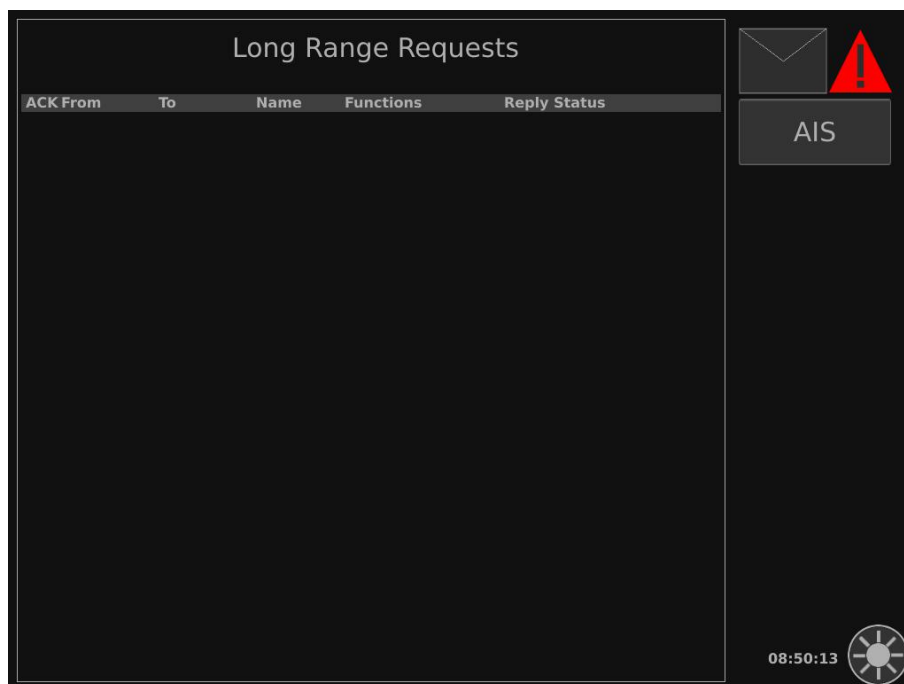


Displaying received requests

If long-range requests are received, a dialog box will appear on the screen alerting you that a Long Range request has been received together with the MMSI (Maritime Mobile Service Identity) number of the requestor.

Procedure

- 1 Tap the **Long Range** submenu item in the **Own vessel** view to open the **Long Range Requests** page.
A list of all received requests appears.
- 2 Tap a row to show the details of the request. A dialog box with the request details appears.
- 3 Chose to acknowledge the request by tapping the **OK** button, or to remove the request by tapping the **Discard** button.
All requests are removed after 24 hours.
- 4 Tap **Close** to close the dialog box and return to the **Long range requests** list.



Long range request reply mode

You can determine whether the AIS Unit's reply mode to the long range requests shall be **automatic** or **manual**.

Procedure

- 1 Enter the **Own vessel** view.
- 2 Tap the **Voyage** submenu item.
- 3 Tap **LR mode**.

- 4 Select **Manual** or **Automatic** from the drop-down list.
- 5 Tap **Save** when finished.

MFD for AIS 300BF

AIS 300BF (Blue Force) provides an encryption layer on top of the standard AIS functions. AIS 300BF is based on the same hardware as AIS 300. The specific AIS 300BF display view with the corresponding dialog boxes is described in the following section.

The user interface and operational procedures are the same for AIS 300BF as for AIS 300.

Related topics

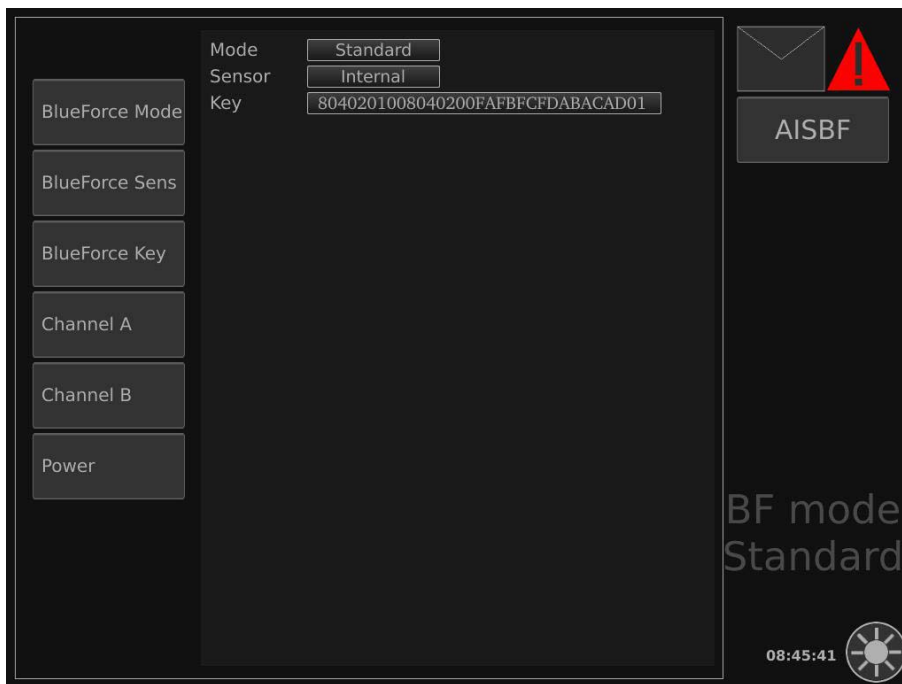
- *MFD for AIS 300* on page 17

Configuring the AIS 300BF

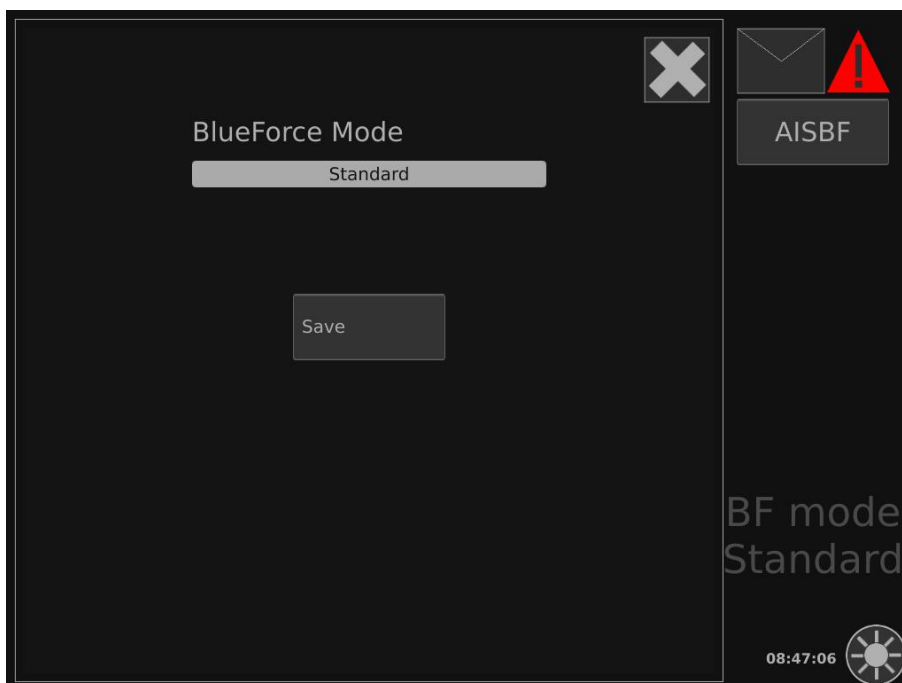
To be able to use the Blue Force mode you must set up your AIS system with the parameters which are specific to this functionality.

Procedure

- 1 Tap the **System** button on the right.
The **Mode**, **Sensor** and **Key** parameters appear.
- 2 Tap the **BlueForce Mode** submenu item to change the mode.
Select between **Standard**, **Receive only** or **Secure** in the mode selection list.

