KONGSBERG

# *K-Sim® Navigation-, Fishery- and Offshore Simulator*

## *Student Instrumentation*

This guide will present the student instrumentation and equipment, systems and controls enabling the user to operate the bridge instruments and equipment.

For release 2.6.10

SO-1432-A10

# Revisions

| Rev. | Written by | | Checked by | | Approved by | |
|---|---|---|---|---|---|---|
| | Date | Sign. | Date | Sign. | Date | Sign. |
| P1 | 21.11.2013 | PMS | | | | |
| P2 | — | | | | | |
| P3 | — | | | | | |
| P4 | 20.12.2013 | | | | | |
| P5 | 09.10.2014 | | | | | |
| A | 25.06.2015 | | | | | |
| A1 | 04.12.2015 | PMS | | | | |
| A2 | 02.09.2016 | PMS | | | | |
| A3 | 09.03.2017 | PMS | | | | |
| A4 | 10.10.2017 | PMS | | | | |
| A5 | 22.09.2018 | PMS | | | | |
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| A7 | 24.10.2019 | PMS | | | | |
| A8 | 10.07.2020 | PMS | | | | |
| A9 | 04.09.2020 | PMS | | | | |
| A10 | 29.10.2020 | PMS | | | | |
| A11 | 24.02.2021 | PMS | | | | |

# Document history

| | |
|---|---|
| P1-5 | Added panels along with release of functions. |
| A | In connection with release K-Sim version 2.2.0 |
| A1 | Added H/W levers on azimuth, throttle and thrusters. No functional changes. |
| A2 | DSC added to the MF/HF Radio and new Flag panel. Release K-Sim 2.2.3. |
| A3 | Added Gyro Control and Wheelhouse/Mast Elevation Control. Release 2.3.0. |
| A4 | Added Propulsion Indicator (and configuration). Release 2.4.0 |
| A5/A6/A7 | Panels added; Blue Sign, Propulsion Mode, Flags and Doppler Log (revised), Tension indicator, Student position, Wind- and RPM instruments and Magnetic compass. Corrected and added VHF DSC descriptions. From release 2.5.0 |
| A8 | Added panels: Deck Light, Waterjet Control., Bridge Watch Monitoring System (BWMS), Fire Pumps and Azimuth Tiller. |
| A9 | SSAS missing. Update of ToC. Removal of Deck Light indicated twice. |
| A10/11 | Sound Signal and Fuel Management. Added Helo Status. From release 2.6.10. |



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# Hazard Warnings and Cautions

## Fire

If a fire condition arises emission of toxic fumes can be anticipated from burning insulation, printed circuit boards, ETC.

## Dangerous Voltages

This equipment is not fitted with safety interlocks and lethal voltages are exposed when the cabinets are open. Before removing any sub-units or component all supplies must be switched off. No user serviceable parts inside.

## Electrostatic sensitive device

Certain semiconductive devices used in this equipment are liable to damage due to static voltage. Observe all precautions for handling of semiconductive sensitive devices.

## ESD precautions

Refer service to qualified personnel. Turn power off prior to opening any of the consoles. Whenever doing work inside the consoles use an ESD protective wrist strap.

Whenever a printed circuit board is put aside it must be put into an ESD protective bag or on a grounded ESD mat.

Non-conductive items such as synthetic clothing, plastic materials, etc. must be kept clear of the working area, otherwise they may cause damage.

Printed circuit boards must be kept in ESD protective bags at all times during storage and transport. The bags must only be opened by qualified personnel using ESD protective equipment as specified in this section.

## Computer system

The simulator contains general purpose computers. Running non Kongsberg software in any of them will void the warranty. Connecting other keyboards, mice or monitors may also void the warranty.

## Notice

The information contained in this document is subject to change without notice. Kongsberg shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this document.

# Table of contents

# 1 ABOUT THIS MANUAL

This user manual is made for the K-Sim® Navigation-, Fishery- and Offshore Simulator system; the student part of the system. The manual will guide you through the standard and optional student instrumentation and support operation of the bridge equipment on the simulator. Aft deck (anchor handling & winches) and Crane operations are found in other documents. The document does not cover any technical issues and maintenance either.

This manual contains all panels and systems available to the simulator. Some of these in this manual are not available to all simulators and the layout of some menu pages might differ from your simulator. This is due to special requests, options accepted, panels available and the configuration of the simulator.

Most instruments are available in blue, grey or black background colour and in a modular design to present analalogue and digital information, execute user interactions (MMI) both on screen based (standard TFT) or touch based 7 inch or 10 inch flat screen types.

Some devices will require (some are optional) hardware controls (joysticks, handset etc.) configured to the system to operate correct.

*A possible arrangement of a K-Sim® Navigation bridge wheelhouse.*

# 2 AIS

## 2.1 Purpose

The purpose of AIS, the Automatic Identification System, is information collection and message exchange and distribution on the AIS VHF network. The system is based on the Seatex AIS 200 unit as produced by Kongsberg Seatex with some function disabled.

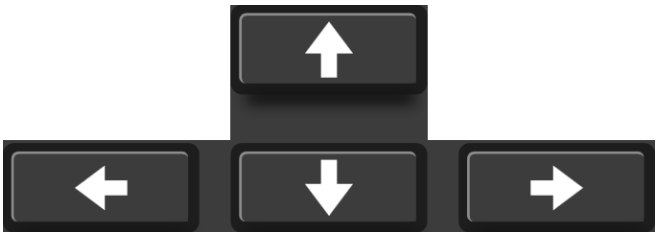
## 2.2 Description


## 2.3 Display, keys and controls

The MKD display shows 4 lines with 20 characters and an LED backlight. The LED backlight is switched on by default, when the application is started.
The keypad has 21 buttons with alphanumeric and navigation function (ARROW buttons). The buttons will have a LED backlight function for better visibility in night mission. The LED backlight for the MKD has an ON/OFF function operated by the 0 – button from the alphanumeric keypad. The dimming function has to be linked to the main console dimmer.

## 2.4 Manoeuvring in the display

When the information on the active page has more than 4 lines / more than 20 characters in a line, the display content in the lines 2, 3 and 4 can be moved up/down and right/left by using the ARROW buttons.



Line 1 in the display will always show the current menu headline (name of the page). Arrow symbols in column 20 will indicate the availability of additional information to be displayed by moving the page frame.

## 2.5 Buttons

Manoeuvring in the display: moves 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.
For this purpose the indication is as follows:

Line 1: Arrows pointing left / right in column 19/20
Line 2: Arrow pointing upward in column 20
Line 3: Underscore character in last column indicating that this is the selected line
Line 4: Arrow pointing downward in column 20


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 (zero) button toggles the backlight on/off.


VIEW — Press this button to switch between 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.

## 2.6 Operation

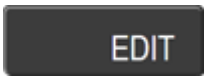
| Input | Processing | Output |
|---|---|---|
| INFO | Pressing the button will at any time call up the "USER HELP" page for the selected menu | Display will show information for the selected menu from a predefined list. From the USER HELP page the operator can switch back to the previous menu by pressing OK. |
| VIEW | By pressing the "VIEW" button the display will | Diagnostic and submenues; VHF S/W, Network etc. are |

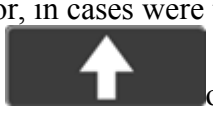
| | | |
|---|---|---|
| | switch between views: Ship List, Main Menu and Diagnostics. | not implemented. |
| OK | Activates the selected page. Selected page is indicated by an underscore character in the last digit of the text in the line. | Switch to selected page. |
| CANCEL | Always switch back one level. Pressing CANCEL when EDIT mode is activated, the previous values will be called up, as long as the OK button has not been pressed to save the modification. | In “display only” levels the previous level will be called up. |

**Note!** *The following functions are currently not implemented on the emulated version of the AIS 200 mkd unit:*

- **CHN. (CHANNEL) MANAGEMENT - - - - - - -**
- **View Regions, Add Region and Edit Current Region.**
- **SETTINGS - - - - - - -**
- **LR (Long range), Serial, Network and PIN.**
- **DIAGNOSTIC - - - - - - -**
- **VHF, Network, Port Activity, SWR Levels, SWR Test, Monitoring and Config File.**

## 2.7 Editing

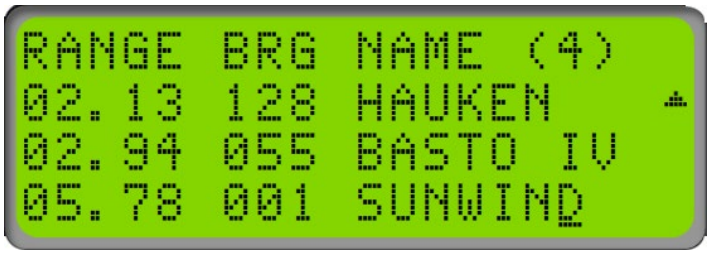
The user can edit a variable by pressing 

when highlighted (underscore in the alpha-numeric display). The value of the current variable is stored and the user can start editing the data. The user selects characters by repeatedly pressing the numeric buttons, or, in cases were there are predefined variables, chooses from a list of these by using the  or  buttons.

Use the keypad to edit and insert numbers 0-9 or letters ABC, DEF, GHI. JKL, MNO, PQRS, TUV and WXYZ (letters appears after pressing SHIFT).
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 for 2 (two) second.

## 2.8 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.

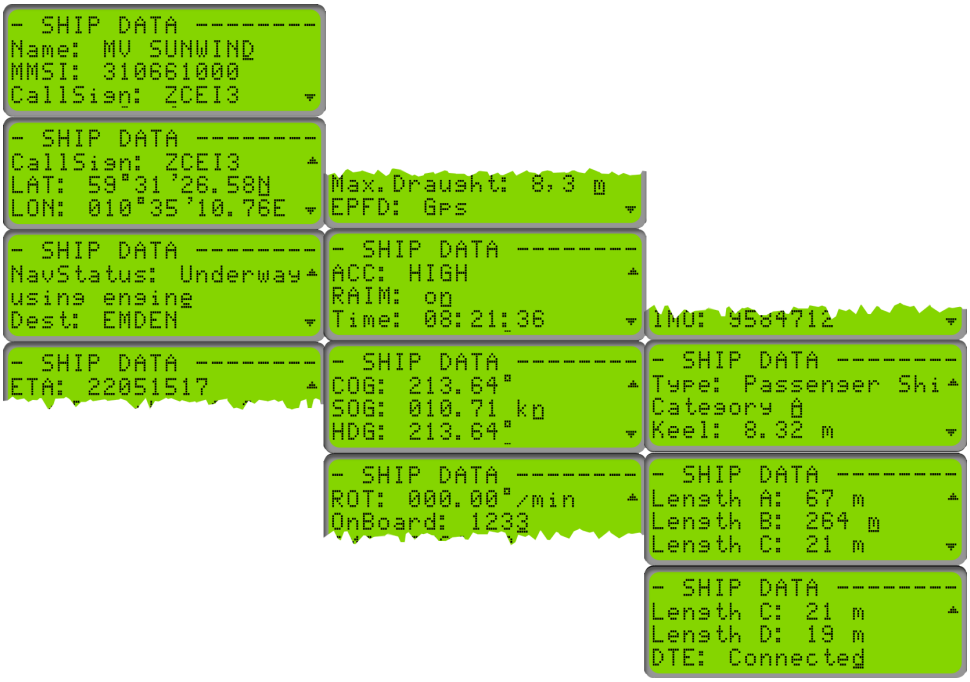



Use the  or  buttons to scroll the viewport to see more. The symbol  indicates more data upwards and  indicates more data downwards.

Select vessel (AIS target) with underscore by 

.


The letter code 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.

## 2.9 Long Range

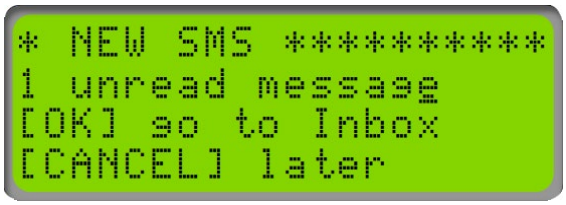
The operator can set the LR status (Long Range request). After accessing the EDIT mode (PIN code required), the operator can toggle between MANUAL or AUTOMATIC. The edit, save and return procedure applies as usual.

## 2.10 Pin Code

The PIN page is a “view only” page. The operator is not authorized to change the PIN code. The fixed PIN code to be used in the application should be shown here. The PIN code to be emulated AIS: 1910 Text for line no. 4: press [CANCEL] to return. There is no pin required for sending SMS (described next section).

## 2.11 Short Message (SMS)

From the main menu the operator can select the SMS page as shown in picture on the right. The operator selects the menu page by scrolling up/down and activates it by pressing OK.
From the main menu the operator can select the SMS page as shown in picture on the right. The operator selects the menu page by scrolling up/down and activates it by pressing OK.




### Inbox

The inbox contains a list of received messages (max 30). The operator can scroll through the list with the up/down arrows and open a selected message by pressing OK. Messages that have been read have a check-sign /tick off sign in the first digit as seen in the picture on the right. A message can be selected for deleting. When a message has been read, the next message can be selected by pressing the OK button.
Press CANCEL to close the page.

### Write message

When the Write message page has been opened by pressing the EDIT button, the line 4 (Send to) automatically uses the station identifier and displays it in line 4 as the station to reply to.

Selecting the Channel with OK, the operator can select: A, B, Both, Default by using the cursor up/down function. The channel has to be confirmed with pressing OK button. Selecting Type, the operator can select following options using the up/down cursor: Addressed, Addressed Safety related [Addr SR], Broadcast, Broadcast Safety related [Broadc SR]. Using the up/down scroll the operator can scroll in the list of station identifiers (Send to) and select the station to send a SMS to.

## Outbox

In the Outbox the operator can find all send messages. The first digit in the message line shows a check-sign / tick-off mark, when the receiver has read (acknowledged) the message. The latest message is always on top. In the example on the right this message has not been read by the receiver, as no check-sign is shown in the first digit. The operator can scroll up/down in the list and re-send or re-read a message. Pressing OK opens the selected message. Selecting EDIT resends the message to the same receiver.

## Predefined messages

The operator can edit, view or delete a previously defined message. He can press OK to view or edit a message or 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. The messages are named Pre1 to Pre5; “Happy Day”, “Happy Eastern”, “Merry Christmas”, Happy New Year” and “Happy Holiday”.

## Clear messages

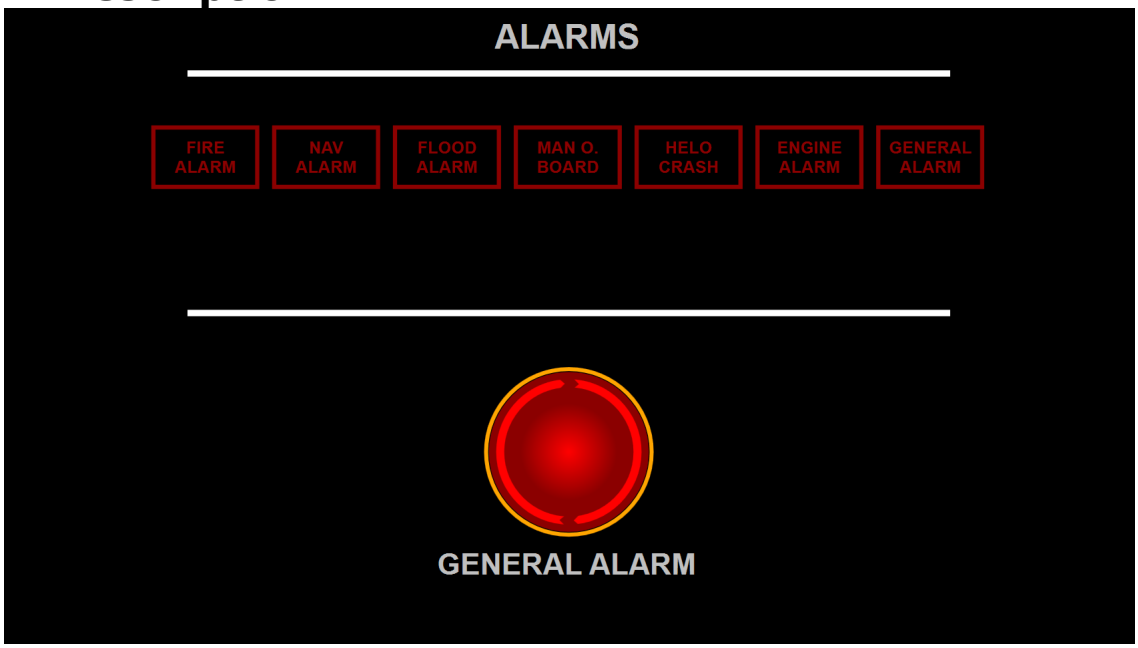
In the Clear Messages page the operator can delete all messages in the Inbox, Outbox or all the Predefined messages. In addition to the number of messages, the number of unread messages (2) is displayed for the Inbox.
For the Outbox, the number of unacknowledged messages (3) is displayed. If the operator wants to clear all messages in a box, he has to select the type of message with UP/DOWN ARROW and hold OK for 3 (three) seconds.

# 3 ALARMS

## 3.1 Purpose

The purpose of the ALARMS panel is to activate by bridge personnel and to notify the own ship's personnel of occurring alarm conditions onboard.

## 3.2 Description




## 3.3 Keys and controls


Alarm functions triggered from instructor. Acknowledge will silence and send feedback to instructor.

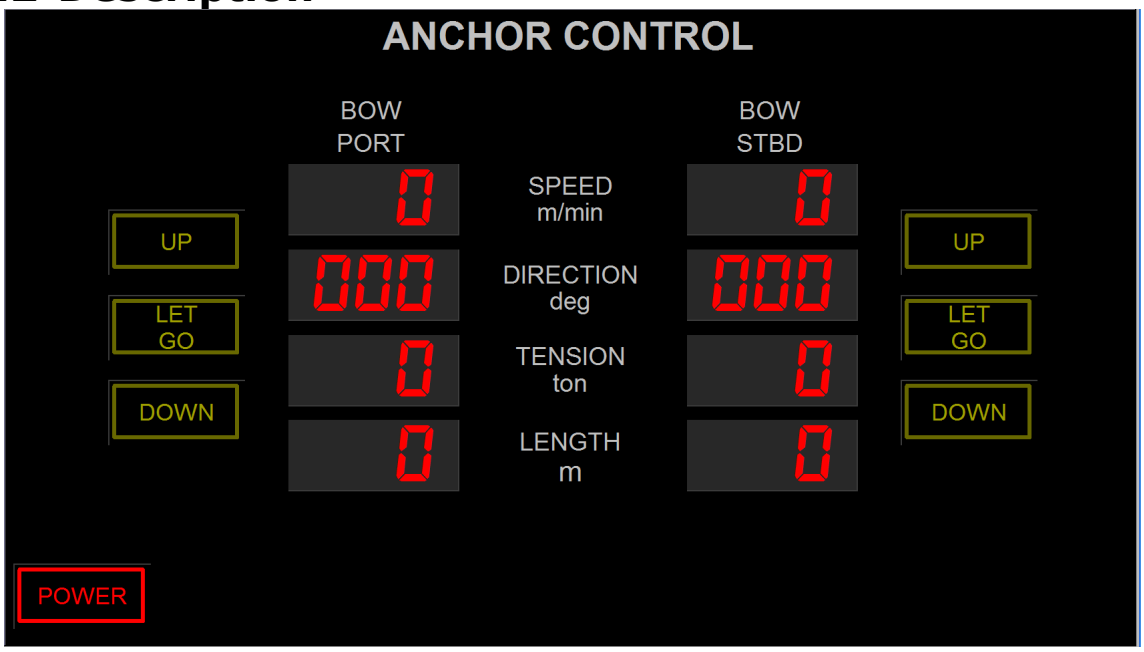
The general alarm may also be set from student. The instructor will acknowledge and student to reset (see picture).

# 4 ANCHOR CONTROL

## 4.1 Purpose

The purpose of the Anchor Control is to allow remote operation from the bridge of starboard and port anchor winches, as well as monitoring of chain speed, direction, tension and length.

## 4.2 Description




## 4.3 Keys and controls

### 4.3.1


Unit power on/off.

Anchor up. Heaving up the anchor at maximum winch speed.

Anchor down. Paying out the chain at maximum winch speed.

Let go the anchor. Releasing the winch brake, the chain will run out freely at maximum speed.

### 4.3.2 Digital displays

| Display | Explanation | Range | Step | Unit |
|---|---|---|---|---|
| *SPEED* | Chain speed during heave in or pay out. | 0.1-99.9 | 0.1 | m/min |
| *DIRECTION* | Relative direction of the chain. | 0-359 | 1 | degrees |
| *TENSION* | Chain tension meter reading. | 0-999 | 1 | tons |
| *LENGTH* | Total chain length out. | 0-999 or 0-99 | 1 | meters, fathoms or shackles* |

*A *shackle* is defined as the chain length between two joining shackles; 15 fathoms or 27.432 metres. Either metres, shackles or fathoms can be used as length units. Units are defined by the Instructor.

## 4.4 Operation

### 4.4.1 Start up and shut down

turns on the anchor control unit. The port and starboard displays will now indicate the current anchor chain data.
If the ship is equipped with only one anchor, the left hand display will present the current anchor chain data. The same keys are used to operate the anchor.

### 4.4.2 Paying out the anchor chain

After power on, keep 

pushed to pay out. The chain will now be let out with the winch motor engaged, at maximum winch speed.

To stop paying out, release 


### 4.4.3 Heaving in the anchor chain

Push 

to start heaving in. The key illuminates.

To stop heaving in click 

again.

To free the courser from heaving in the anchor, place the cursor on 

wand click the right mouse button. When you remove the courser the button will be pressed down

When the anchor is heaved into the storage position, the winch will stop automatically.

### 4.4.4 Let go the anchor

Keep 

pushed to run out the chain. The brake is released, and the chain runs out freely, with the winch motor disengaged.

To stop running out, release 

. The winch brake is engaged.

### 4.4.5 Chain break indication

When 

, 

and 

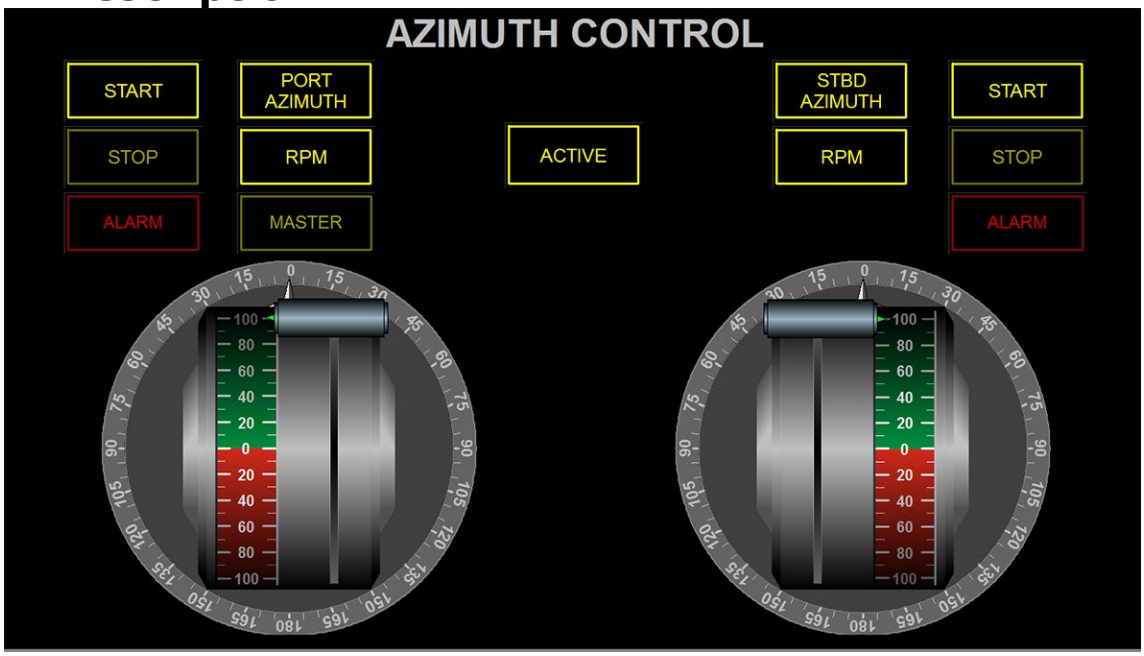
are flashing, the corresponding chain is broken.

# 5 AZIMUTH CONTROL

## 5.1 Purpose

The purpose of the Azimuth control is to control all Port and Starboard Azimuth thrusters RPM and Azimuth (direction) orders.

## 5.2 Description




## 5.3 Keys and controls


When illuminated indication that the panel is activated/ power on


STOP button and indicates that either PORT/STBD Azimuth propulsion is stopped. (Also Waterjets)


When flashing: Azimuth rotating to ordered direction
When illuminated the Azimuth in set direction.


When flashing the increasing/de-creasing rpm to ordered rpm. When illiminated running to setpoint.

MASTER

Activation and indication button that PORT Azimuth control also control STBD Azimuth

ALARM

When flashing: An fault condition has occurred
When illuminated: A fault condition is acknowledged

## 5.4 Operation

- Click ACTIVE if not already illuminated
- Click PORT START and STBD START to activate the PORT and STBD Azimuth

- *Speed*
  - When the cursor is over the respective combilever handle the hand symbol will appear.
  - Press down the left mouse button to drag/move the combilever forward and astern. Release the mouse button when the combilever is in desired position.

- *Direction*
  - When the cursor is on the azimuth indication ring the hand symbol will appear.
  - Click and drag the combilever to Stbd or Port. Release the mouse button when the combilever is in desired direction.

- The PORT or STBD PORT AZIMUTH and PORT PITCH will start flashing until they are in ordered direction/pitch

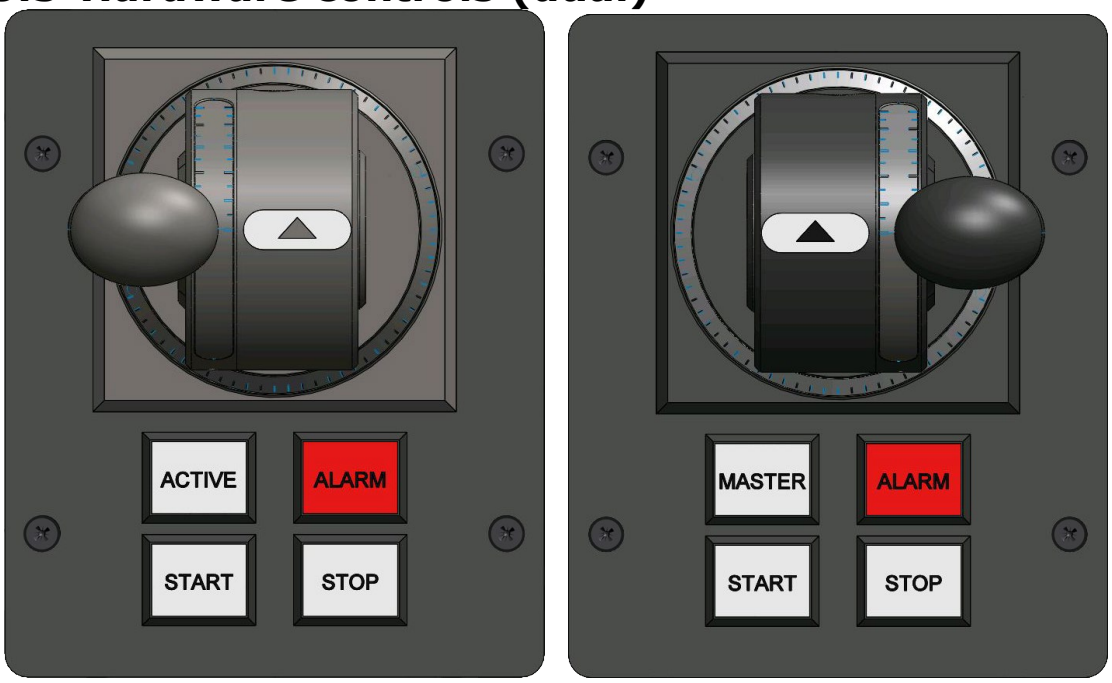
MASTER

Used for master/slave operation. When MASTER is activated the *port* combilever controls both combilevers simultaneously in azimuth and RPM. The STBD Azimuth control buttons are turned off

PORT ALARM

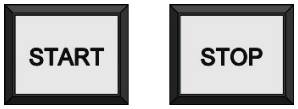
When a fault condition occurs the PORT ALARM button begins flashing and a buzzer is sounded. Click the button to stop the buzzer. The PORT ALARM gets a steady light.

## 5.5 Hardware controls (dual)




### 5.5.1 Keys and controls


When illuminated indication that the panel is activated/ power on




START and STOP buttons and indicates that either the Port or Starboard Azimuth propulsion is stopped.

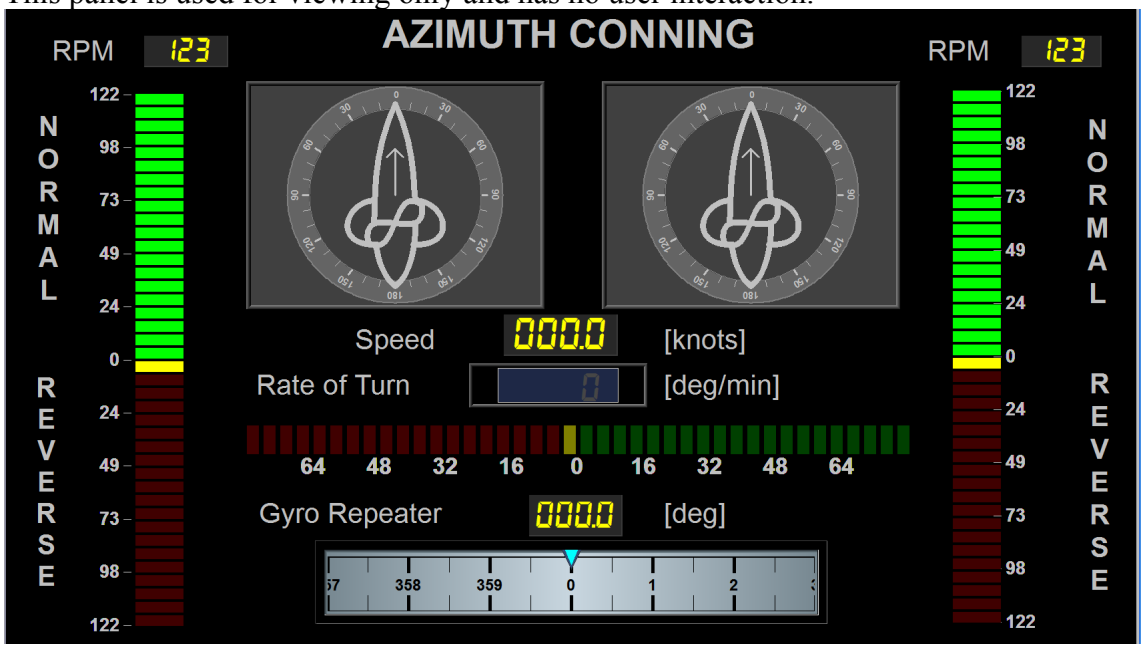

Activation button and indication lamp that the Port Azimuth lever control also controls the starboard azimuth drive/lever.


When flashing an fault condition has occurred. When steady illuminated the fault condition is acknowledged.

# 6 AZIMUTH CONNING

## 6.1 Purpose

This panel is used for viewing only and has no user interaction.




## 6.2 Information

This panel is used for viewing only and has no user interaction.

**RPM:** The two bar graphs show port and starboard propeller speed order in RPM. On top of the two bars digital readouts indicates port and starboard propeller speed in RPM.

**Speed** Readout from vessel log (in knots).

**Azimuth Direction:** Two indicators, starboard and port shows propeller thrust direction achieved in degrees.

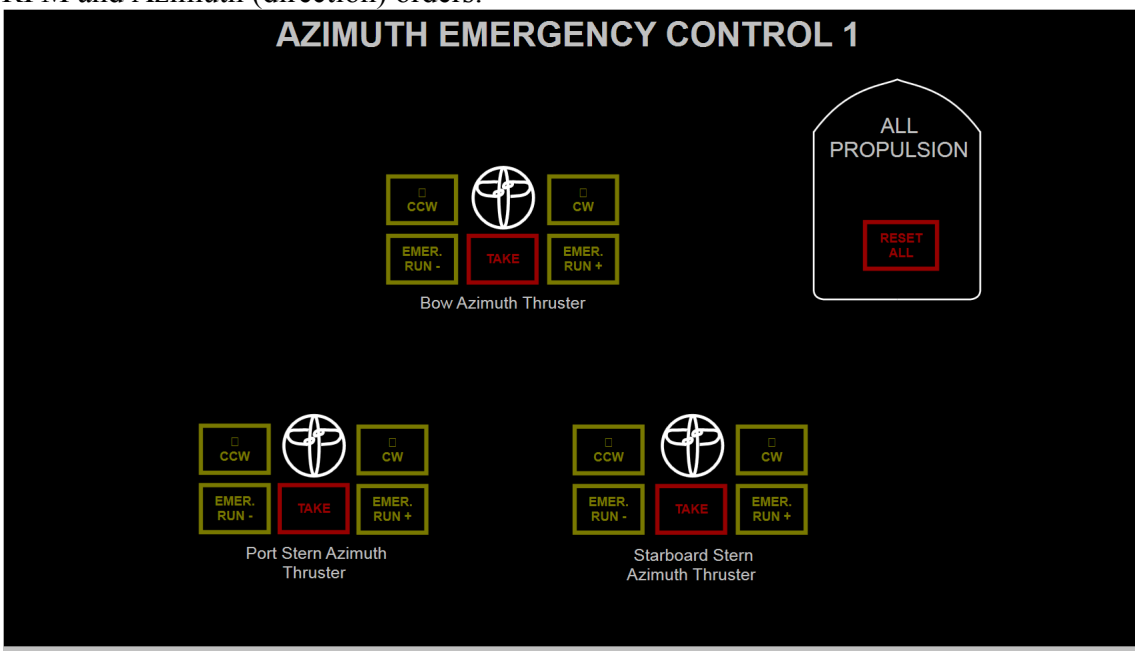
**Rate of Turn:** A horizontal bar graph shows the ships rate of turn in degrees per minute. A digital readout is above the bar graph.

**Gyro Repeater:** The ships heading is displayed in degrees as rotating gyro repeater and digital readout.

# 7 AZIMUTH EMERGENCY CONTROL

## 7.1 Purpose

The purpose of the Azimuth control is to control all PORT and STBD azimuth thrusters RPM and Azimuth (direction) orders.




## 7.2 Operation

The Azimuth Emergency Control panel will have control for azimuth and azipod thrusters. The configuration is pending on model selected.


The TAKE button takes teh control from all other control units on board the ship. From the manoeuvre controls, DP or Joystick controls.


When the TAKE button is pushed, and the control has been given, the button text should change to REL and the button light will turn on.


Pushing the “EMER RUN+” button will increase the thrust (fast) as long as the button is held down.


Pushing the “EMER RUN-” button will decrease the thrust as long as the button is held down. Releasing the “EMER RUN+” or “EMER RUN-“ buttons will immediately freeze the thrust.


Pushing the CW button will rotate the azimuth clockwise (fast) as long as the button is held down.

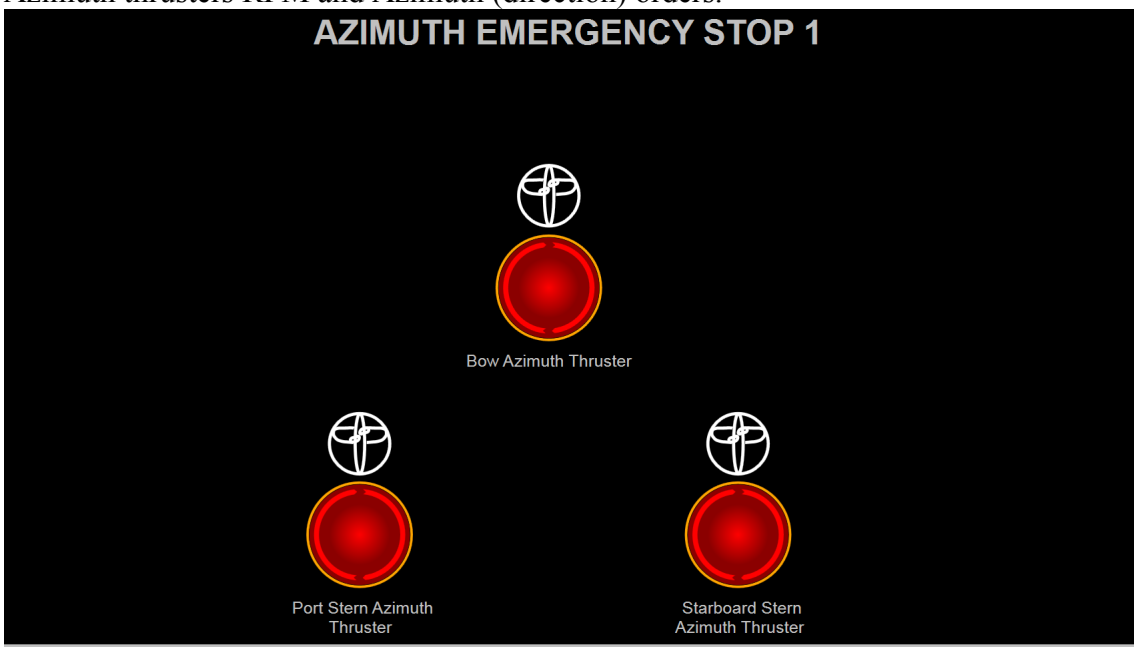

Pushing the CCW button will rotate the azimuth counter clockwise (as fast as possible) as long as the button is held down. Releasing the CW or CCW buttons will stop the rotation immediately.


The RESET ALL button, reset all azimuths (or the one used) to zero position (thrust and direction).

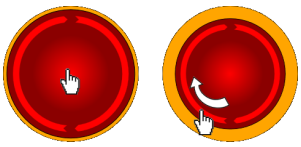
# 8 AZIMUTH EMERGENCY STOP

## 8.1 Purpose

The purpose of the Azimuth Emergency Stop is to stop all BOW, PORT and STBD Azimuth thrusters RPM and Azimuth (direction) orders.




## 8.2 Operation

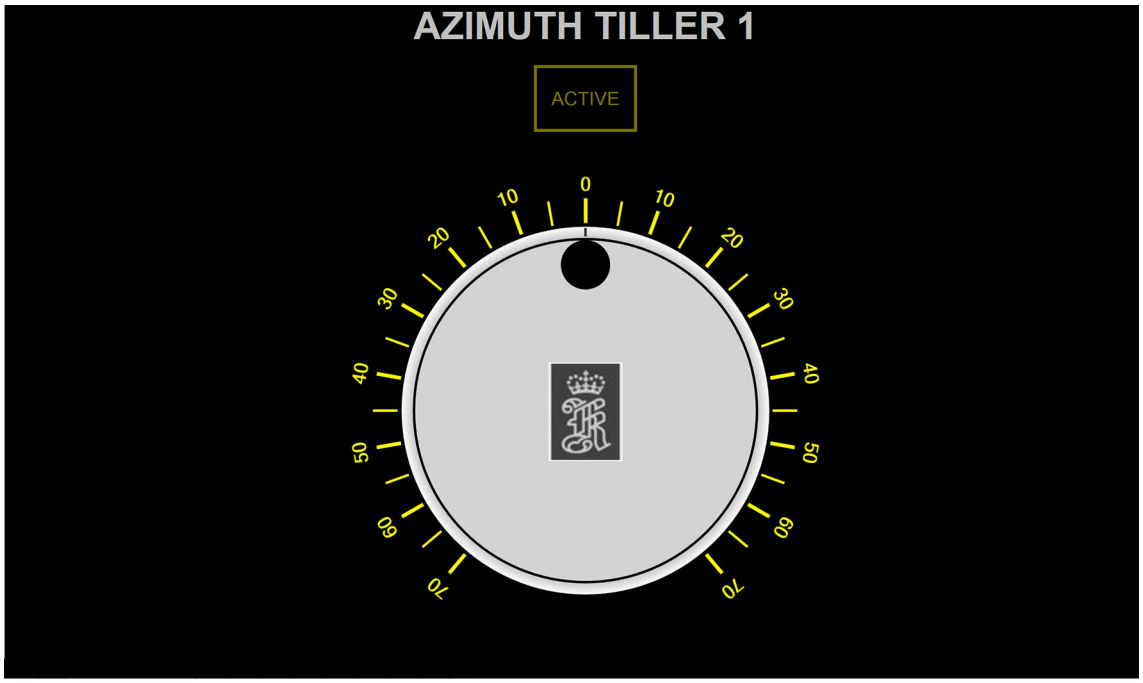


The activation is similar to other emergency buttons (see picture). A twist operation to “open” the button.

# 9 AZIMUTH TILLER

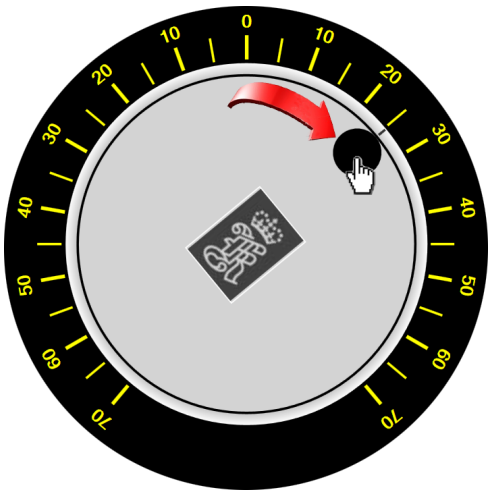
## 9.1 Purpose

The purpose of the Azimuth Tiller is control a waterjet direction as opposed to conventional rudder.

