Automatic Identification System

JHS-182

Instruction Manual

JRC Japan Radio Co., Ltd.

7ZPJD0226

Preface

Thank you for purchasing JHS-182 Automatic Identification System.

JHS-182 is the Class A shipborne equipment of the universal Automatic Identification System.

- Be sure to read this manual for full comprehension before using the equipment.
- Save this manual near at hand for quick reference in the future.
  Make use of this manual when experiencing operation difficulties.

Before Operation

Concerning the symbols

This manual uses the following symbols to explain correct operation and to prevent injury or damage to property.
The symbols and descriptions are as follows. Understand them before proceeding with this manual.

⚠WARNING	Indicates a warning that, if ignored, may result in serious injury or even death.
⚠CAUTION	Indicates a caution that, if ignored, may result in injury or damage to property.

Examples of symbols

The △ symbol indicates caution (including DANGER and WARNING).
The illustration inside the △ symbol specifies the content of the caution more accurately. (This example warns of possible electrical shock.)

The ⃠ symbol indicates that performing an action is prohibited.
The illustration inside the ⃠ symbol specifies the contents of the prohibited operation. (In this example disassembly is prohibited.)

The ● symbol indicates operations that must be performed.
The illustration inside the ● symbol specifies obligatory instructions. (In this example unplugging is the obligatory instruction.)

Concerning warning labels

A warning label is pasted to the top cover of this product.
Do not remove, damage or modify the label.

Handling Precautions

⚠ WARNING

Do not disassemble or customize this unit. Doing so may cause fire, electrical shock or malfunction.

Do not use a voltage other than specified. Doing so may cause fire, electrical shock or malfunction.

Do not touch any parts where this warning label is pasted. Doing so may cause electrical shock.

Handling Precautions

⚠ CAUTION

Do not use this equipment for anything other than specified.
Doing so may cause malfunction or damage to persons.

Do not turn the trimmer resistors or the trimmer capacitors on the PCB unit, except when and if they need to be adjusted.
Doing so may cause malfunction or damage to persons. They are preset at the factory.

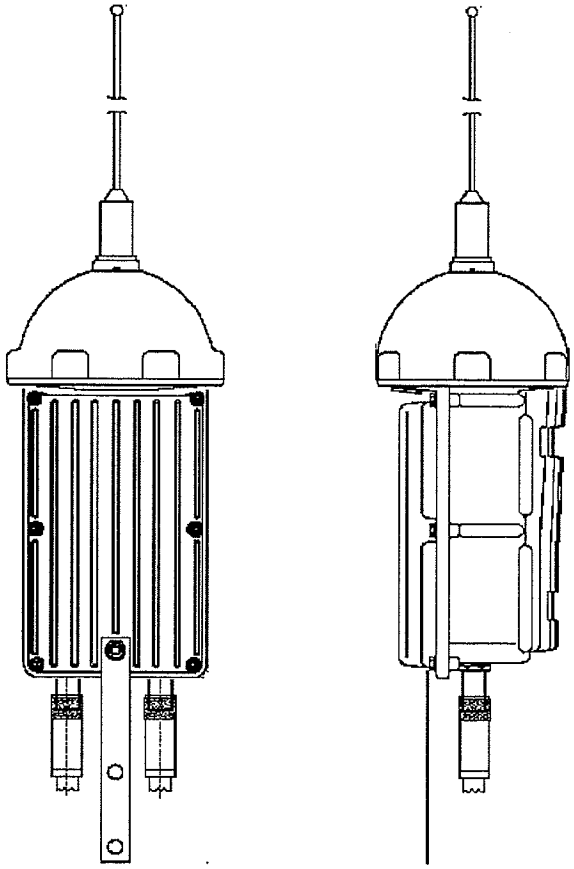
Do not install this equipment in a place other than specified or in one with excessive humidity, steam, dust or soot. Doing so may cause fire, electric shock, malfunction or damage to persons.

Do not get this equipment wet or spill any liquids on or near this equipment.
Doing so may cause electrical shock or malfunction.