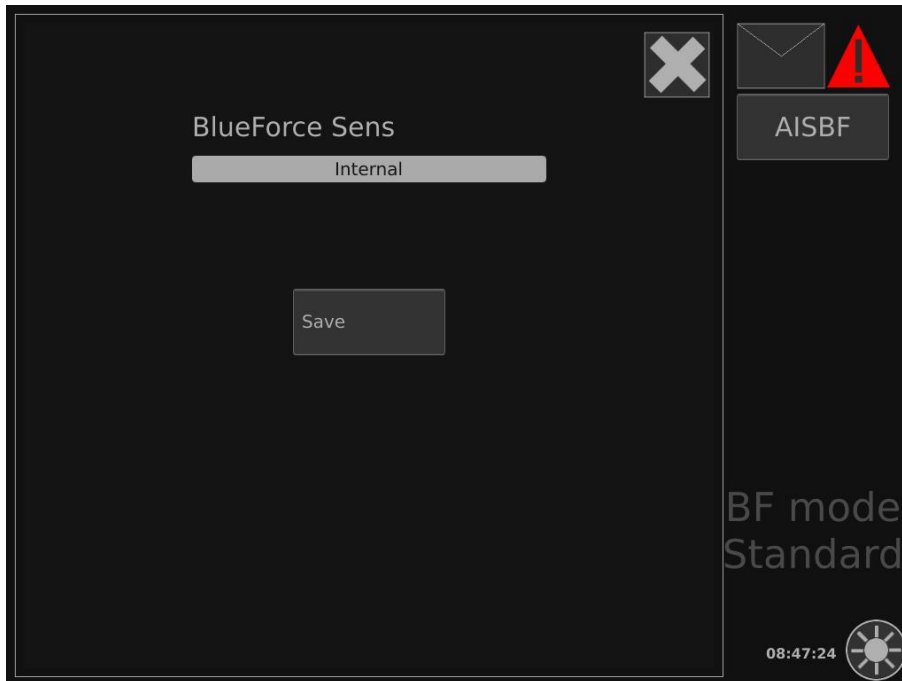


- 3 Tap the box below the BlueForce Mode text and the mode selection list appears. Tap wanted mode and tap the **Save** button to save the selection. The mode is changed and the mode is shown in the lower right corner of the display.



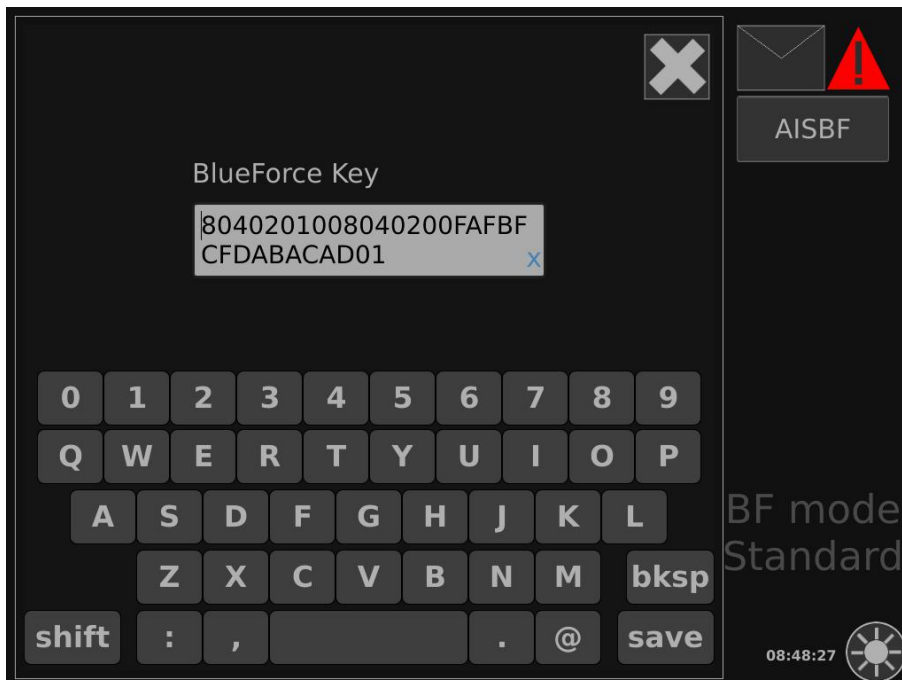
- 4 Tap the **BlueForce Sensor** submenu item to change between internal and external sensor.
- 5 Tap the box below the BlueForce Sensor text and the sensor selection list appears. Tap the wanted sensor, **External** or **Internal**, and tap the **Save** button to save the selection.

Internal is the GPS receiver inside the AIS and **External** is the ship's GPS receiver used for navigation. The transmitted position will come from the selected receiver.

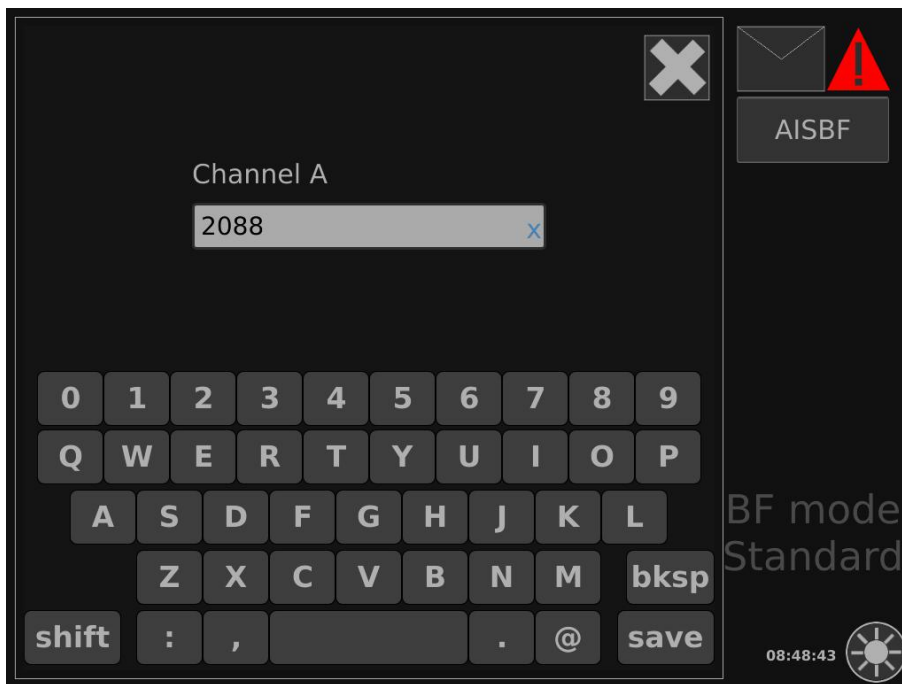


- 6 Tap the **BlueForce Key** submenu item to change the encryption key. Use the keyboard to change the key and tap the **Save** button to save the new key.

The length of the key will depend on the encryption key of the AIS 300BF. Number of characters: 128-bit = 32.

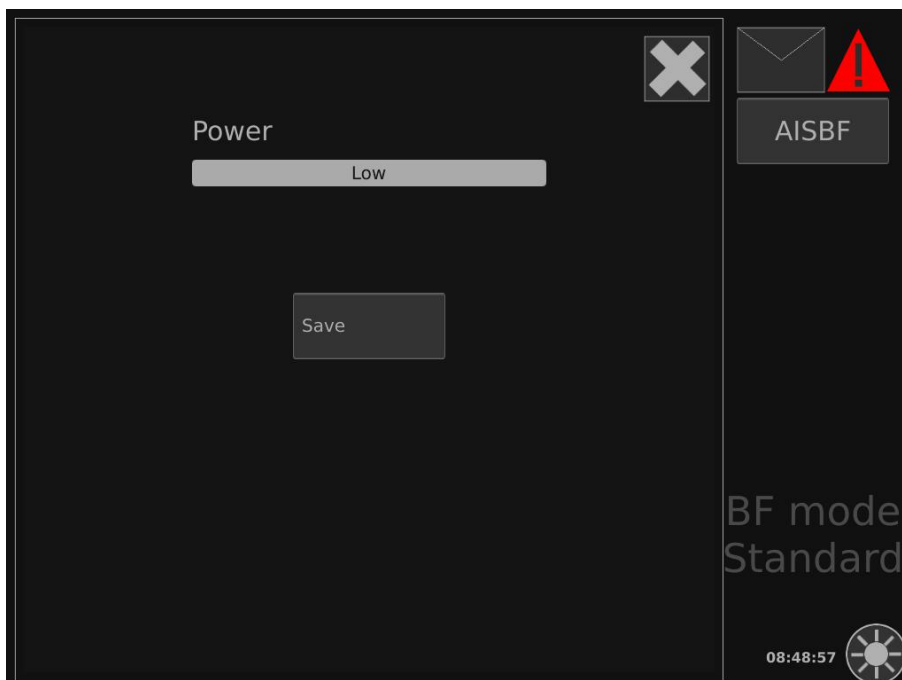


- 7 Tap the **Channel A** or **Channel B** submenu items to set a different channel from the standard channel A and channel B. Tap the **Save** button when the channel is set.