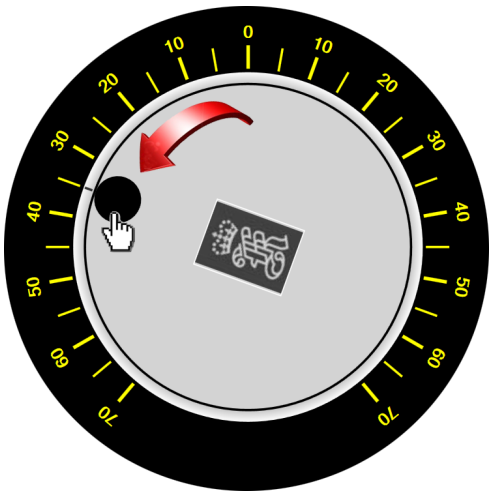



## 9.2 Operation


Pressing active button will acquire control from autopilot or other steering control (i.e. azimuth levers or steering stand) if configured.

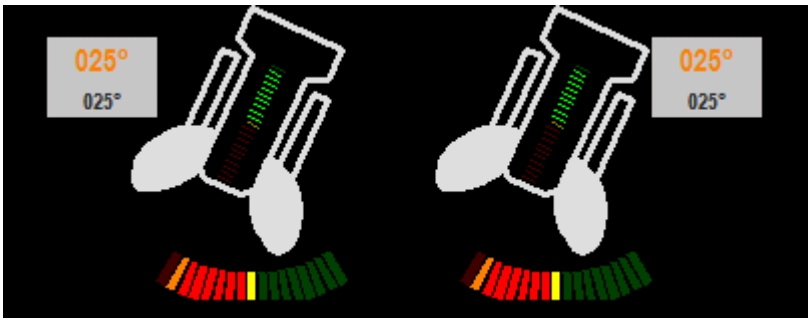



Azimuth tiller activation direction clockwise (CW) – a waterjet propulsion will turn to port if propulsion >2 knots ahead.




Azimuth tiller activation direction counter clockwise (CCW) – a waterjet propulsion will turn to starboard (propulsion >2 knots ahead).

NB! Maximum angle to both port and starboard is 35 degrees default (total rotation 70° defined in system configuration).




*Presentation of waterjet on the conning – now in 25° port rotation.*

# 10 BLUE SIGN

## 10.1 Purpose

A special sign for inland waterway vessel used in maneuvering and passage. The current model equipped with this sign is RIVER07 (a river cargo ship).


## 10.2 Operation


The “blue sign” plate is lifted (sequence of flashing 2-3 sec.).

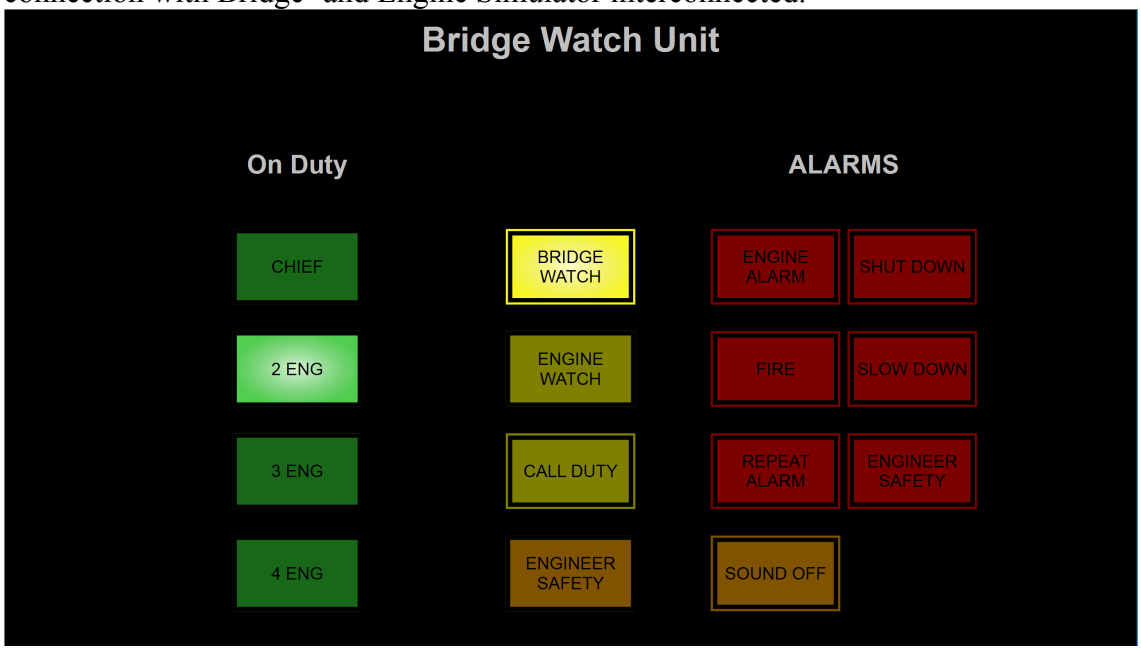

Lower the sign.


Blue Sign light – this button is placed on the Navigation Light panel decribed later in this document. The operation raises the visual sign board (blue) on starboard side of wheelhouse with 360° white signal light inside (white isophase flashing light 50/min).

# 11 BRIDGE WATCH

## 11.1 Purpose

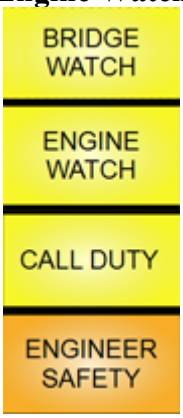
The purpose of the Bridge Watch Unit is to enable operation and alert control in connection with Bridge- and Engine Simulator interconnected.



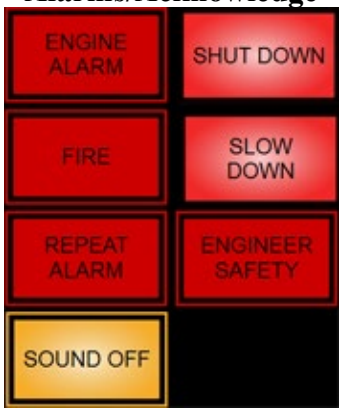

## 11.2 Keys and control

**Selection of Duty Officer**


**Engine Watch**




**Alarms/Acknowledge**




## 11.3 Operation and main functions

Used to relay alarm information and communication from the remote operator station to personnel on the bridge.

- Indicate who has WATCH RESPONSIBILITY.
- Indicate who is ON DUTY.
- Indicate the current alarm status and sound an audible alarm whenever a new alarm condition occurs and someone is ON DUTY.
- Allow the bridge watch to contact (call) duty personnel.
- Warning Button (yellow): Engineer Safety System is activated.

### 11.3.1 Alarms

The Watch Calling System receives alarm conditions from an Alarm & Monitoring System, and forwards the alarms such that they do not go unacknowledged, but that an appropriate response is achieved.
The system includes a repeat alarm feature which distributes the alarms (using three sequences) to ensure that the alarm does not go unacknowledged.
Any alarm activated when unmanned engine room will activate alarm in Duty engineer's cabin and Chief Officer cabin. Duty engineer silence the buzzer and have to accept the alarm in the ECR within 3 (three) minutes. If duty engineer does not accept the alarm within 3 minutes (adjustable), the repeat alarm (1st) is activated on bridge and watch keeping engineer/Chiefs cabin. Another 3 minutes (2nd repeat) a "call all engineer" feature is activated, which means that alarm is activated in all other cabins.

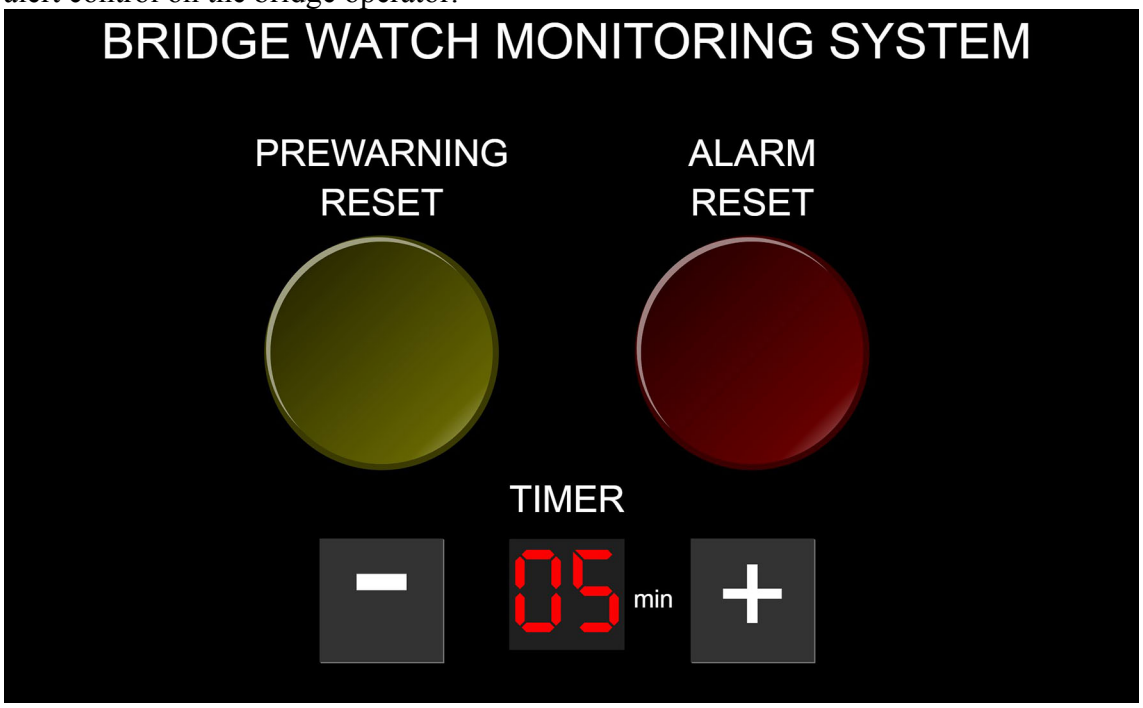
### 11.3.2 Engineers Safety System

When Duty engineer(s) has to enter the engine room, they will switch to "manned engine room" to "re-activate" alarm bells and alarm tower. When a patrol system is activated, the info button "Engineers Safety" is lit on the bridge unit and the buzzer is activated. After 15 minutes (adjustable) the pre-warning alarm is activated and alarm lamp in alarm tower and alarm sound is activated. If engineer reset the pre-warning within pre-warning time (3 minutes), alarm is accepted and alarm light and sound is switched off. If engineer does not reset within pre-warning time, buzzer and lamp on bridge unit is activated as well as buzzer and alarm on watch keeping engineer's cabin unit.
After additional 3 (three) minutes without reset of Engineers Safety alarm, the alarm is activated and alarm with buzzer is activated on all watch call units. At the same time, the "call all engineers" is activated.

# 12 BRIDGE WATCH MONITORING SYSTEM

## 12.1 Purpose

The purpose of the Bridge Watch Monitoring Panel ( BWMS) is to enable operation and alert control on the bridge operator.



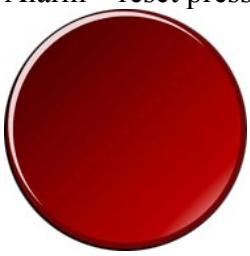

## 12.2 Operation

1


Prewarning button lamp ignites 30 sec. before time reaching zero.
Reset pressing button.

0


Alarm – reset pressing button.



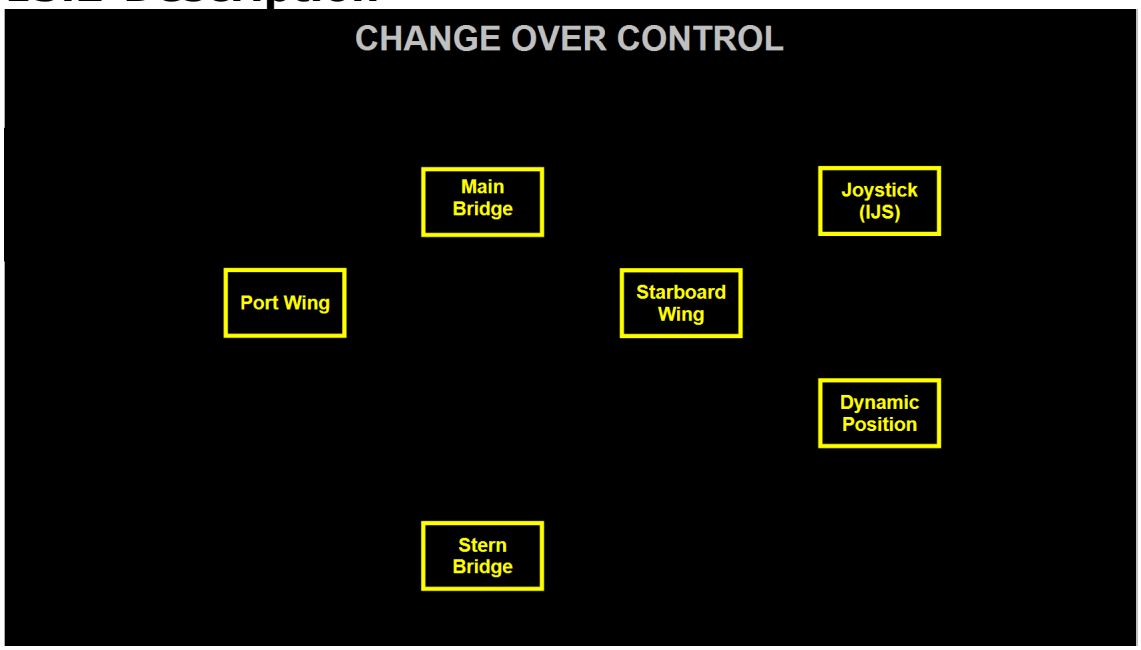

Timer settings from 3 (three) to 12 (twelve) minutes.

# 13 CHANGE OVER CONTROL

## 13.1 Purpose

The purpose of Change over control is to allow alternating between Dynamic Position manoeuvring and the ordinary bridge equipment like pilot, throttle and individual thruster control.

## 13.2 Description




## 13.3 Keys and controls

The panel has a set of (programmable) keys for operator input in connection with vessel control an transfer the various bridge stations. As an example the following may apply:

i) Dynamic Position

ii) Independent Joystick (IJC).

iii) Main bridge control and wing stations or stern operation.

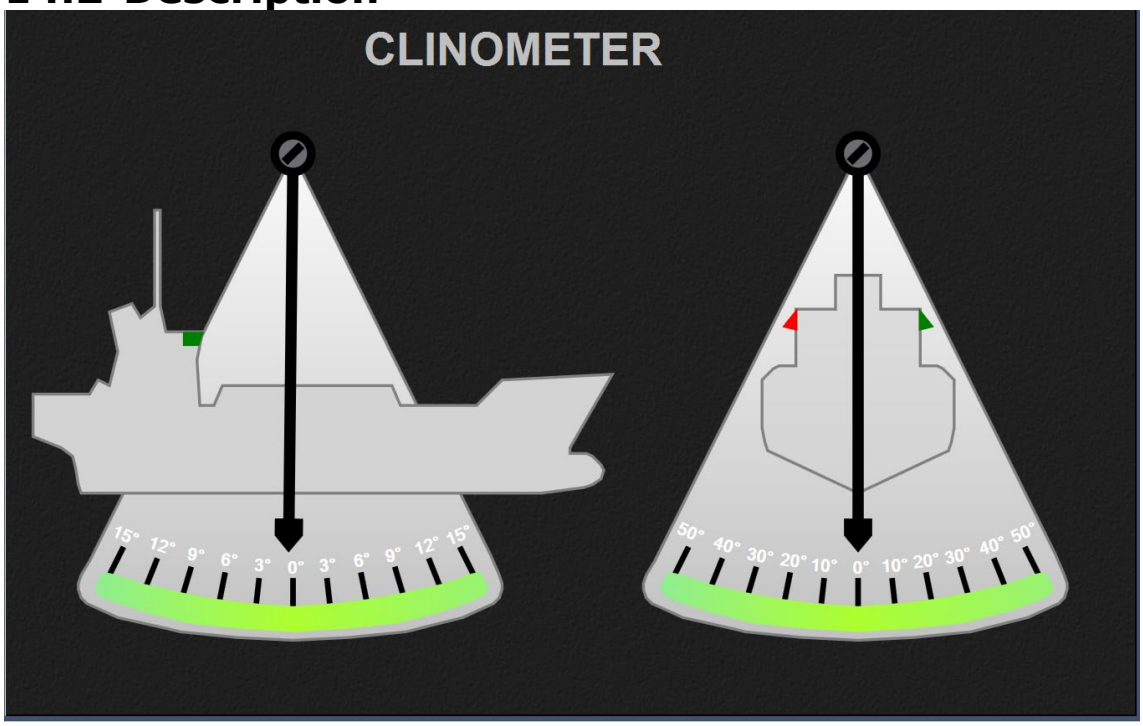
**Note**! *The command **TAKE** must be operated from the single or dual DP console or from the joystick system (IJC) in order to have vessel control.*

# 14 CLINOMETER

## 14.1 Purpose

The Clinometer is designed to present vessel trim and list.

## 14.2 Description



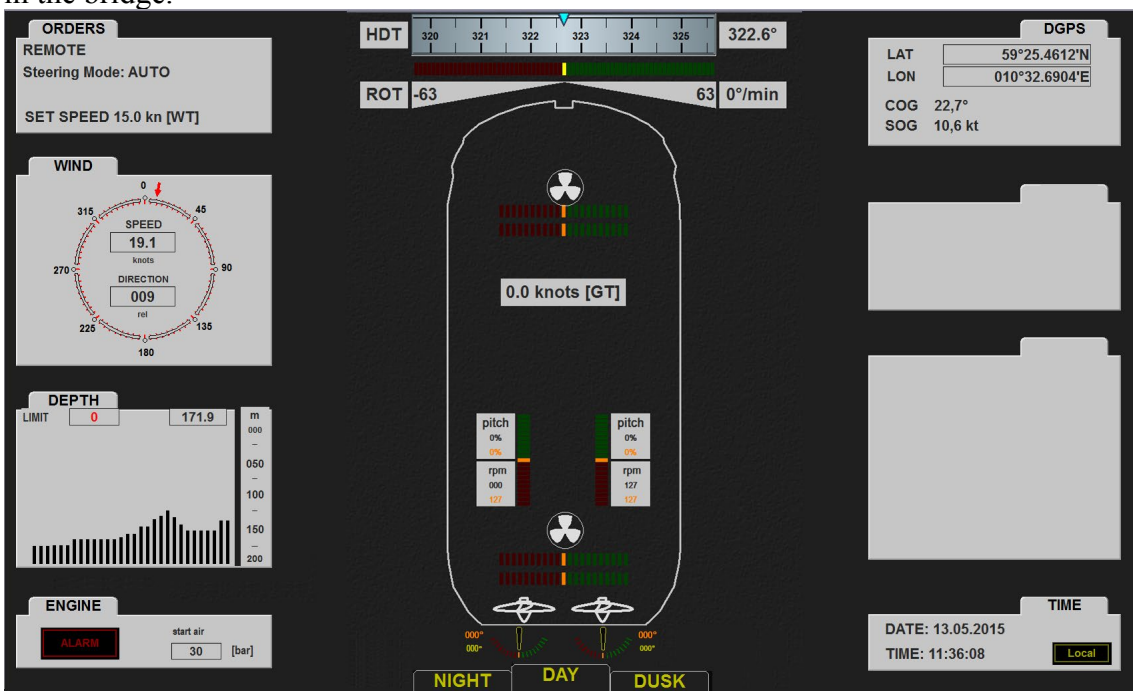

The clinometer panel shows the ships pitch and roll (trim and list).

- A presentation of bow pitch indicates that the bow is lower than the stern. Scale from minus 15° to plus 15°.
- A presentation of port list indicates the ship is listing to stbd and vice versa. Scale from minus 50° to plus 50°.

# 15 CONNING

## 15.1 Purpose

The purpose of the Desktop Conning Display is to display all the information normally found on a standard conning display into the Polaris Desktop environment. The Conning Display is automatically configured based on the model that is being simulated in the bridge.




## 15.2 Description

Standard information displayed on the Conning Display is: heading, rate of turn, propellers, thrusters, gyro, log, depth (with graph), ship position (GPS-based), date, time, engine start air and engine alarm status.

A generic hull structure represents all ship models. The elements presented inside the hull structure are: thrusters with indicators, Doppler log speed display with arrow(s), propeller/engine power applied with “LED” indication and direction forward/astern.

The following table shows how the different propellers types are indicated on the conning display:

Thrusters (tunnel – bow and stern). Power and direction presented separate.



Azimuth propeller and Z-drive (usually twin). Arrow for direction.



Azipod® (usually twin). Arrow for direction.



Waterjet (usually twin). Arrow for direction.



High speed propeller (models with speed above 20 knots).



Slow/standard propeller. Normal fixed pitch.

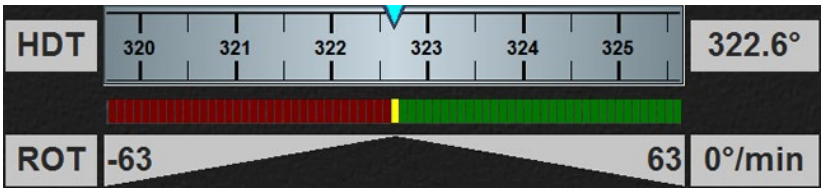


Voith Schneider (usually twin). A special bar presents setpoint values from the Voith propellers.

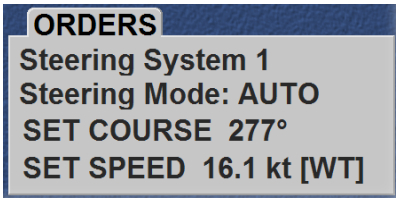


Rudder. Command(s) and direction(s) presented separate.

A Heading and Rate-of-Turn indicator is displayed at the top of the Conning Display. The Gyro Heading (HDT) presentation is based on traditional naval "tape-repeater". A sharp arrow indicated course with course values rotating either direction (starboard – port). The heading numeric value is shown in a box on the left side. The Rate of Turn (ROT) is "LED" - bar based with green and red rising to starboard and port. Two triangle indicators show maximum rate of turn value. The ROT numeric value is shown in a box on the left side.



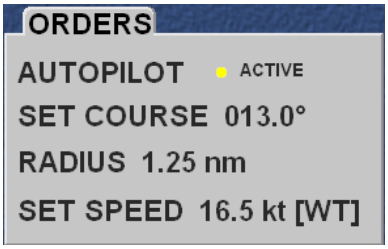

A series of 6 panes are placed around the hull structure. Each pane displays specific information, as described below:



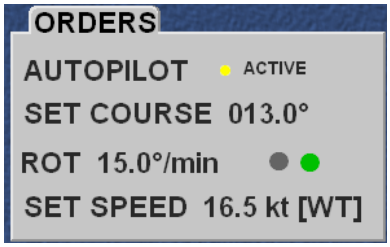

The ORDERS pane displays information about the course that is being steered. If the AUTOPILOT is activated, the selected mode will show:

**AUTO** — **HELM** (manual helm wheel) — **TRACK** (from ECDIS) — **NFU** (None Follow Up).

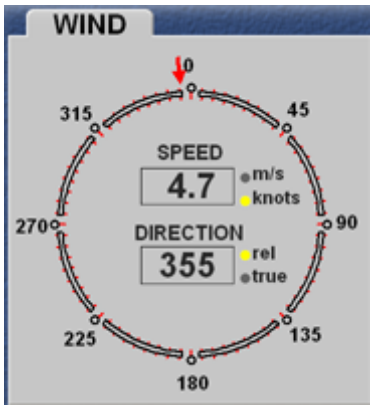
SET COURSE shows the course being steered by the autopilot. SET SPEED shows the ordered speed in knots (water track).




When Fixed Radius mode is selected on the Steering System, the ORDERS pane will display the set RADIUS (nm) or the set RATE (°/min).

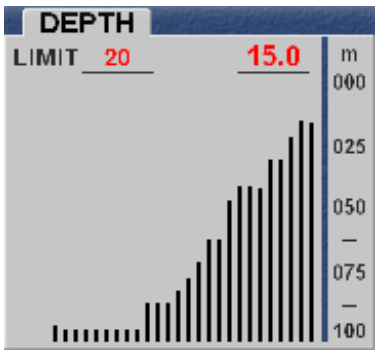



When Fixed Rate of Turn is selected on the Steering System, the ORDERS pane will display the set Rate of Turn (ROT) in degrees per minute. A red LED will illuminate to indicate a ROT to Port and a green LED will illuminate to indicate a ROT to starboard.




The WIND pane has a circular graphic presentation with a compass rose and a red arrow showing relative wind direction. Numeric value for wind speed (selectable m/s and kts) and direction (selectable relative and true).

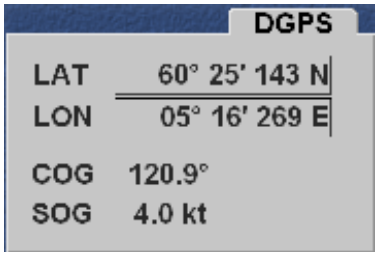
Selection of m/s and kts as well as rel/true is done from the instructor station.




The DEPTH pane shows a graphic presentation with "collected" values/bars to establish a bottom 2D graph of the depth "history". The most recent depth reading is on the right side of the graph. The depth limit alarm is shown next to LIMIT; its value is set on the Echo Sounder panel.

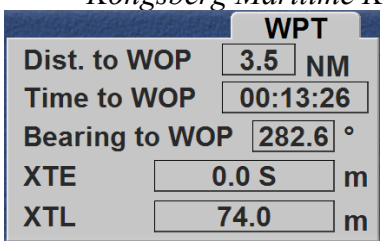
The current depth reading is shown above the graph on the right side; it is normally displayed in black but will turn red when it reaches the depth limit.


The ENGINE pane has an ALARM indicator that will flash when the Propulsion Control General Failure is set by the instructor. The Start Air pressure is displayed.




The DGPS pane displays the ship's position. It is read from the DGPS panel (the DGPS panel must be turned on and must be calculating a position). The Course Over Ground (COG) and Speed Over Ground (SOG) are also displayed, as they are calculated by the DGPS panel.

Note! *The three below listed panes are only available on system configured against Kongsberg Maritime K-ECDIS system on each Ownship bridge:*

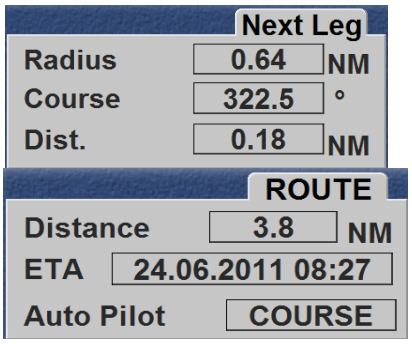



The WPT – WayPoint pane presents the data from the ECDIS station when configured for integrated operation. Route must be VALIDATED and in MONITOR[1] mode for acceptance. Values presented are:

— Distance to Waypoint (WOP)

[1] Refer to K-Bridge ECDIS and Planning Station – Operator Manual Doc. No. 331595.

— Time to WOP.
— Bearing to WOP in degrees.
— XTE Cross Track Error in meter.
(letter S for starboard and P for port error).
— XTL Cross Track Distance Limit in meter.

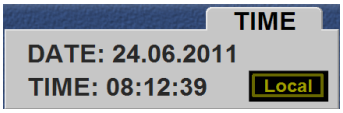



The Next leg pane presents valid data in the next leg of the route (the rout under MONITOR). Radius in nm, Course in degrees and Distance in nm.

The ROUTE pane presents overall Distance to last waypoint in nm and the ETA (Estimated Time to Arrival). The Autopilot mode; COURSE or MANUAL is presented. Display also shows the selection of RATE and RADIUS if these are selected on the Steering System Panel.

## Operation (mouse click controlled)


Click on the NIGHT tab to dim the display for night operations. Click on DAY to return to normal display luminance. DUSK operation for a foggy day a sea!




The TIME pane displays the exercise date and time.

Button for presented time: 

(default).

Or use: 

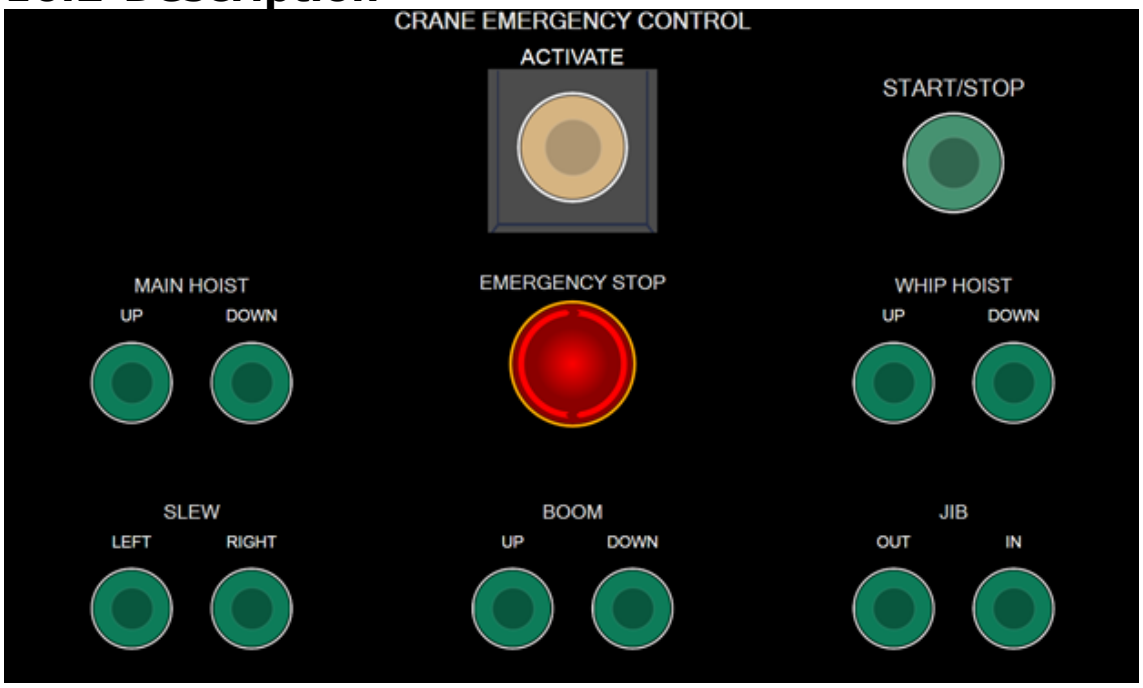
for Coordinated Universal Time.

# 16 CRANE EMERGENCY CONTROL

## 16.1 Purpose

The purpose of the crane emergency control instrument is to allow emergency operation of slew, boom, jib or telescope, and hoist functions. All operations are hold to run and operate at reduced speed. Functions are restricted to run one at a time.

## 16.2 Description

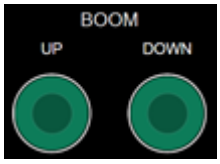



## 16.3 Operation Control

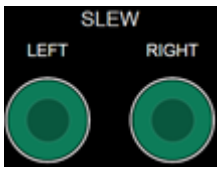

Lamp button with flip cover for activating\deactivating emergency control, lit when active. Main crane system stopped and disabled automatically on activation.


Lamp button for starting\stopping emergency control system, lit when started.

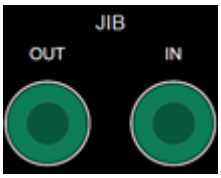

Emergency stop button to stop emergency control system and cease all crane operations. Button must be twisted and released before system can start.




Lamp buttons for lifting\lowering the boom, lit when active.

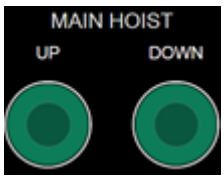



Lamp buttons for slewing the anti-clockwise\clockwise, lit when active.




Lamp buttons for extending\retracting the jib, lit when active.


Lamp buttons for extending\retracting the telescope, lit when active.



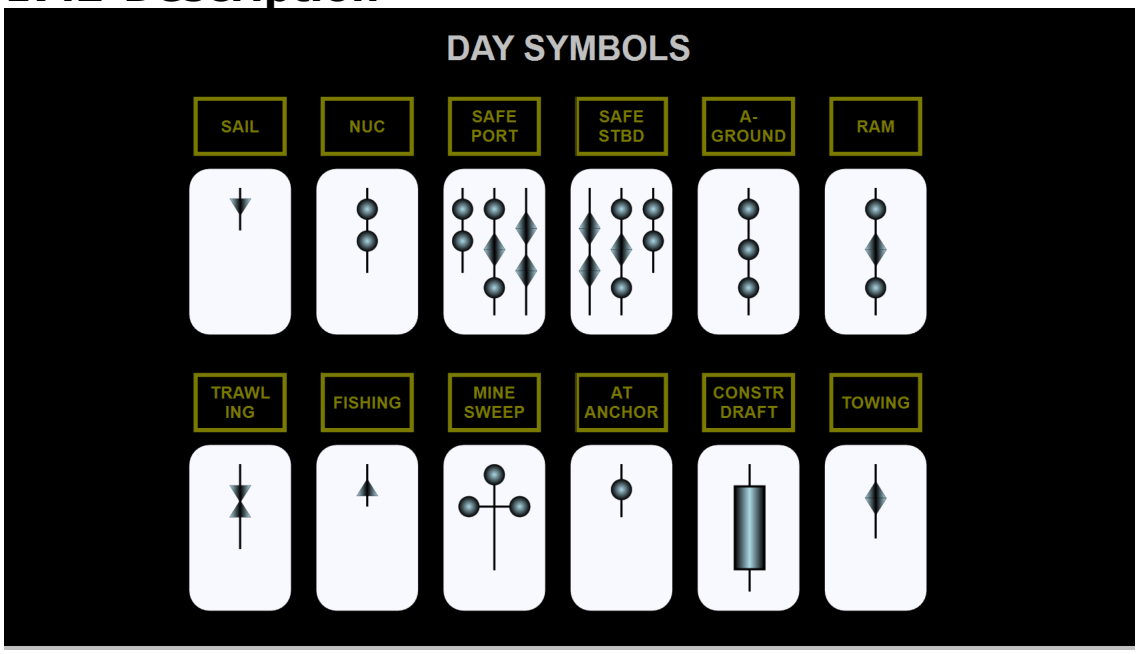

Lamp buttons for lifting\lowering the main hoist block, lit when active.

# 17 DAY SYMBOLS

## 17.1 Purpose

To display different shapes and day symbols on the mast of the ownship.

## 17.2 Description




## 17.3 Operation

Click on the desired key to display the corresponding day signal, as the picture shown on the panel. The key will become illuminated to indicate that the signal is being displayed. More than one day signal can be displayed at the same time.

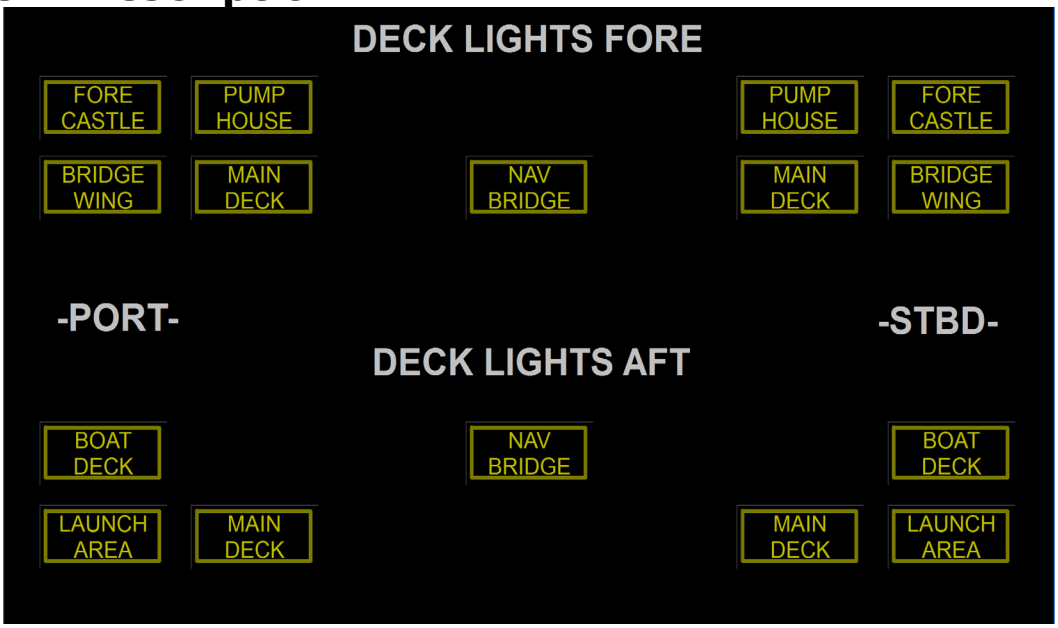
Clicking on an illuminated key will remove the signal.

# 18 DECK LIGHT

## 18.1 Purpose

The Deck lights control allows remote control and monitoring of various deck lights, and is divided into for, aft, starboard and port sections. There are several different Deck Lights Panels available with different naming of light buttons and they all work the same way.

## 18.2 Description




## 18.3 Operation

Click on the desired key to display the corresponding light, as the picture shown on the panel. The key will become illuminated to indicate that the light is on. Clicking on an illuminated key will switch off the light. The deck lights keys have individual inscriptions that are self evident.

## 18.4 Keys and controls


Deck lights keys – shown NAV BRIDGE OFF!

Deck lights keys – shown NAV BRIDGE ON!

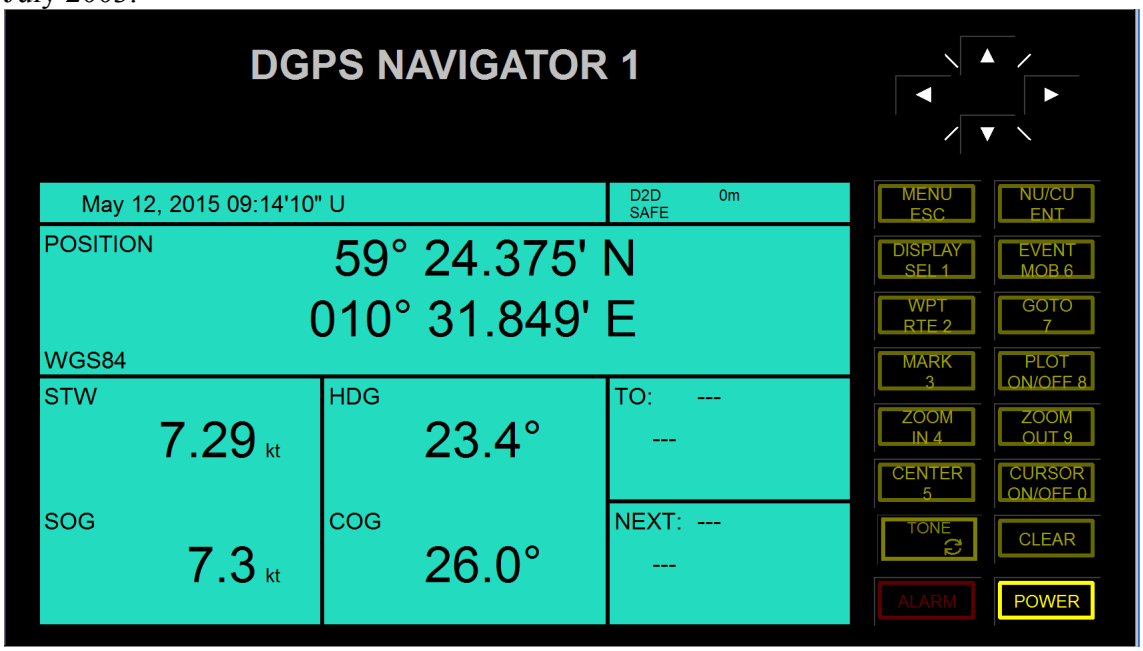
# 19 DGPS NAVIGATOR

## 19.1 Purpose

To receive, accept and transmit operator inputs, present navigation data and information

## 19.2 Description

This DGPS receiver is replicating a commercial FURUNO GPS Marine Receiver. This original FURUNO receiver is designed to fully meet new IMO Resolution MSC.112(73) and IEC 61108-1 Ed.2 for SOLAS carriage requirements on and after 1 July 2003.

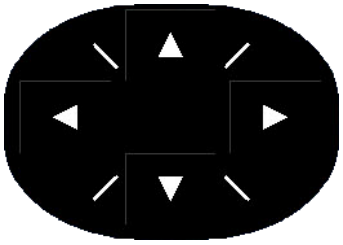



*Default page on the DGPS receiver after start-up.*

It is an ideal navigation sensor of SOG and COG for AIS, radars, and other navigational aids. The unit is augmentation to enhance accuracy by standard fitted WAAS.[2] and DGPS on the simulator.

The receiver "skin" is implemented to the Polaris Bridge Simulator adapted and modified for simulator use – some features and functions are not implemented at this stage. The receiver does have two display modes: Text and Steering. The original units do also contain a 3D Fairway display currently not implemented. The following buttons and operational feature are found:

[2] WAAS is known as Wide Area Augmentation System or alternately, "wide-area DGPS". WAAS offers accuracy similar to the USCG's ground-based DGPS networks, and there has been some argument that the latter will be turned off as WAAS becomes fully operational.



Main cursor data control in the menu and sub-menu pages. Arrows for up and down and horizontal right/left positions.

= Display cursor (in the display area).