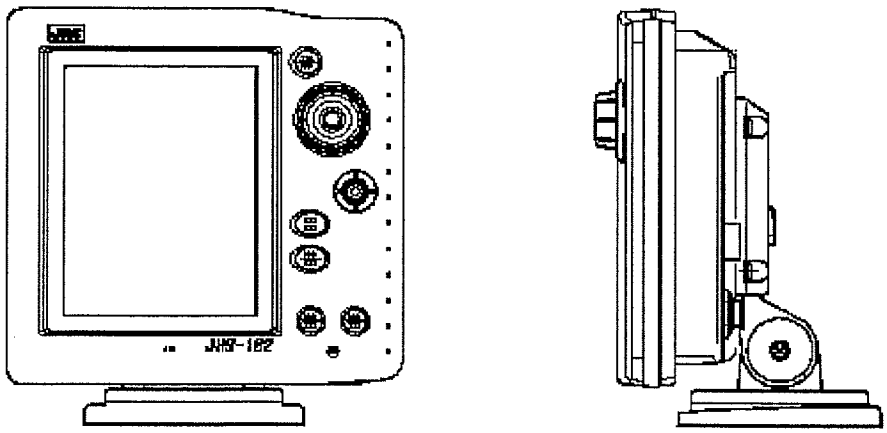
Do not place this equipment anywhere vibration or impact is likely to occur.
Doing so may cause a fall or damage to property and persons.