- 8 Tap the **Power** submenu item to set the power level.

Select between **High** (12 W) and **Low** (1 W) in the power selection list. Tap the **Save** button to save the selection.



Note

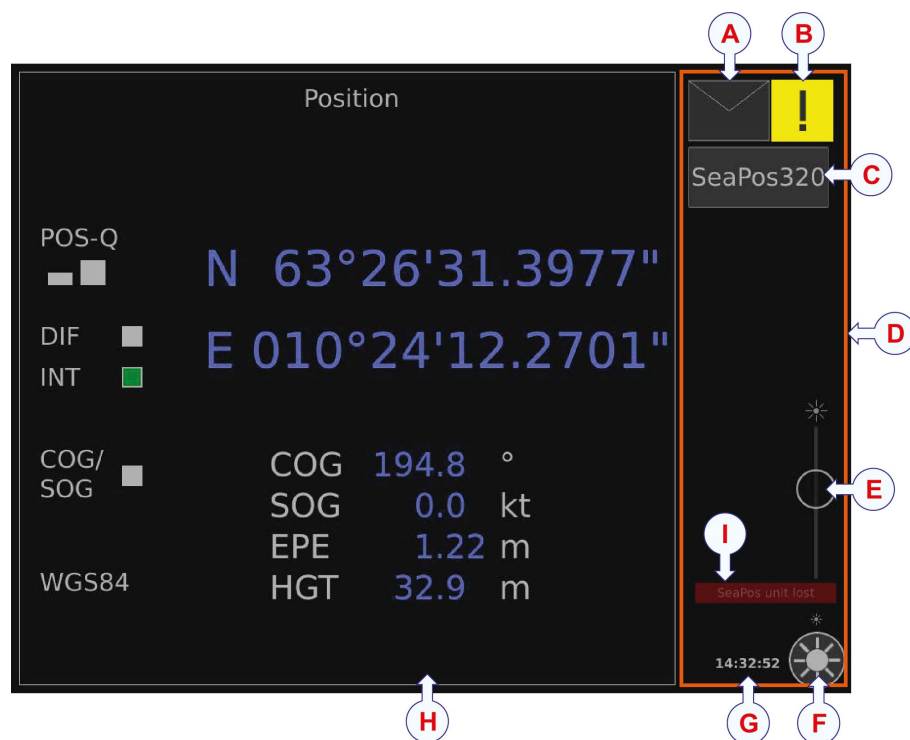
The selection between AES and Blowfish encryption key must be done from the AIS 300BF WEB interface. Default is Blowfish (128 bit).

MFD for SeaPos

This chapter provides you with information on how to configure and operate the Multi Function Display for the SeaPos 300 product series.

Display organisation SeaPos

The illustration shows how the display is organised.



- A Message icon
- B Warning icon
- C System button
- D Control area
- E Brightness slider
- F Brightness icon

- G** Clock showing UTC time
- H** Information window
- I** No connection message

Display settings

The **Configuration** view holds the system setting parameters.

Enter the **Configuration** view → **SeaPos IP** to set up the display for operational use.

Setting the display IP address for SeaPos

Set the Internet Protocol (IP) address for the display to be able to communicate on the network.

Procedure

- 1 Enter the **Configuration** view
- 2 Tap the **SeaPos IP** button
- 3 Type the IP address for the display.
- 4 Tap **Save** when finished.

Display views

The display has five main views:

- **Position** view
- **Satellites** view
- **Reference stations** view
- **GPS information** view
- **Configuration** view

The SeaPos **Configuration** view holds the configuration parameters. The other views are for information purposes only and require no action from the user.

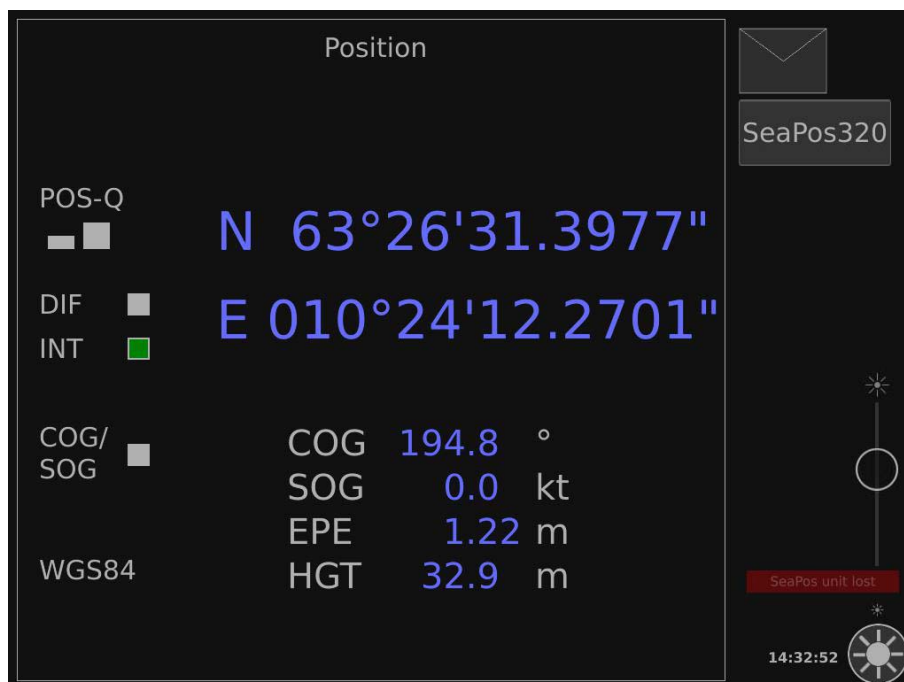
Tap the **System** button in the control area to the right to toggle between the views and to exit the views which do not have a dedicated **Exit** button, .

Position view

The **Position** view shows the position resolved by the GPS receiver. It also displays course over ground, speed over ground, estimated position error and height information.

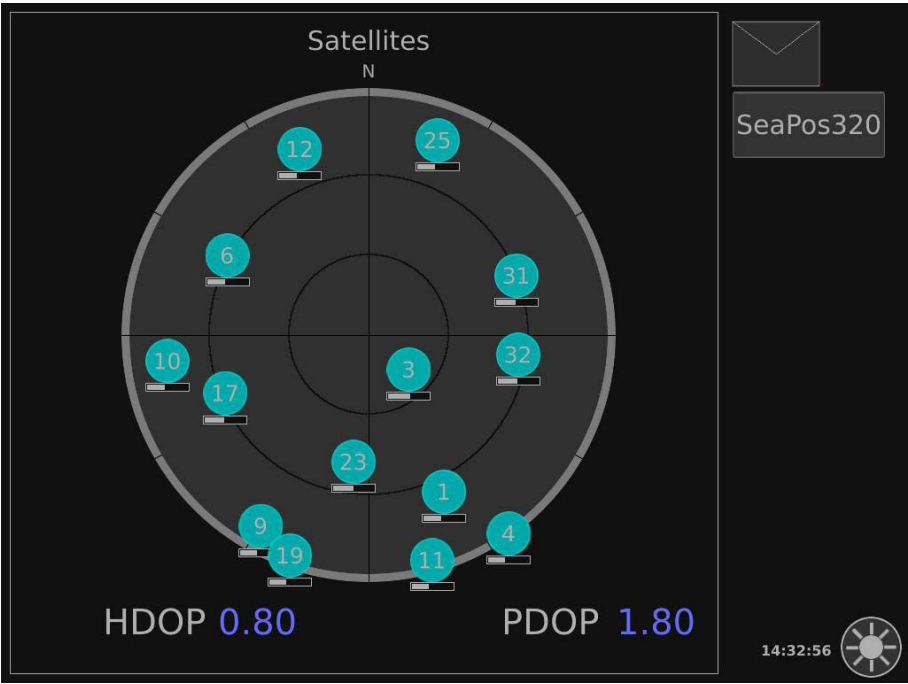
The left side holds various status and position indicators.