Menu and Escape
Enter

Display selection Data/Navigation display (see below) and the A/N keypad number #1. Event and MOB Man Over Board button

WPT – To enter route/waypoint menu and keypad #2
Go to and keypad #7

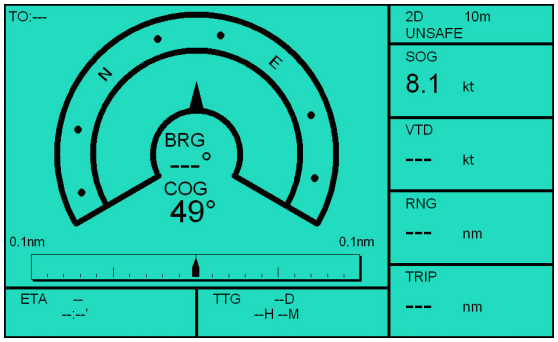
Mark and keypad #3
Plot on/off and keypad #8

Zoom in (not used) and keypad #4
Zoom out (not used) and keypad #9

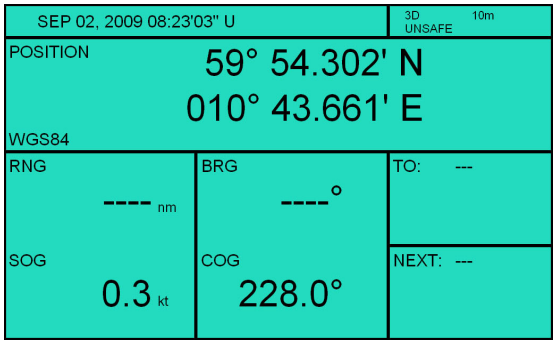
Center (not used) and keypad #5
Cursor (display) on/off and keypad #0 (zero)

Tone
Clear

Alarm (flashing when Satellite receiver fault)
Power on/off (Goes to off when Defect is introduced)




*DGPS "Navigation" display.*




*DGPS "Data" display*

Menues and system operation as follows (VOID = currently not implemented):

1- DISPLAY SETUP – VOID
2- TRACK/MARK SETUP - VOID
3- ERASE TRACK/MARK - VOID

4- ALARM SETTINGS – Selection on WAAS/DGPS – ON/OFF

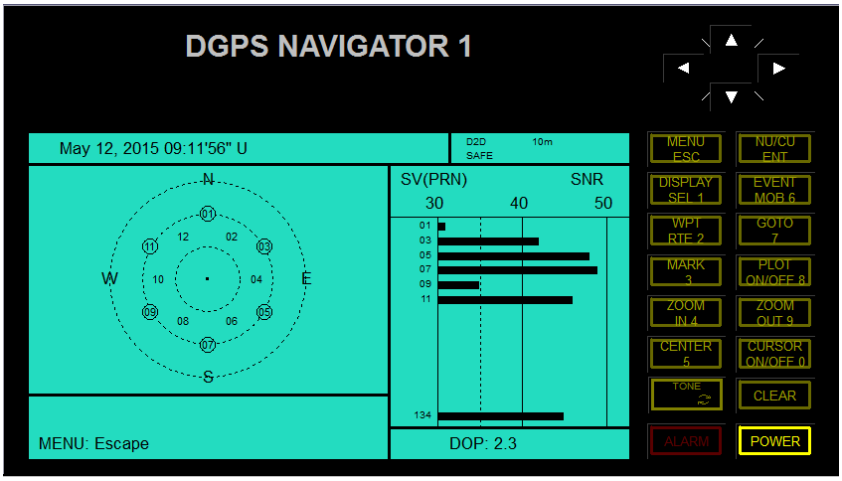
To change alarm settings for WAAS/DGPS press MENU ESC.

User cursor control arrows ▼ to select MAIN MENU number 4. Press NU/CU ENT.

Press ▶ to select either ON or OFF. Press MENU to return to default display.

5- MANUAL CALCULATION - VOID
6- (EMPTY)
7- GPS MONITOR

Press MENU ESC and arrow ▼ down to number 7. Press NU/CU ENT to enter satellite monitor pages with satellite position(s) and signal strength.




*Satellitte monitor page.*

8- SELF TEST - VOID
9- SYSTEM SETTINGS – New menu with
   a. PLOTTER SETUP – four user defined selections
   b. UNIT SETUP - VOID
   c. DATA 1,2 OUTPUT SETUP - VOID
   d. DATA 2 OUTPUT SETUP- VOID
   e. DATA 4 I/O SETUP - VOID
   f. GPS SETUP – selection of Fix Mode 2D and 2/3D, antenna height satellites, smoothing, speed average,

new page; RAIM[3] Function OFF/ON, accuracy, datum selection, position offset, time difference, position.

g. WAAS/DGPS SETUP. Mode selection; GPS, DGPS, WAAS, EXT. BEACON and AUTO. **NB! Select WAAS for improved position quality and highest possible accuracy in connection with DynPos operations**.
h. LOP SETUP - VOID
i. CLEAR MEMORY - VOID

[3] Receiver Autonomous Integrity Monitoring (RAIM), a technology developed to assess the integrity of Global Positioning System (GPS) signals in a GPS receiver system. RAIM detects faults with redundant GPS pseudorange measurements.

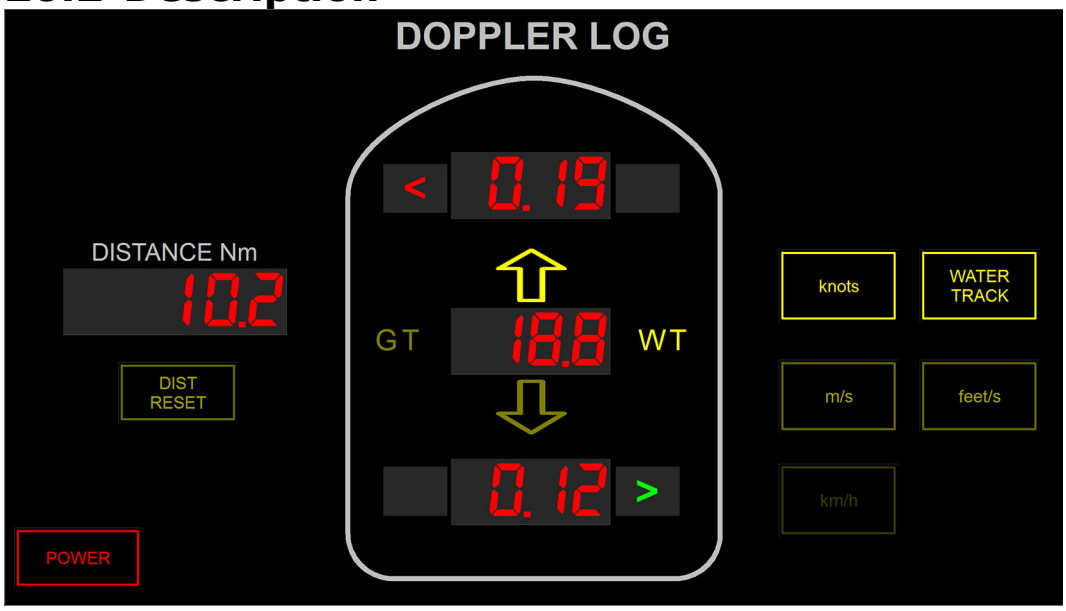
# 20 DOPPLER LOG

## 20.1 Purpose

The purpose of the Doppler log is to allow:

- Digital readout of longitudinal speed ahead and distance sailed through the water (water track, WT).
- Digital readout of longitudinal speed ahead and distance sailed over ground (ground track, GT).
- Digital readout of bow and stern lateral speed to starboard and port (water or ground track).

## 20.2 Description




## 20.3 Keys controls and indicators

| | |
|---|---|
| POWER | Power on/off. |
| DIST RESET | Distance reset. Resets the distance counter and display to zero. |
| WATER TRACK | Switches between water track (illuminated) and ground track (dark) selection of speed measurement. |


Selection of speed readings in knots.


Selection of speed readings in meters/second.


Selection of speed readings in feet/second.

Indicates forward/astern longitudinal speed.

Indicates Port/Starboard lateral speed.


Ground/Water Track indication.

**Digital displays**

| Indicator/ Display | Explanation | Range | Step |
|---|---|---|---|
| SPEED | Logged speed through the water or over ground | 5.0-99.9/99.9-2.0<br>2.00-0.00/0.00-4.99 | 0.1<br>0.01 |
| DISTANCE | Logged distance through the water or over ground | 0 - 999.9<br>1000-9999 | 0.1<br>1 |

When own ship's speed is less than 2.0 knots, the speed is displayed with two decimals (x.xx), in increments of 0.01 knots. As the speed is increased above 2 knots, two decimals will be displayed until the speed passes 4.99 knots, then one decimal speed accuracy will be displayed.

## 20.4 Operation

### 20.4.1 Start up

- Click 

. The key will illuminate.
- If the water depth is 400 meters or less, *GT* will illuminate to indicate that ground track speed is displayed.

- If the water depth is more than 400 meters, the *WT* indicator and WATER TRACK will illuminate to indicate that water track speed is displayed.
- Own ship's speed and distance sailed is shown in the digital displays. The key is illuminated to indicate that the speed is presented in knots.
- Illuminated arrow indicates longitudinal and/or lateral speed direction.

### 20.4.2 Water track and ground track

- Normally, the Doppler log automatically changes between water track (WT) and ground track (GT) at 400 meters depths.
- To manually select water track mode at water depths less than 400 meters click WATER TRACK. *WT* indicator will illuminate.
- To return to ground track mode at water depths 400 meters or less, click WATER TRACK again. The *GT* indicator will illuminate and the *WT* indicator turns dark.

### 20.4.3 Speed presentation unit

- At power on, the speed presentation unit is knots.
- To change the speed presentation to desired unit, press the corresponding m/s, feet/s or knots.
- The selected unit key is illuminated.

Using the engines astern will cause turbulent water flow and effect the Doppler log's speed presentation.

### 20.4.4 Distance counter

- When in ground track mode, ground track distance is displayed.
- When water track mode is selected, or when the water depth is more than 400 meters, water track distance is displayed.
- If a reset of the distance display is required, click DIST RESET

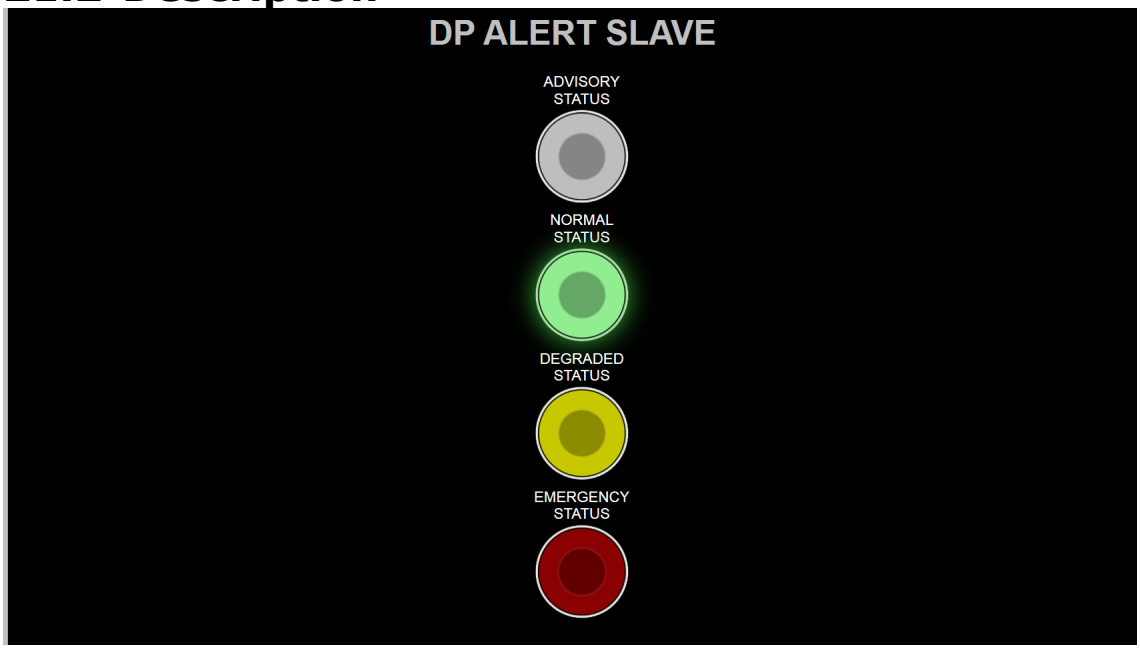
Using the engines astern will cause turbulent water and cause the distance counter to present wrong sailed distance.

# 21 DP ALERT

## 21.1 Purpose

To present the system status based on DP operation level.

## 21.2 Description




## 21.3 Operation

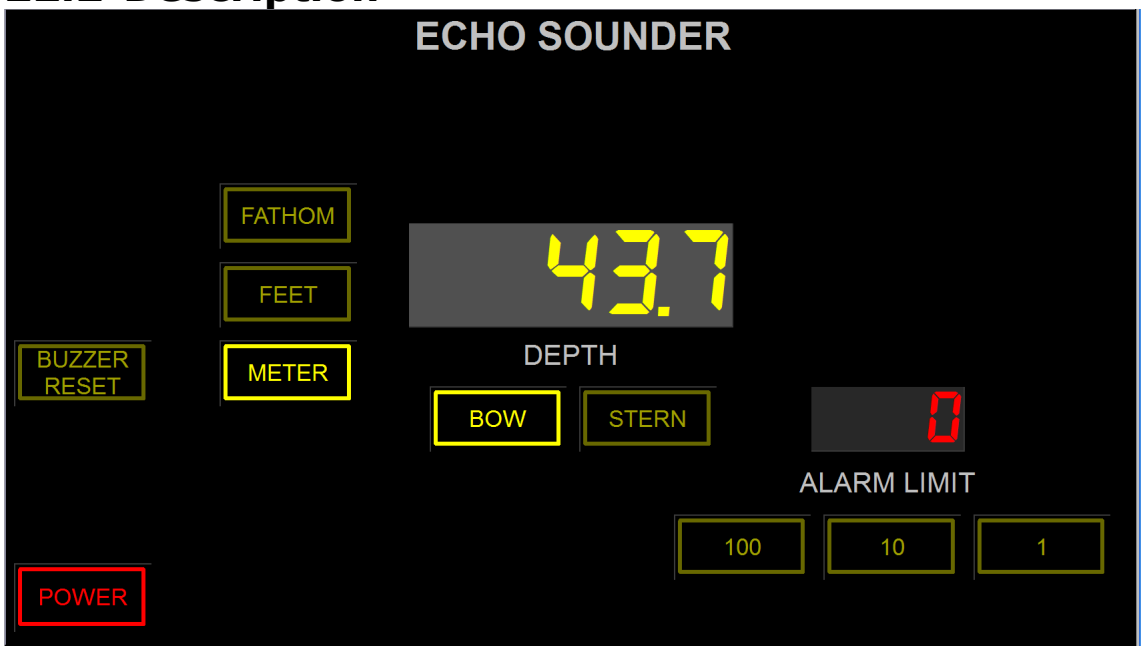
Colour coded “DP operation level” with the buttons to select status. Selection and changes will be presented on the instructor position. For DP vessels there are normally three or four alert levels.
**White** – Advisory status.
**Green** - Normal operational status: Adequate equipment is on line to meet the required performance within the declared safe working limits.
**Yellow** - Degraded DP status: In general it is the condition where one or more items of redundant DP equipment failed, safe working limits are being exceeded or an excursion of heading or position is a possibility.
**Red** – Emergency level: Loss of position or position loss is inevitable.

# 22 ECHO SOUNDER

## 22.1 Purpose

The purpose of the Echo Sounder is to provide depth readings from a bow or stern transducer, displayed on the bridge in fathoms, feet or meters, including a depth alarm function. It gives realistic readout of keel clearance.

## 22.2 Description




## 22.3 Keys and controls

| | |
|---|---|
| POWER | Unit power on/off. |
| FATHOM | Selects depth readings in fathoms. |
| FEET | Selects depth readings in feet. |
| METER | Selects depth readings in meters. |


Turns off the buzzer.


Selects soundings from the bow transducer to be displayed.


Selects soundings from the stern transducer to be displayed.


"Hundredths". Sets the value of "Hundredths" in the *ALARM LIMIT* display.


"Tens". Sets the value of "tens" in the *ALARM LIMIT* display.


"Ones". Sets the value of "ones" in the *ALARM LIMIT* display.

## 22.4 Digital displays

| Display | Explanation | Range | Step | Unit |
|---|---|---|---|---|
| Depth | Sounded depth below transducer. | 0.0-999.9 | 0.1 | meters, fathoms or feet |
| *ALARM LIMIT* | Minimum depth. (Alarm limit value) | 0-999 | 1 | meters, fathoms or feet |

## 22.5 Basic operation

- Click 

to activate the panel. The display settings (*FATHOM, FEET, METRE, BOW, STERN*, and *ALARM LIMIT*) are the same as at last power off.
- Click 

, 

or 

to select the desired depth reading. The corresponding key will illuminate. The depth display and alarm limit changes accordingly.
- Click 

or 

to read soundings from the bow or stern transducer. The corresponding key will illuminate.
- To turn off the panel 

again.

### 22.5.1 Using the depth alarm function

- Push the 1, 10 and 100 to set the minimum depth alarm limit. Each push of the corresponding key will increase the value by one until *9* are reached and then it starts on *0* again.
- When the sounded depth at the selected transducer is less than - or equal to the alarm limit value the *ALARM LIMIT* display and BUZZER RESET starts flashing and a buzzer is activated.
- Click BUZZER RESET to silence the buzzer. The *ALARM LIMIT* display will flash until the sounded depth is greater than the alarm limit value or a new alarm limit is entered.

### 22.5.2 Fault indication

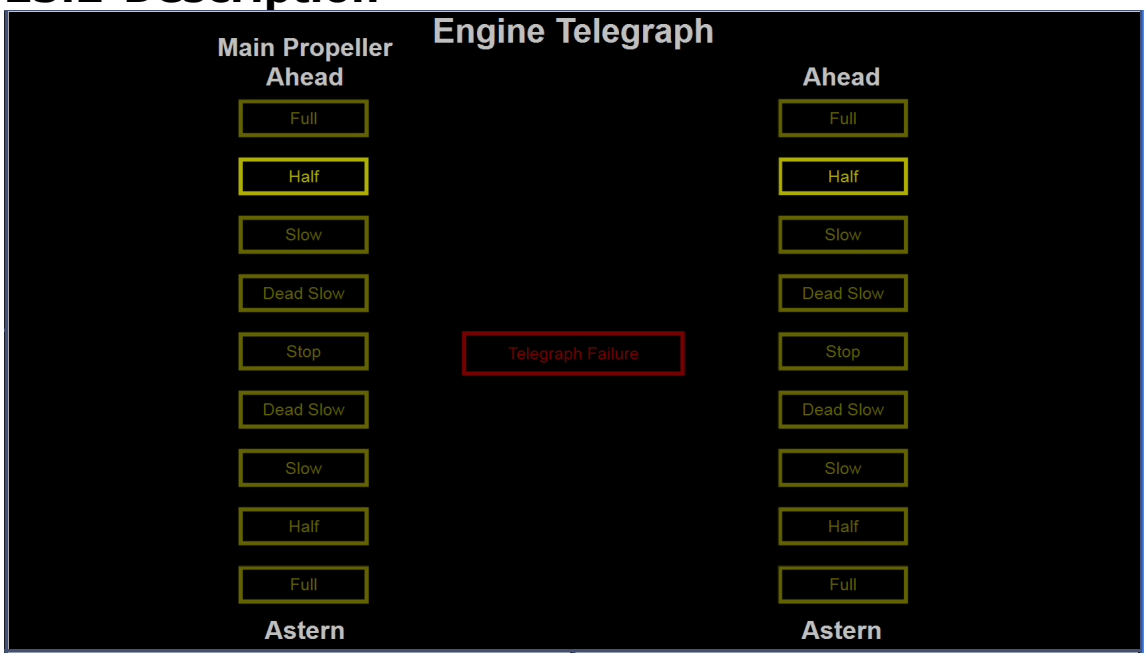
If the transducer signal is lost or the depth is outside range, the *DEPTH* display will start flashing 999.9.

# 23 ENGINE TELEGRAPH

## 23.1 Purpose

The purpose of the Engine Telegraph is to set single or twin engine manoeuvre orders from the bridge to a manned control room.

## 23.2 Description




## 23.3 Keys and controls


Full ahead/astern orders to the engine control room. The light is flashing until the control room has acknowledged the request. The *MAX POWER* key indicates whether 80% or 100% power is possible.


Half ahead/astern orders to the engine control room, giving 50% shaft power. The light is flashing until the control room has acknowledged the request.


Slow ahead/astern orders to the engine control room, giving 25% shaft power. The light is flashing until the control room has acknowledged the request.


Dead slow ahead/astern orders to the engine control room, giving 12.5% shaft power. The light is flashing until the control room has acknowledged the request.


Stop engine orders to the engine control room. The light is flashing until the control room has acknowledged the request. The STOP procedure will be utilized.

## 23.4 Setting engine orders

- Click desired comand using the STBD AHEAD/ASTERN or PORT AHEAD/ASTERN key groups as appropriate. The key will flash until the duty engineer has acknowledged the setting.
- When the duty engineer acknowledges the order, the key gets steady light.

## 23.5 Alarm

Failure to the telegraph is indicated with light in 

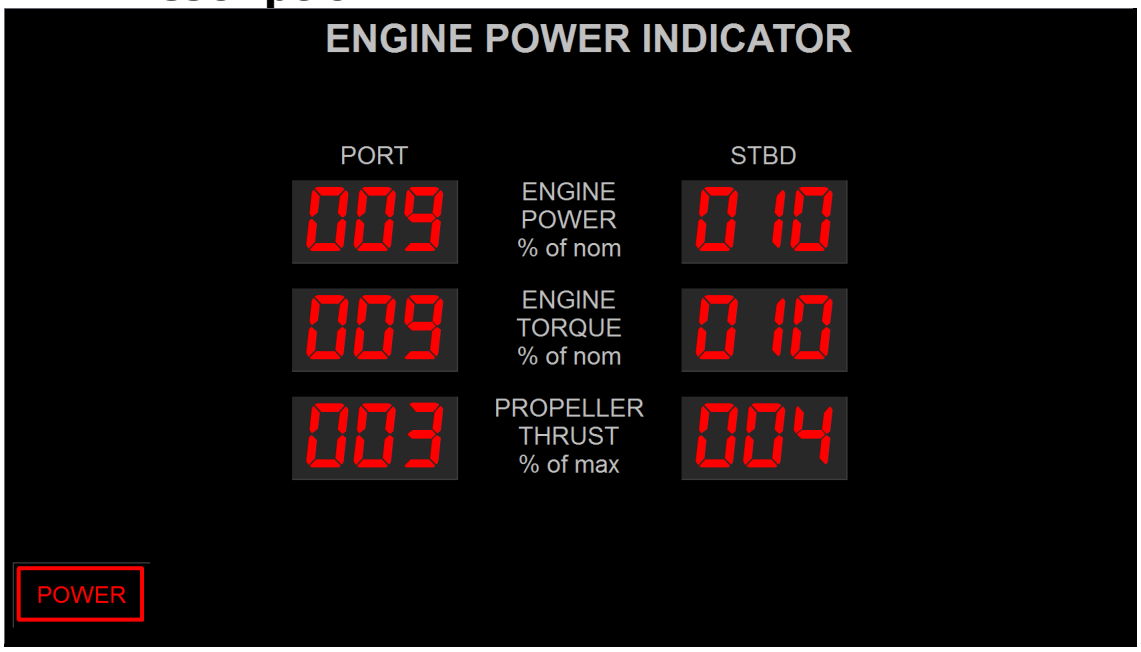
.

# 24 ENGINE POWER INDICATOR

## 24.1 Purpose

The purpose of the Engine Power Indicator is to present vital engine data during simulation.

## 24.2 Description




### 24.2.1 Keys and Controls

On/Off switch.

### 24.2.2 Display

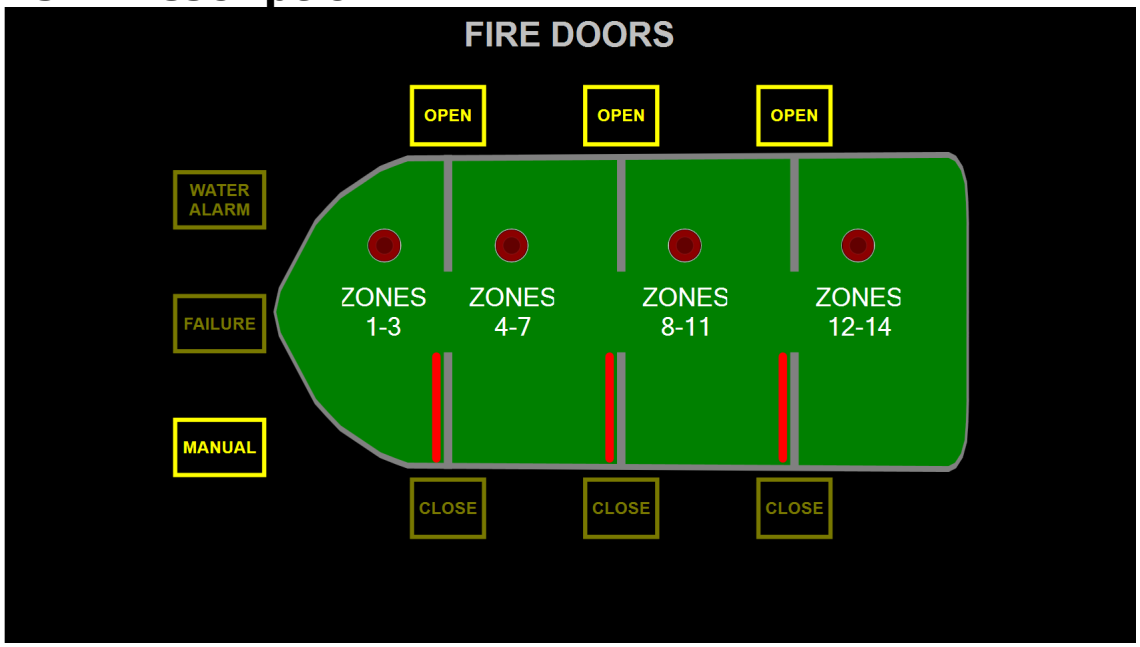
Singel screw or dual screw display pending on ship model.

# 25 FIRE DOORS

## 25.1 Purpose

The purpose of the Fire Doors panel is to allow monitoring of the fire doors status and, in manual mode, to open and close the fire doors. The panel will also give status about a possible leakage. A leakage is indicated by a WATER ALARM and a red flashing light in the actual zone.

## 25.2 Description




### 25.2.1 Keys and Controls


FAILURE indicator key. Push to acknowledge a failure.


MANUAL override key. Push to go to manual mode; key illuminates. Push again to return to automatic mode; key turns dark.


OPEN door key. When in manual mode, push to open a door; key illuminates.


CLOSE door key. When in manual mode, push to close a door; key illuminates.


WATER ALARM indicator. If a leakage occur the alarm will start flashing and the buzzer will sound.

Leakage alarm for the individual ZONE.

## 25.3 Operation

### 25.3.1 Modes of Operation

A darkened MANUAL key indicates that the system is in Automatic mode of operation. In this mode, each fire door will close automatically when a fire alarm or a leakage alarm is set on in a zone adjacent to it. The doors will open automatically when the fire alarm and leakage alarm is set off.

Click on the MANUAL key to switch to Manual mode; the key will illuminate. In this mode, the doors will not react automatically to a fire alarm or a leakage alarm; each door has to be manually opened and closed. To return to the Automatic mode of operation, click on the MANUAL key once again; the key will be darkened to indicate that the system is now in Automatic.

### 25.3.2 Opening and Closing Doors Manually

In MANUAL mode, click on the CLOSE key of the fire door that needs to be closed; the door will close and the CLOSE key will illuminate as the OPEN key is darkened.

To open a closed door in MANUAL mode, click on the OPEN key; the door will open and the OPEN key will illuminate as the CLOSE key is darkened.

### 25.3.3 Failure

When a failure is activated on a fire door, a buzzer will be heard. The FAILURE key and the OPEN and CLOSE keys of that specific door will start flashing.

To acknowledge the failure, click on the FAILURE key; the buzzer will be silenced and the FAILURE key will remain illuminated. The OPEN and CLOSE door keys will keep on flashing to indicate that the failure is still present.

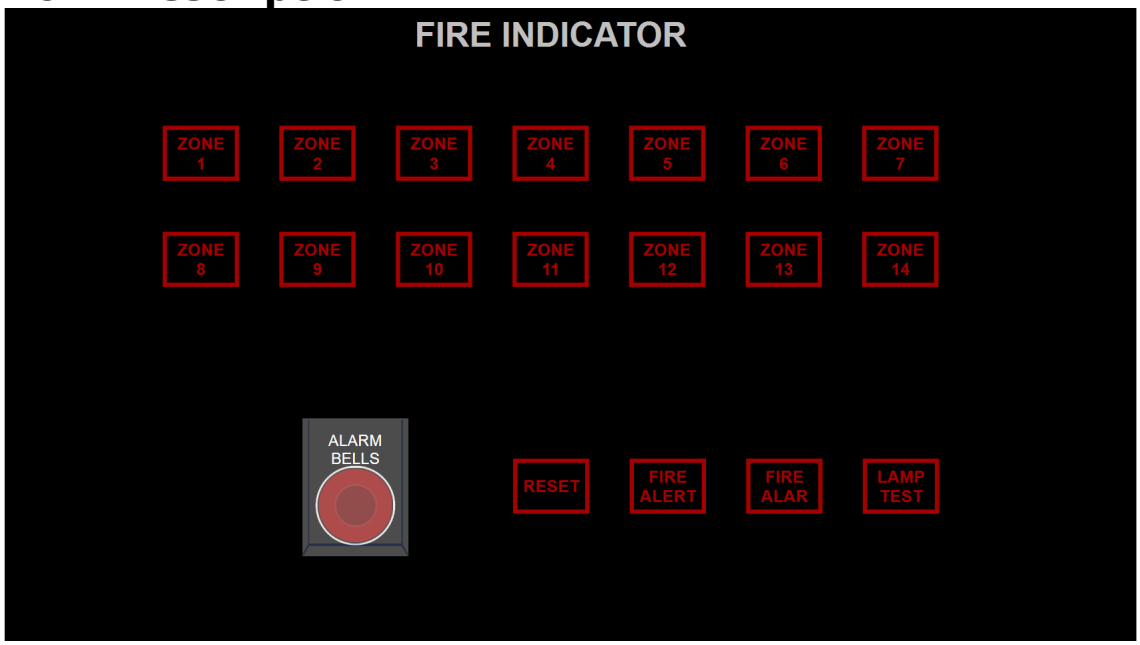
Once the failure is disabled by the instructor, the FAILURE key will be darkened and the OPEN and CLOSE key will stop flashing; the fire door will remain in the state as it was before the failure was activated.

# 26 FIRE INDICATORS

## 26.1 Purpose

The purpose of the Fire indicator is to monitor fire sensors in the main sections of the vessel, and to give fire alarms and alerts.

## 26.2 Description




## 26.3 Keys and controls


The corresponding *ZONE* will start flashing and a buzzer will sound if a fire is registered in zone *n*. Zone number from 1 to 14 is here referred to as *ZONE n*.


If a fire is registered in one of the zones, the *FIRE ALARM* button will start flashing and a buzzer will sound.


When the fire alert is given from a manual call point, the *FIRE ALERT* button will start flashing and a buzzer will sound.

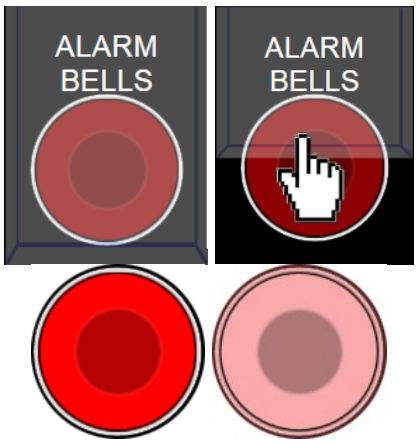

Reset all the activated zone indicators provided they have first been acknowledged.


Tests the light in all buttons and lamps, as well as the alarm buzzer.

If a fire alert is triggered by any of the vessel's manual call points, both 

and the corresponding 

will flash and a buzzer will sound.
To acknowledge, push the flashing zone key. The key gets a steady light.
To set the alarm to sound, open the button guard and press button. The key starts flashing until acknowledged.




### 26.3.1 Lamp test

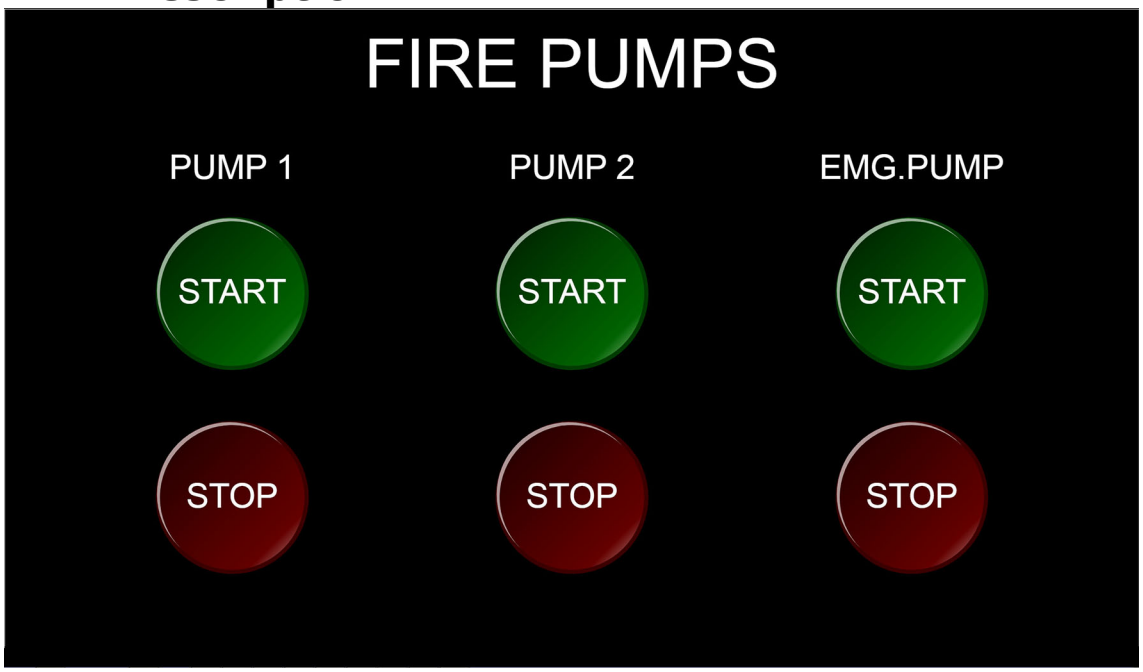
To test the key lights and the internal buzzer, push and hold. All keys will illuminate, and the buzzer will sound as long as the key is pushed. Note: only available on the HW panel.

# 27 FIRE PUMPS

## 27.1 Purpose

The purpose of the Fire Pumps is to start water pumps to each of the three (3) possible fire pumps. This feature is model dependant and found only on selected vessels.

## 27.2 Description




## 27.3 Keys and controls

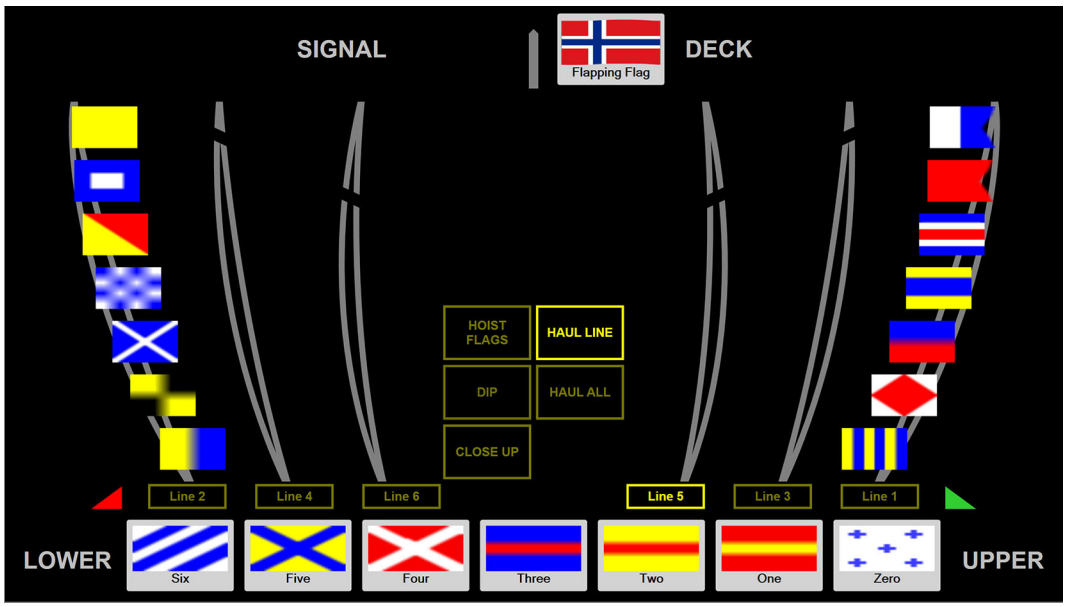

Start and Stop of Pump 1, Pump 2 and Emergency Pump.


Stop – button flashing; approx. 5 (five) seconds to stop.

# 28 FLAGS (SIGNAL DECK)

## 28.1 Purpose

The purpose of the Flag panel is to allow remote operation from the bridge of hoisting flags up, down and at dip. In the mast top, signal flag and national flag can be hoisted.




## 28.2 Description

### 28.2.1 Flags

To hoist a flag, select first a halyard and press the actual flag position. You may need to haul the line(s) first. Starboard side is the upper most flag on the halyard when hoisted. The flag shelf will now be available as a pop up panel and a flag can be selected – on shelf for signal flag and pennants and one for national flags. To fulfil the signal select the next flag position and repeat the operation.

## Flag shelf – Signal Flags


## Flag shelf – National Flags


When the signal is ready press the HOIST FLAGS button and all flags on the selected halyard will be hoisted. To give more than one signal, select the next halyard and repeat the operation described above.

When pressing 

the flags at the selected halyard will be lowered to its dip position and the “DIP” button will lit. To hoist the signal back to upper position press the 

button.


This button hauls the flags on the selected halyard down to initial position.


This button hauls all signals on all halyards down to initial position. Only the selected halyard is displayed.

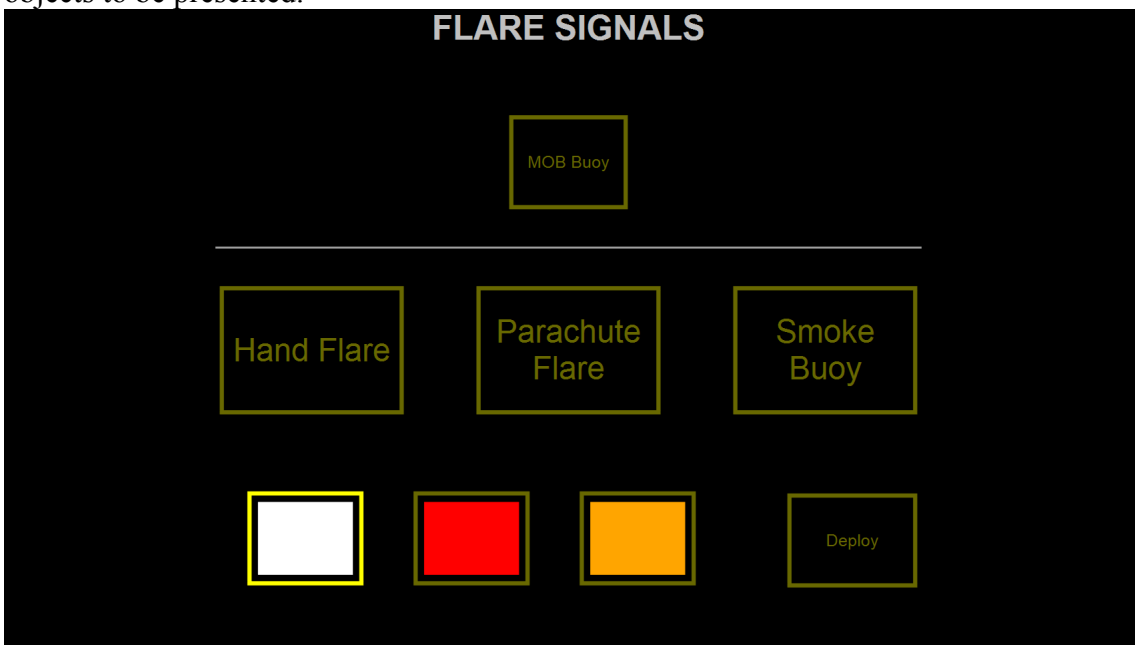
## Note

*To empty a flag position, select box No Flag in either of the two flag panels.*

# 29 FLARE SIGNALS

## 29.1 Purpose

The Flare Signals panel is designed to aid emergency operations by providing visual objects to be presented.




## 29.2 Operation

The panel features buttons for:

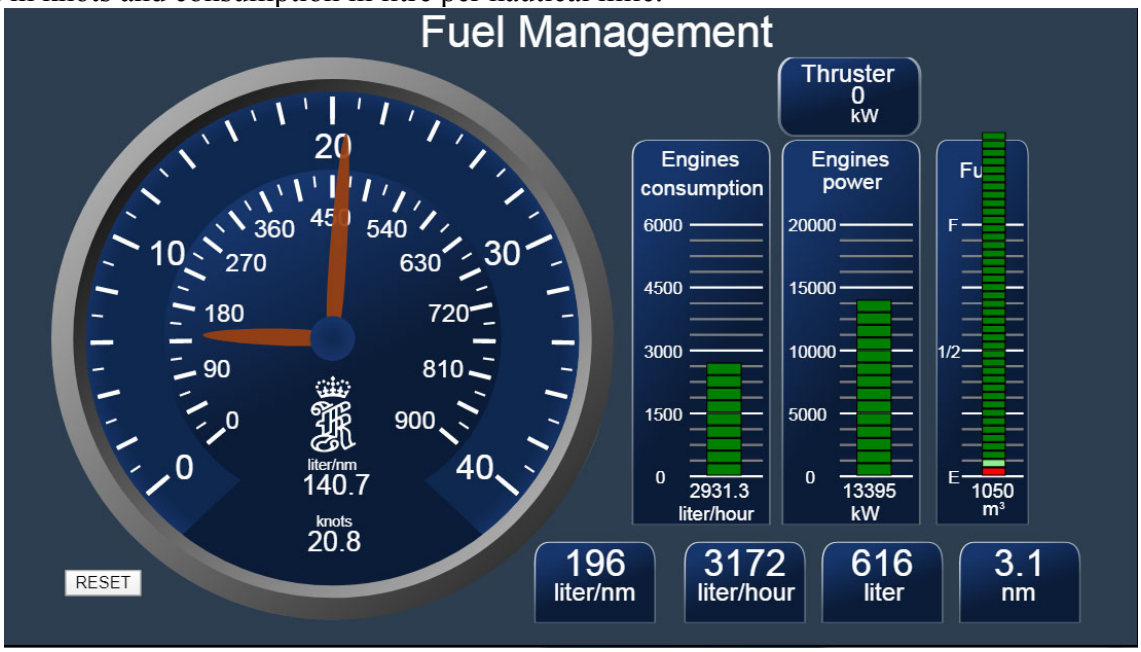
- Launch of man overboard buoy (MOB).
- Hand flare on vessel or rig.
- Launch of parachute flare.
- Smoke buoy.