External Views

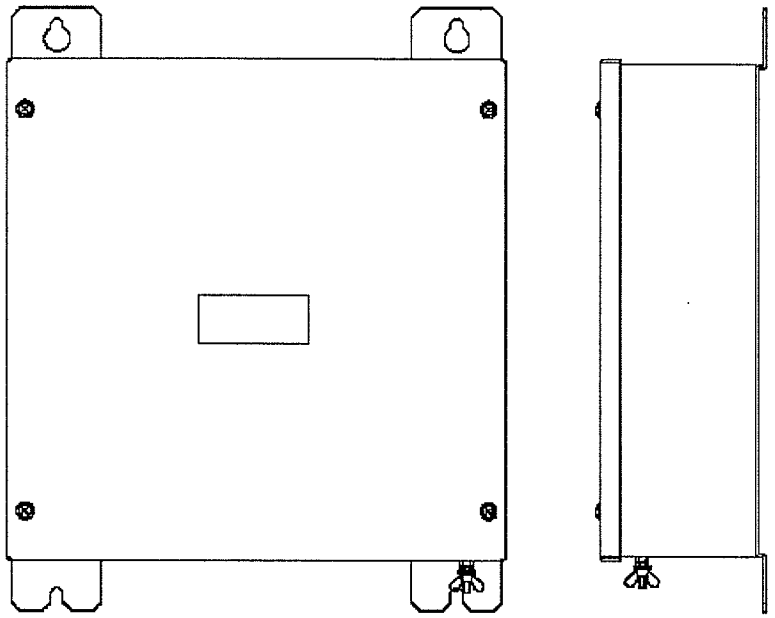
NTE-182 AIS Transponder



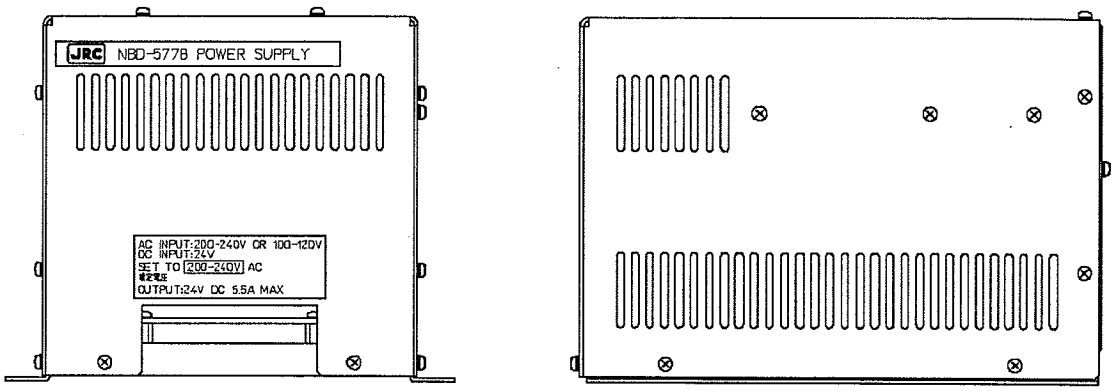
NCM-779 AIS Controller



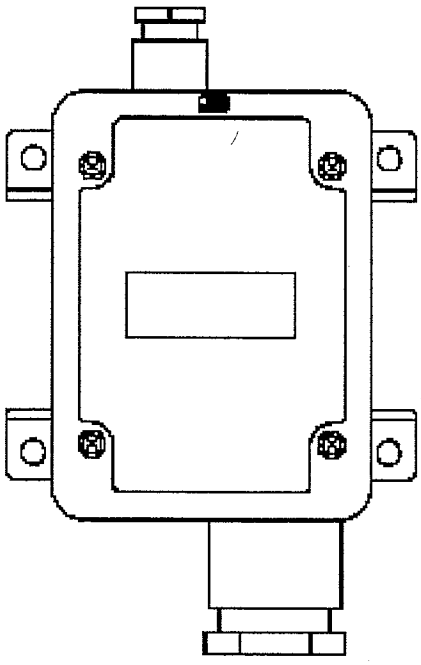
NQE-3182 Connection Box



NBD-577A Power Supply Unit



NQD-4382 Junction Box



CONTENTS

1. GENERAL

1.1 Outlines

Automatic Identification System (AIS) is a maritime navigation and radio communication system. This system intends to enhance the safety of life at sea, the safety and efficiency of navigation and the protection of the marine environment by communicating navigational information automatically on VHF channels between ship and ship, ship and shore.
JHS-182 meets the requirements of the SOLAS Conventions for the Class A shipborne equipment of the universal AIS. JHS-182 mainly consists of AIS Transponder, Connection Box and AIS Controller. The combined antenna and transponder design allows installation at any convenient location on any vessels. The small and simple design controller allows easy installation and operation. Moreover, easy equipment that connects a connection box and these each equipments by one cable is designed. JHS-182 employs the latest technologies such as digital signal processing, circuit integration technology, and these technologies ensure high performance and high reliability.

1.2 Features

● Fully Comply with International Regulations

JHS-182 is designed to meet the requirements of the SOLAS Conventions for the Class A shipborne equipment of the universal AIS and fully complies with international regulations: IMO MSC74(69) Annex 3, ITU-R M.1371, IEC61993-2, IEC60945 etc.

● Combined Antenna and Transponder for Ease of Installation

JHS-182 employs the combined antenna and transponder design. This design allows installation at any convenient location on any vessels. For the connection between abode deck component and below deck component, only one cable is needed.

● Increased Probability of Vessel Detection

JHS-182 is equipped with a guard zone alert function. When preset guard zone range and other vessel enters into the zone, JHS-182 indicates and sounds the alert. This function enhances probability of vessel detection.

● Recognition of Own-group Vessels

JHS-182 is equipped with a recognition of own-group vessels function. When preset own-group vessels' identification in advance, the display indicates the own-group vessel sign. This sign allows easy recognition of own-group vessels.

● Self-diagnosis Function

JHS-182 is equipped with a built-in automatic self-diagnosis function. This function allows easy maintenance and high system reliability.

● System Integration Availability

JHS-182 is equipped with various interfaces. These interfaces allow system integration and future expansions.