- The **POS-Q** quality indicator highlights no bars if there is no GPS fix is available, one bar for normal GPS and two bars for differential fix.
- The **DIF** indicator will also be lit if there is a reference station used in the fix.
- The **INT** integrity status indicator is red for unsafe, yellow for caution and green for safe.
- The **COG/SOG** indicator is lit if course over ground and/or speed over ground is present.
- The **datum** used is displayed at the bottom.



Satellites view

The **Satellites** displays the location of the satellites in the sky. Underneath each satellite there is an indicator for signal-to-noise ratio. It also displays HDOP and PDOP values.



Reference stations view

The **Reference stations** view displays a list of reference stations stored in the IALA receiver.

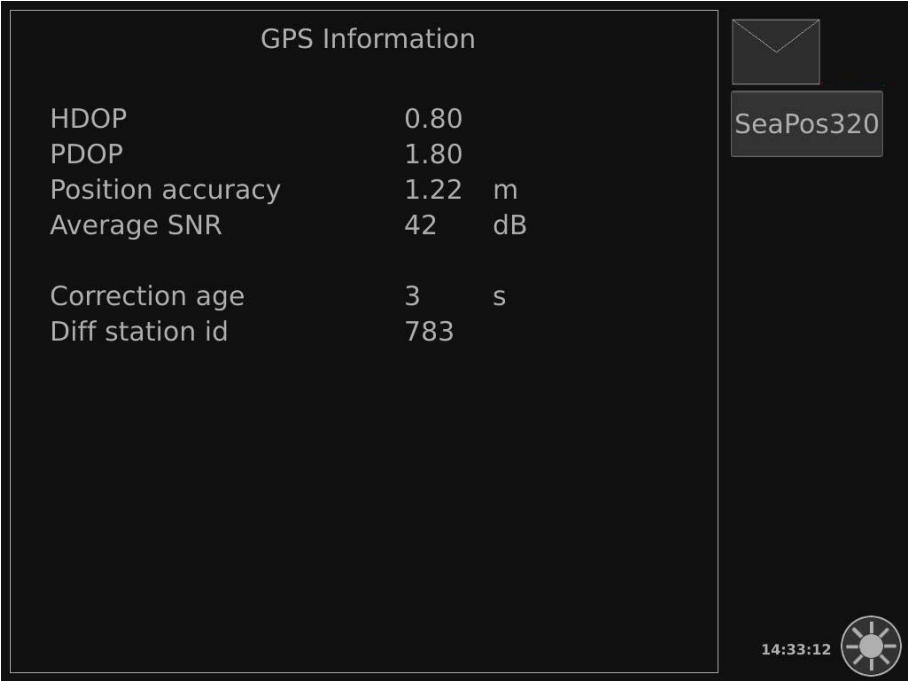
The 'Reference Stations' view displays a table with the following columns: BeaconId, Name, Frequency, Health, Distance, Status, and WER. The table is currently empty. On the right side, there is an envelope icon, the text 'SeaPos320', and a compass icon with the time '14:32:59'.

BeaconId	Name	Frequency	Health	Distance	Status	WER
----------	------	-----------	--------	----------	--------	-----

GPS information view

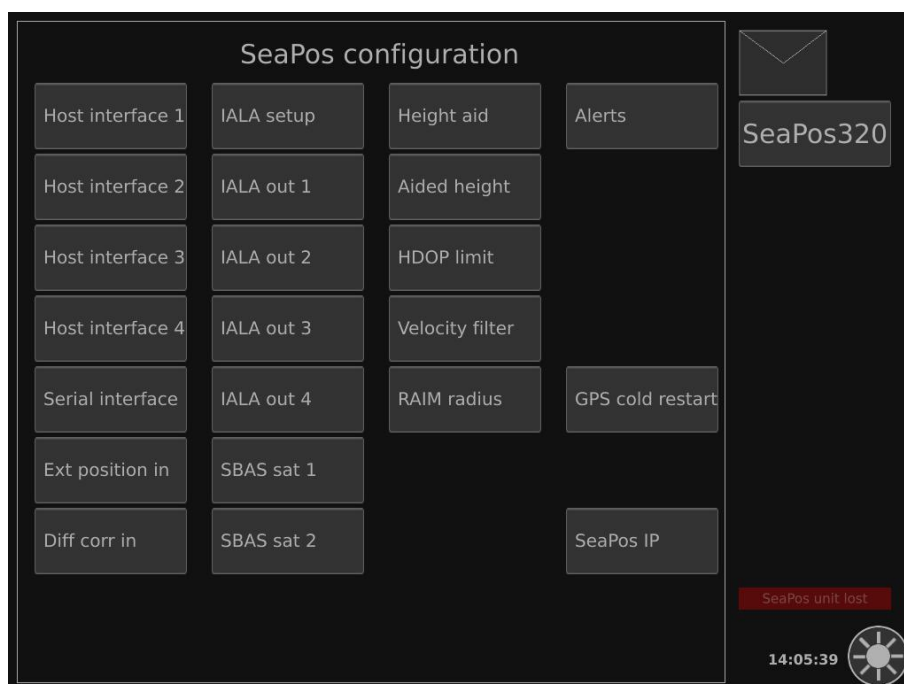
The **GPS information** view, shows values for HDOP, PDOP, position accuracy and average satellite signal-to-noise ratio.

If the IALA receiver is able to receive data from a reference station, and this is used in the position fix, the correction age and reference station ID, are also displayed.



SeaPos configuration view

The SeaPos **Configuration** view holds the system settings and configuration parameters.



Configuring the SeaPos unit

The SeaPos unit is pre-configured and does not require any configuration to be operable.

Should you, however, need specific settings the **SeaPos configuration** view holds submenu items for configuration of the SeaPos Unit. Some of these are password protected with the default password **1234**. Tap a submenu item to open a corresponding page where the values can be edited.

Tap **Save** to save the changes. For some parameters, a drop-down list of valid values is used instead on a text input box and for others you can make a selection with radio buttons.

A point "." is used as a decimal mark.

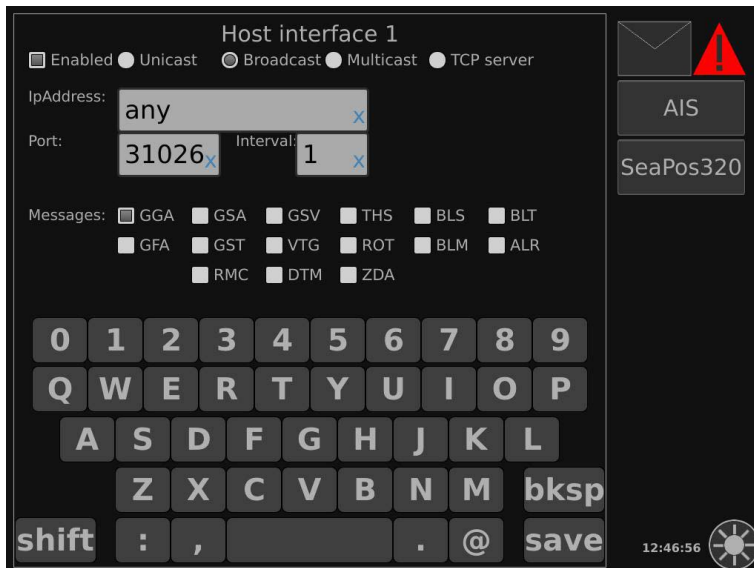
Setting NMEA data output messages on host interface

The host interfaces and the serial interface are available for output of NMEA data. These can be configured by selecting message types, connection type and message interval.

Procedure

- 1 Enter the **Configuration** view.
- 2 Tap the **Host interface** submenu item to open the **Host interface** dialog box.
- 3 Enable and select connection type.
- 4 Type the IP address and the Port number (depending on connection type selected).
- 5 Type output interval [seconds].

- 6 Select NMEA message type.
- 7 Tap **Save** when finished.