Select colour (flare and smoke) and press deploy button.

# 30 FUEL MANAGEMENT

## 30.1 Purpose

A simulation fuel panel (emulated model) presenting fuel details such as consumption, power and amount of fuel. An analogue instrument with dual dials presenting the vessel speed in knots and consumption in litre per nautical mile.

i. 


## 30.2 Description

Only one interaction available – the RESET button will set all digital values to zero. Fuel amount is defined by the specific ship model and may also be altered by the instructor. In the system configuration (POCOS/instructor) units may be changed. Presentation and values as follows:

i. Value calculation for fuel consumption in kg/nm (l/nm) - Consumption for distance in nm travelled after last press of RESET button.
ii. Value calculation for fuel consumption in kg/hour (l/hour) - Consumption for time passed after last press of RESET button.
iii. Value for fuel consumption in kg - Fuel spent from tank after last press of RESET button. Estimated range left in nautical miles with fuel content.
iv. Value for distance in nm - Travelled distance from last press of RESET button.

Reset button - tracks the distance travelled and current fuel level in the tank. Amount of fuel is instructor controlled form vessel fuel tanks.

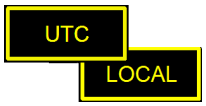
# 31 HEADING, LOG AND TIME

## 31.1 Purpose

The purpose of the panel is to present vessel heading, speed log and exercise time.

## 31.2 Description


## 31.3 Keys and controls



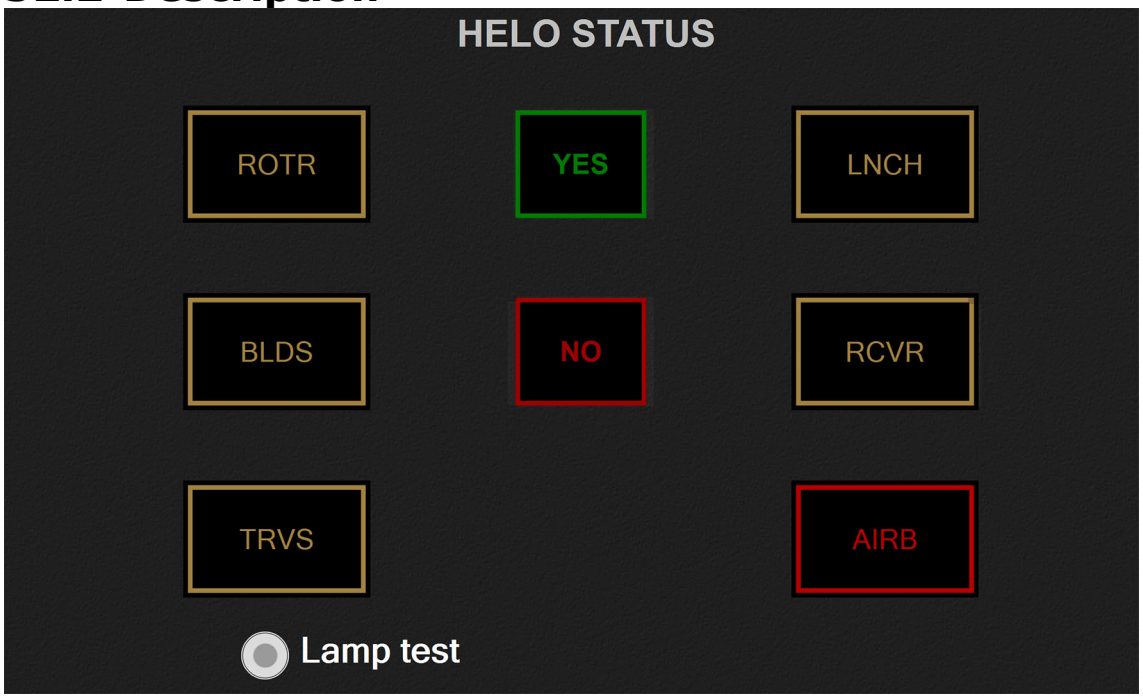

Select either UTC (Universal Time Coordinated) or Local time indicator (LOCAL) to be active.

# 32 HELO STATUS

## 32.1 Purpose

The Helo Status Panel is designed for K-Sim Naval simulator using Multiflex touch display. The panel is located on one own ship bridge and are operated by OOW (Officers of Watch) for communicating with the FDO (Flight Deck Officer) served by the instructor.

## 32.2 Description




## 32.3 Keys and controls

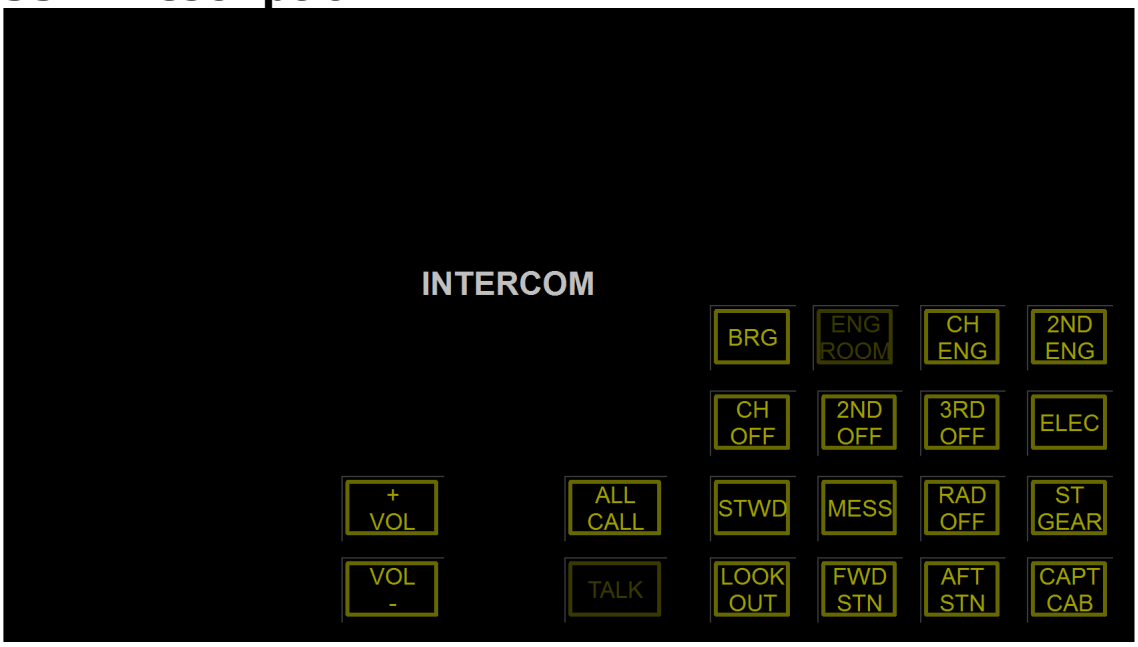
All buttons and buttons holds designated command for communication between OOW and FSO. A lamps test is found to verify all buttons to be active.

# 33 INTERCOM

## 33.1 Purpose

The purpose of the Intercom is to allow on board communication.

## 33.2 Description




## 33.3 Keys and controls

The Intercom has a set of 16 (sixteen) predefined keys for stations selection.


Volume keys.


Talk key. To be kept pushed while talking, when using the built-in microphone.


All call key. For broadcasting a message to all Intercoms stations connected to the onboard Intercom system.

## 33.4 Operation

1. Click to adjust the speaker volume as appropriate.
3. Click the location onboard to contact. The button illuminates and a 0.5 second bip will sound, indicating that an incoming call is pending.
4. Click 

and hold while talking.
5. To close communication, click 

.
6. To broadcast a message to all Intercoms connected click 

while talking.

# 34 INDEPENDENT JOYSTICK SYSTEM

## 34.1 Purpose

The independent joystick system (IJS) gives the operator the possibility to manoeuvre the ship or rig in two different modes (Joystick or Auto heading). The Joystick mode can in zero speed lon/lan and be capable of rotating the ship around three defined rotation centers (Bow, Center and Stern). The joystick features X- and Y axis control and rotation.


## 34.2 Description

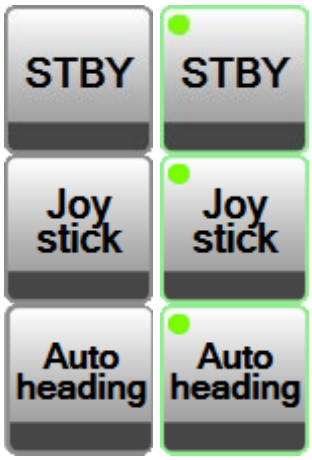
The Joystick system  will be based on one Multiflex panel and one half panel with a Joystick handle. The Multiflex panel will have the possibility to define the operation mode, control the ships heading and displays to indicate total thrust power used to move the ship in surge, sway and jaw direction. The second panel includes the physical Joystick.

## 34.3 Characteristics and operation

The Joystick control model calculates forces acting on a ship or rig based on data from available sensors (Gyro, DGPS, Doppler-log, etc.). With a single Joystick the operator can then manoeuvre the ship in all directions or changing the heading by use of the heading control. The Joystick system can be located in the centre console, stern console or on the bridge wing (all positions on the bridge). The Joystick control will work fully independent of an alternative DP system located on the bridge (controlled from the Change over Control panel).

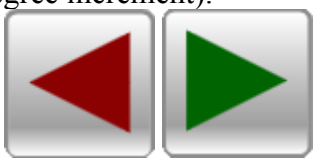
### 34.3.1 Buttons

The following push buttons are found on the Independent Joystick system to control the different operation modes. These buttons required double-click to activate and accept transfer.




When command control has been transferred to the Independent Joystick from the “Change over Control” panel, the push button “STBY” will get steady light. The command can then be selected between “Joystick” or “Auto heading” by double click on the actual button.
If de-activating the “Joystick” or “Auto heading” control, this can be done by double click on the “STBY” button.
The command will then be transferred to Bridge or DP on the “Change over Control”.
When “Auto heading” is activated, the “Set heading” will default be the actual heading. If new heading is required push the “Set heading” button.


The “Set heading” indicator is lit and the new heading command can be given by use of the joystick (rotating the handle) or by use of the port / starboard arrows buttons for fine tuning (one degree increment).



The new heading will be displayed in the “Compass” indicator as an orange arrow on the N/S indictor and orange numbers in the centre of the compass.

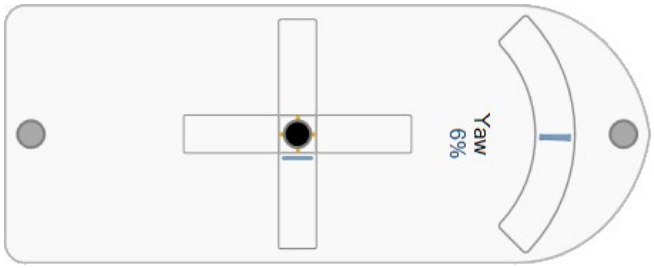
### 34.3.2 Compass

The outer circle indicates turn-rate direction (blue dots with tail (afterglow)). Clockwise rotation with afterglow, indicates that

turn have been to starboard where anti-clockwise rotation indicates that turn have been to port. Distance between the dots indicates fast (long tail) or slow (short tail) turn rate. The inner circle is the gyro compass direction (North, East, South & West) with indicator for true heading. The heading marker (black arrow) and commanded (new) heading (orange arrow) is relative to ships heading. The centre of the gyro compass includes actual heading (blue number) and commanded heading (in orange) in degrees. Actual heading is updated automatically from the gyro. Turn-rate is calculated from the gyro input.

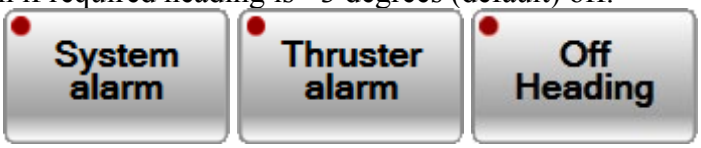

### 34.3.3 Ship outline

The ship outline have indicationA for Port and Starboard movement (arrows) and speed indication (alpha-numeric). Forward and aft movement are indicted with blue arrow in the moving direction. The actual speeds are given in knots and position close to the arrow.

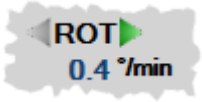



### 34.3.4 Alarms and off-heading

System alarm is set by instructor – complete failure to the IJS. The Thruster alarm will limit your power and position keeping capability – check thruster fall out etc.. Off heading comes on if required heading is >3 degrees (default) off.




### 34.3.5 Other information

Display of vessel rate of turn: 

and selected gyro: 

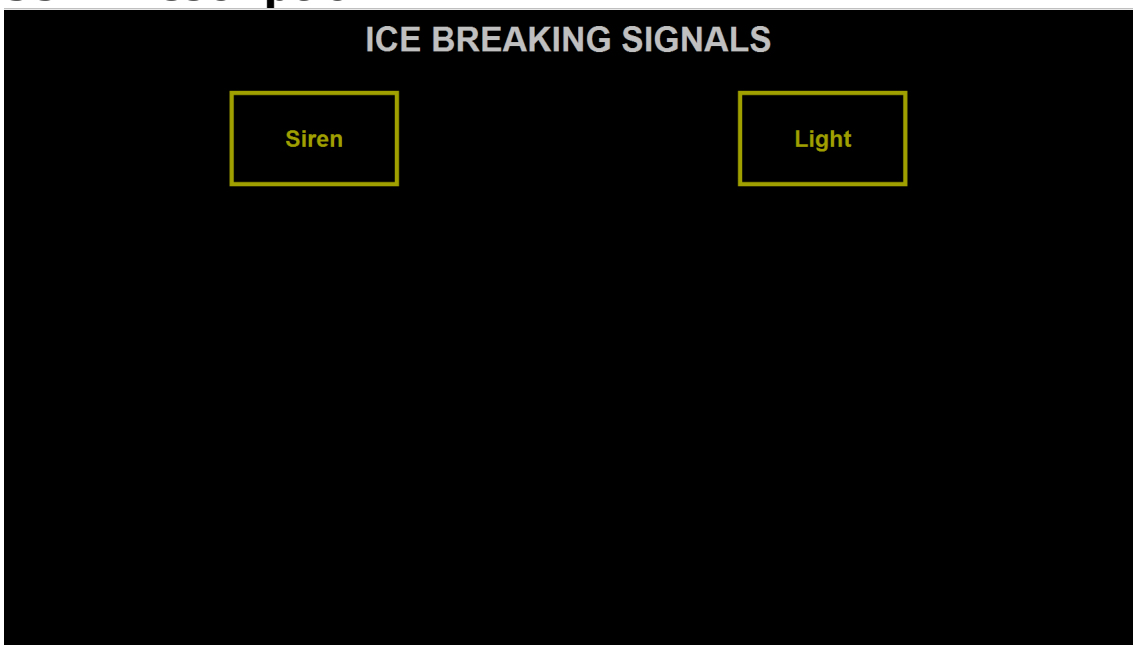
.

# 35 ICE BREAKING SIGNALS

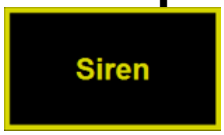
## 35.1 Purpose

The purpose of the Ice Breaking signals is to allow operation to switch ON/OFF the ice breaking siren and the ice breaking light (rotating light).

## 35.2 Description




## 35.3 Operation



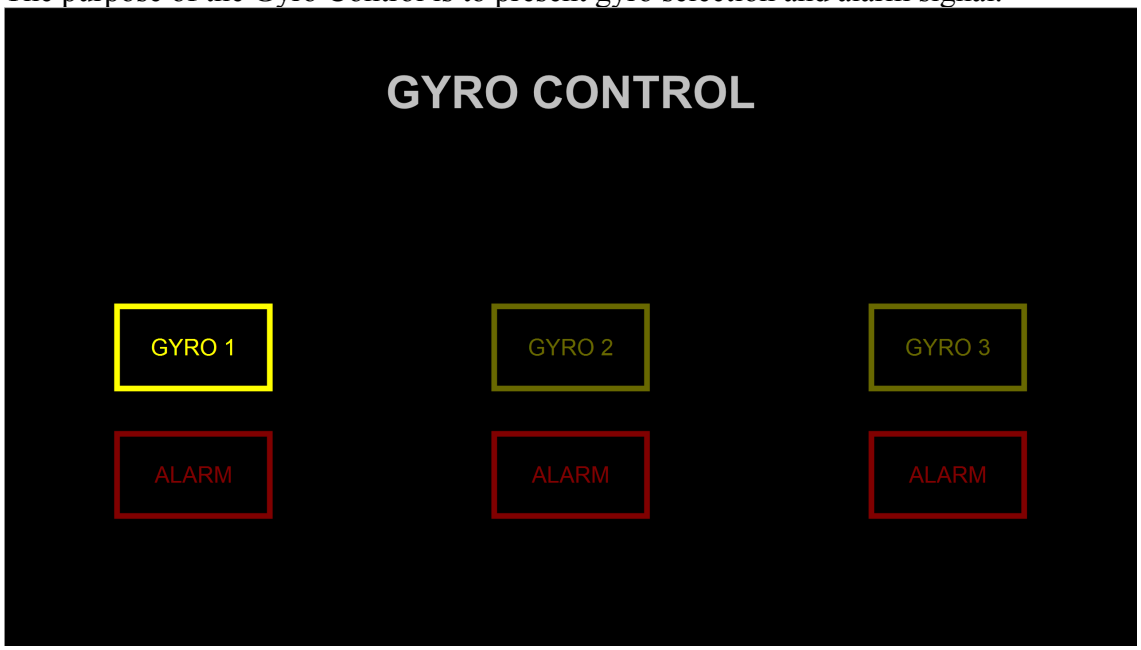

To switch on the ice breaking siren (deep horn).


To switch on the red flashing (stern) ice breaking light (rotating).

# 36 GYRO CONTROL

## 36.1 Purpose

The purpose of the Gyro Control is to present gyro selection and alarm signal.




## 36.2 Operation


Select gyro source; #1 - #2 - #3 to the wheelhouse instruments.


Each gyro have separate alarm. Indicated dark: NO ALARM.

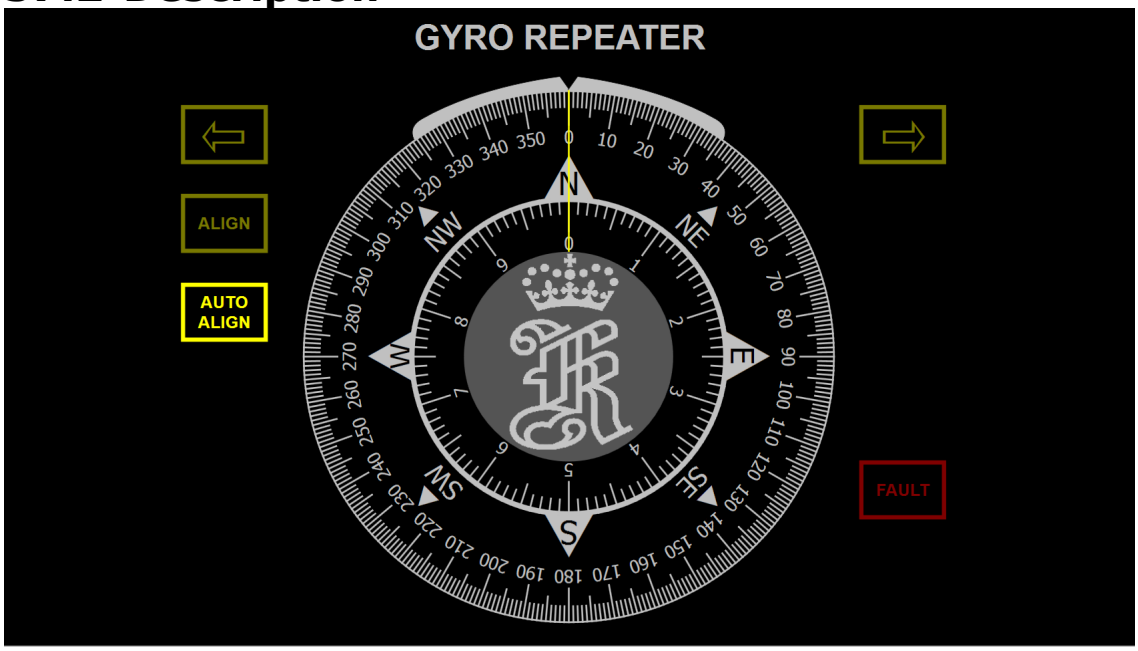

Indication: ALARM.

# 37 GYRO REPEATER

## 37.1 Purpose

The purpose of the Gyro Repeater is to display the gyro course from the gyro selected.

## 37.2 Description




The Gyro repeater has to be aligned before use. The alignment can be done manually or automatically.

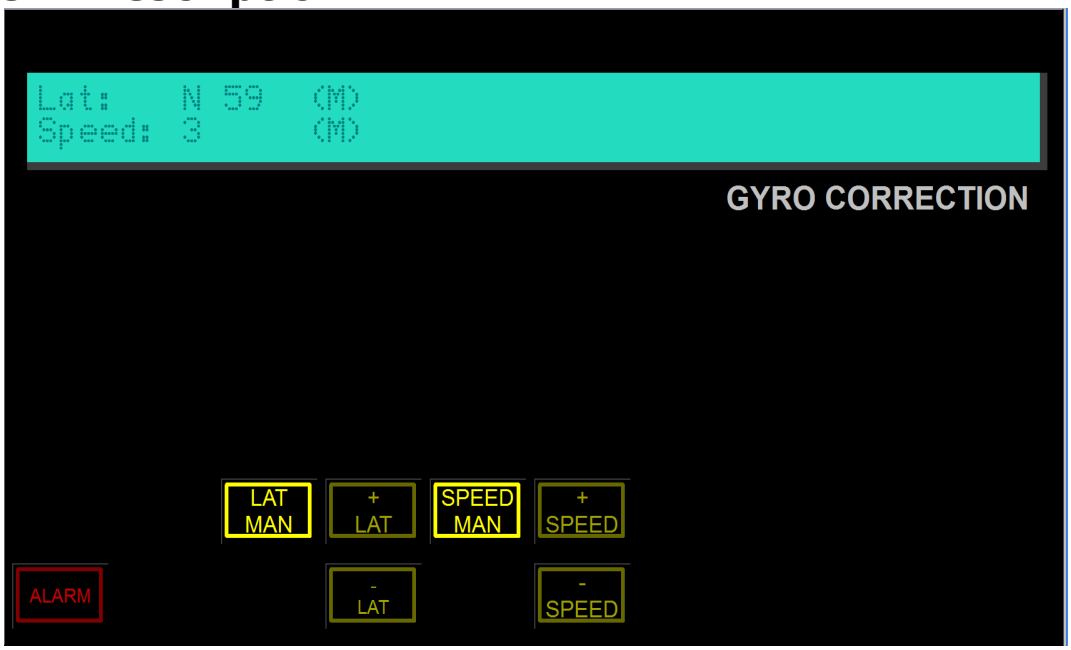
To align manually select ALIGN and the use the port or starboard arrow to adjust the gyro to actual course. If AUTO ALIGN is selected the gyro will adjust the course automatically. The AUTO ALIGN can also be enabled by the Instructor.

# 38 GYRO CORRECTION

## 38.1 Purpose

The purpose of the Gyro Correction unit is to allow correction of the gyro signals for SLE (Speed and Latitude Error).

## 38.2 Description




## 38.3 Operation

The Gyro Correction panel will under normal conditions (no malfunction on GPS and Log) have background light in its buttons and be in AUTO mode, reading and displaying latitude from the GPS and speed from the Log.


When activated the button is illuminated and allow setting and reading of Latitude inputs


When activated the button is illuminated and allow setting and reading of Speed inputs


For increasing/decreasing the latitude value. One push will change the value with one step. When the key is kept pressed, the value will change rapidly.


For increasing/decreasing the speed value. One push will change the value with one step. When the key is kept pressed, the value will change rapidly.

### 38.3.1 Manual Latitude

1. Click 

   - The key is illuminated and the gyro reads LAT from the Gyro Correction panel
2. Click the appropriate 

to adjust the latitude north- or southwards. The "adjustment keys" illuminates when pushed/activated. For minor changes, push the key subsequently to change the value step by step. For major changes, keep the key pressed, and the value will change rapidly. The display will be updated.
3. To return to Auto mode click 

   - The key turns dark and the gyro reads LAT from the GPS.

### 38.3.2 Manual Speed

1. Click 

   - The key is illuminated and the gyro reads the speed from the Gyro Correction panel
2. Click the appropriate 

to adjust the speed. The "adjustment keys" illuminates when pushed/activated. For minor changes, push the key subsequently to change the value step by step. For major changes, keep the key pressed, and the value will change rapidly. The display will be updated.
3. To return to Auto mode click 

   - The key turns dark and the gyro reads speed from the Log

### 38.3.3 Alarm

If the LAT signal from the GPS or the speed input from the Log is lost, the 

begins flashing.

Note! *No buzzer is activated on the Gyro Correction panel when a fault condition to the GPS or Log occurs.*

When a fault condition to the GPS occur the 

gets a steady light and the Gyro read Lat from the Gyro Correction panel. The Gyro Correction panel use the last received LAT input from the GPS.

When a fault condition to the Log occur the 

gets a steady light and the Gyro read the speed from the Gyro Correction panel. The Gyro Correction panel use the last received speed input from the Log.

Click 

to stop the flashing and the button turns dark.

To return back to Auto Mode click the appropriate 

or 

. If the button does not turn dark and the 

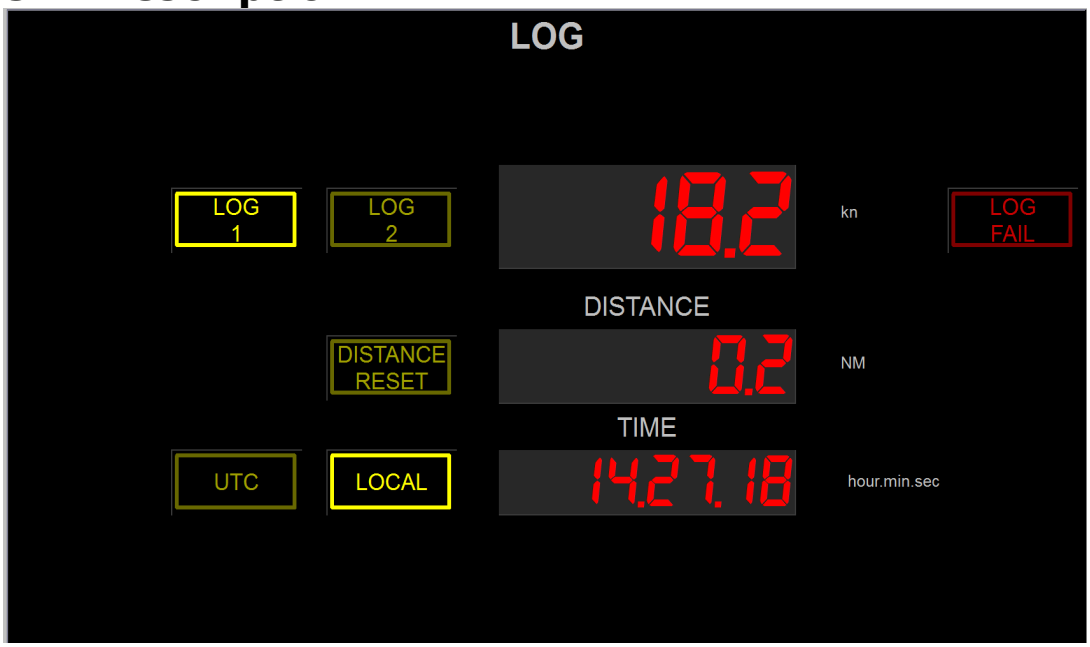
starts flashing it indicates that the fault condition is not rectified.

# 39 LOG, TIME, DISTANCE

## 39.1 Purpose

The Log/Distance/Time unit is combined with a digital time display, and allows digital readout of speed and distance through the water.

## 39.2 Description




## 39.3 Keys and controls


Push either key to select reading from Log number 1 or number 2.


Push the key to reset distance counter of the active log.


Select either UTC (Universal Time Coordinated) or Local time indicator (LOCAL) to be active.


Indicates a log signal malfunction on the active log when flashing. Push the key to acknowledge the alarm. The key turns dark when the fault is repaired.

### 39.3.1 Digital displays

| Indicator/ Display | Explanation | Range | Step | Unit |
|---|---|---|---|---|
| LOG | Logged speed through the water | 0-99.9 | 0.1 | Knots |
| DISTANCE | Logged distance through the water | 0 to 99999.9<br>or<br>10000 to 999999 | 0.1<br><br>1 | n. mile<br><br>n. mile |
| TIME | Local Time or UTC | 00.00.00 - 23.59.59 | 1 sec | hour/ min/sec |

## 39.4 Operation

### 39.4.1 Log selection

- Push 

. When the key is illuminated, the corresponding log speed is displayed.

Note! *Two logs cannot be used simultaneously*

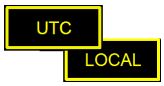
### 39.4.2 Distance counter

- The distance counter displays nautical miles sailed (through water).
- Push 

to reset distance counter and display.

### 39.4.3 UTC and local time

Time may be displayed either in UTC or LMT.

Push 

to select the time displayed. The corresponding key illuminates.

## 39.5 Alarms

- In the event of malfunction on the active log 

will start flashing and a buzzer will sound.
- To silence the buzzer, push the flashing key. The key turns to steady light.
- When the fault condition is fixed the 

turns dark.
- Select the other log.

# 40 MAGNETIC COMPASS

## 40.1 Purpose

The purpose of the Magnetic Compass is to provide magnetic heading information.

## 40.2 Description


The compass rose shows the magnetic heading with a scale resolution of one degree.

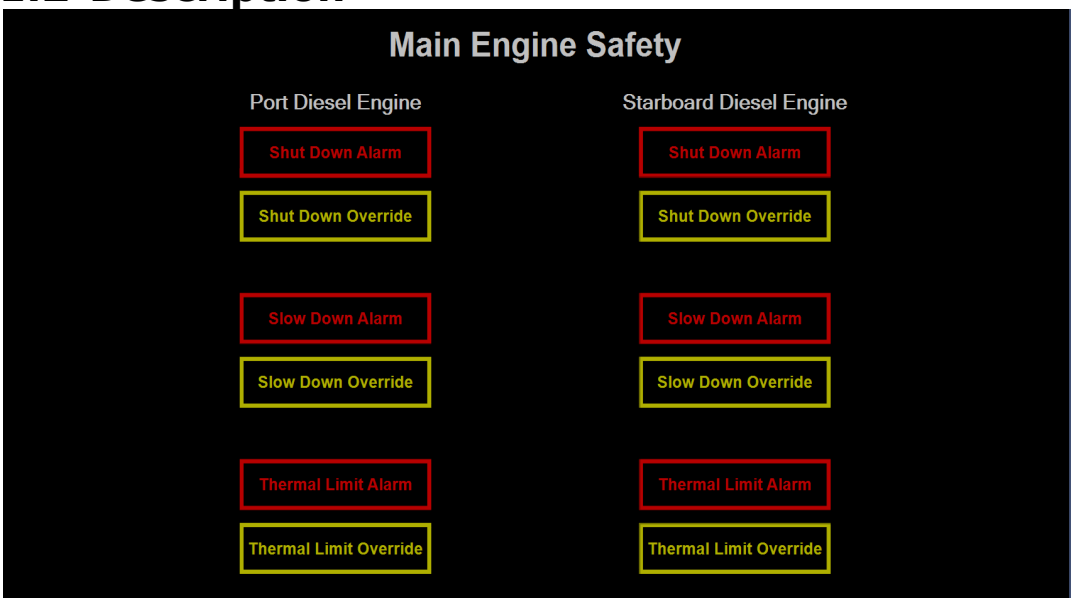
Note! *The magnetic compass is affected by magnetic variation and deviation.*

# 41 MAIN ENGINE SAFETY

## 41.1 Purpose

The purpose of this panel is to alert the bridge manning during manned engine room on engine conditions; Shut down-, Slow down alarms, and Thermal limits. The bridge will be able to return with override to all engine orders and alarms.

## 41.2 Description




## 41.3 Keys and control

For the engine(s) – Starboard- and Port Diesel propulsion as follows:

Shut Down Alarm

*An serious engine fault is requesting engine to shut down.*

Shut Down Override

*The bridge calls for a shut down override due to maneuvering situations.*

Slow Down Alarm

*A request from engine control to reduce engine load and reduced rpm.*

Slow Down Override

*The bridge calls for an override to maintain full rpm control.*

Thermal Limit Alarm

*Engine rpm reduction calls for a thermal program to reduce engine rpm.*

Thermal Limit Override

*The bridge is requesting engine control room to override limits.*

### 41.3.1 Thermal limit

To avoid static tensions in the engine due to temperature variations, the engine RPM is thermally controlled running up from 80 to 100 % or down from 100 to 80 % power. In emergency cases, this feature can be switched off by the operator. This will, however, involve a risk of damaging the engine.

- This indicates that the thermal limitation feature is on.
- To switch off the thermal limitation feature, push 

, which will turn dark.
- The operator is now free to adjust the engine RPM independent of the thermal limitations.

# 42 MF/HF RADIO

## 42.1 Purpose

The purpose of the MF/HF Transceiver is to allow Medium and High Frequency ship to ship, shore to ship or ship to shore communication. The MF/HF Transceiver operates in simplex and duplex.


## 42.2 Keys and controls – MF/HF

The MF/HF is turned on by a single press (mouse click) on this button for 3 (three) seconds. The transceiver comes on.

The MF/HF is turned off by pressing the same button button for 4 (four) seconds. Always indicated by a count down window in the information display, except if the radio is powered down in distress mode.

The volume in the loudspeaker is adjusted by turning the VOLUME control. The volume level is visualized in the display.

**Speaker volume**

Switches loudspeaker on/off. The loudspeaker symbol in the display will show if the loudspeaker is on or off. Graphic symbol in display area.


**Loudspeaker on/off**
Changes between 'HIGH POWER' and 'LOW POWER'. DSC and Telex calls are automatically sent in 'HIGH POWER'. (DSC and Telex is not implemented yet).


**Squelch on/off**
Changes between squelch on and off, indicated in the telephony display by 'SQUELCH' and squelch off (no indication). When squelch is on the receiver is muted in speech pauses.
Squelch is automatically set to off by a change of RX frequency except during scanning.


Display dimming - adjust backlight intensity

Button for different modes; Toggle the button to choose between SSB TELEPHONY, AM BROADCAST DSC (*/), TELEX(*/) and SSB REMOTE.


The four soft keys at the bottom of the display will have different functionality depending of the menu items. Navigate the menu by using up- and down key. Press OK when the select bar is at the preferred menu item. Press CANCEL if you want to leave the main menu.


## 42.3 How to make a call to a coast station

Wait until transmission of the traffic list has finished and the channel is free. Call the coast station on the working frequency on which the traffic list was received or as instructed by the coast station.

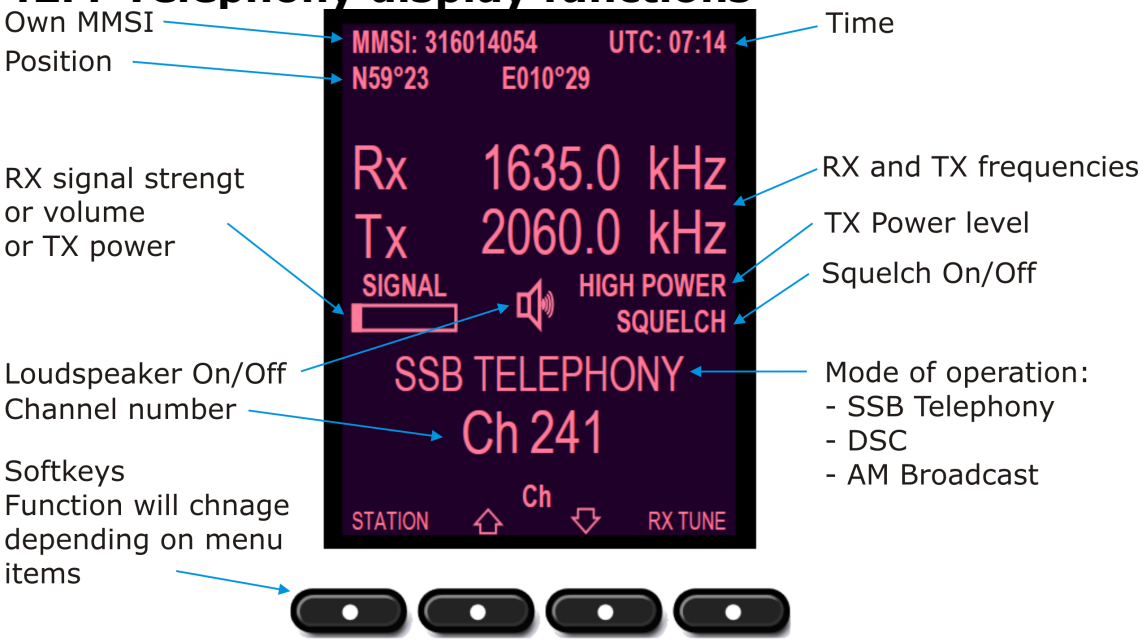
• Hook off the handset.
• Press the PTT key on the handset when speaking.

Say:
- <Called station's name (3 times)>
- 'This is' <Your ship's name (3 times)>
- 'Over'
- Release the PTT key to listen.

When answered

Follow the instructions from the coast station. The coast station may ask for further identification, information on position and next port of call, and may suggest another working channel for the traffic to follow. If the coast station is not ready to receive traffic immediately it may ask you to wait for a specific number of minutes.
PTT only when you are talking. If on a simplex channel (in other words, a channelthat can carry only one transmission at a time), always say “Over” just before releasing.

## 42.4 Telephony display functions



# 42.5 Voice call operation

## 42.5.1 Operating MF/HF radio communication

The MF/HF is operated by means of a handset. To bring the MF/HF in transmission mode the handset must be hooked off and the PTT button on the handset has to be pressed. Transmission is indicated by the lighted TX indicator.
Receive mode is always reached by releasing the PTT button.

Transmit and receive is performed on the frequencies or channels shown in the telephone display.

## 42.5.2 Listening for calls from a coast station

Coast stations transmit traffic lists consisting of call signs/names of the ships for which they have traffic. The traffic lists are sent at specified times and at intervals of typically two hours. They are broadcasted on the normal working frequencies from the coast station. Ships should, as far as possible, listen to the traffic lists transmitted by relevant coast stations. On hearing their call sign they should establish communication as soon as they can do so.

1. Select the appropriate station.
2. Select the channel on which traffic lists are transmitted.
3. Switch loudspeaker on and adjust volume to an appropriate level.

On HF verbal traffic lists are transmitted in more frequency bands simultaneously. Search for the channel with the best propagation conditions.

## 42.5.3 Enter Rx/Tx frequency

Rx

Press RX to enter a new Rx frequency.

Enter the new frequency via the keyboard.

Enter

Complete by pressing Enter. Pressing the ENTER softkey is equal to pressing OK

Tx

Press TX to enter a new Tx frequency.

Enter the new frequency and complete by pressing Enter.

Pressing the Rx softkey copies Rx frequency to the Tx.

Pressing the Tx softkey copies Tx frequency to the Rx.

Pressing the ⇦ softkey deletes last entry.

Pressing the CANCEL softkey resets the display.

**RX tune**

To fine tune the Rx value turn the Adjust/Tune knob or press the RX TUNE soft key.
Pressing RANGE softkey more times will toggle the detail of tuning (10Hz, 100Hz or 1kHz)
Turn the Adjust/Tune knob to fine tune the value or use the ⇧ and ⇩ softkeys.


Last digit always interpreted as “10Hz “- digit.

### 42.5.4 Channel entry

The MF/HF control unit has all ITU channels preprogrammed in a channel table. These channels starts at Ch 241 and ends at Ch 2517.

Channel 1 to 199 are reserved as user channels.


Press Ch and key in an existing channel number.


Complete by pressing Enter or by pressing the ENTER softkey. The channel number is displayed in the display.

# 42.6 DSC Operation

## 42.6.1 DSC Main

Menu Press the Menu button

Using the Down key and press OK when the select bar is at the preferred menu, or use quick select.

DSC CALL - Alternative press Mode button until DSC mode, and press DSC CALL softkey.

### DSC CALL

Select 1. DSC CALL. Opens DSC transmitter menu. From here it is possible to make routine calls: COAST STATION, SHIP and special calls: AREA, DISTRESS, INDIVIDUAL, GROUP and TEST CALL.

### DSC LOG

Select 2. DSC LOG. Opens a menu to the DSC LOG where DSC calls are stored. In this menu, received distress calls, other received calls and transmitted calls, sorted by time can be read separately. Received calls are deleted after 48 hours.