1.3 Components

1. 3. 1 Standard Components

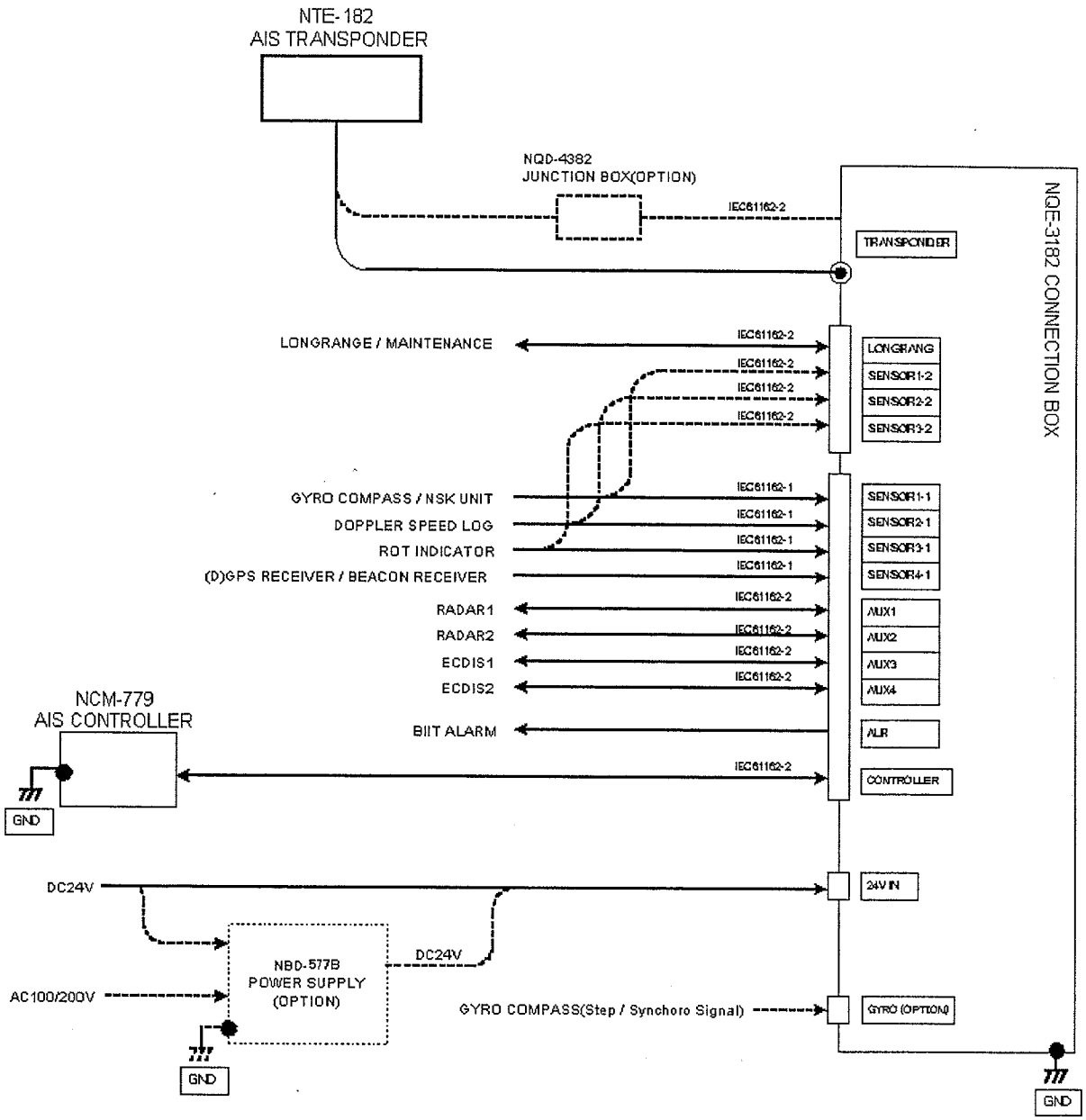
No.	Name	Type	Quantity	Remarks
1	AIS Transponder	NTE-182	1	With whip antenna
2	Connection Box	NQE-3182	1	
3	AIS Controller	NCM-779	1	With Pilot Plug
4	Control Cable	7ZCJD0214A	1	L=10m
5	Spare Parts	7ZXJD0049	1	Fuses
6	Instruction Manual	7ZPJD0226	1	