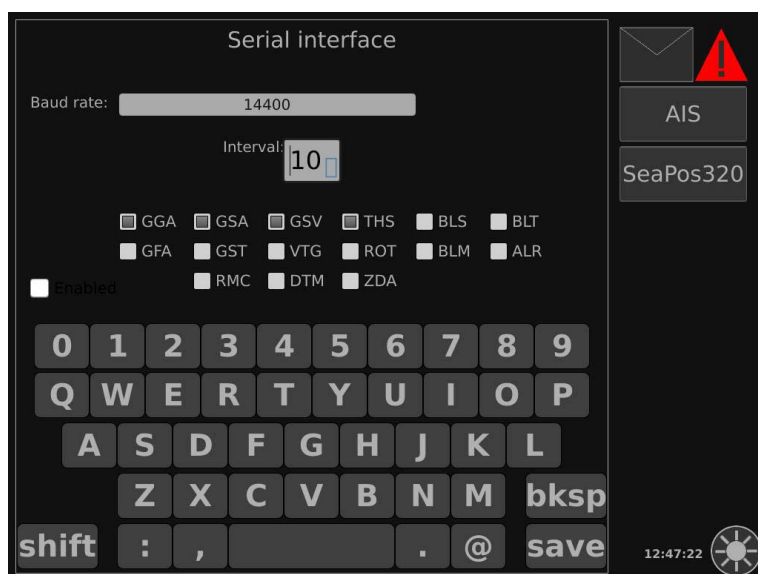


Setting NMEA data output messages on serial interface

The host interfaces and the serial interface are available for output of NMEA data. These can be configured by selecting message types, connection type and message interval.

Procedure

- 1 Enter the **Configuration** view.
- 2 Tap the **Serial interface** submenu item to open the **Serial interface** dialog box.
- 3 Enable serial interface.
- 4 Select the wanted baud rate.
- 5 Type the wanted interval [seconds].
- 6 Select NMEA message type.
- 7 Tap **Save** when finished.

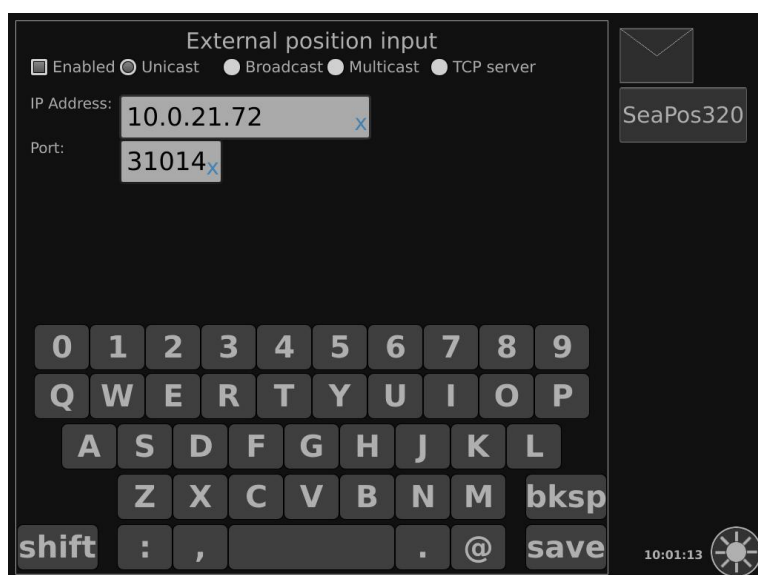


Setting external position input

If an external positioning sensor is connected to the system you must enable reception of the external position data.

Procedure

- 1 Enter the **Configuration** view.
- 2 Tap the **Ext position in** submenu item to open the **External position input** dialog box.
- 3 Enable external position input and select connection type.
- 4 Type IP address and port number (depending on connection type selected).
- 5 Tap **Save** when finished.



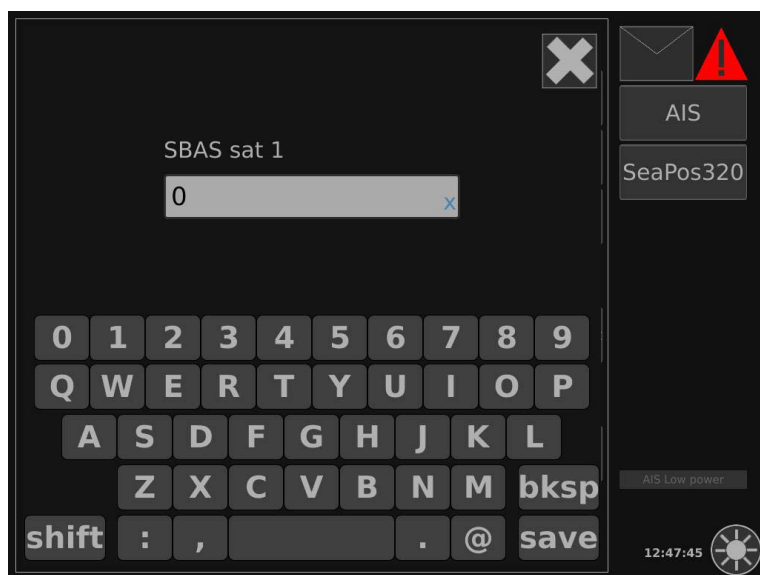
Enable tracking of SBAS satellites

The default value for SBAS satellites is 0, which means Automatic mode where the system will track the available satellites. Depending on the vessel location you can set the system to track specific SBAS satellites by typing the satellite ID number. To turn off tracking, set both satellites to -1.

- 0 = auto
- -1 = no tracking

Procedure

- 1 Enter the **Configuration** view.
- 2 Tap the **SBAS Sat 1** submenu item to open the **SBAS Sat 1** dialog box.
- 3 Type the specific satellite's ID number.
- 4 Tap **Save** when finished.
- 5 Repeat the same for **SBAS Sat 2**.
- 6 Tap **Save** when finished.



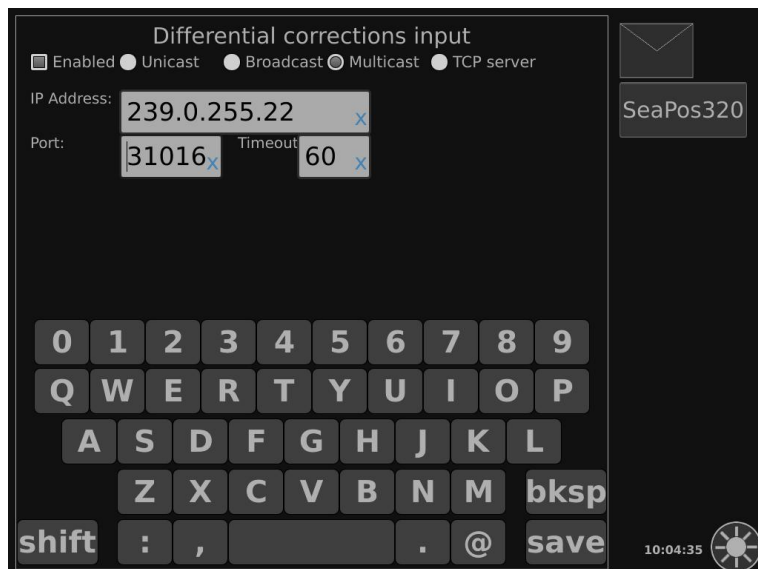
Enabling use of external DGPS source

If you want to use an external DGPS source, enable the network setting to receive RTCM version 2.3 data.

Procedure

- 1 Enter the **Configuration** view.
- 2 Tap the **Diff corr in** submenu item to open the **Differential corrections input** dialog box.
- 3 Enable use of external DGPS source and select connection type.
- 4 Type the input IP address and port number (depending on connection type selected).

- 5 Type timeout value [seconds]. Default is 60 seconds.
- 6 Tap **Save** when finished.



Setting alerts

Alerts can be configured to be sent on a specific port, and to trigger a relay.

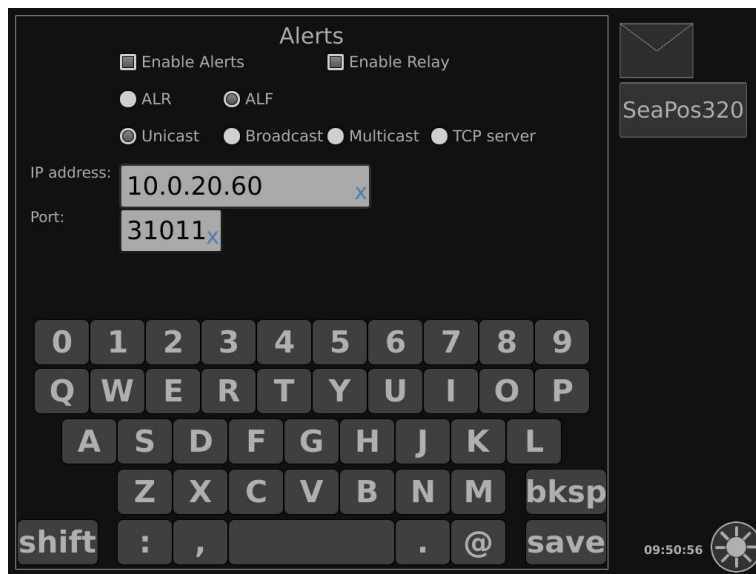
The alerts are displayed with a yellow icon in the display. Press the icon to see the alert contents.