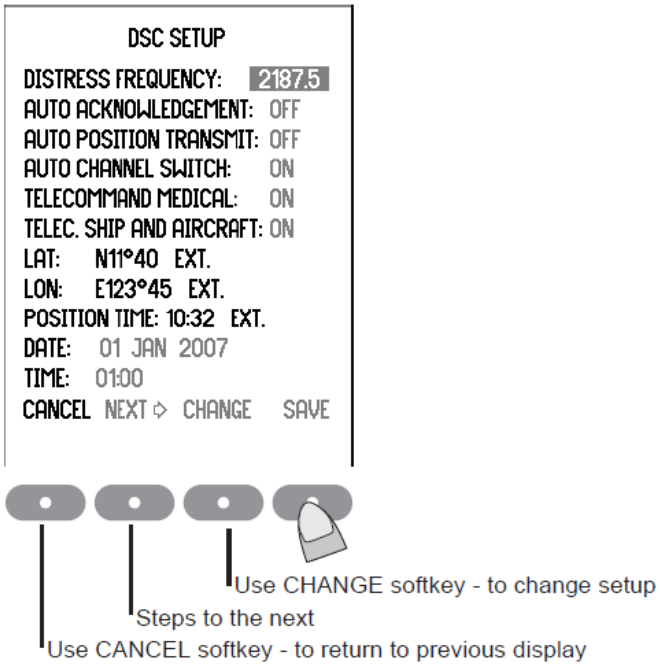
### COMPOSED DSC CALLS

Select 3. COMPOSED DSC CALLS. Opens the COMPOSED DSC CALLS menu. In the menu complete DSC calls can be composed and stored for later used, or already stored DSC calls can be selected.

## 42.7 DSC Setup

Menu Press the Menu button

Select 5. SETUP.
Select 1. DSC SETUP.




Change LAT/LON - to manually enter position if no GPS position
Change TIME - to set real time clock if no GPS time and date

TIME and POSITION TIME disappear when information is updated via the NMEA interface. If not updated via the NMEA interface DATE and TIME must be set manually each time the equipment is switched on.
An alarm is given if position data is not received via the NMEA interface for 30 seconds. In this case position information must be entered manually. In case of manual input an alarm is given when the position information is more than 4 hours old. Any position information is deleted if not updated for 23½ hours.

## Set answer back mode

AUTO ACKNOWLEDGEMENT = ON:
Transmission of acknowledgement is initiated automatically when a direct call, polling or position request call is received.
AUTO ACKNOWLEDGEMENT = OFF:
Manuel acknowledgement only. Direct calls initiated by the ship can be carried through; direct calls from coast stations cannot (factory default).

Note: The purpose is to enable the user to prevent automatic transmissions, e.g. when the ship is in port.

## Set auto position transmit

AUTO POSITION RESPONSE = ON:
Position information is included in direct calls and position request acknowledgements
AUTO POSITION RESPONSE = OFF:
Position information is excluded in direct calls and position request acknowledgements

## Set auto channel switch

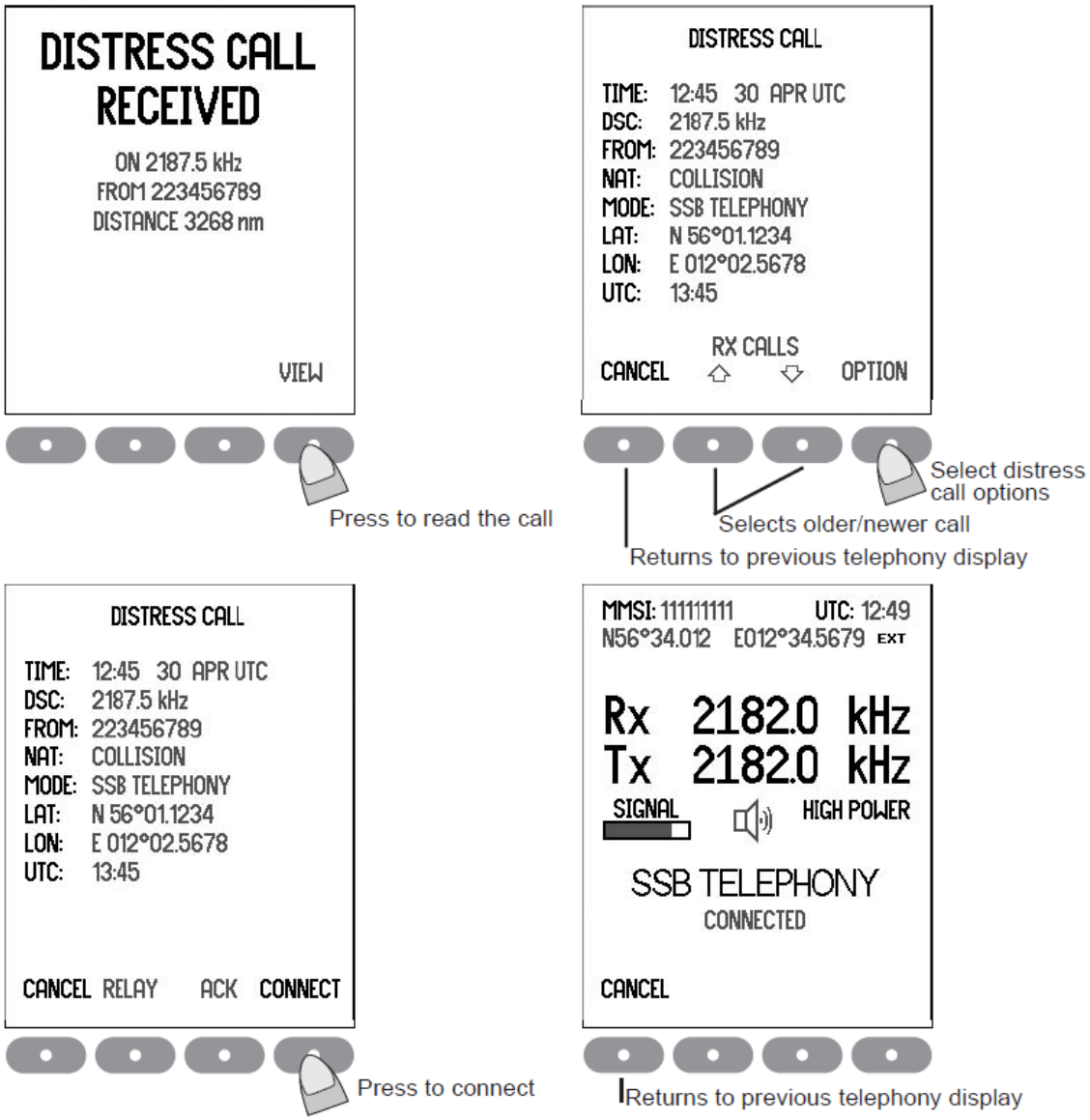
AUTO CHANNEL SWITCH = ON:
??
AUTO CHANNEL SWITCH = OFF:
??

## Set telecommand

TELECOMMAND AND MEDICAL = ON:
Is only available by default after changing relevant parameters in the setup menu
TELECOMMAND AND MEDICAL = OFF:
Is only available by default after changing relevant parameters in the setup menu
TELEC. SHIP AND AIRCRAFT = ON:
Is only available by default after changing relevant parameters in the setup menu
TELEC. SHIP AND AIRCRAFT = OFF:
Is only available by default after changing relevant parameters in the setup menu

## 42.8 Receiving a Distress Call

The DSC Watch Receiver keeps continuous watch on the distress and safety frequency 2187.5 kHz. Reception of a distress or urgency call is indicated by a specific sound signal which continues until a key is pressed. Additional DSC channels can be used if 6-channel scan has been enabled, see chapter “Watch keeping receiver”.



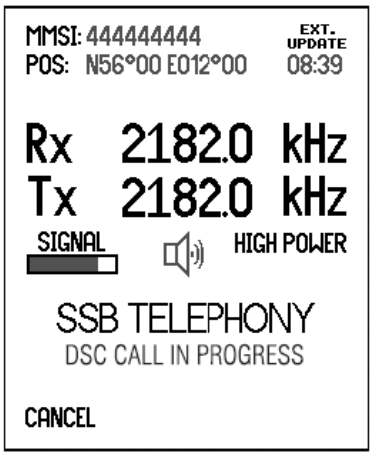

Ships receiving a distress alert from another ship should prepare for receiving the subsequent distress communication on the telephony distress frequency in the same band in which the DSC call was received.

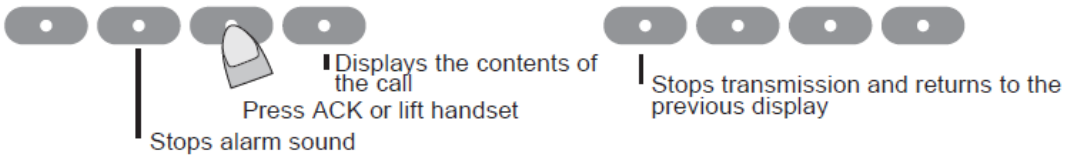
Wait for a short interval in order to give a coast station time to acknowledge the DSC distress alert first. Then, if within range and able to assist, acknowledge the receipt of the distress alert by radiotelephony:

Press the handset key and say:
• the distress signal MAYDAY;
• the words THIS IS;
• the NAME of the vessel in distress, spoken three times;
• the NAME or other identification of own ship, spoken three times;
• “RECEIVED MAYDAY”.

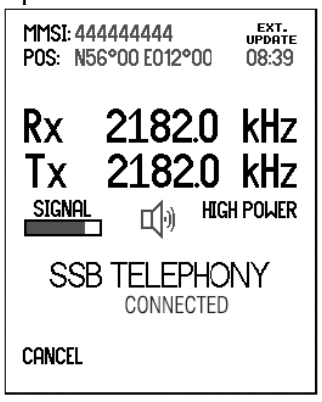
## 42.9 Receiving an Individual call

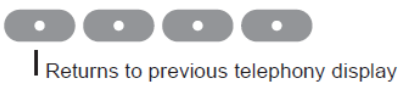
When the transceiver is not used for traffic, scanning should be activated to keep watch on one or more DSC frequencies used for public correspondence and general ship-to-ship communication. Reception of an individual routine call addressed to the ship is indicated by a sound signal which continues until the call is acted upon. The call alarm sound level setting can be changed, see the Menu tree.


The call should be answered by sending a DSC Acknowledgement within 4½ minutes. LIFT HANDSET TO ACKNOWLEDGE and ACK is shown if SSB telephony and legal frequencies are indicated in the call. Lifting the handset or pressing the softkey in this case will initiate transmission of an acknowledgement containing the mode and frequencies from the received call.



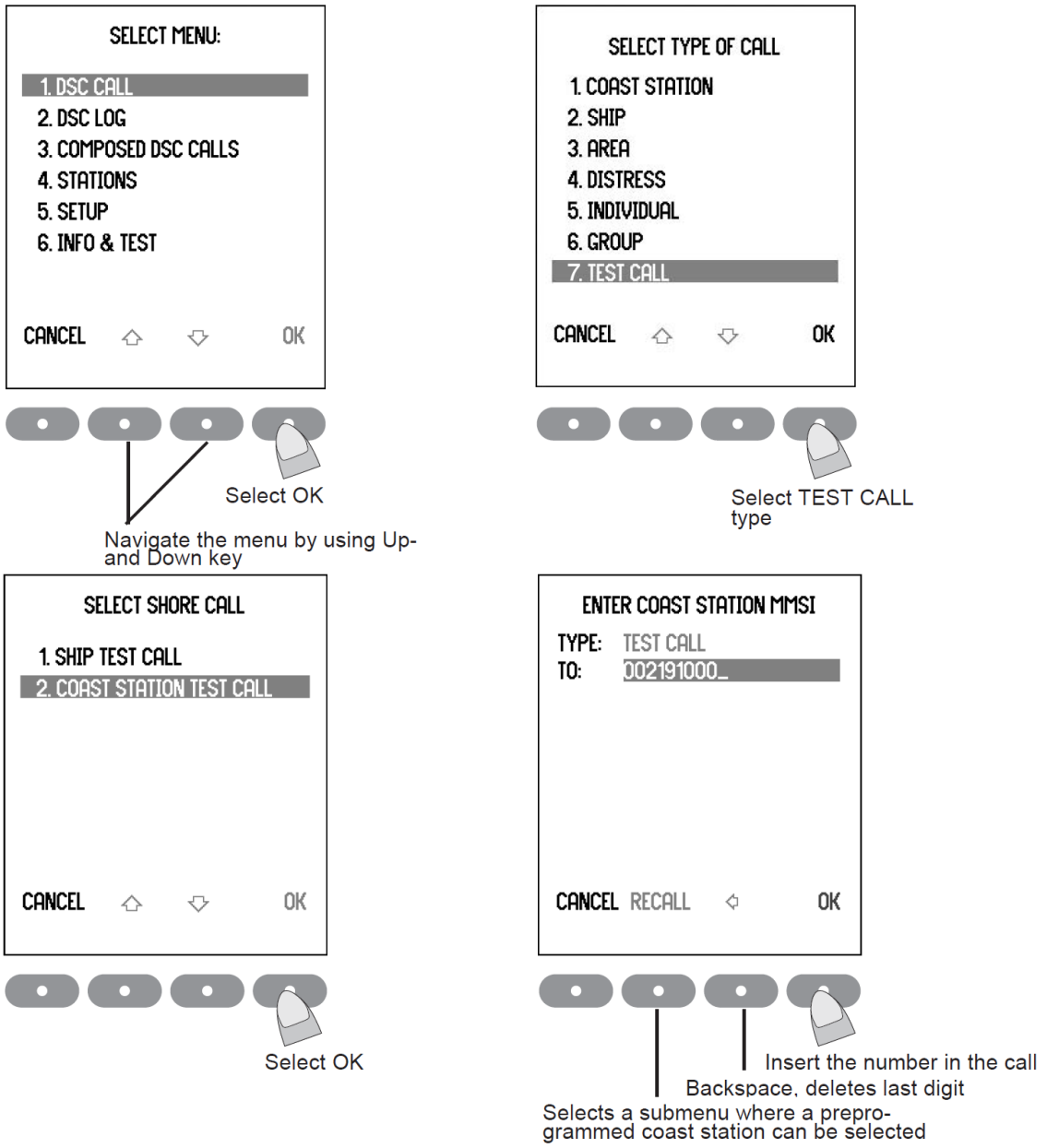

Transmission of the DSC acknowledgement takes approx. 8 seconds. Then the equipment is automatically set to the mode and working frequencies from the acknowledge- ment, and voice communication can start.

When handset is placed on hook the equipment returns to previous telephony setting

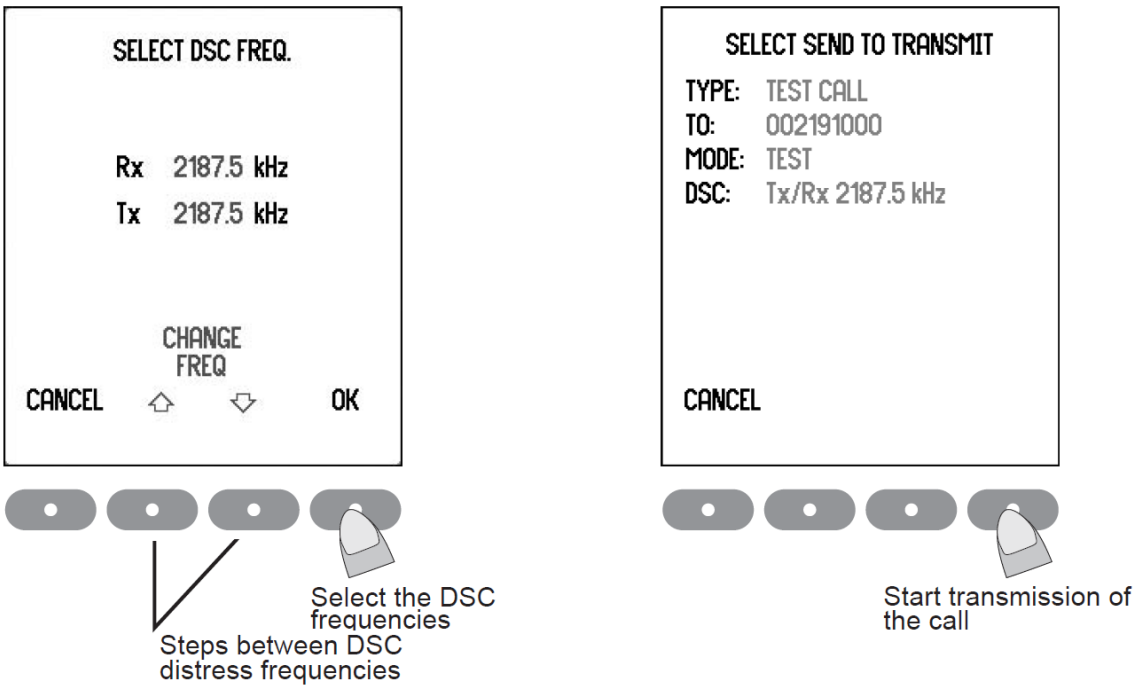
## 42.10 Sending a test call

This call type is intended for test of the DSC system on distress and safety frequencies.

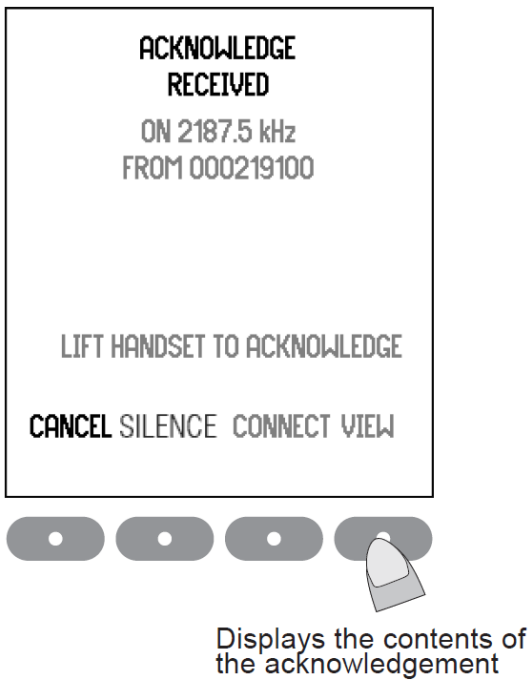
Menu Press the Menu button.




Key in the nine digit MMSI number of the nearest coast station which can accept and reply to DSC test calls.

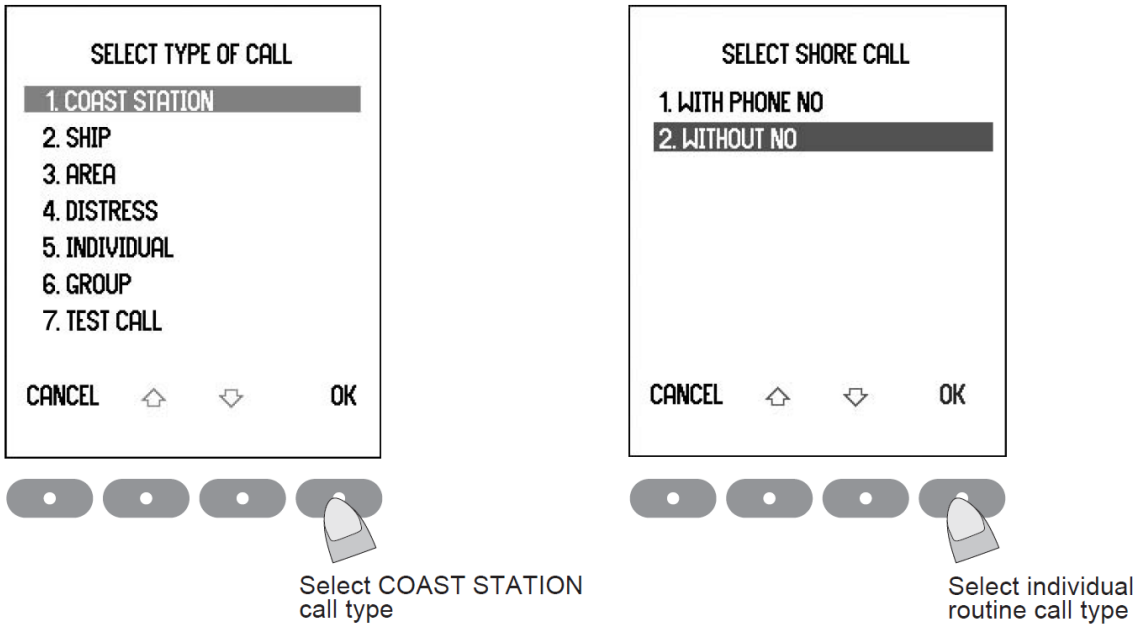



Transmission of a DSC call on MF/HF takes approx. 8 seconds. The coast station should answer the call by sending a DSC Acknowledgement within 4 1/2 minutes. No further communication is intended to take place.

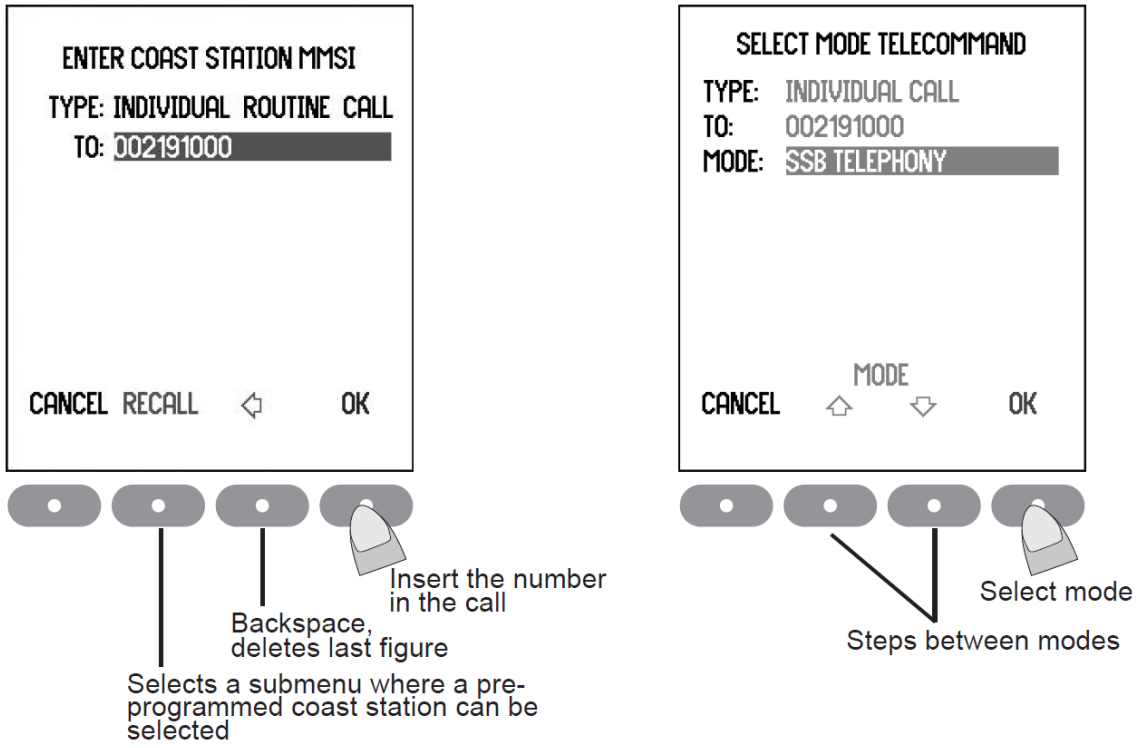


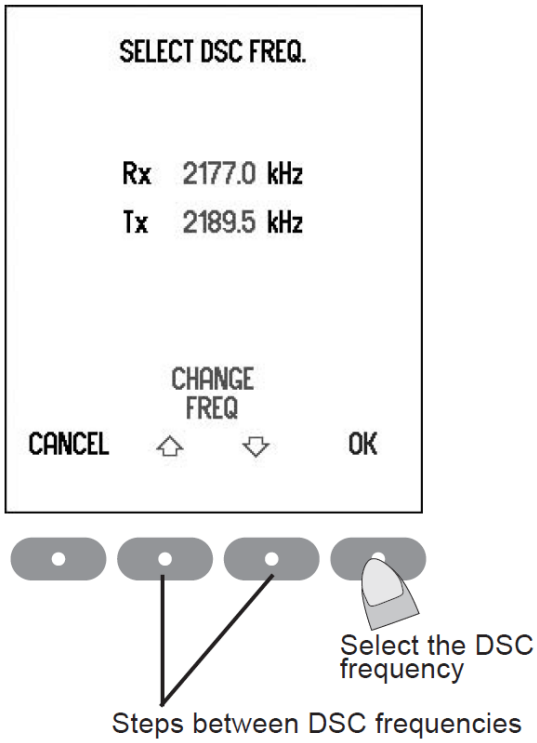
## 42.11 Calling a coast station

Menu Press the Menu button and select 1. DSC CALL

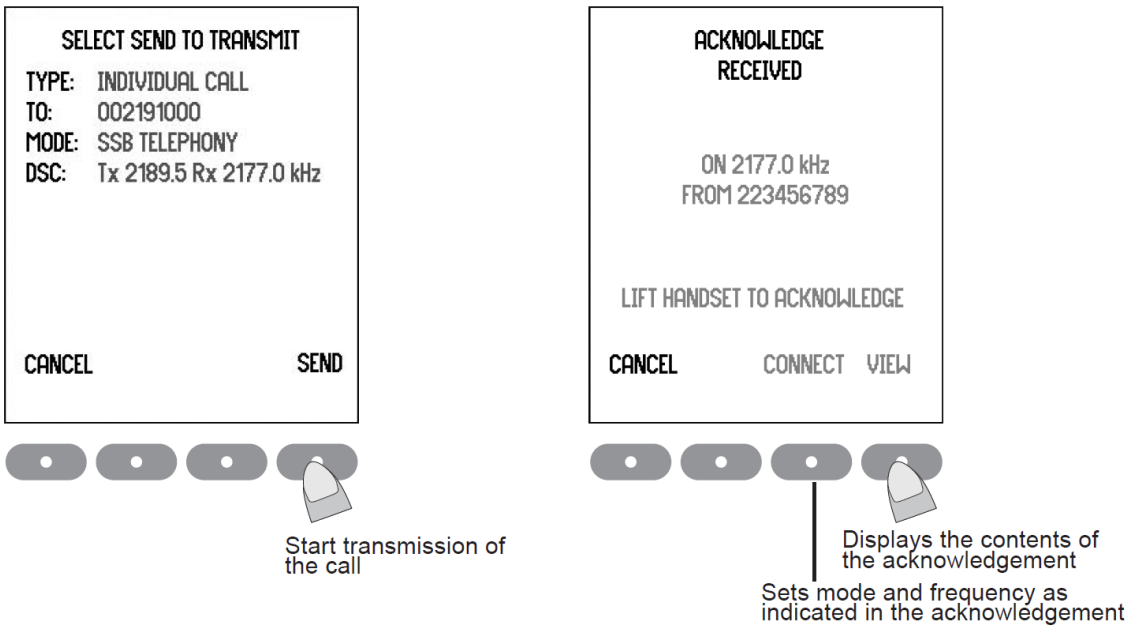



Key in the MMSI number of the wanted coast station (coast station without no).






If the MMSI number is found in the station list, the frequencies are selected from the DSC frequencies of the station if any; otherwise from the list of non distress DSC frequencies. If DSC frequencies were selected from the Telephony display prior to the call these are default. Distress frequencies cannot be selected in any way.
Transmission of a DSC call on MF/HF takes approx. 8 seconds. The Coast station if able to comply will answer the call within 4½ minutes by sending a DSC Acknowledgement containing information on working frequencies for the subsequent traffic. When acknowledgement is received lift the handset to set the radio to the working frequencies.

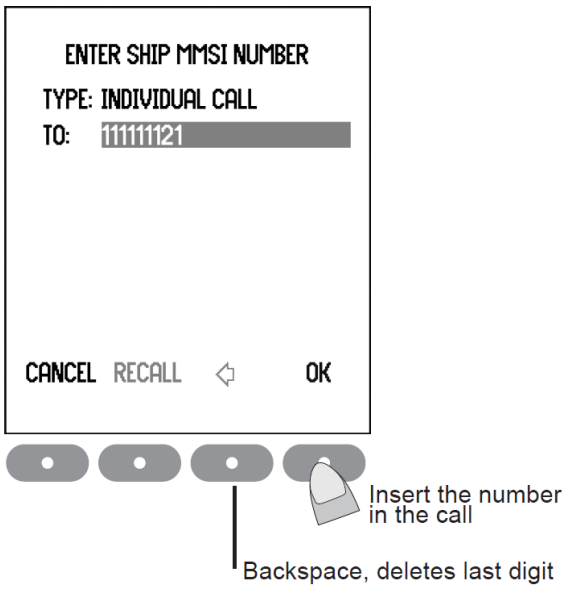



If no acknowledgement is received within 5 minutes, the equipment returns to the previous telephony display and starts scanning if selected.

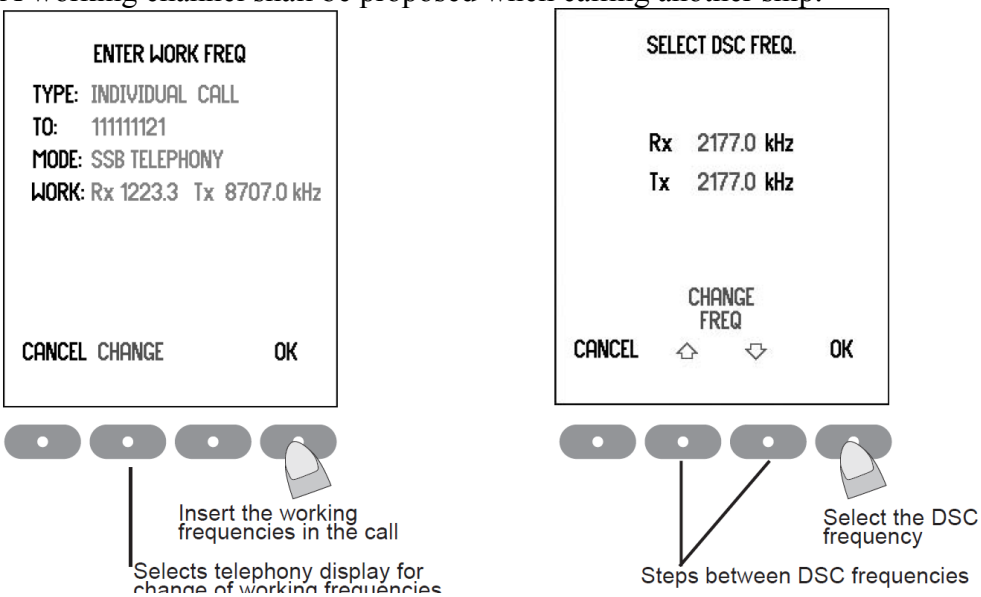
## 42.12 Calling a ship

Menu Press the Menu button and
select 1. DSC CALL.
select 2. SHIP.

Key in the nine digit MMSI number of the wanted ship.

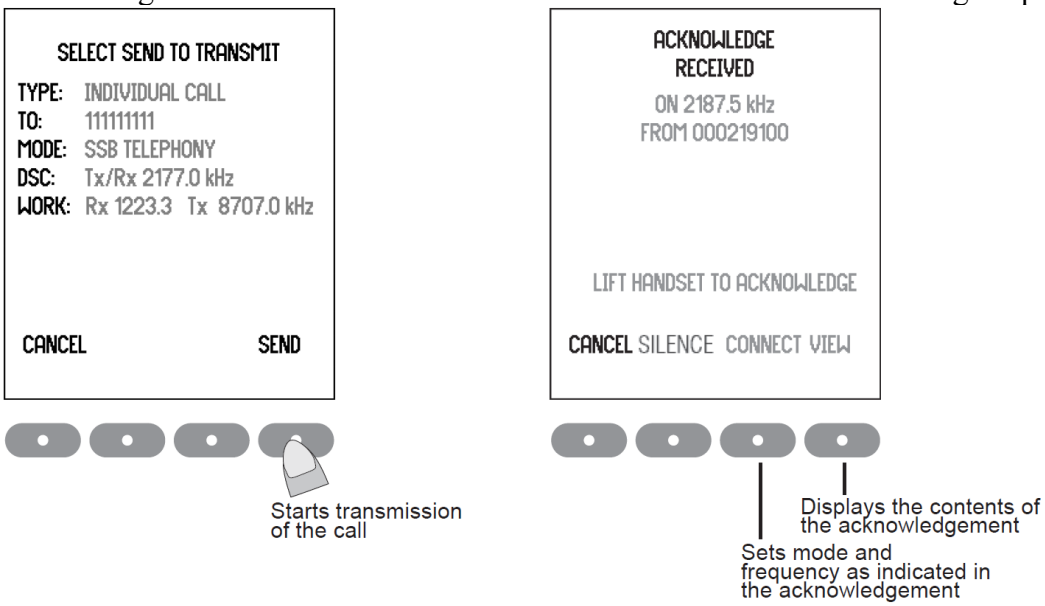


A working channel shall be proposed when calling another ship.




Normally 2177 kHz is used for intership DSC calls. In addition user programmed DSC frequencies may be selected. If DSC frequencies were selected from the Telephony display prior to the call these are default. Distress frequencies cannot be selected in any way.

Transmission of a DSC call on MF/HF takes approx. 8 seconds. The called ship is supposed to answer the call within 4½ minutes by sending a DSC Acknowledgement containing information on working frequencies for the subsequent traffic. When acknowledgement is received lift the handset to set the radio to the working frequencies.

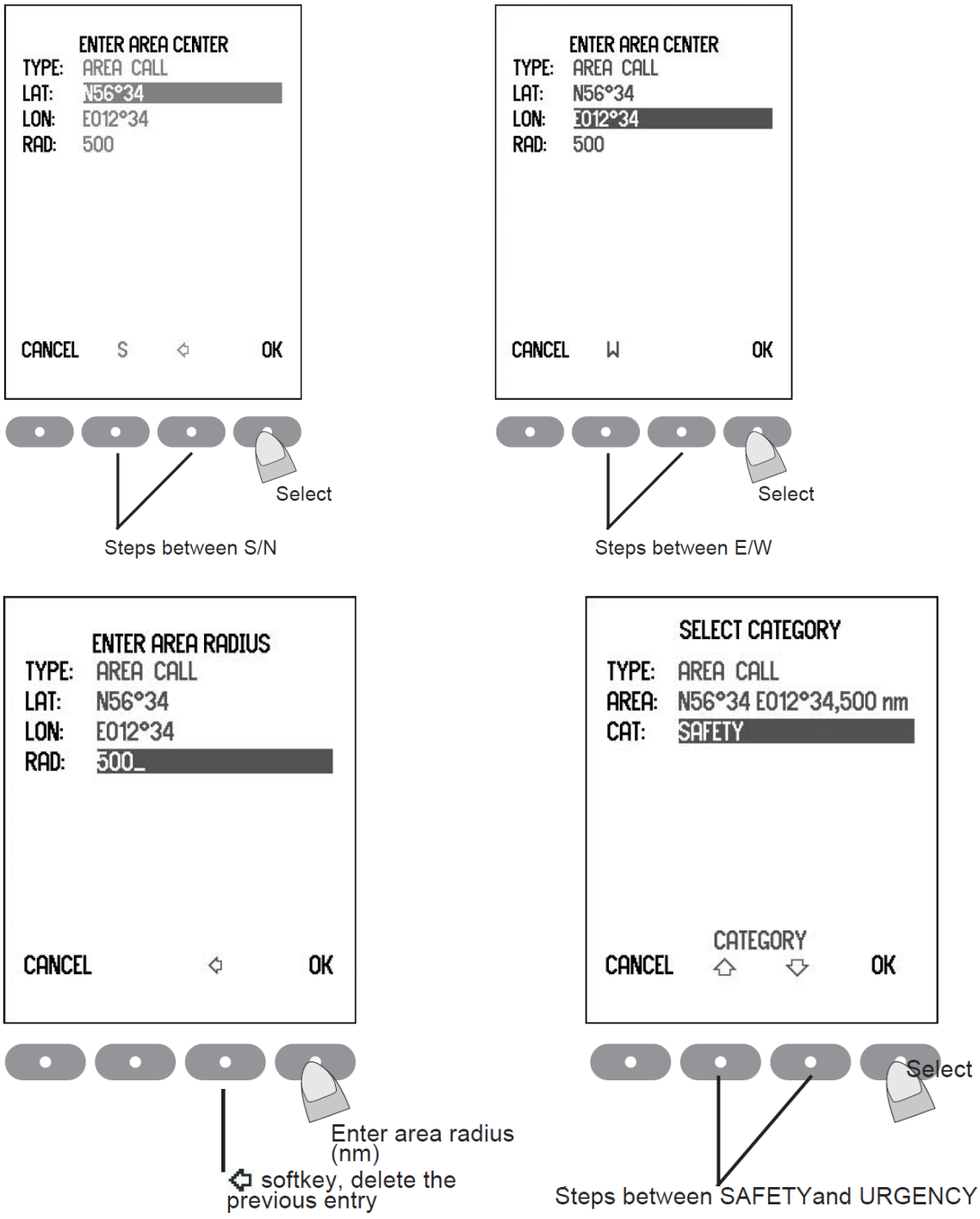


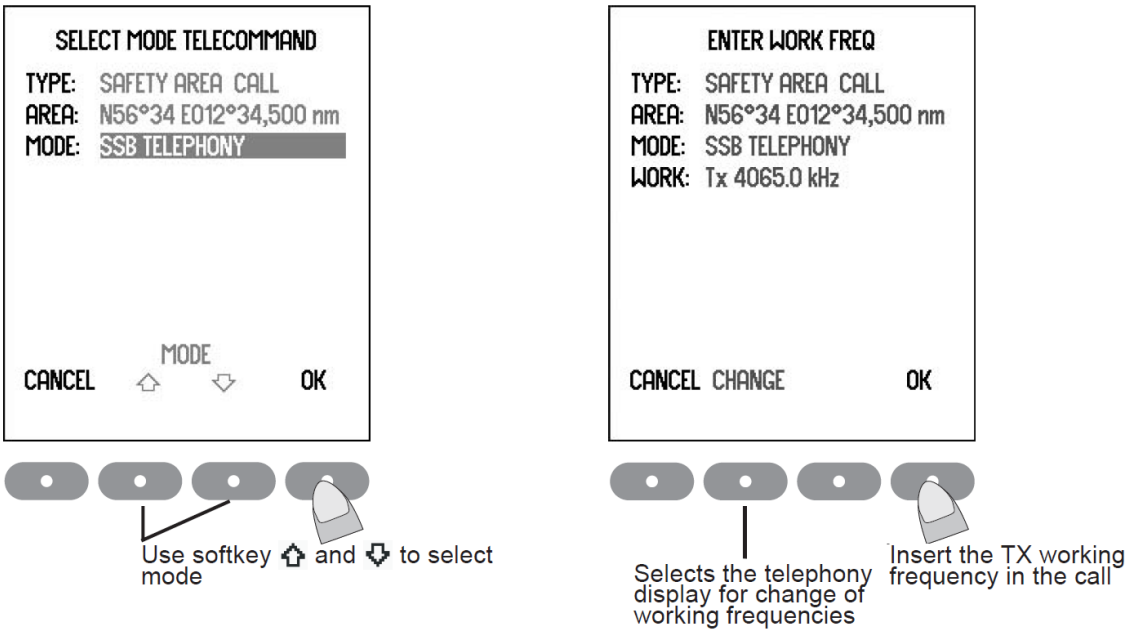

If no acknowledgement is received within 5 minutes, the equipment returns to the previous telephony display and starts scanning if selected.

## 42.13 Sending an area call

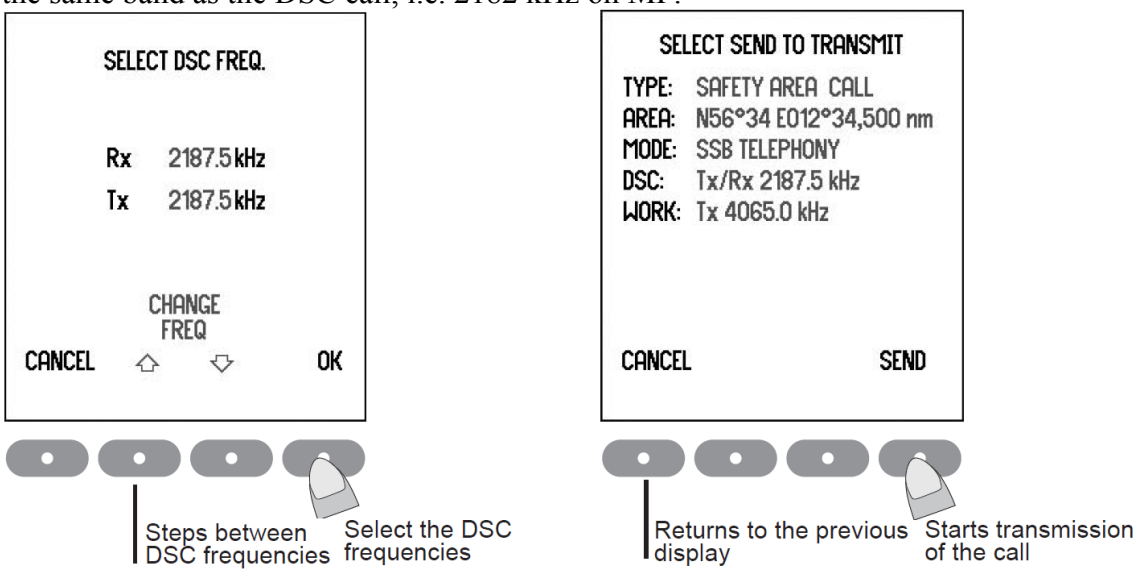
This call type is used for announcing a vital safety or urgency message.

Menu Press the Menu button and select 1. DSC CALL and select 3. AREA






The working frequency for safety calls is normally the distress and safety frequency in the same band as the DSC call, i.e. 2182 kHz on MF.




When transmission ceases the equipment is set to SSB telephony and the working frequencies indicated in the call. Transmit the safety message as follows:

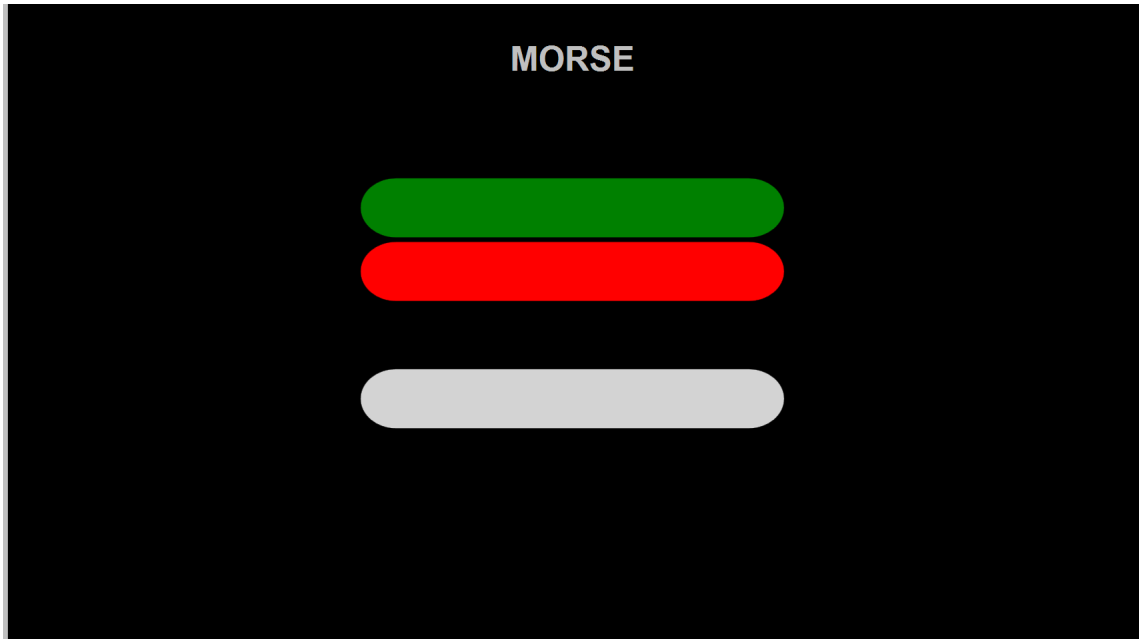
- SECURITE, spoken three times;
- ALL STATIONS, spoken three times;
- the words THIS IS;
- the NAME or other identification of own ship
- the MMSI if needed;
- the text of the safety message

Returns to the previous telephony setting, by an off-to-on hook transition.

# 43 MORSE

## 43.1 Purpose

The Morse panel is used for visual signalling from the student bridge – nearby observers will be presented corresponding light.




### 43.1.1 Keys and controls

Green morse light (naval ship).

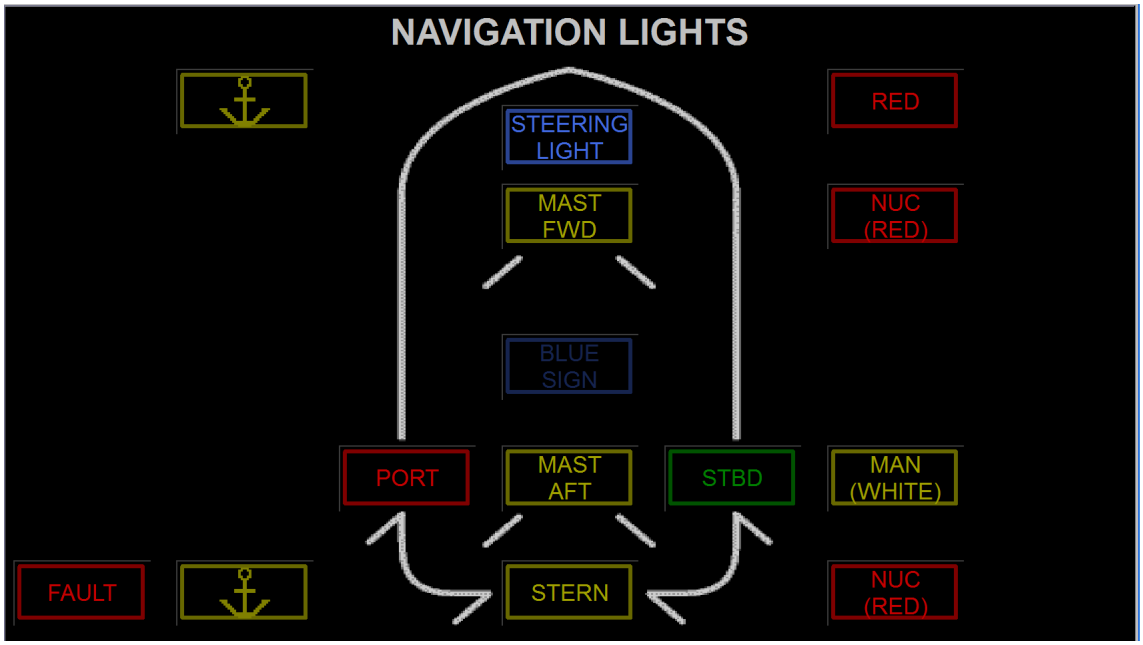
Red morse light (naval ship).

White morse light.

# 44 NAVIGATION LIGHT

## 44.1 Purpose

The purpose of the Navigation lights control is to allow remote control and monitoring of lights required according to the International Regulations for Preventing Collisions at Sea 1972.




### 44.1.1 Keys and controls

| | |
|---|---|
| FAULT | Indicates a failure with the navigation lights control, or a defective light. |
| | Anchor light. For switching the fore and aft anchor light on and off. |
| **All other Light.** | Navigation light keys. For switching the corresponding navigation lights on and off. The navigation light colour is specified. |

## 44.2 Operation

To switch a navigation light on, push the corresponding key. The key will illuminate to indicate that the navigation light is on. To switch a navigation light off, push the corresponding key. The key will turn dark to indicate that the navigation light is off.

## 44.2.1 Failure indication


Button starts flashing when a fault condition occurs. Depending on the type of fault, a buzzer will sound either steady or intermittent.

### 44.2.1.1 Steady buzzer - control panel failure


If a failure occurs with the control panel, a steady buzzer sounds and flashes. The controls are locked and no changes in light states can be made.
Push to acknowledge. The buzzer silences, and lights becomes steady. Call for repair and wait until the fault condition is fixed. This action will bring the Navigation lights control back to normal condition.

### 44.2.1.2 Intermittent buzzer - activated navigation light failure


If an activated navigation light fails, an intermittent buzzer sounds, flashes, and the corresponding key flashes quickly.

Push  to acknowledge. The buzzer silences and  light becomes steady.


Switch on the backup navigation light, by pushing the appropriate key. The key illuminates. will remain with a steady light until the light has been changed, whereupon it turns dark.

If the backup navigation light fails, before the main light is changed, the ship will sail with a darkened light. Call for repair and wait until the fault condition is fixed. This action will make both navigation lights operative again.

### 44.2.1.3 Blue Sign


This light indicates that a vessel wants to meet descending vessels ‘starboard to starboard’. A small descending ship confronted by an ascending vessel with a blue sign must yield right of way. In BPR[4] areas, the small vessel must preferably respond to the blue sign. In RPR[5] areas, the small vessel must always give way to the large vessel although no response is required.This operation raises the visual sign board (blue) on starboard side of wheelhouse with the 360° white signal light inside (white isophase flashing light 50/min).

[4] BPD - Binnenvaart Politiereglement (The Netherlands).

[5] RPR - Rhine police regulations.

# 45 NAVTEX

## 45.1 Purpose

The NAVTEX system is used for the automatic receive and display broadcast of localized Maritime Safety Information (MSI). The system operates in the Medium Frequency radio band of 490 and 518 kHz. The broadcast range is generally 50 - 400 nautical miles from the transmitter.

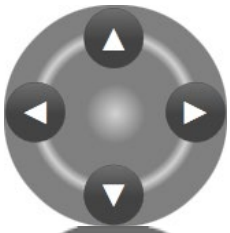

### 45.1.1 Keys and controls


NavTex station power on button. After the NavTex is started, a message text screen is displayed.


Display the main menu.


This button is used to select display mode. Each time pressed, the screen is switched in the order below:
Message text -> Message list 1 -> Message list 2 -> Selected message list -> Position/date ->


Not used.



Buttons for Up, Down, Left and Right. Moves the cursor, scrolls the display screen, and selects the item.


Not used. Display will show:

```
Requested functionality not available
Press ENT or CLR to exit
```


Clears input errors or cancel the operations. Also turn off the buzzer.


Accept the selection of the item (cursor position) and fixes the setup.


Displays the small pop-up window.

### 45.1.2 Message type and identification codes

The message identification codes displayed on upper-left side of the message text screen indicates the message type. These codes consist of four alpha-numeric characters which denote the coast station originating the message, the message type and the report number.

a) First character - the coast station that has transmitted the message is assigned by a character from A to Z.

b) Second character identifies the type of message:

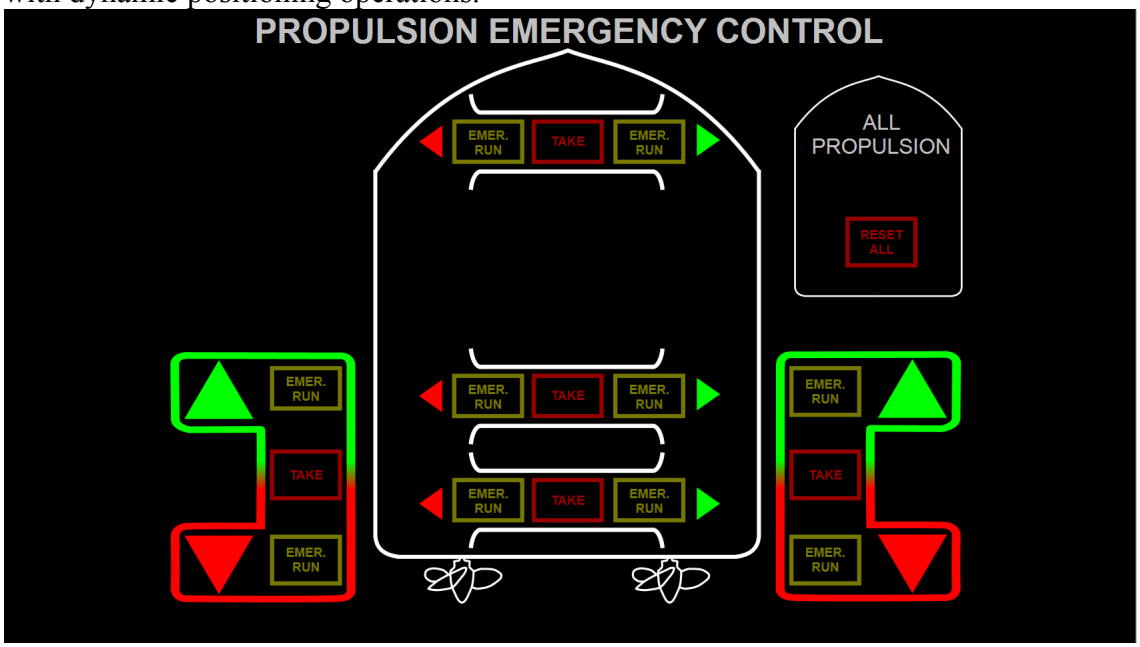
| | | |
|---|---|---|
| A | = | Navigational warning |
| B | = | Meteorological warning |
| C | = | Ice reports |
| D | = | Search & rescue information, and pirate warnings |
| E | = | Meteorological forecasts |
| F | = | Pilot service messages |
| G | = | DECCA messages |
| H | = | LORAN messages |
| I | = | OMEGA messages (note OMEGA has been discontinued) |
| J | = | SATNAV messages (i.e. GPS or GLONASS) |
| L | = | Navigational warnings - additional to letter A |
| M-U | = | Reserve, presently not used |
| V | = | Notice to Fishermen (U.S. only - currently not used) |
| W | = | Environmental (U.S. only - currently not used) |
| X-Y | = | Special services - allocation by IMO |
| Z | = | No message on hand |

c) Third and fourth characters – these characters denote the report number assigned to the message by the coast station where the message originated.

# 46 PROPULSION EMERGENCY STOP/CTRL

## 46.1 Purpose

The thruster and propulsion emergency control/stop is designed for us in connection with dynamic positioning operations.




*Possible layout – contour and layout pending on model.*

## 46.2 Operation

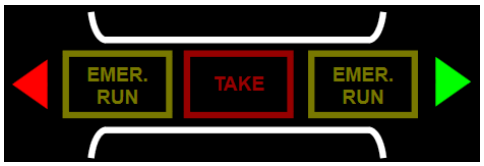
The panel features instant control for emergency stop to all thrusters, propulsion and/or azimuth systems to the vessel/rig. The panel is "automatic" detecting the own ship model settings and the dedicated configuration.


Ahead Emergency Run – Port main propulsion.


Astern Emergency Run – Port main propulsion.


Take command from any other propulsion control.


Return control to standard or DP propulsion control.

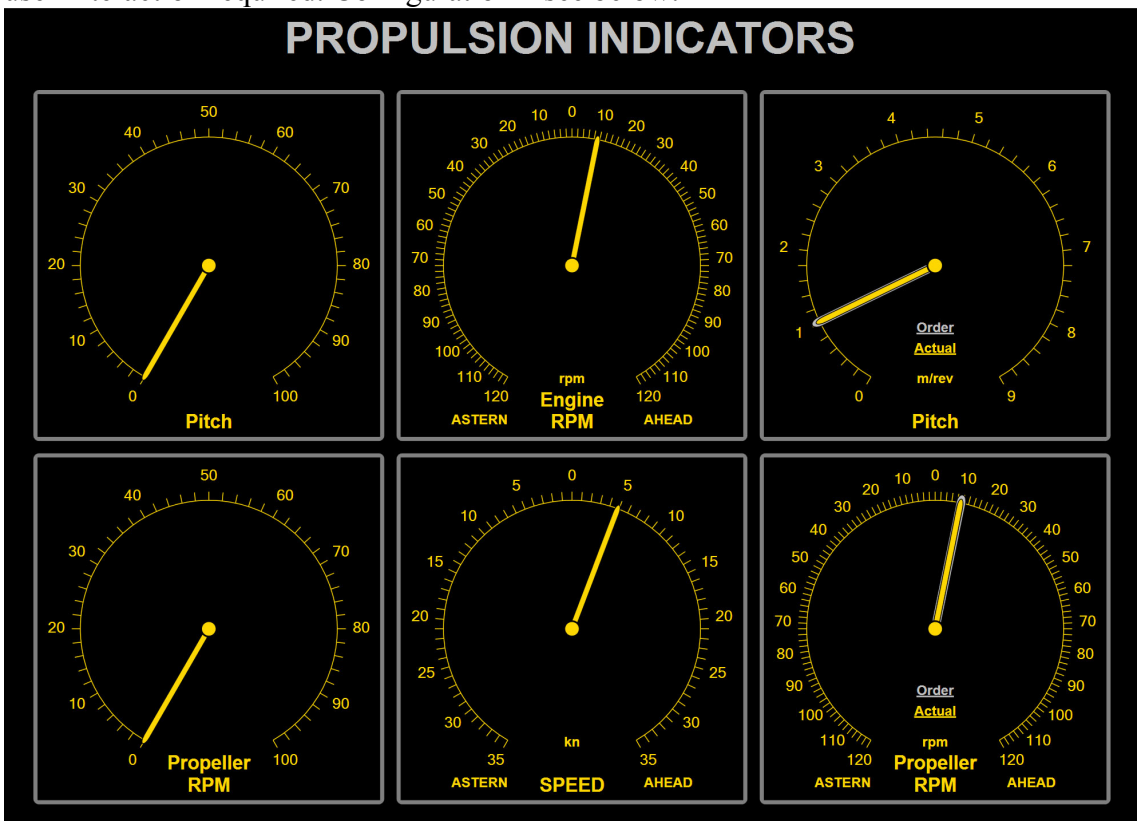



Tunnel thruster control (identical controls).

# 47 PROPULSION INDICATOR

## 47.1 Purpose

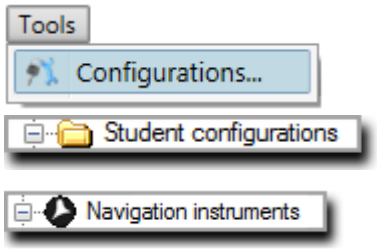
The Propulsion Indicator panel presents engine, propeller pitch and propeller data. No user interaction required. Configuration – see below.




*Instruments presenting different propulsion data.*

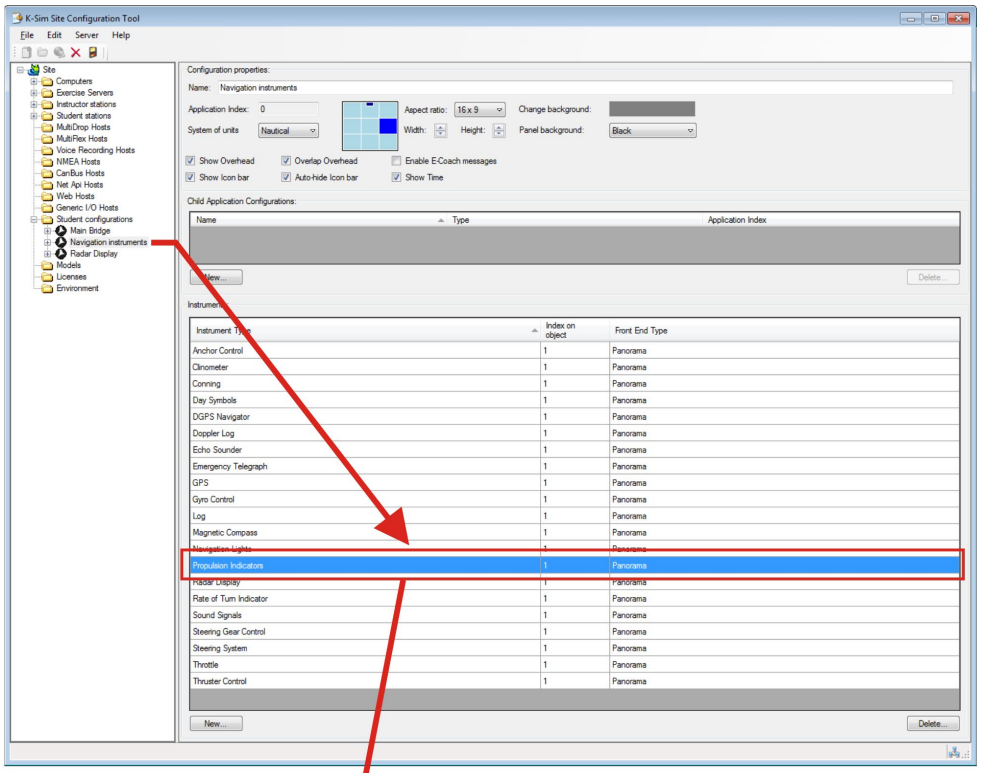
## 47.2 Configuration

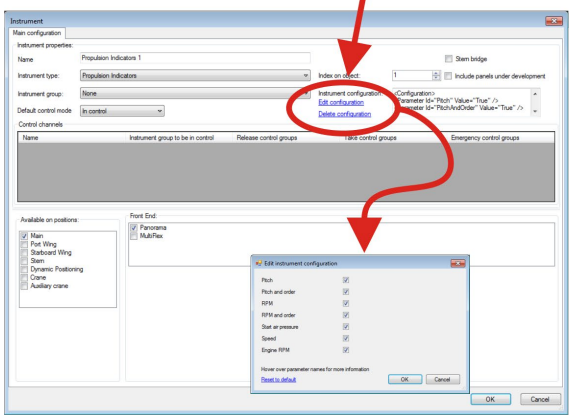
Only at instructor control – student action not required. From K-Sim top meny – open the menu named:
Select and open in the explorer three:




Go to actual student configuration, i.e.:

The next window presents all already prepared panels – select Propulsion Indicators to edit and select Edit Configuration...




Check box for Pitch, Pitch Order, RPM and RPM order, Start Air Pressure, Speed and Engine RPM. Values presented will vary pending on model selected.

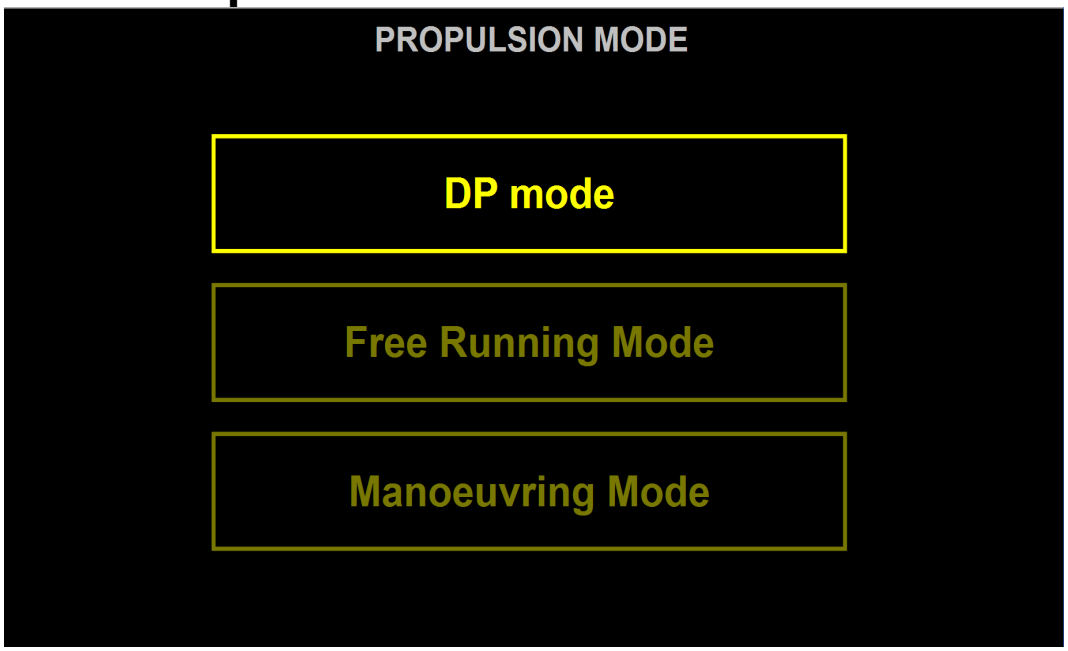
Remember to save all new data before closing the windows. Click  and wait for a confirmation.

# 48 PROPULSION MODE

## 48.1 Purpose

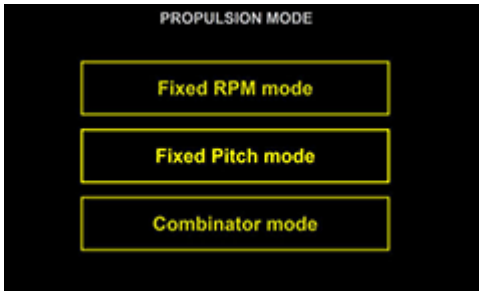
The Propulsion Mode panel presents the available pitch/propeller/rpm control modes for the specific vessel selected. The panel is designated each vessel during model design and preparation of hydrodynamic model. Please consult vessel pilot card at the instructor station for details with regard to engine order, engine RPM and percentage of Pitch.

## 48.2 Description

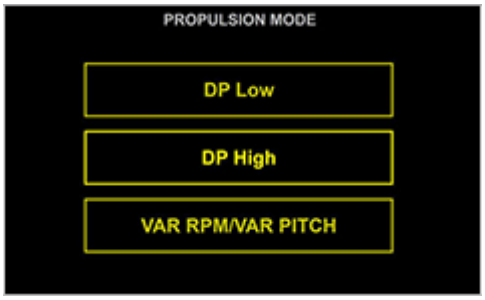



## 48.3 Keys and controls

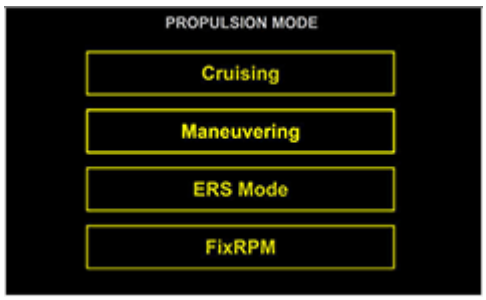
Control mode for the propulsion may be selected – all buttons presents the available control modes – click to select and highlight the mode wanted for the ship:



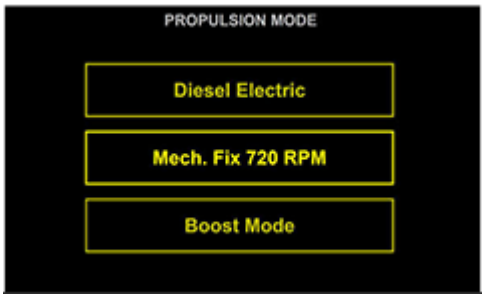

*Ship model: FERRY #61.*



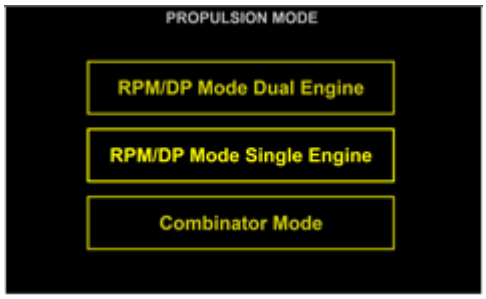

*TANK #31 (fitted with DP).*



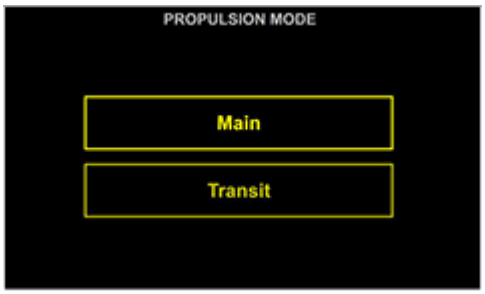

*CONTAINER #43.*



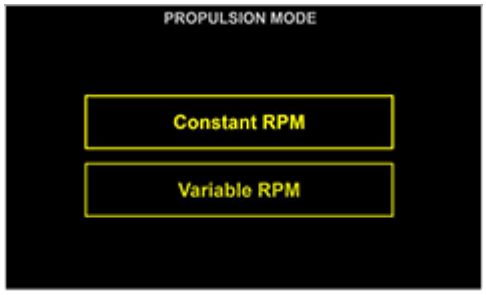

*ANCHOR HANDLER #17.*



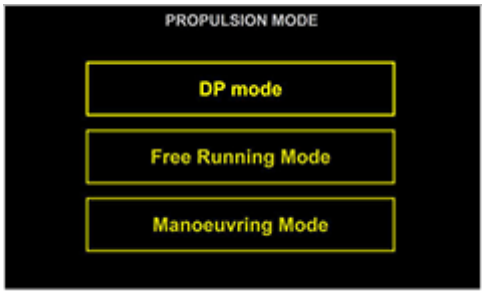

*ANCHOR HANDLER #42.*



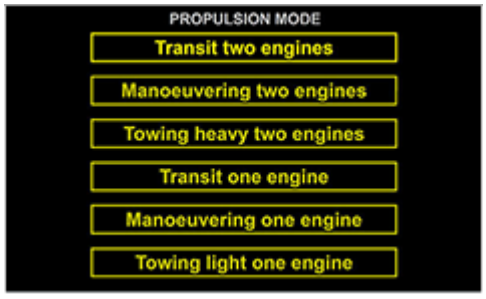

*FERRY #45.*



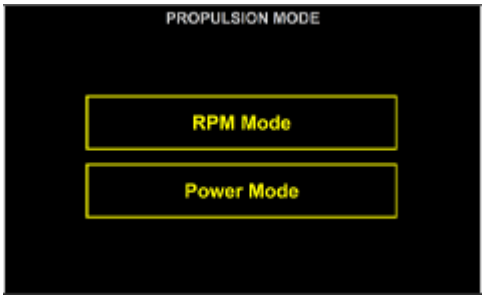

*ICE BREAKER #3*




*Inspection, Maintenance and Repair Vessel IMR #2.*




*SEISMIC VESSEL.*



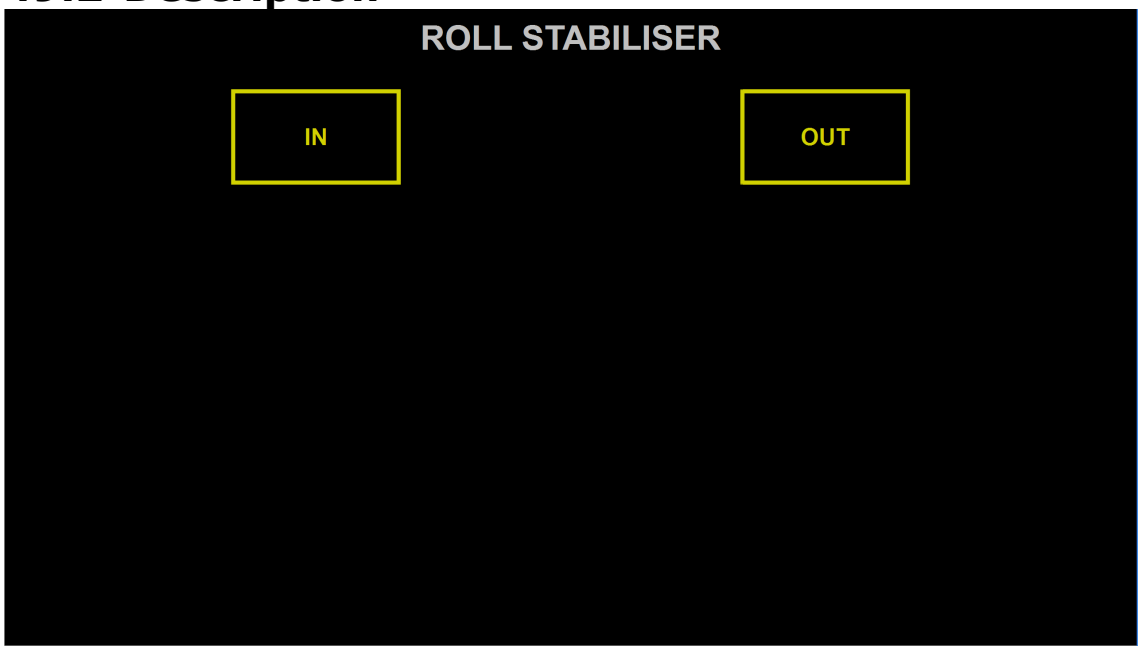

*OIL RIG.*

# 49 ROLL STABILIZER

## 49.1 Purpose

The purpose of the Roll Stabiliser is to operate the vessel's stabiliser fins to reduce the ship's motion. The ship installation and bridge panel is only found on a limited set of ship models.

## 49.2 Description




## 49.3 Keys and controls


Indication and operating key to indicate and order the stabilise fins to stored position


Indication and operating key to indicate and order the stabilise fins to operational (out) position

## 49.4 Operation

Click 

to extract the stabilisers. The 

begins flashing, indicating the stabilisers are moving to extracted position.

When 

gets a steady light the stabilisers are extracted and operating.

Click 

to fold in the stabiliser fins. The 

begins flashing, indicating the fins are moving into stored position.

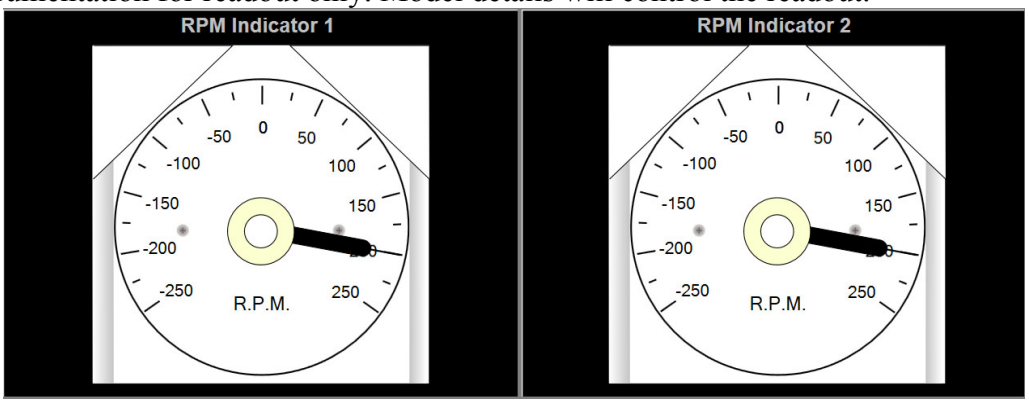
When 

gets a steady light the stabiliser fins are stored in the ship's hull.

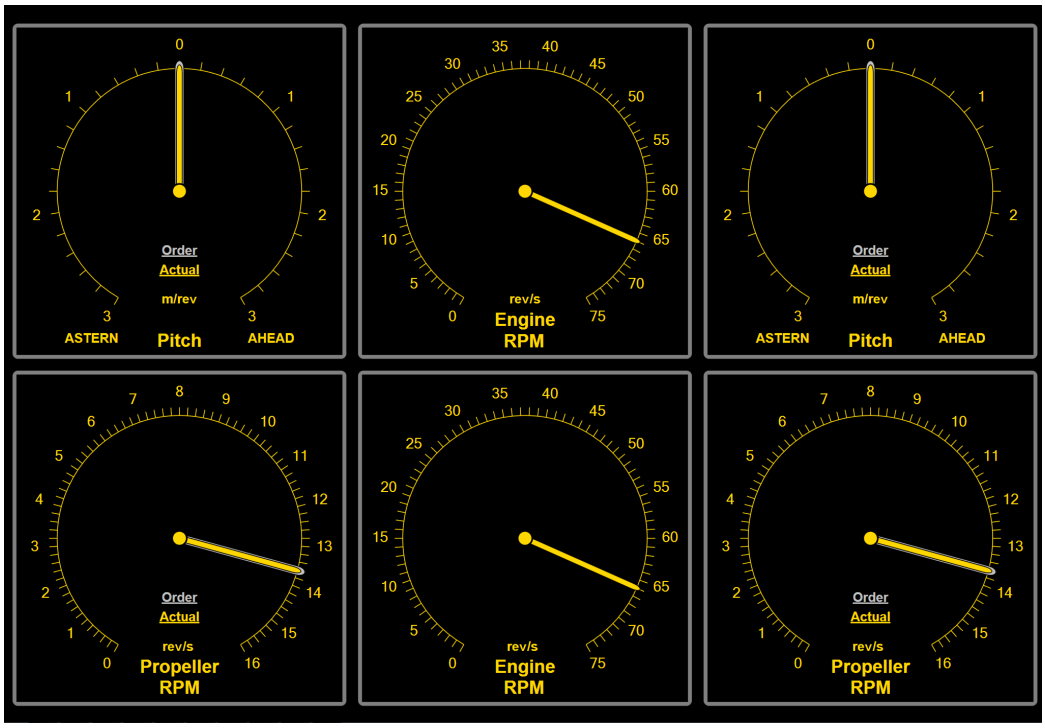
# 50 RPM INSTRUMENTS

## 50.1 Purpose

Instrumentation for readout only. Model details will control the readout.




Both forward and astern rotation – shown a set of instruments with max rpm of 200 Rev/min. Numbering is relating to engines and engine number. Relocation is possible unless configured for overhead view.



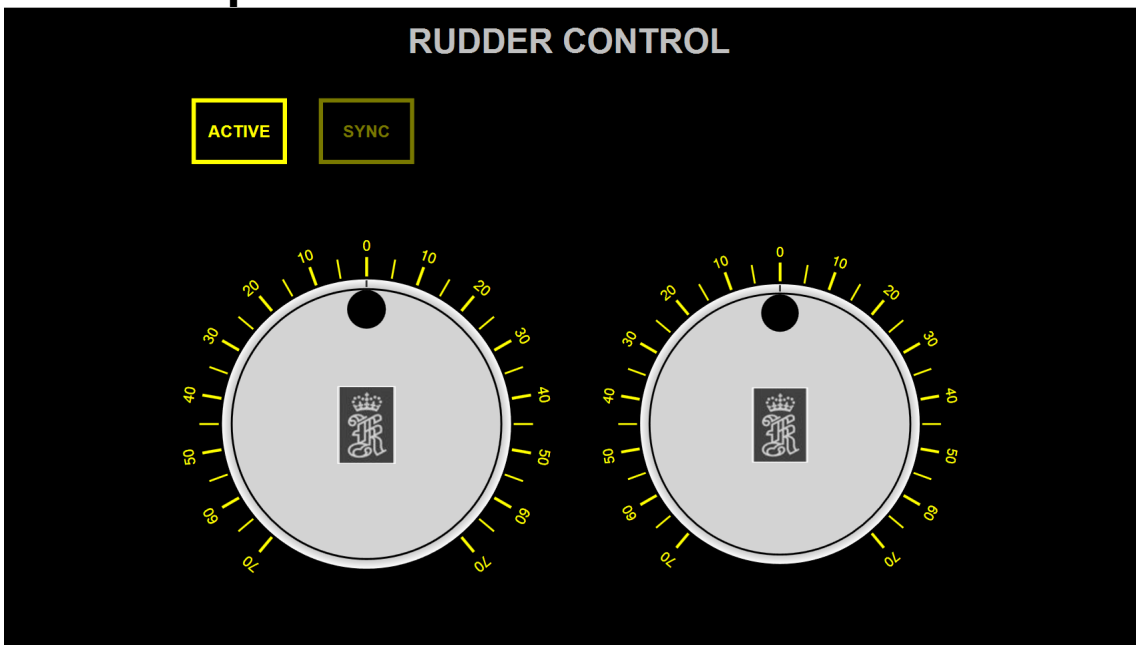

*RPM combined with Pitch values (instructor may configure this panel).*

# 51 RUDDER CONTROL

## 51.1 Purpose

The purpose of these panels is to allow operation of rudders on bow (Flanking Rudder Control) and stern (Rudder Control) rudder vessels, when the Steering System is in manual steering mode.
When there are two rudder controls present, split rudder control on twin rudder vessels is available.

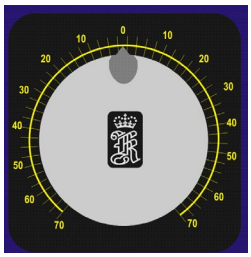
## 51.2 Description




## 51.3 Keys and controls


Activates/deactivates the Rudder Control. If dual controls are installed, only one will have the 

key, and will - when the key is pushed - operate both controls.




To adjust the rudder angle. Maximum rudder angle is 105 degrees or depending on vessel/manual rudder limit.
On a dual rudder vessel the port panel controls the port rudder and stbd panel controls the stbd panel

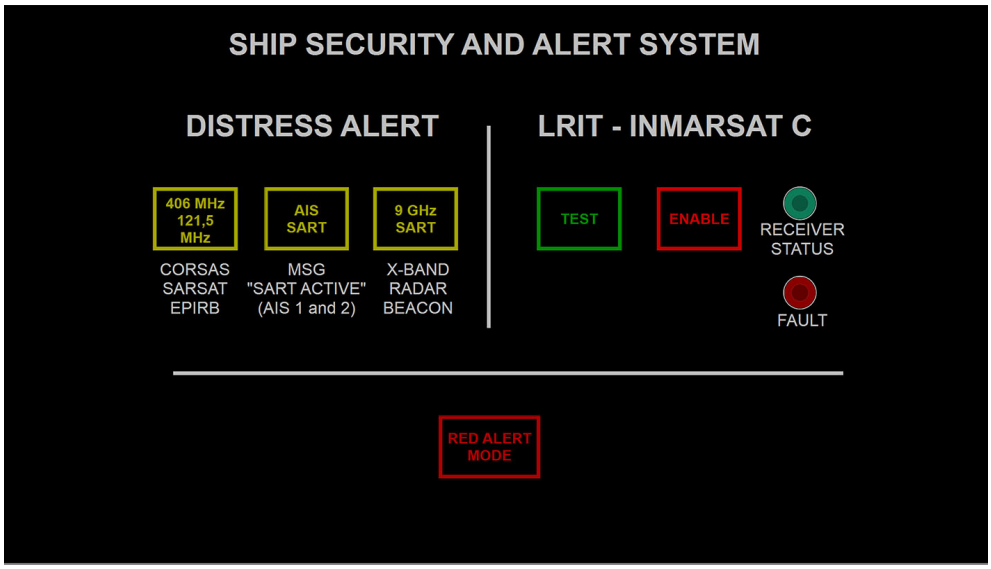
## 51.4 Operation

- Set the Steering System to manual steering mode. (Click MANUAL)
- On the Rudder Control, push ACTIVE, which will illuminate.
- Use the manoeuvre handle to set the desired rudder angle. When two Rudder Controls are installed, twin rudder vessels can be operated with split rudders.
- To return to the Active Steering System, push ACTIVE. The key will turn dark, and the control is transferred back to the Active Steering System.

# 52 SSAS (DISTRESS ALERT)

## 52.1 Purpose

The purpose of the distress alert control unit is to activate different rescue beacons. The panel is used in bridge simulators as well as in GMDSS trainers. From this panel a number of emergency beacons can be activated and distress signals sent on Inmarsat frequencies as well as 9 GHz X-band radar.




## 52.2 Keys and controls

To activate the appropriate beacon, push the corresponding key. The key will be lit, and the beacon is activated. To deactivate the beacon, push the corresponding key again. The key turns dark.


406 MHz and 121,5 MHz transponder released (EPIRB) for COSPAS/SARSAT satellite coverage activation on/off.


AIS SART transponder activation on/off.


X-band radar transponder/beacon deployed.