Cautions and warnings

- HDOP exceeded.
- No raw data/no GPS data.
- No position solution.
- No link data.
- No DGPS position.

Procedure

- 1 Enter the **Configuration** view.
- 2 Tap the **Alerts** submenu item to open the **Alerts** dialog box.
- 3 Enable Alerts and/or Relay.
- 4 Select alarm mode: ALR or ALF.
ALR: select this mode if you are using legacy alarm mode.
ALF: select this mode if you are using BAM.
- 5 Select connection type.
- 6 Type the IP address and port number (depending on connection type selected).
- 7 Tap **Save** when finished.

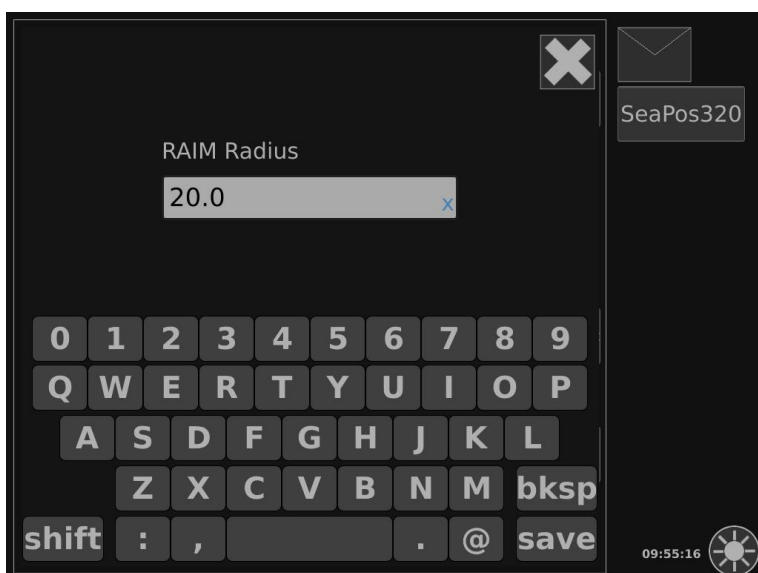


Setting alarm and warning limits

HDOP limit and RAIM radius set alarm and warning limits.

Procedure

- 1 Enter the **Configuration** view.
- 2 Tap the **HDOP limit** submenu item to open the **HDOP limit** dialog box and/or the **RAIM radius** submenu item to open the **RAIM radius** dialog box.
- 3 Enter the wanted HDOP limit value.
The HDOP limit default value is 4.0.
- 4 Enter the wanted RAIM radius value.
The RAIM radius default value is 20.0 metres.
- 5 Tap **Save** when finished.

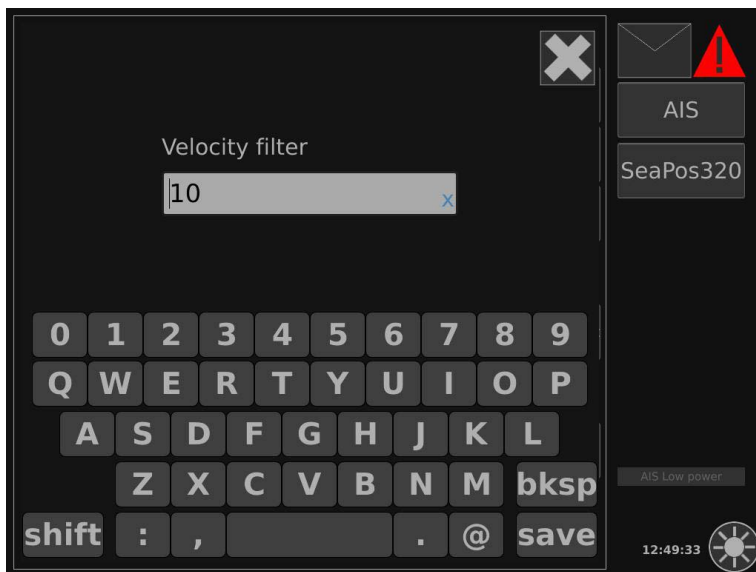


Setting velocity filter

The duration of the filter sample period used for velocity calculations.

Procedure

- 1 Enter the **Configuration** view.
- 2 Tap the **Velocity filter** submenu item to open the **Velocity filter** dialog box.
- 3 Enter the wanted velocity filter value.
The velocity filter default value is 10 seconds. Values from 0 to 99.
- 4 Tap **Save** when finished.



Setting height aiding

Height aiding is used to ease the calculation of the position fix.

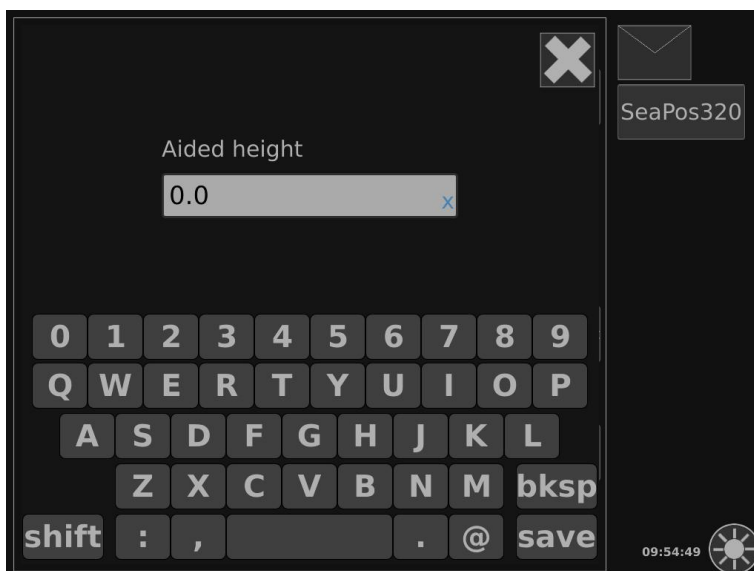
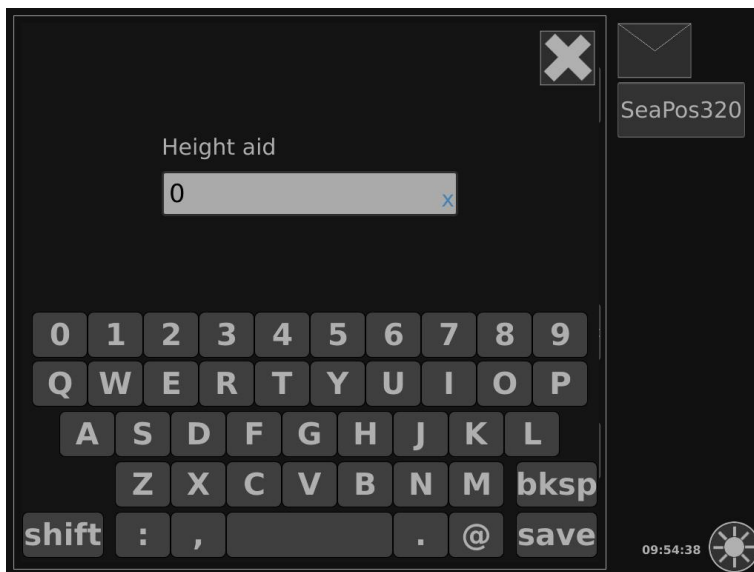
The **height aid** default value is 2.

- 0 = off
- 1 = the height aid value set in the **Aided height** dialog box
- 2 = auto

When the height aiding is set to **2 = auto**, the automatic filtered height aiding uses the value set in the **Aided height** dialog box as initial height.