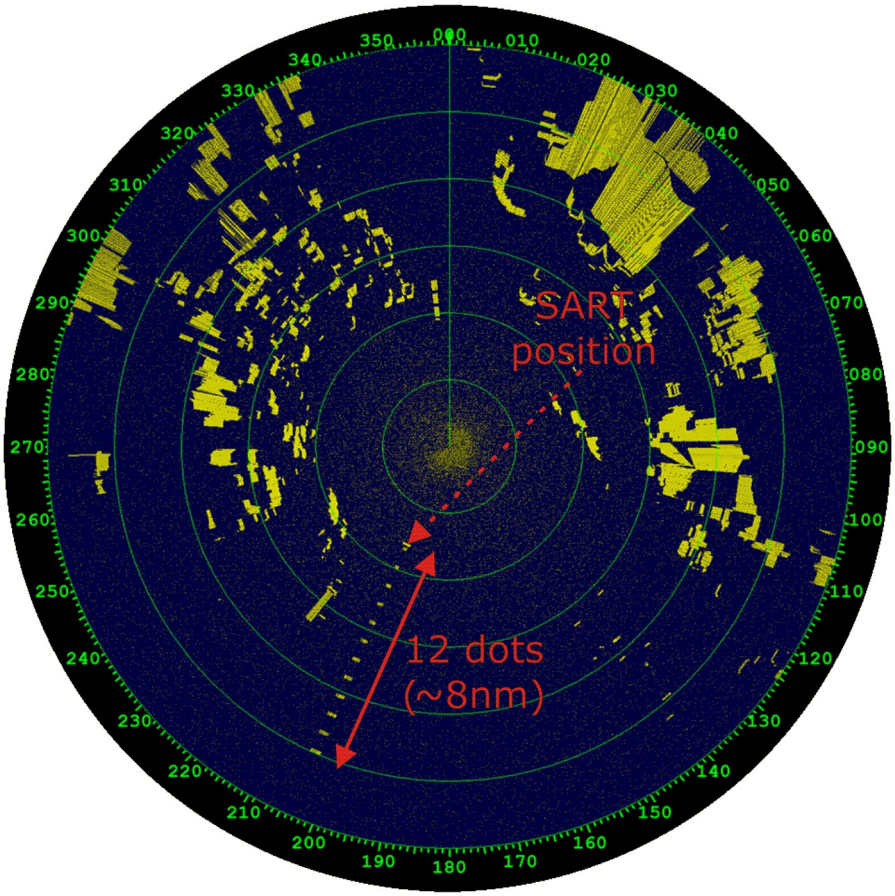
# 52.3 Distress types

## 52.3.1 EPIRB (Emergency Position Indicating Radio Beacon)

If any of the EPIRB keys are activated, a signal will be sent on the relevant frequency. The signals can be received by satellites or other vessels. Thus one can quickly set the correct heading towards the vessel in distress, which had activated the EPIRB.

## 52.3.2 SART (Search and Rescue Transponder)

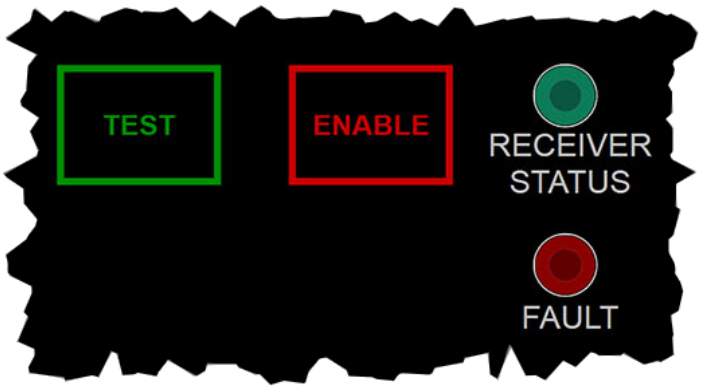
When the SART key is activated, vessels with X-band/3 cm radar can observe a line of 12 (twelve) dots originating from the vessel that activated the SART key. The lines extend approximately 8 nautical miles away from the SART's position along the line of bearing. Rescue vessels can easily identify the vessel activating the SART key and quickly set course towards the vessel in distress.




*SART signal as it appears on the radar screen onboard.*

### 52.3.3 LRIT[6]

When LRIT key is activated, an alarm on the instructor station activates (also logged). The instructor will then act as on shore station and activate an operation.




**TEST**
When the test button is pushed it should remain light 10 sec and then should go off.
During these 10 sec: If the test is OK the GREEN LED should be light on for about 1 min and then the LED is switched off.

If the test fails the RED fault LED should be light on until new self-test is tried. If next test is successful the red LED should go off (and green LED should be ON)

### 52.3.4 Red Alert Mode - SSAS[7]


When SSAS key is activated, an alarm on the instructor station activates (also logged). The instructor will then act as on shore security people and activate a possible rescue operation.

[6] LRIT - Long-Range Identification and Tracking of ships was established as an international system on 19 May 2006 by the International Maritime Organization (IMO) as resolution MSC.202(81).

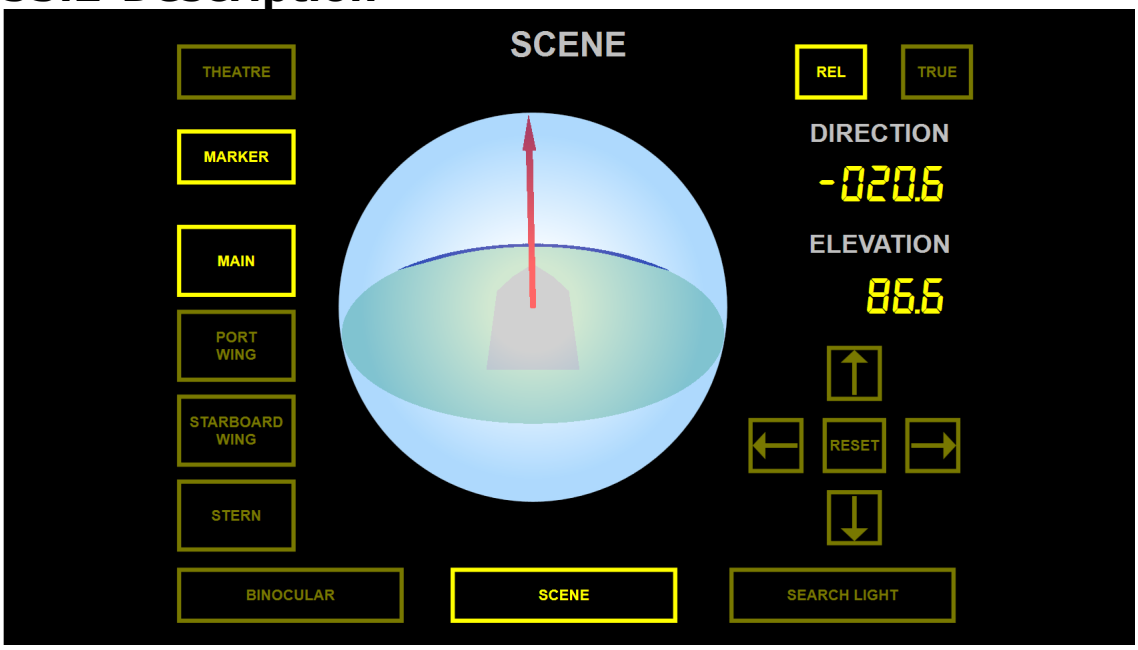
[7] SSAS - Ship Security Alert System is part of the ISPS code and is a system that contributes to the International Maritime Organization's (IMO)'s efforts to strengthen maritime security and suppress acts of terrorism and piracy against shipping.

# 53 SCENE, BINOCULAR AND SEARCH LIGHT

## 53.1 Purpose

The visual view control – screen based (mouse operated) or Multiflex version, let the operator operate the visual view from the student position. Instant touch-screen operation of selected position(s) such as Port, Starboard, Wing and Stern locations.

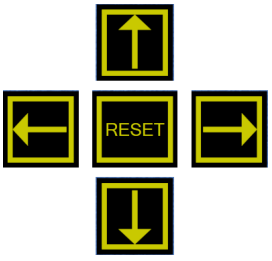
## 53.2 Description




## 53.3 Keys and controls

The panel contains main selection for Theatre Scene, Binocular and Search Light.


Select function Binocular.




Use arrows to direct the view. Reset to return to “zero” position.

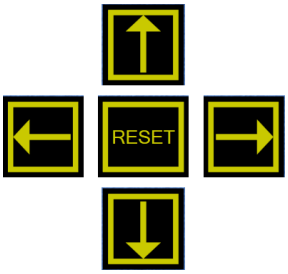

Select Relative or True angular indication for readout.


Enlarge by two (2) the magnification


Enlarge in steps of one (1X)


Lock the selected position.


Select function Scene.




Use arrows to direct the view of total scene. Reset to return to “zero” position. Theatre view allow access to the panorama bow to control the scene.


Select Relative or True angular indication for readout.


Select the whole theatre for view.


Switch on/off the cross-hair marker.

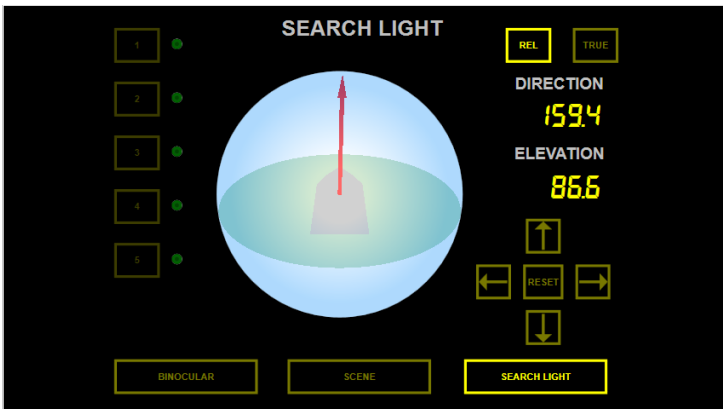

Quick button to select centre main forward view.

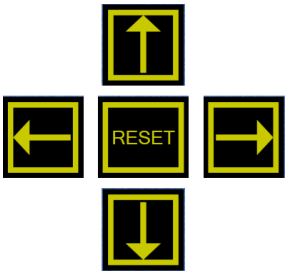

Quick button to select port wing view.


Quick button to select starboard wing view.


Quick button to select stern (aft deck and ahead) view.


Select function Search Light.




Use arrows to direct the view. Reset to return to "zero" position. Up and down arrows for vertical change of view. Red arrow in "view area" may also be used with finger or mouse click. Observe readout in degrees for Direction and Elevation.


Select Relative (0-180° from course)or True angular indication (0-360°) for readout.


Select search light by number 1-5. Indication light will enlight.

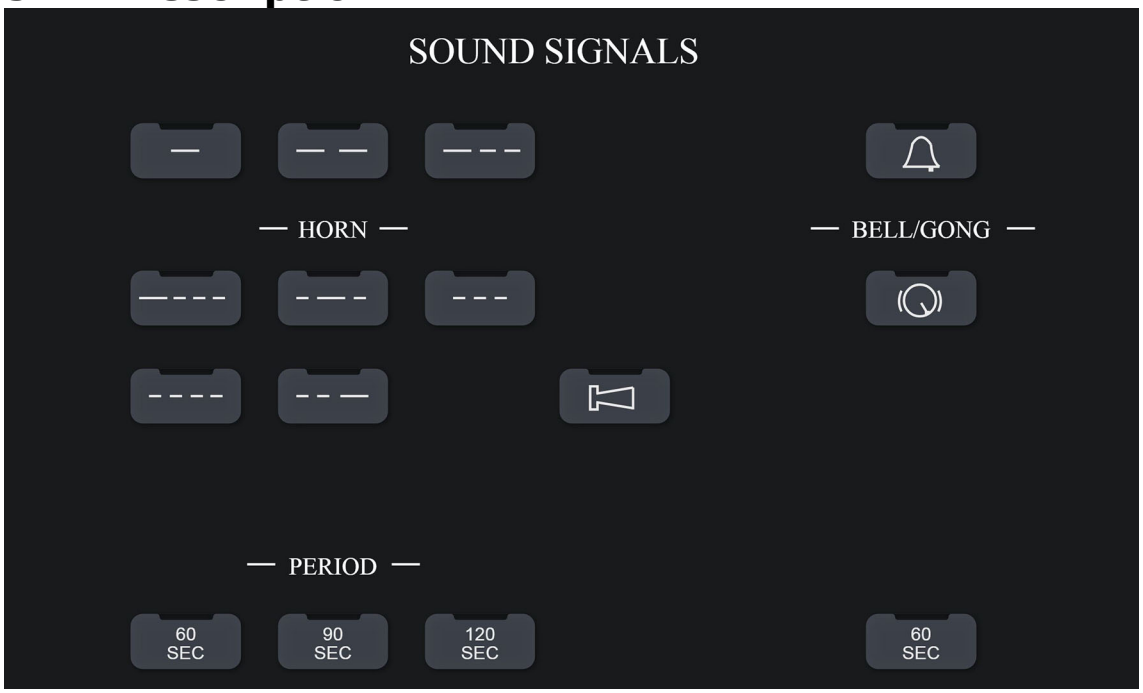
Search light is off - Search light is on.

# 54 SOUND SIGNAL

## 54.1 Purpose

The purpose of the Sound Signals unit is to provide both manual and automatic horn, bell, and gong signals from the bridge.

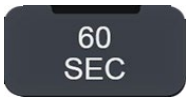
## 54.2 Description




### 54.2.1 Keys and controls

Giving bell signal as long as kept pressed.

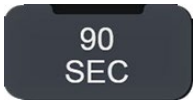
Giving gong signal as long as kept pressed.




The Bell/Gong signal procedure - as defined according to the ship model length - is activated at intervals of 60 seconds

Manually horn signal as long as the button is pressed.

Horn signal buttons. When pressed, the selected signal will be sounded once as indicated with Long or Short sequences.




PERIOD buttons. When pressed together with one of the signal buttons the fog horn will send automatically signals at the given interval.

## 54.3 Operation

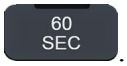
**Gong signal**: Only active on ships with a LOA of 100m or more.

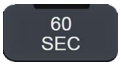
Press  . The key will illuminate, and gong signals will be given as long as the key is kept pressed. The gong signal stops when  is released. The key turns dark.

**Bell signal**

Press  **.** The key will illuminate and bell signals will be given as long as the key is kept pressed. The bell signals silences when  is released. The key turns dark.

**Automatic Bell/Gong signal**

Click  and  . Click e.g. 

. The key will illuminate and the bell and gong signal will be sounded every 60 second. The signal stops when 

is pressed again. The key turns dark.

**Fog horn signal**

To sound a fog horn signal manually, press  . The key will illuminate, and the fog horn signal is sounded as long as the key is pressed.

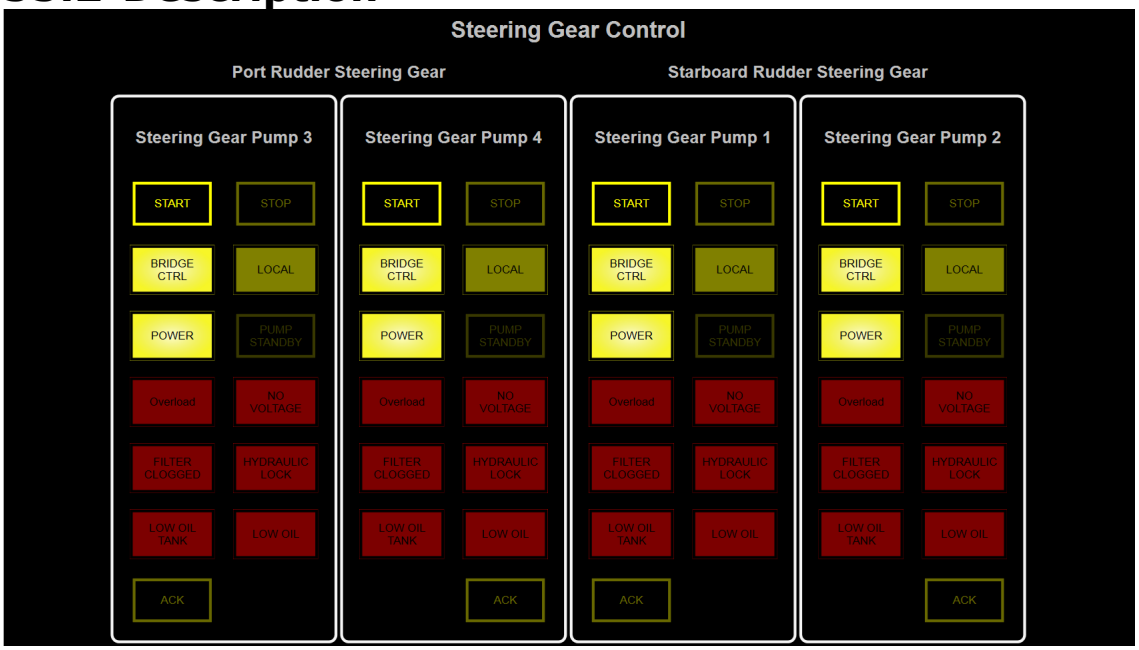
Press one of the *HORN* signal buttons to give the selected signal once. When one of the *PERIOD* keys are pressed together with the *HORN* signal buttons, the selected signals will be given automatically at the given time intervals. Selected horn and period keys are illuminated.Press the active keys to deactivate the fog horn. The key lights are turned off.

# 55 STEERING GEAR CONTROL

## 55.1 Purpose

The purpose of the Steering Gear Control is to allow key control and monitoring of the two steering gear systems. This optional extended panel is also prepared for interconnection with the Engine Room Simulator (ERS) M42 AHV vessel.

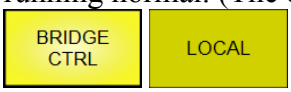
## 55.2 Description




## 55.3 Keys and controls

All steering gear system (Starboard and Port Steering Gears – Pumps 1 to 4) are all default in operation and running normal. (The configuration is model dependant).


*Steering gear in normal operation (START in on).*

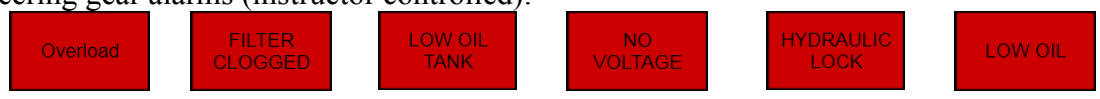



*Bridge Control as opposed to Local control.*


*Power as opposed to Pump in Standby position.*


*Alarm(s) acknowledge.*

Steering gear alarms (instructor controlled):

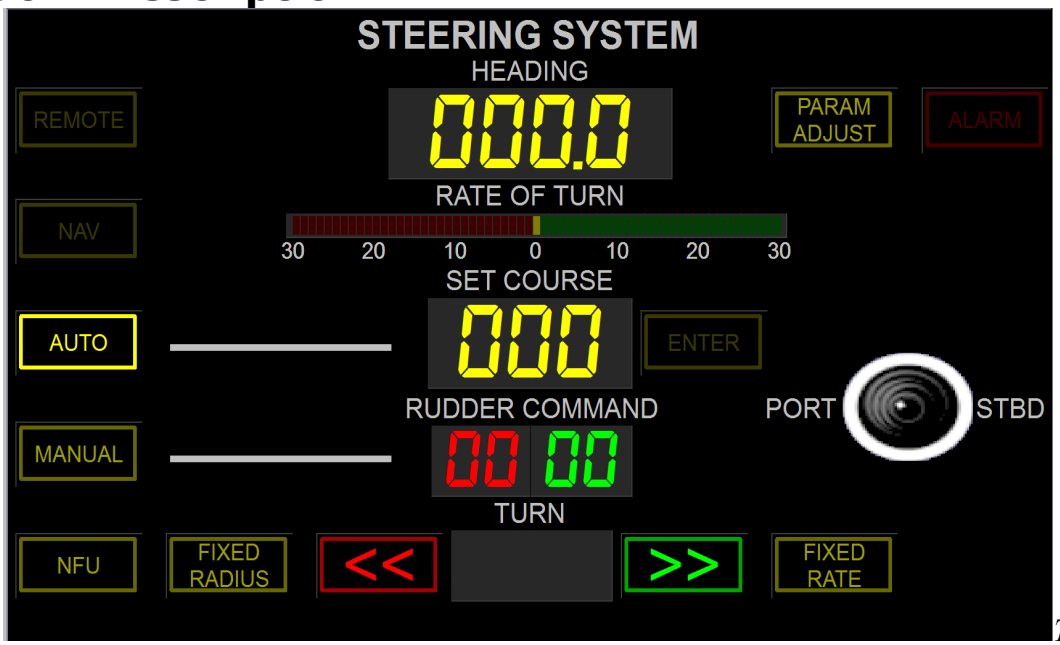


# 56 STEERING SYSTEM

## 56.1 Purpose

The purpose of the Steering System is to allow steering in the following different modes: remote, track, auto, manual, joystick control and NFU (Non Follow Up).

## 56.2 Description




*The Steering System Panel (may have separate Joystick and NFU buttons).*

### 56.2.1 Keys and controls


Remote mode. This key indicates that another steering system is active. An active steering system is the unit that controls the rudder. All other systems are passive systems. There can only be one active system at a given time on a ship's bridge, but several passive systems.


Automatic track and route steering. The track or route alternation is initiated from an interfaced navigation system, normally Kongsberg Maritime K-Ecdis station.

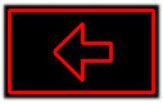

Auto pilot. Course to steer is shown in the SET COURSE display and adjusted by the joystick.

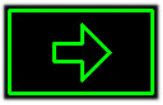

Manual steering. Rudder angle set by the joystick or the wheel and indicated by the digital display.


Non Follow Up. Emergency steering where rudder angle is set by the two arrow keys.


Fixed Turn Radius. Selects Fixed Turn Radius when executing course changes. Only active when AUTO mode is selected.


Fixed turn rate. Selects constant turn rate when executing course changes. Only active when AUTO mode is selected.





Arrow keys. For controlling the rudder in NFU mode, for emergency manoeuvres in AUTO or MANUAL mode and adjusting fixed turn rate or fixed turn radius.


Parameter adjustment. For adjusting the system parameters.


Alarm indicator. In the event of a steering failure, or when exceeding parameter limits, the alarm key will flash and a buzzer will sound.


To acknowledging an automatic course change at a waypoint, and setting a new heading to steer in AUTO mode.

*JOY-STICK*: The joy-stick is used to enter the course in auto pilot mode, set rudder angle in manual steering mode, and to select auto pilot parameters for inspection or adjustments.

### 56.2.2 Digital displays

| Display | Explanation | Range | Step | Unit |
|---|---|---|---|---|
| *HEADING* | Present gyro heading. | 000.0-359.9 | 0.1 | deg. |
| *TURN RATE* | Present turn rate. | port 30-stb.30 | 2 | deg./min |
| *SET COURSE* | Set gyro course to steer. | 000-359 | 1 | deg. |
| *RUDDER COMMAND* | Set rudder order. | port 99-stb.99* | 1 | deg. |
| *TURN* (radius) | Set turn radius. | 0.05-9.75 | 0.05 | n. mile |
| *TURN* (rate) | Set turn rate. | 00.0-99.5 | 0.5 | deg./min |

* The rudder setting depends on the ship model rudder limit, set in the Steering System's parameters.

## 56.3 Operation

### 56.3.1 Start up

At start up the Steering System will be ON and in MANUAL mode.

### 56.3.2 Selecting steering modes

#### 56.3.2.1 Remote mode

is an indication only, and indicates that another steering system is active.
At start-up the operator can select one of the following 4 steering modes:

- *TRACK*
- *AUTO*
- *MANUAL*
- *NFU*

#### 56.3.2.2 Track mode

When pushed 

is illuminated and an interfaced, external navigation system (e.g. Track pilot, radar) will transfer the course to steer while the steering system uses its own settings of turn rate/radius.

If the external system is operating with fixed turn rate, 

will illuminate and the turn rate will be shown in the *TURN* display.

If the external system is operating with fixed turn radius 

will illuminate, and the turn radius will be shown in the *TURN* display.

### 56.3.2.3 Auto pilot mode

- Push AUTO The key will illuminate and the steering system set to auto pilot mode.
- Use the joystick to set the course to steer. It will be displayed in the *SET COURSE* display. As soon as a course alteration is made by the joystick, ENTER starts flashing.
- Push ENTER to activate the new set course to steer. The key will turn dark.

Initially the auto pilot operates in normal course mode, but the FIXED RADIUS and FIXED RATE can be used to change this to fixed turn radius or fixed turn rate mode:

### 56.3.2.4 Fixed Turn Radius mode

Fixed Turn Radius mode can only be used when sailing in auto pilot mode.

Push FIXED RADIUS.  are used to set the new fixed turn radius when the auto pilot makes course alterations.

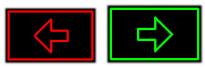
Push ENTER to make the new set value valid.

To deselect Fixed Turn Radius mode, push FIXED RADIUS. The key will turn dark.

### 56.3.2.5 Fixed Turn Rate mode

Note

*Fixed Turn Rate mode can only be used when sailing in auto pilot mode.*

Push FIXED RATE.  are used to set the new fixed turn rate when the autopilot makes course alterations.

Push ENTER to enter the set new value.

To deselect Fixed Turn Rate mode, push FIXED RATE. The key turn dark.

### 56.3.2.6 Manual steering mode ("Follow Up" mode)

- When pushed MANUAL is illuminated and the steering system is set to manual steering.

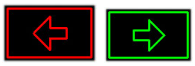
- Use the joy stick to steer the ship model. The desired rudder angle is shown in the *RUDDER COMMAND* display.

Note

*The rudder angle is displayed in the Overhead Panel. In this mode the HEADING, TURN RATE and RUDDER COMMAND values will be updated. The SET COURSE and TURN displays will be off.*

#### 56.3.2.7 NFU mode ("Non Follow Up" mode)

- When pushed, 

illuminated and the steering system is set to Non Follow Up mode. In this mode the operator controls the steering gear directly.
- Use  to control the rudder angle. When pushed, the keys are illuminated and the rudder will move at maximum rate until the rudder limit is reached. When the key is released, it turns dark and the rudder remains in the present position.

Note

*In this mode, nothing will be presented in the RUDDER COMMAND display.*

#### 56.3.2.8 Emergency manoeuvres - Arrow keys

 can also be used in emergency manoeuvres in 

or 

mode. The operation is as described for 

mode, but as soon as the arrow key is released, the steering control will return back to 

or 

mode.

## 56.4 Tuning the Steering System

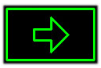
The Steering System's performance is dependent upon the environmental forces (wind, sea, current) and the ship's manoeuvring characteristics. To perform satisfactory, a number of Steering System parameters must be set.

The active Steering System parameters may be changed by the operator by using the joy-stick and the two arrow keys on the Steering System. The parameter number will be shown in the *SET COURSE* display, and the parameter value will be shown in the *HEADING* display. During the change of parameter settings the Steering System will continue to be operative.

Note

*Adjustments of the Steering System parameters can change the steering performance radically. Such operations should therefore be carried out with extreme care. Always note the initial parameter value for easy restore, in case the new values do not have the desired effect on the ship model's performance. Parameter numbers 002, 003, 004, 005.*

### 56.4.1 Changing parameter values

- Push PARAM ADJUST (parameter adjustment). The key is illuminate.
- Use the joy-stick to select the parameter to be adjusted. The parameter number is shown in the *SET COURSE* display (Refer to the parameter list below). The value of the parameter is shown in the *HEADING* display.
- To change parameter values, push  or  . The *HEADING* display will increase/decrease, allowing the operator to set the parameter values.
- Push the port arrow key to decrease the value or push the starboard arrow key to increase the value.
- To return to normal operation, push PARAM ADJUST

Changes of parameters on any steering system will be communicated to all other steering systems on the bridge.

### 56.4.2 Parameter list

| Par no | Par. name | Explanation | Range | Step | Unit |
|---|---|---|---|---|---|
| 001 | Heading Align | Aligning of the gyro/magnetic heading on Steering System and Overhead Panel. | 000.0-359.9 | 0,1 | deg |

Heading alignment is used to align the auto pilot heading reading when there is a difference between the gyro- and steering system reading and when the steering system shall follow (align with) magnetic heading reading.

| | | | | | |
|---|---|---|---|---|---|
| 002 | Weather Adjust | Auto pilot course sensitivity. The rougher weather, the higher setting should be used. A higher setting allows more yawing. | 000.0-007.0 | 1,0 | - |

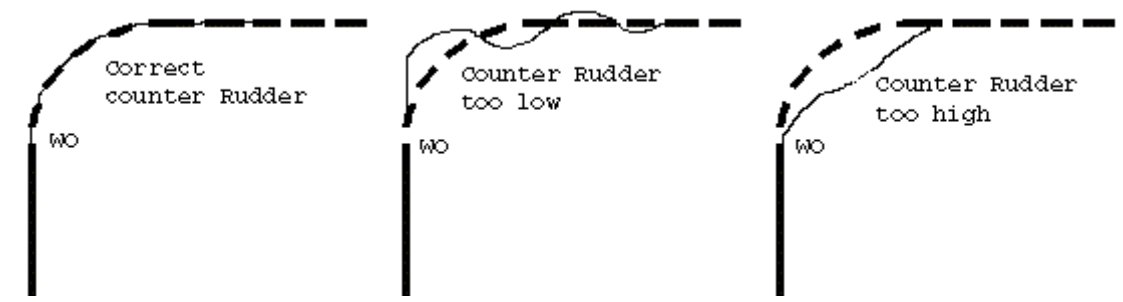
The effect of weather and waves is counteracted using this parameter. The higher parameter value the less counter rudder and longer time delay on rudder command signal. This causes an increase in the deadband width. A deadband refers to an area around the set course within which deviations are tolerated and do not produce any steering response. The function of the deadband is to allow the boat to come back to course by itself and so to conserve power and prevent continual port/stbd rudder commands.

| | | | | | |
|---|---|---|---|---|---|
| 003 | Rudder Gain | Rudder gain in the rudder controller. The higher value, the more rudder | 000.0-010.0 | 0,1 | deg |

| | | | | | |
|---|---|---|---|---|---|
| | | angle at heading deviations. | | | |

The term "gain" refers to the amount and speed of rudder movements induced by the pilot and can also be adjusted to fit the existing conditions. The higher gain the more rudder angle is used to get the Ownship back on set course. A too high value can cause the Ownship to oscillate (steer like “a drunken sailor”).

| | | | | | |
|---|---|---|---|---|---|
| 004 | Counter Rudder Time | Controls how quick counter rudder is given. A higher value gives quicker counter rudder. | 000.1-020.0 | 0,1 | Sec. |




| | | | | | |
|---|---|---|---|---|---|
| 005 | Counter Rudder Gain | Controls the value of the counter rudder set point. | 000.0-020.0 | 0,1 | deg. |

The counter rudder parameter sets the max rudder angle of opposite rudder the track pilot is to use to stop a turn  Factory setting is 10deg

| | | | | | |
|---|---|---|---|---|---|
| 006 | Helm Time | Response time to heading deviation. A smaller value will give rapid response, but more yawing. Long helm time gives nearly permanent heading deviation. | 000.0-999.9 | 1,0 | sec. |

The time the track pilot is “allowed” to use before using the rudder to adjust the Student ownship heading. Factory setting is 100sec.

| | | | | | |
|---|---|---|---|---|---|
| 007 | Gyro Filter Time | For reducing the effect of fast gyro heading changes input to the auto pilot. Value 000.0 gives no filtering, value 010.0 (s) gives maximum filtering. | 000.0-010.0 | 0,1 | sec. |

The parameter sets how long the gyro heading is allowed to change before the autopilot shall use the rudder to adjust the gyro change.  A low value means active use of rudder. Factory setting is 0,2sec

| | | | | | |
|---|---|---|---|---|---|
| 008 | Manual Rudder Limit | Maximum rudder angle in Manual and NFU mode. | 000.0-vessel rudder limit | 1,0 | deg. |

The maximum rudder angle allowed in manual and NFU steering mode. Factory setting is Ownship max rudder angle.

| | | | | | |
|---|---|---|---|---|---|
| 009 | Auto Rudder Limit | Maximum rudder angle in Auto mode. | 000.0-man. rudder limit | 1,0 | deg. |

The maximum rudder angle to be used by the autopilot to steer set course. Factory setting is 10 deg

| | | | | | |
|---|---|---|---|---|---|
| 010 | Course Ramp Rate | Rate used to execute heading changes in Auto mode. | 000.0-600.0 | 1,0 | deg./ min |

The maximum turn rate the autopilot can use to steer the Ownship to set course. This parameter will only affect the autopilot when parameter 009 Auto Rudder Limit can give the Ownship a turn rate greater than the set turn rate limit. Factory setting is 40deg/min

| | | | | | |
|---|---|---|---|---|---|
| 011 | Off Course Limit | Limit for the Off-course alarm. When exceeded, the steering system gives an Off-course alarm.. | 000.1-010.0 | 0,1 | deg |

Factory setting is 5 degrees.

## 56.5 Steering System Alarms

- In the event of a steering system failure, or when the ship exceeds the 'off course' limits, 

will flash and a buzzer will sound.
- To silence the buzzer, push 

The key gets a steady light. An alarm code number indicates the error and is shown in the *HEADING* display as long as the key is pushed. If several fault conditions occur simultaneously, repeated pushes of this key will cycle through the existing fault conditions.
- When the fault condition is fixed, 

turns dark.

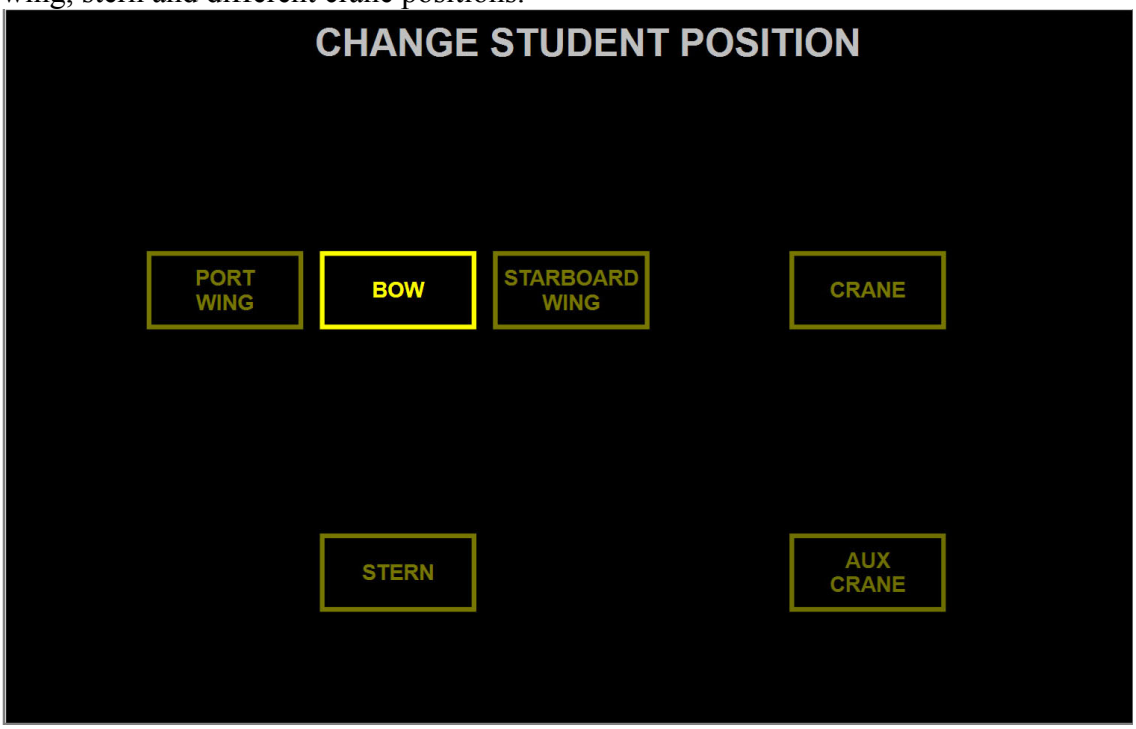
### 56.5.1 Fault conditions

| Number | Fault | Consequence |
|---|---|---|
| 001.0 | Steering gear fault. | Rudder(s) stuck in last position |
| 002.0 | Gyro signal fault. | No gyro input. Magnetic course can be set as backup. |
| 003.0 | Rudder(s) fault. | Rudder(s) hanging free. Rudder angle will gradually be reduced to 000.0. |
| 004.0 | Off-course alarm. | Auto pilot steering outside Off Course Limit. |
| 005.0 | Auto pilot fault. | Auto pilot total malfunction. |

# 57 (CHANGE) STUDENT POSITION

## 57.1 Purpose

The purpose of the student position panel is to enable bridge (bridge view) access to wing, stern and different crane positions.





*Port wing position.*


*Bow or Main forward view position.*


*Starboard wing position.*


*Crane (crane operator) position.*


*Stern view (i.e. anchor handling position).*

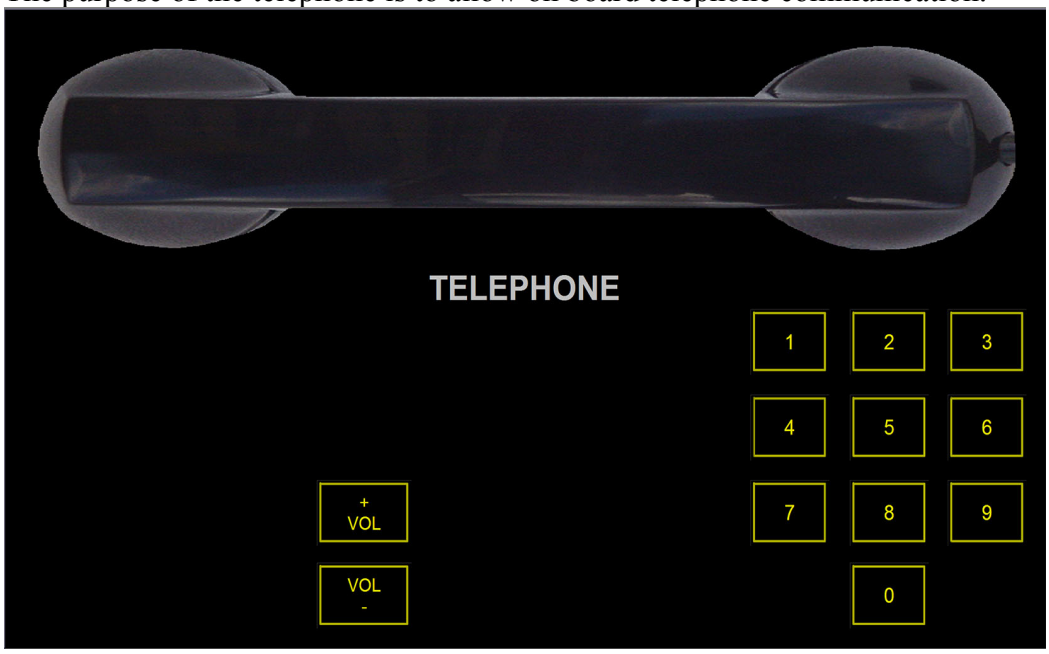

*Auxiliary Crane (crane operator) position.*

Note! All positions must be configured with instrumentation for control and operation of vessel. Instructor do have an override control with similar access.

# 58 TELEPHONE

## 58.1 Purpose

The purpose of the telephone is to allow on board telephone communication.




### 58.1.1 Keys and controls

The telephone has keys for volume control and number inputs. These include the numbers 1, 2, 3, 4, 5, 6, 7, 8, 9, 0 and the following:

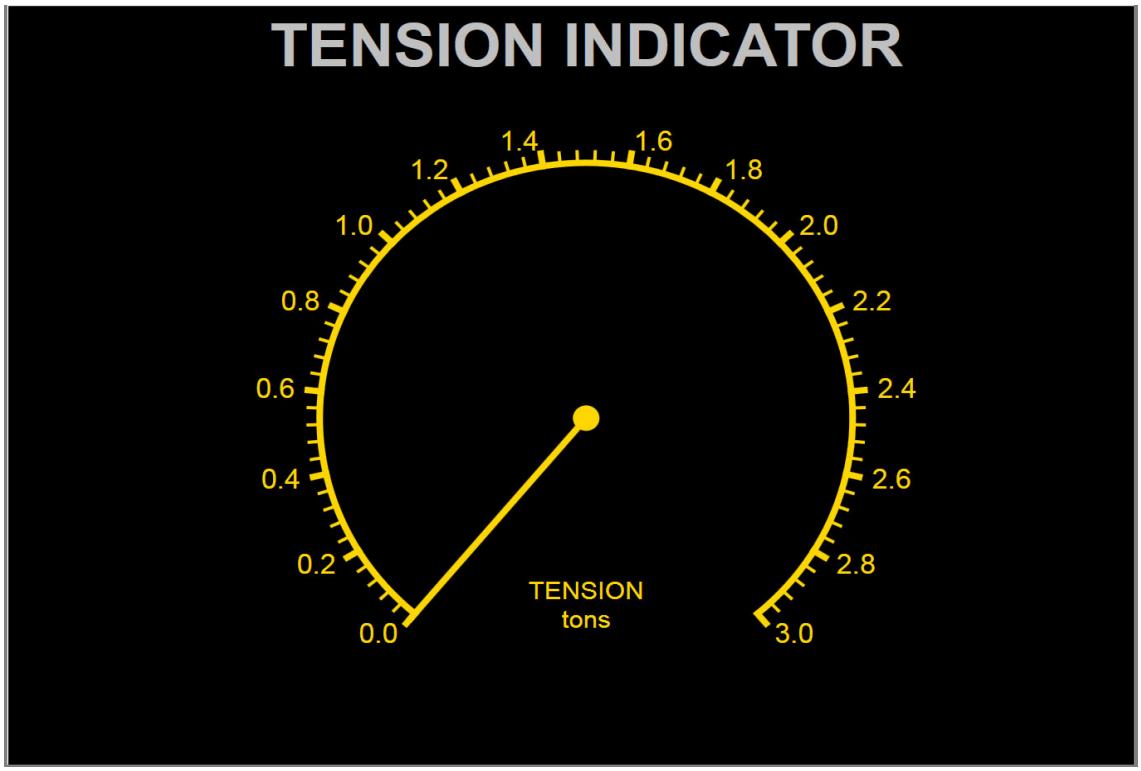
**Capacity**

| | Range | Step | Maximum digits |
|---|---|---|---|
| **Telephone** | 100-999 | 1 | 3 |

# 59 TENSION INDICATOR

## 59.1 Purpose

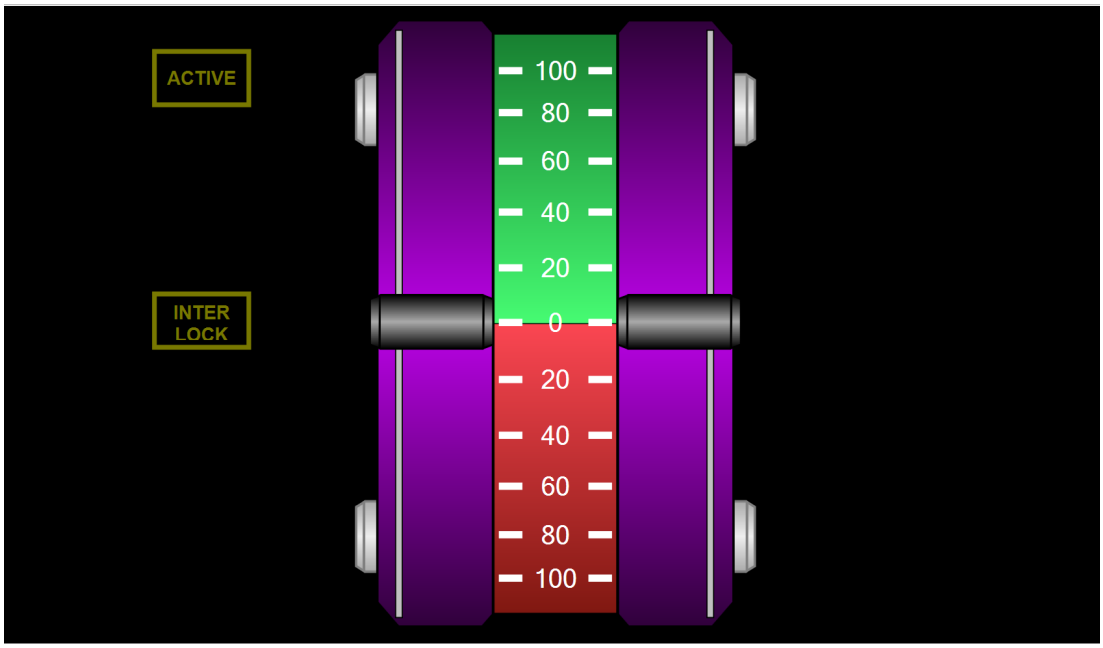
The purpose of the tension indicator is to present winch tension in tons. No user interaction.



# 60 THROTTLE CONTROL

## 60.1 Purpose

The purpose of the Throttle control is to allow control of RPM, PITCH or a combination of RPM/PITCH on the Ownship Student propulsion system (normally hands-on type).




## 60.2 Operation

Click ACTIVE to activate the throttle panel. Move the courser over the throttle handle. When the courser takes the form of a hand, click the left mouse button and drag the throttle to desired position.

When INTER LOCK activated, moving one of the throttles automatically causes the other throttle to follow.

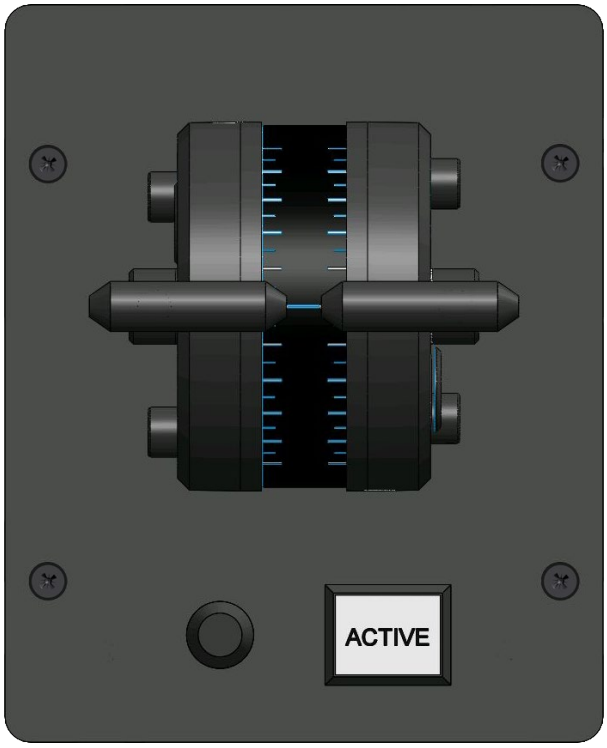
On single screw ships the INTER LOCK button is not available.

## 60.3 Faults

When ACTIVE is unlit, the courser will not take the form of a hand when over the throttle handles. Click ACTIVE to activate the Throttle panel. If still no light, the panel is inoperative and you should activate alternative RPM/PITCH control.

The connection from the Throttle control to the propeller shaft can be interrupted. Only indication of this is that no change in RPM/PITCH is observed when altering the throttle setting. You should then activate alternative RPM/PITCH control.

### 60.3.1 Hardware lever

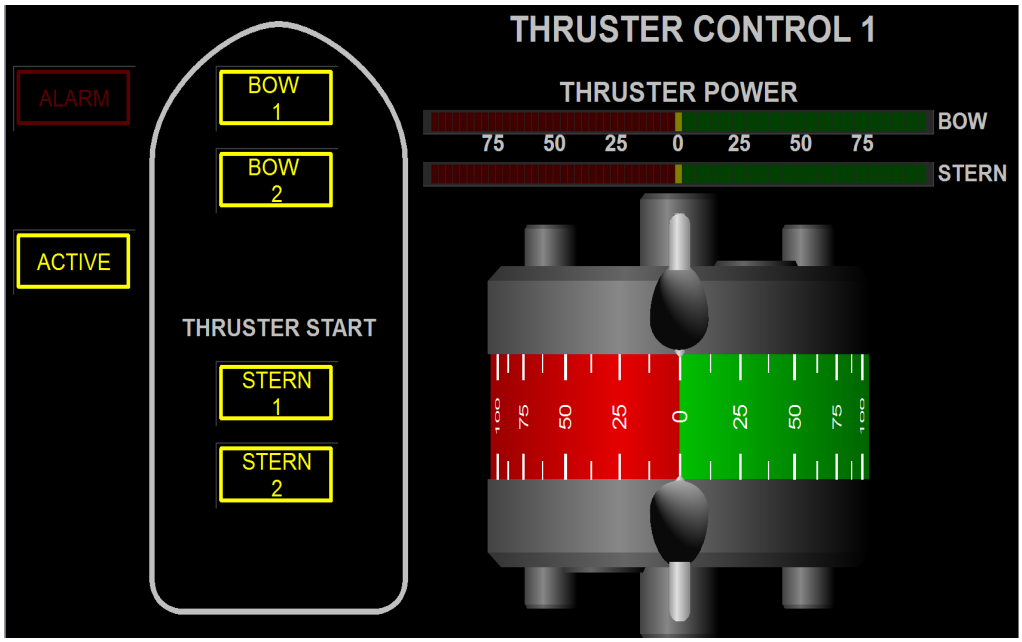



The hardware lever for engine control (may be single or dual) will be operated similar omitting the Interlock function. Operation else will be similar.

# 61 THRUSTER CONTROL

## 61.1 Purpose

The purpose of the Thruster control is to allow operation of bow- and stern thrusters on Ownship.




## 61.2 Keys and controls


Enables thrust output from bow thruster no. 1


Enables thrust output from bow thruster no. 2


Enables thruster output from bow thruster no. 3.


Enables thruster output from stern thruster no. 1.


Enables thruster output from stern thruster no. 2.


Enables thruster output from stern thruster no. 3.


Thruster control activation. If multiple thruster controls are installed, this key is used to activate the thruster control panel.


Indication of a malfunction to bow and stern thruster

### 61.2.1 Control levers

Two levers are controlling maximum three (3) thrusters each. The upper lever controls the bow thruster(s). The lower lever controls the stern thruster(s).

#### 61.2.1.1 Display data and limitations

| Display | Explanation | Range | Step | Unit |
|---|---|---|---|---|
| THRUSTER POWER | Indication of thruster feedback in % of maximum available thruster power. | 0-100 | 5 | % of max. |

Note

*Maximum available thrust power is defined as maximum thrust power with all the vessel's (bow or stern) thrusters selected*

## 61.3 Operation

1. Click 

to activate the thruster control panel. The key will illuminate.
2. Click the thruster you want to activate e.g. 

and 

to start these thrusters. The corresponding key will illuminate to indicate that the thruster is running.
3. Move the throttle in the desired direction. *Moving the thruster throttle to starboard will result in a thruster force moving the bow (stern) to starboard.* Thrust is ordered as a percentage of maximum available thruster power.
4. The corresponding THRUSTER POWER display indicates thruster feedback in percentage of maximum available power.
5. Click the activated thrusters to stop these thrusters. The corresponding key will turn dark to indicate that the thruster is stopped.

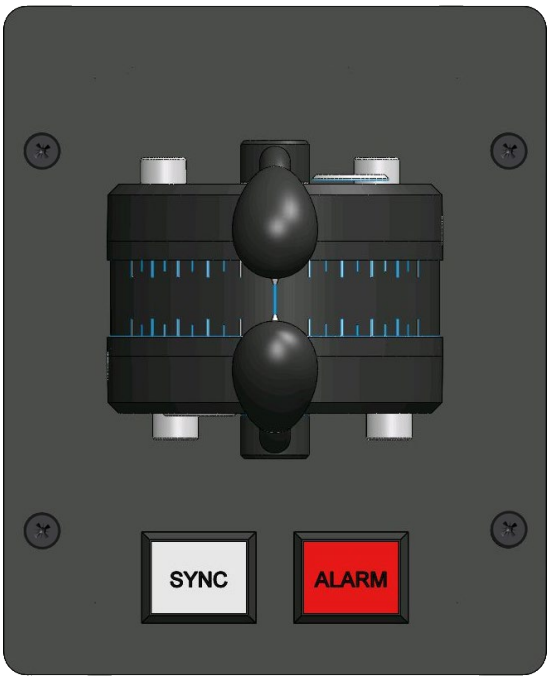
## 61.4 Alarms

1. If a thruster failure occurs, the corresponding thruster key and ALARM lashes to indicate a fault condition. No thruster output will be given from that particular thruster.

2. To silence the buzzer, click ALARM. The key gets steady light.

3. When the fault condition is fixed, the corresponding thruster key turns dark.

### 61.4.1 Hardware lever




The hardware lever for tunnel thrusters (single or dual) will be operated in combination with a software panel omitting the “soft” levers. Operation will be similar. The SYNC button will lock operation to one lever.

# 62 TUG WINCH

## 62.1 Purpose

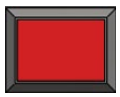
The purpose of the Tug Winch Control is to allow operation and monitoring of the own ship's (assisting tug) winch control. The Tug Winch operates one winch at the time.


## 62.2 Keys and controls

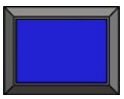
This system is fitted with a "hands-on" lever control for line payout and manual winch brake, plus a tension control setting zero to 100. Each with Winch and Brake selection buttons and two additional buttons for Emergency Stop and Emergency Release.

The additional buttons and control in hardware are:

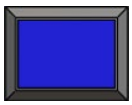
*Emergency Stop*



*Emergency Rel.*



*Manual Winch*



*Manual Brake*


*Tension*

## 62.3 Panel buttons

SPEED

4 pre-set winch speed, SPEED1 slow being the slowest and SPEED4 the highest speed for paying out and hauling in the line on the winch.

LENGTH

Used when the winch is to use the length of the line on the winch to pay out or haul in the line.

TENSION

Used when the winch is to use the tension on the line on the winch to pay out or haul in the line.

OFF

Release of tension control.

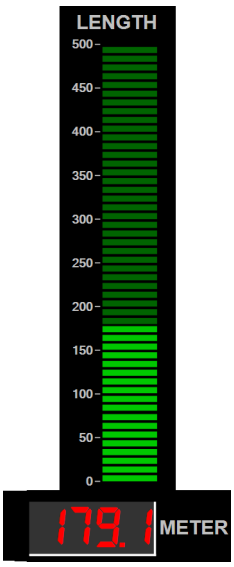
PUMP

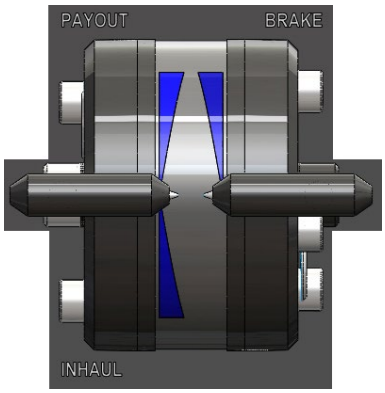
Start buttons for the three (1-2-3) pumps driving the winch. The more pumps activated the higher tension the winch can operate.

## 62.4 Operation

After line is created, activate the tug winch touch panel with the power on button. Allow 3-5 seconds to activate. All mode selections and settings is default off.
The LED bar is illuminated indicating the length of the line on the winch already. A green LED bar and alpha numeric line payout in meter.

POWER ON




*Levers for Inhaul and Payout and Manual Brake.*

To start the hydraulic pumps, click PUMP1 to start. PUMP1 start flashing indicating it is starting up. Allow 2-4 seconds to start each pump. When the button has a steady light

the hydraulic pressure is up and the winch control is ready for operation. Available pumps are three (3). Default control mode is LENGTH (button will enlight). All setting are allowed for control before start of simulation.

Set the speed the winch is to haul in the line.

SPEED1 Slow 5 – 25 m/min, tug/winch model dependent

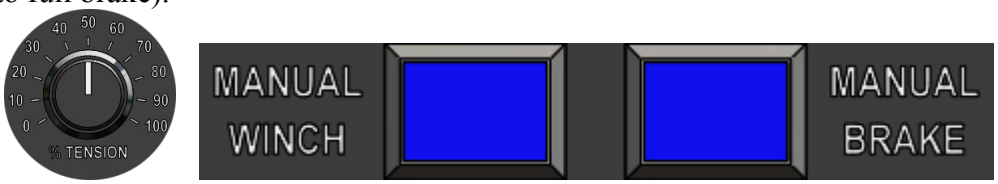
SPEED2 2 x SPEED1

SPEED3 3 x SPEED1

SPEED4 4 x SPEED1

## 62.4.1 Brake and tension control

Hardware (knob) and push-buttons on the panel for setting of Tension 0% to 100% and bbuttons to access control of line inhaul/payout (center lever) and manual brake (from zero to full brake).




When operating in brake tension control the winch will attempt to haul in the line using set tension. The more pumps activated, the higher tension the winch can take.
The winch will stop hauling in the line when set tension is reached and begin paying out the line to maintain set tension.

Click TENSION and the winch control will automatic go to speed level 1 SPEED1. Select wanted speed up to 4X.

Click LENGTH. The button is illuminated and turns dark TENSION.

The user will then control *PAY OUT/HAUL IN* lever to control line length.

In tension mode the winch will stop hauling in when the level is reached.

## 62.4.2 Brake

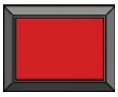
ON

When selected the winch brake is on and the winch can neither pay out nor haul in the line


The winch brake is off and the winch can pay out and haul in the line until set tension limit is reached.


The winch brake is on but the winch will automatically pay out /haul in the line according to set winch mode, tension or length.

### 62.4.3 Emergency release and Emergency stop

4. Click  to release the line from the winch. The line will start paying out the line on the winch
5. To stop the emergency release of the line on the winch, click once again. The winch will assume brake control according brake setting.
6. Click  to stop the line payout from the winch. To open and reset again, the button must be twisted to return to normal state.

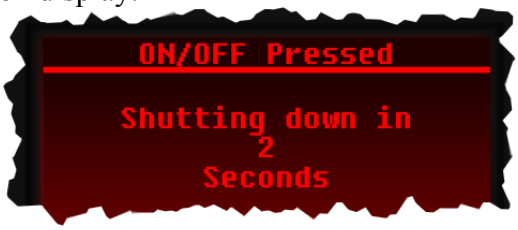
# 63 VHF RADIO WITH DSC

## 63.1 Purpose

The purpose of the VHF DSC system is to allow “Very High Frequency” ship to ship, shore to ship or ship to shore communication and allow for DSC messages. The VHF Transceiver operates in both simplex and duplex, in the frequency range 156.025 MHz to 160.025 MHz. The frequencies are locked to channels.


## 63.2 Keys and controls - VHF

The VHF is turned on by a single mouse click on this button. The transceiver comes on. The VHF is turned off by pressing the ON/OFF/Volume button for three (3) seconds.
Always indicated by a count down window in the information display.




*Display when turning off.*


*Volume.*

The squelch level is adjusted by using the squelch control. The actual squelch level is visualized in the telephone display.
The volume level of the default handset earpiece is adjusted by selecting the Handset. The buttons are used to adjust the level. The level is indicated in the information/message display.

*Channel.*

The system is defaulting to channel 16 after a normal power-on. Channels can be selected using the (increasing to next valid VHF channel) or (decreasing channel). Channels can also be entered using the numeric keypad. The active working channel is always shown in the upper display.

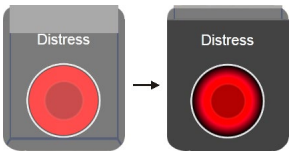

Dual watch is a mode where the priority channel (16) is scanned periodically for a signal while listening on a working channel. Dual watch is activated by pressing the DW button. The DW indicator is lit while DW is active. Dual watch is deactivated by:

- Pressing DW – Continues to receive on the working channel.
- Pressing PTT – Transmits always on working channel.
- Pressing ´16´.
- Pressing Replay - Dual watch is terminated while the message is replayed and will then be re-invoked.
-

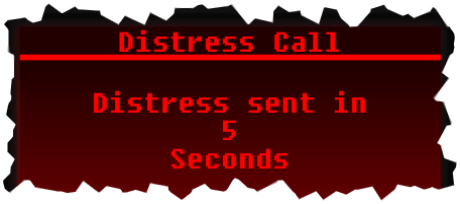
Selecting a new channel while in dual watch mode will continue dual watch on the new selected working channel, unless a signal is found on channel 16.

## 63.3 Keys and controls – DSC/Distress

Switch on the VHF transceiver single press (mouse click) on this button. The VHF will start up in distress mode after a power failure. Adjust volume.




**Lift up the lid covering the red Distress key and press the button for five (5) seconds.**




*Display during Distress DSC.*

Unless stopped manually, by pressing the key or switching the unit off, the distress call is automatically repeated every 3½-4½ minutes until distress acknowledgment is received. Wait for distress acknowledgement and start mayday procedure.

When DSC distress acknowledgement is received after you have pressed DISTRESS, or if you otherwise need to commence distress traffic via radiotelephony on the distress traffic frequency channel 16, follow this procedure:

- "MAYDAY", "this is" <name of vessel>.
- The 9-digit (MMSI) identity and the call sign of the ship, the ship's position in latitude and longitude or other reference to a known geographical location.
- The nature of distress and assistance wanted.
-

Upon reception of a DSC distress alert from another ship in distress, you should acknowledge the receipt by radiotelephony on the distress traffic frequency channel 16, by doing the following:

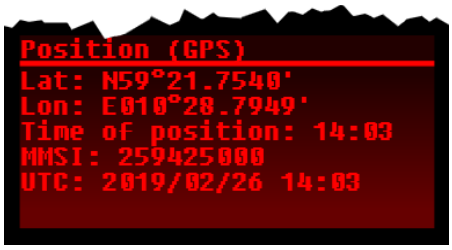
- "MAYDAY".
- The 9-digit identity of the ship in distress, repeated 3 times, "this is".
- The 9-digit identity or the call sign of own ship, repeated 3times.
- Received "MAYDAY".

## 63.4 VHF channels available

| Channel | Simplex | Duplex | | Channel | Simplex | Duplex |
|---|---|---|---|---|---|---|
| 1 | | X | | 29 - 59 | Channels 29 to 59 are not used. Entering any of these channels will not be accepted by the VHF | |
| 2 | | X | | | | |
| 3 | | X | | 60 | | X |
| 4 | | X | | 61 | | X |
| 5 | | X | | 62 | | X |
| 6 | X | | | 63 | | X |
| 7 | | X | | 64 | | X |
| 8 | X | | | 65 | | X |
| 9 | X | | | 66 | | X |
| 10 | X | | | 67 | X | |
| 11 | X | | | 68 | X | |
| 12 | X | | | 69 | X | |
| 13 | X | | | 70 | X | |
| 14 | X | | | 71 | X | |
| 15 | X | | | 72 | X | |
| 16 | X | | | 73 | X | |
| 17 | X | | | 74 | X | |
| 18 | | X | | 75 | X | |
| 19 | | X | | 76 | X | |
| 20 | | X | | 77 | X | |
| 21 | | X | | 78 | | X |
| 22 | | X | | 79 | | X |
| 23 | | X | | 80 | | X |
| 24 | | X | | 81 | | X |
| 25 | | X | | 82 | | X |
| 26 | | X | | 83 | | X |
| 27 | | X | | 84 | | X |
| 28 | | X | | 85 | | X |
| | | | | 86 | | X |
| | | | | 87 | | X |
| | | | | 88 | | X |

## 63.5 Basic DSC operation

When switched on, your VHF automatically monitors channel 70 for incoming DSC calls. In case the receiver is off, the radio officer must update with manual position before sending DSC messages.


*The GPS receiver is switched on.*

### 63.5.1 Menu operation

To operate DSC functionality the menu system is used. The main menu can be activated by pressing the menu Menu button. From the main menu all parts of the menu tree can be reached.

All menus have a unique hierarchical number. The main menu is the only menu which does not have a number. The number is (to a certain level) displayed in the upper right corner of the screen. If more than 6 items are available in the menu, arrows will indicate if remaining items are to found above ▲ current items or below ▼ current displayed menu items.

The active menu item is highlighted. A press on or will move the focus.

A press on OK will select the item which is currently in focus. A press on any of the numeric keys (1 to 9) in a menu will quickly select the menu item having the corresponding number.

A press on ◄Menu will return to the previous menu window (normally one level up). If this is pressed in the main menu, the menu will be turned off.

Selecting the menus for transmitting DSC calls will lead to a sequence of windows. The flow sequences are controlled by the OK (accept and proceed to next window) or ◄Menu (cancel and return to the previous window) buttons.

Following a menu hierarchy or a window flow might include a guidance text (e.g. “OK/next”.

Certain windows and lists do not show any guidance texts. These windows can always be left by (jumping to main menu) or ◄Menu (returning to the previous window).

### 63.5.2 Receiving a DSC call

An incoming call will always be recognized by activity on the CALL indicator – and if more severe (Distress and Urgency calls), also the ALARM indicator. When receiving a DSC call the message will be displayed immediately in the information/message display, if not obstructed by any other operations taking place. Received DSC calls will always be accompanied by a sound alarm. When you receive a call you can read in the display whether the call is addressed to All Ships, ships in a specific geographic area, a group of ships or to your ship (identified by your MMSI number) as an individual call.

If you are busy you can choose to handle the call a little later (e.g. by pressing the button ), which will stop the alarm sound.

When you are ready to accept the call, lift the handset or press OK. Your choices handling the particular call will now appear. Follow the instructions. If an individual call is received it will not be acknowledged before you accept the call.

### 63.5.3 Transmitting DSC Calls


All DSC calls are initiated from the DSC Call Menu (menu number 1). When entering a menu item, you will be guided through the call construction. For every call generated you will have the possibility of verifying the call before you transmit it. Either entering a new MMSI number directly or search up a contact already prepared.

Settings will show your won MMSI number and set the auto acknowledgement setting for routine polling and safety position. (click for on/off).

### 63.5.4 Call a ship station

To call a ship station and suggest a working channel, enter the Station Call menu and follow the instructions. Have the ships MMSI number ready if it is not available via the contact list.

### 63.5.5 Call a shore station

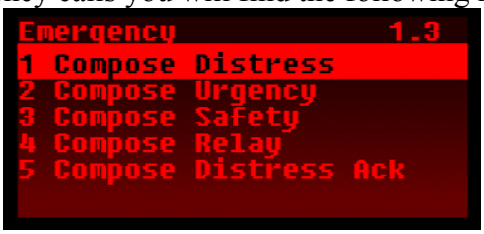
To call a shore station, enter the Station Call menu and follow the instructions. Have the shore MMSI number (shore stations starts with 00*) ready if it is not already made available in the the contact list.

### 63.5.6 Call a group of ships

To call a group of ships enter the Group Call menu and follow the instructions. Have the group MMSI number (ships starts with 0*) ready if it is not made available in the the contact list.

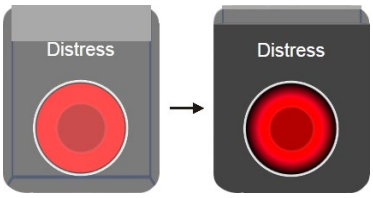
### 63.5.7 Create emergency calls

In the category of emergency calls you will find the following menu:




Transmitting any of these calls should be done with caution. Please make yourself familiar to the common procedures for using these calls. Selecting any of the call types will lead to a call establishing flow with maximum flexibility. You should make yourself familiar with the flow sequences, but be sure you do not actually send the message by mistake. In other words, never press OK the transmit verification window if you do not actually intend to send an emergency call.

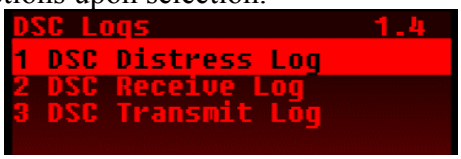
Designated distress calls are composed entering the menu. From this list the Nature of Distress is selected. A fast method to reach this selection list is a short press on .




The call completion is then continued from here. If no nature of distress is selected, but is pressed for 5 seconds, an undesignated distress is sent. Distress calls are always transmitted by pressing the button for 5 seconds. After you have transmitted a distress call the VHF is in distress mode (distress call is re-transmitted once each 3½-4½ minutes). The distress mode can be exited only by reception of the appropriate distress acknowledgement call or if you press for 5 seconds, or if you power off the VHF.

### 63.5.8 DSC call log

Received and transmitted DSC messages can be found with details in the DSC Logs. A special log contains distress related calls. The call log system will store the last twenty (20) calls, sorted by date and time. Each of the logs and each of the calls within the logs have their own possible actions upon selection.




### 63.5.9 DSC transmission

All DSC calls are transmitted on channel 70 with a transmitter power of 25W. Distress, urgency and non-test safety calls, are always transmitted. Other calls are sent only if the radio is not already recognizing a DSC message on channel 70.

### 63.5.10 Contact list

The contact list or phone book can contain up to 200 entries. Each entry might contain:

- Station-, group-, coast station- or public name
- Station MMSI, group MMSI numbers and coastal MMSI numbers.

### 63.5.11 Entering your position into the system

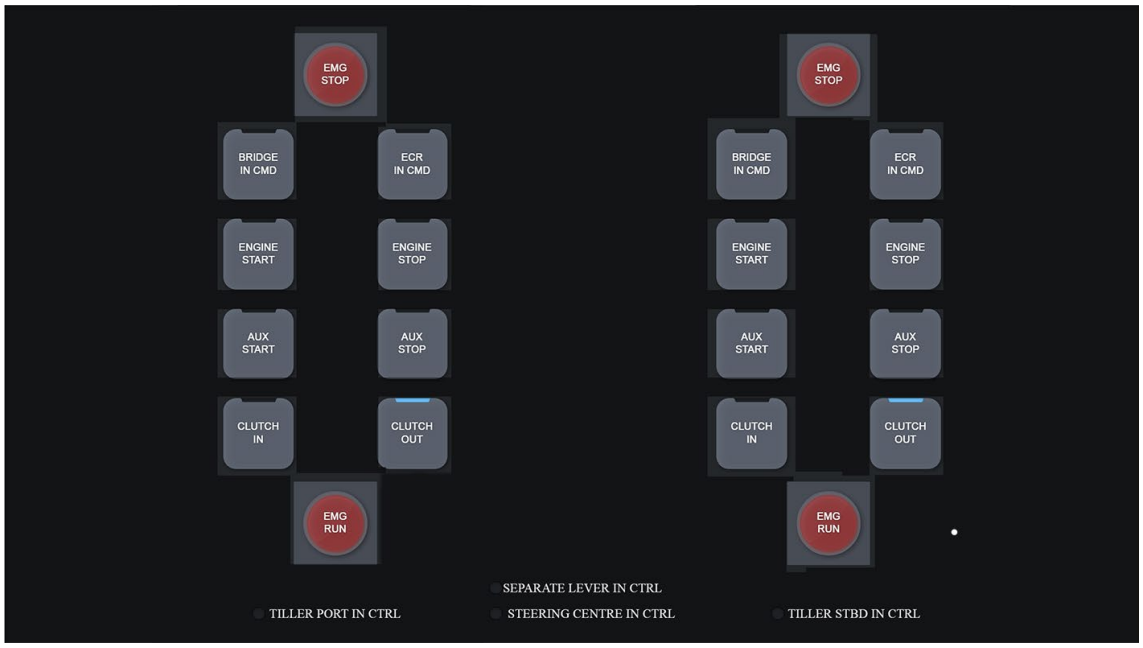
Ship's position and the time for this position are essential to the success of a possible rescue operation. This information is automatically incorporated in a DSC distress call sent from the VHF. Therefore it is important always to keep this information updated. Normally a GPS is interfaced to the VHF, which ensures continued updating of position and time. If the VHF is not connected to an external GPS system, or a malfunction of the GPSconnection is detected by the VHF, the VHF will automatically prompt for manual update of the position 1 minute after power-up and then every 4 hours. The position and time can always be entered via the Set Position & Time selection in the Settings menu.

**Note! Consult the instructor for MMSI details as well as MMSI numbers on traffic ships and shore stations in the area during the exercise if required.**

# 64 WATERJET CONTROL

## 64.1 Purpose

The purpose of this Waterjet Control panel is to enable full propulsion control to port and starboard waterjets, both in stand-alone operation and in connection with engine simulator connection. The engine prepared for this interconnection is M22 medium speed engine from MTU.




## 64.2 Keys and controls


Engine emergency stop button – inactive status.


Active status.


Change over button to transfer from bridge to engine command – in connection with bridge-engine simulator interface. Status shown: Bridge in command.


Engine started (after emergency stop, the engine must be started from this button). Status shown: Engine started and running. Expect some time delay during start up.


Auxiliary engine control – active only in connection with bridge-engine simulator interface.


Clutch (propulsion waterjet) in and out. Status shown at left: Clutch in.


Command in connection with bridge-engine simulator interface: Emergency Run.

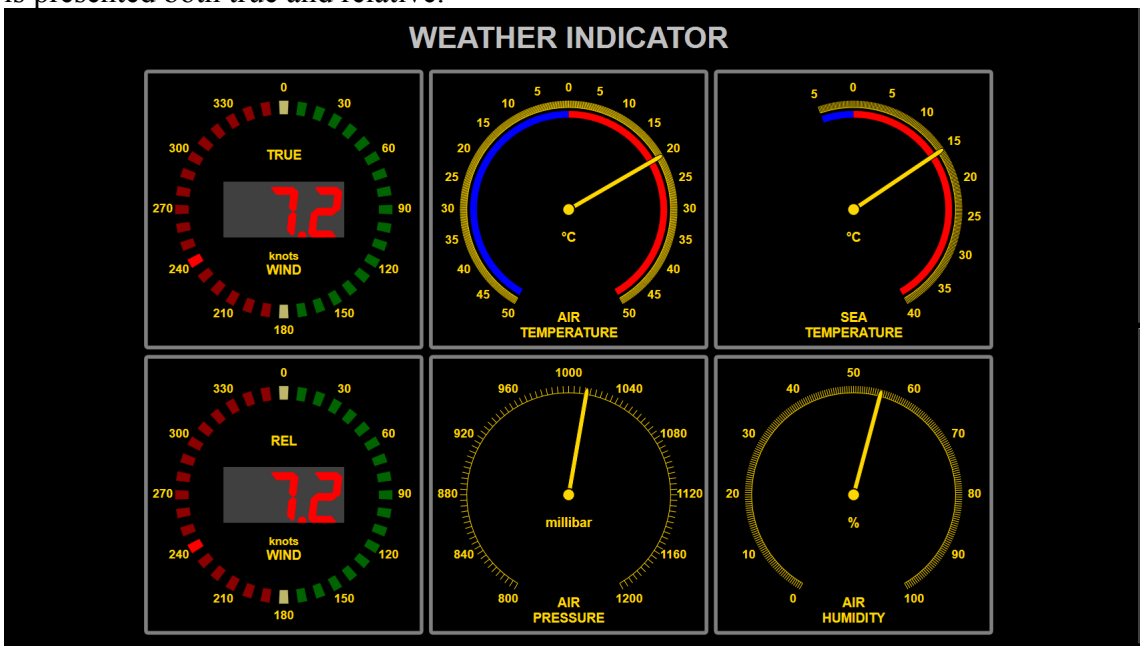
Indicator lamps for:

- **SEPARATE LEVER IN CONTROL.**
- **STEERING CENTRE IN CONTROL.**
- **TILLER PORT IN CONTROL.**
- **TILLER STARBOARD IN CONTROL.**

# 65 WEATHER INDICATORS

## 65.1 Purpose

The purpose Weather Indicator is to present all environmental data from the current exercise in progress. All data are under control of the instructor station. Wind direction is presented both true and relative.

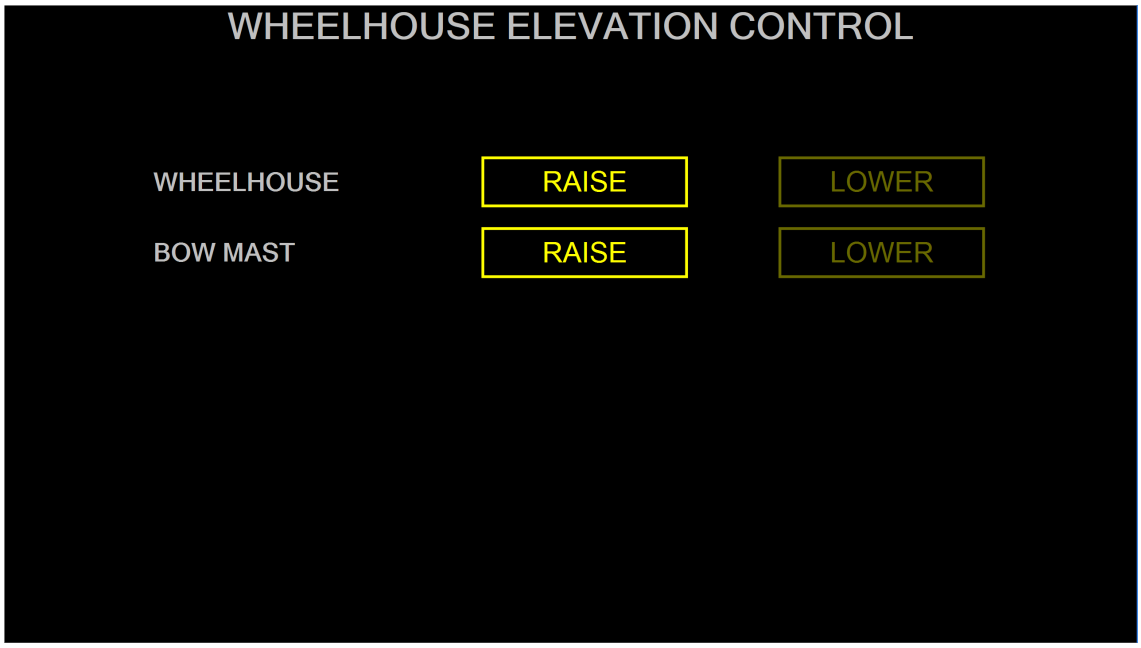



All values and presentation are under exercise control. Wind and wind speed values are always relative to the vessel/ship course.

# 66 WHEELHOUSE ELEVATION CONTROL

## 66.1 Purpose

Designed for an inland cargo river vessel for lowering and raising the bridge wheelhoiouse and the bow mast. Both instructor and student control are available.




## 66.2 Keys and controls

RAISE

LOWER

Wheelhouse – default position is up (light on).

Press LOWER and await 4-6 second for lowering the bridge wheelhouse.

RAISE

LOWER

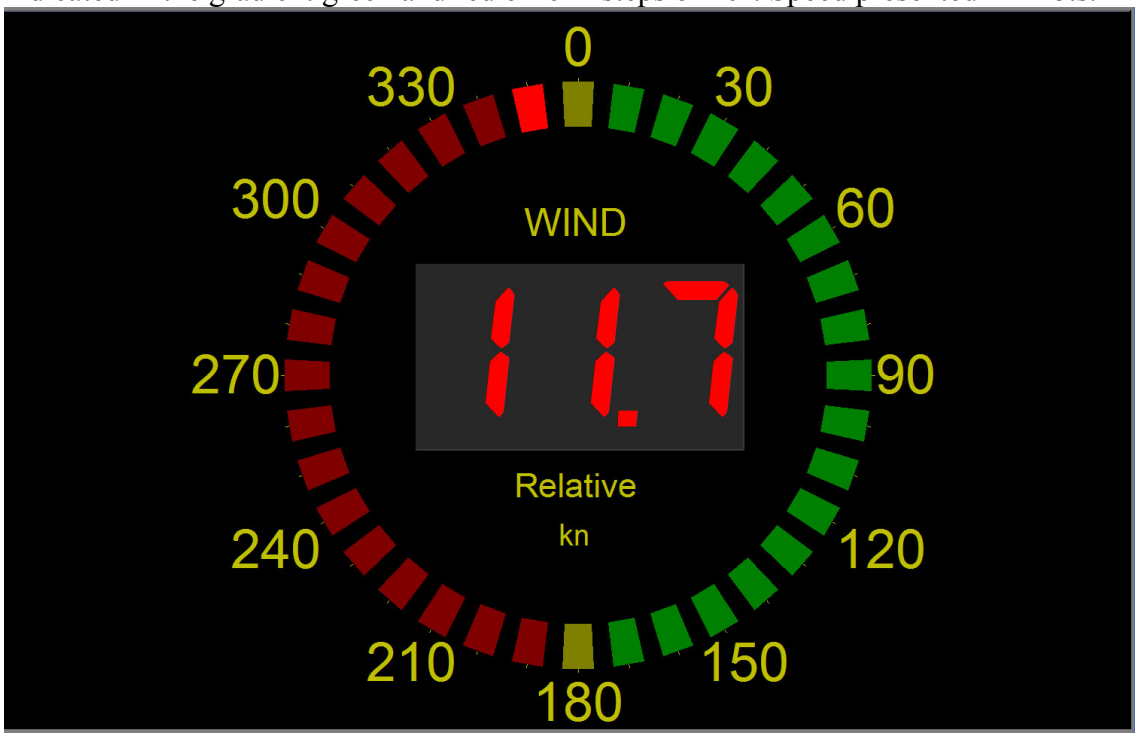
Bow Mast – default position is up (light on).

Press LOWER and await 4-6 second for lowering the mast.

# 67 WIND INDICATOR

## 67.1 Purpose

An instrument to present wind direction and speed – all values are relative. Direction is indicated in the gradient green and red cirle in steps of 10°. Speed presented in knots.



# List of Abbreviations and Terms

| | |
|---|---|
| AIS | Automatic Identification System |
| AH | Antenna Height |
| ANGLE | Drift angle (deg) |
| AOR-E | Atlantic Ocean Region East |
| AOR-W | Atlantic Ocean Region West |
| AZIM | Azimuth angle to satellite. |
| ARQ | Automatic Repetition reQuest |
| BRG | Bearing |
| CH1 | Satellite receiver channel 1. |
| CH2 | Satellite receiver channel 2. |
| COG | Course over ground (deg) |
| COSPAS/SARSAT | "International satellite based emergency alerting/locating system" |
| CPA | Closest Point of Approach |
| DGPS | Differential Global Positioning System |
| DIST | Distance (nautical miles) |
| DR | Dead Reckoning position |
| DSC | Digital Selective Calling |
| EGC | Enhanced Group Call |
| EPFS | External Electronic Position Fixing System (i.e. GPS) |
| MES | Mobile Earth Stations |
| ELEV | Elevation angle to satellite. |
| EPIRB | Emergency position indicating radio beacon |
| ETA | Estimated Time of Arrival |
| FEC | Forward Error Correction |
| GC | Great Circle |
| GPS | Global Positioning System |
| H/V DOP | Horizontal/Vertical Dilution Of Precision |
| HEAD | Heading (deg) |
| HTS | Heading to steer. |
| IAC | Initial Acquisition. Acquiring a satellite. |
| IDL | Idle. No satellites visible. |
| IMO | International Maritime Organisation |
| INMARSAT | International Maritime Satellite Organisation |
| IOR | Indian Ocean Region |
| LAT | Latitude |
| LES | Land Earth Station |
| LCD | Liquid Crystal Display |
| LCL | Local time |
| LED | Light Emitting Diode |
| LON | Longitude |

| | |
|---|---|
| LOP | Line Of Position |
| MMI | Man Machine Interface |
| MMSI | Maritime Identification Digit |
| NBDP | Narrow Band Direct Printer |
| NFU | Non Follow Up |
| NCS | Network Co-ordination Station |
| OS | Own Ship |
| PNR | Visible satellite number (GPS) |
| POR | Pacific Ocean Region |
| PSTN | Packet Switched Telephone Network |
| RCC | Rescue Co-ordination Centre |
| RNG | Range |
| RPM | Revolutions Per Minute |
| S/NO | Signal to Noise ratio (Satellite signal strength) |
| SART | Search and rescue transponder |
| SATS | Number of satellites being tracked (GPS) |
| SEQ | Sequential Track. Collecting satellite data in normal navigation mode. |
| SET | Drift angle |
| SMS | Short Message (part of AIS system) |
| SOG | Speed Over Ground |
| SPEED (A) | Log speed |
| SPEED (M) | Manually entered speed |
| TD | Time Difference (microseconds, Loran-C) |
| TSM | Time Since Mark (GPS) |
| TTD | Time To Destination (GPS) |
| UTC | Universal Time Coordinated |
| VHF | Very High Frequency |
| WPT | Way Point |
| XTE | Cross Track Error |