Procedure

- 1 Enter the **Configuration** view.
- 2 Tap the **Height aid** submenu item to open the **Height aid** dialog box.
- 3 Type the wanted height aid value.
0 is default value. Requires no further action.
1 requires aided height in metres.
- 4 Tap the **Aided height** submenu item to open the **Aided height** dialog box.
- 5 Type the aided height value in metres.
- 6 Tap **Save** when finished.



Configuring the IALA receiver

The IALA receiver card can be configured by setting the search mode. The IALA search mode default value is 1, which means that the search for IALA bacon receivers is done automatically.

- 0 = off
- 1 = auto
- 2 = manual frequency/auto bitrate
- 3 = manual
- 4 = database

For **Manual** mode, the bitrate can also be configured. The IALA bitrate values are 50, 100 or 200.

IALA setup

Mode: 1 x Latitude: 2916.45 x

Bitrate: 100 x N/S: N x

Frequency: 301.0 x Longitude: 10311.12 x

Lock pos: 0 x E/W: E x

0 1 2 3 4 5 6 7 8 9

Q W E R T Y U I O P

A S D F G H J K L

Z X C V B N M bksp

shift : , . @ save

10:50:57

Procedure

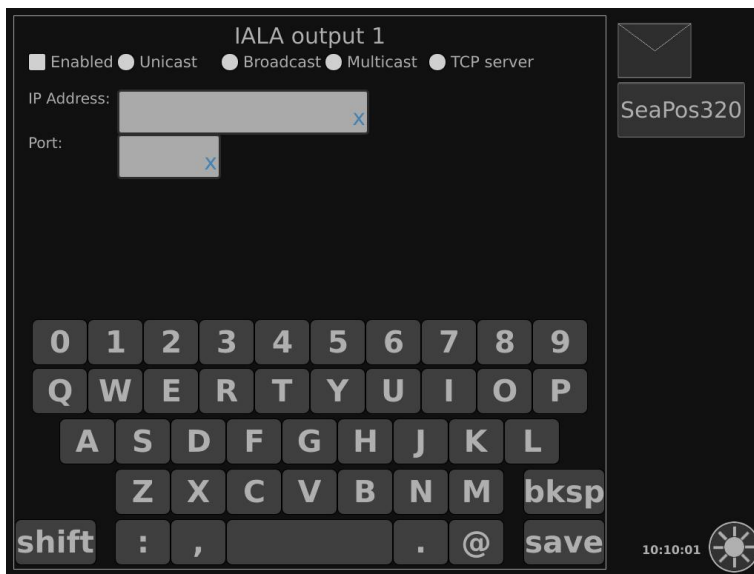
- 1 Enter the **Configuration** view.
- 2 Tap the **IALA setup** submenu item to open the **IALA setup** dialog box.
- 3 Type the wanted search mode value, between 0 and 4.
- 4 If you have search mode 3, type the bitrate value: 50, 100 or 200.
- 5 If you have search mode 2 or 3, type receiver frequency.
- 6 Lock position can be set to 0 or 1. Default is 0.
If you have set lock position to 1, the receiver will be locked to a specific position.
Enter the parameters for this position.
- 7 Type the latitude for the receiver.
- 8 Type North or South direction.
- 9 Type the longitude for the receiver.
- 10 Type East or West direction.
- 11 Tap **Save** when finished.

Setting IALA output

You can set up four channels for distribution of RTCM corrections.

Procedure

- 1 Enter the **Configuration** view.
- 2 Tap the **IALA out** submenu item to open the **IALA output** dialog box.
- 3 Enable IALA output and select connection type.
- 4 Type the output IP address and port number (depending on connection type selected).
- 5 Tap **Save** when finished.

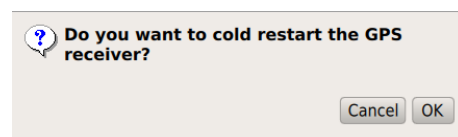


Restarting the GPS receiver

If you experience no data reception or reception of inconsistent data it is advisable to restart the GPS receiver.

Procedure

- 1 Enter the **Configuration** view.
- 2 Tap the **GPS cold restart** submenu item.
The message **Do you want to cold start the GPS receiver?** appears.
- 3 Tap **OK** to initiate the restart.
The GPS receiver will restart after a few seconds.



Operational procedures

The SeaPos system requires no operational interaction from the user. It is for information purposes only.

Technical specifications

This chapter provides the technical specifications and requirements related to the multi function display.

Weight and outline dimensions

Type	MPCF1–10.4“
Width	252.4 mm
Height	197.8 mm
Depth	36.4 mm
Weight	1.6 kg

Power specifications

Type	MPCF1–10.4“
Voltage	18 to 32 V DC
Power consumption	11 W @ 24 V (50 % brightness) 14 W @ 24 V (100 % brightness)

Environmental specifications

Type	MPCF1–10.4“
Enclosure material	Die cast and painted aluminium
Enclosure protections	IP 56 as console or flush mount, IP 22 as VESA mount
Operating temperature range ^[1]	–10 to +55 °C

-
1. Continuously running at very high temperatures will reduce computer lifetime. Recommended operating temperature is +25 °C.

Storage temperature range –25 to +70 °C
 Operating humidity 95 % non-condensing

Conformity declaration

The product is in compliance with relevant product standards.


KONGSBERG

DECLARATION OF CONFORMITY

(according to ISO/IEC 17050-1)

Manufacturer's name: **Kongsberg Seatex AS**

Manufacturer's address: **Pirsenteret, N-7462 Trondheim, Norway**

declares that the product:

Product type: **Maritime Panel Computer**

Models: • **Bridge Wing Display**
 • **Multi Function Display**

is in conformity with the **EMCD directive 2004/108/EC** and **Low Voltage Directive 2006/95/EC**,
 using relevant sections of the following product standards:

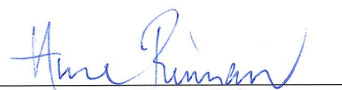
EMC: **IEC/EN 60945: 2002**

Electrical safety: **IEC/EN 61010-1:2010**

Report references
 Test report EMC: Report No.: 20157; issued by Applica Test & Certification
 Technical Construction File Safety: KSX-2014-3-Display; issued by Kongsberg Seatex AS

Supplementary information
 The generic product is named Maritime Panel Computer MPCF1-10.4. Models may run different SW. The product is further compliant to environmental requirements in IEC/EN 60945, DnV 2.4, IACS E10.

Date and signature
2014-10-17

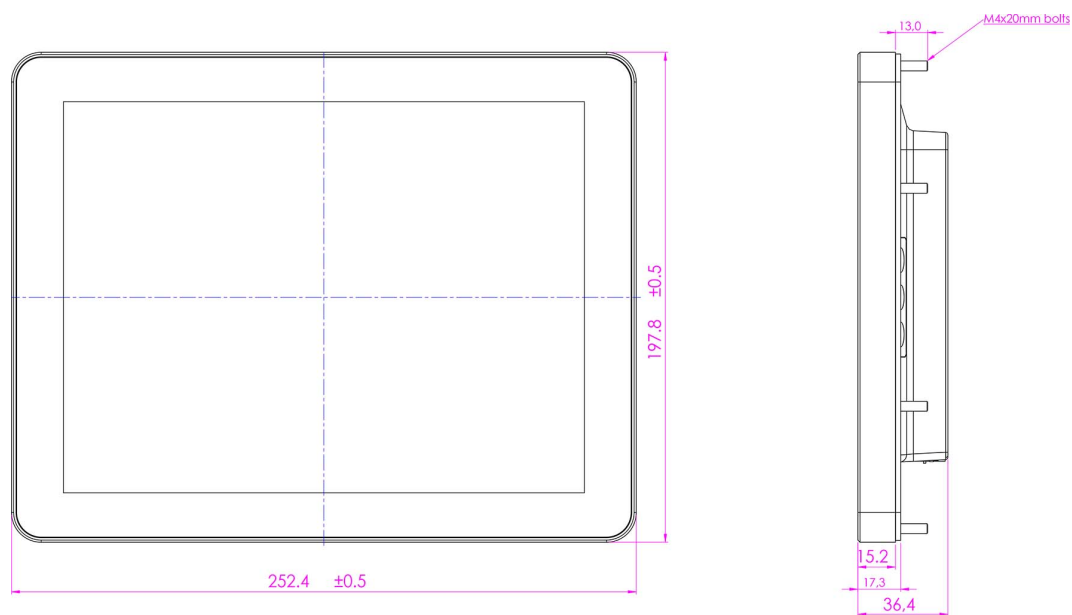

Arne Rinnan, CTO

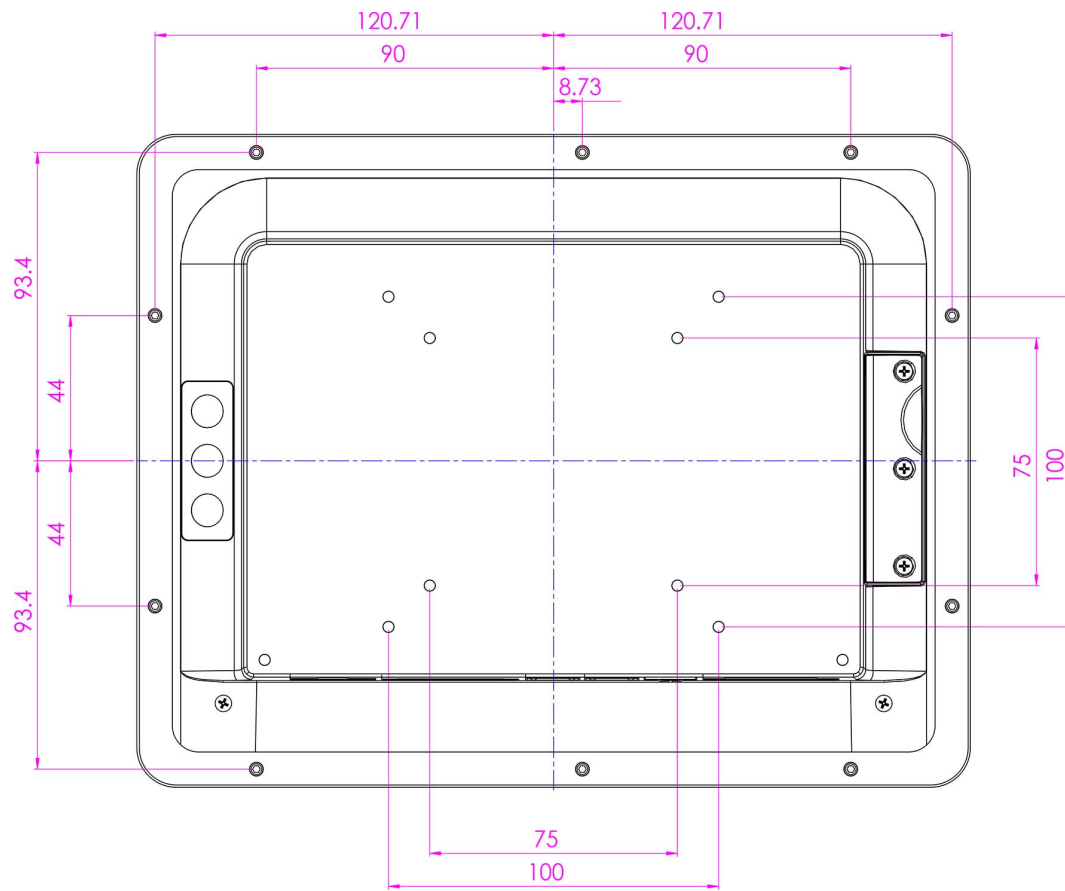
Drawings

This chapter provides drawings of the multi function display.

Dimensions

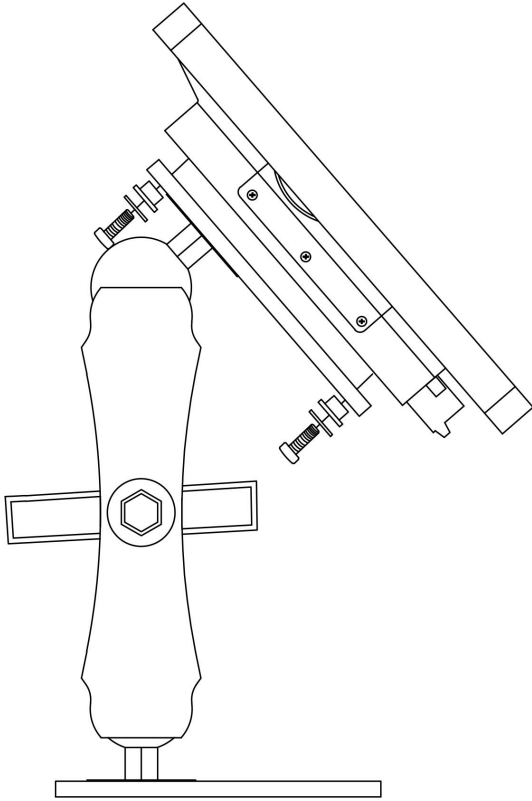
Dimensions and screw placement are illustrated. Mounting holes for a VESA bracket are shown.



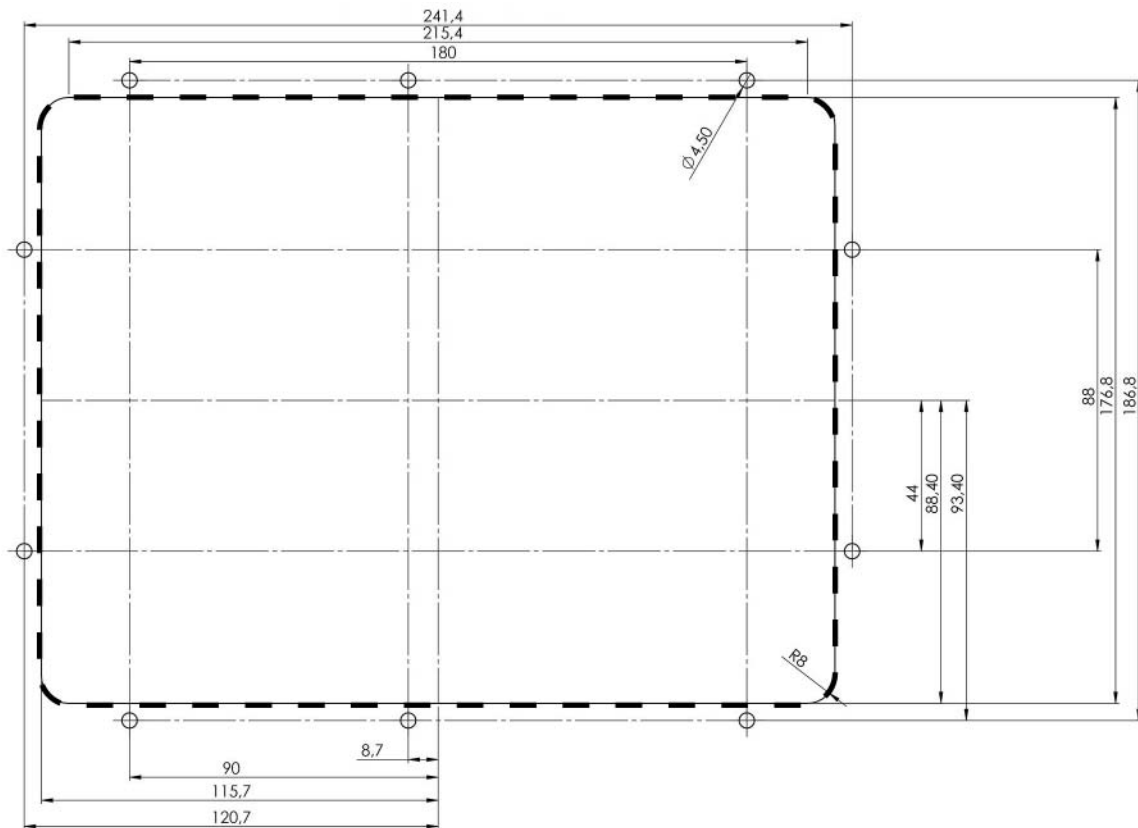


Bracket

The figure shows the standard VESA bracket.



Console cut-out, front view



Glossary

Abbreviations

AC	Alternating current
AIS	Automatic Identification System
BF	Blue Force
DC	Direct current
GPS	Global positioning system
IP	Ingress protection
IP	Internet protocol
IWW	Inland Waterway
LAN	Local area network
MFD	Multi Function Display
MMSI	Maritime Mobile Service Identity
UTC	Universal Time Coordinated. This is the official time in the world and has replaced GMT (Greenwich Mean Time) as the official time.
V	Voltage
W	Watt

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