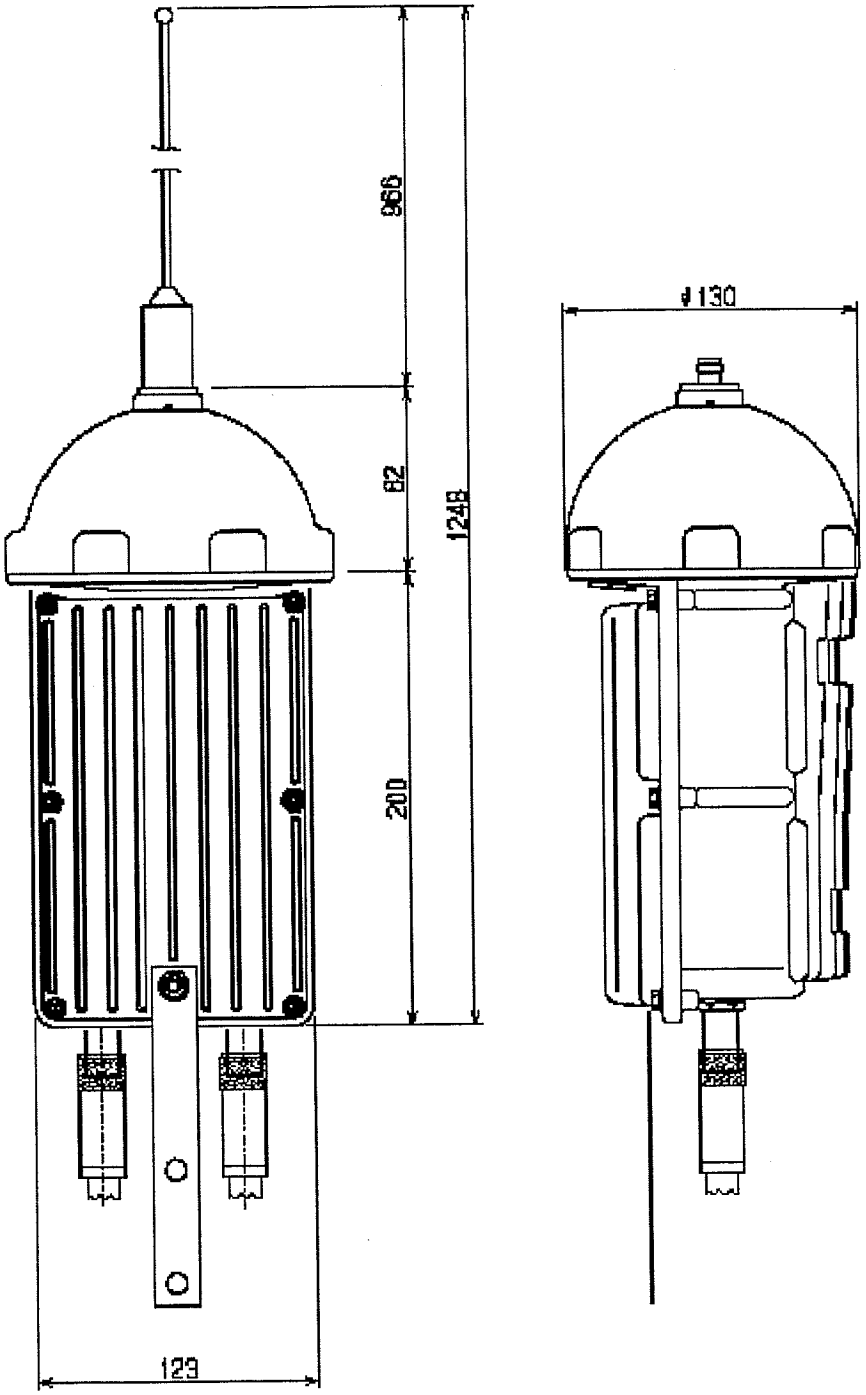
1. 3. 2 Options

No.	Options	Type	Quantity	Remarks
1	Power Supply Unit	NBD-577B	1	100/220V Manual Change
2	Junction Box	NQD-4382	1	For TTYCYS-7
3	Junction Unit	CQD-5182	1	For TTYCYS-7
4	NSK Unit	NCT-27	1	
5	Console Mount Kit	NCE-5779	1	For NCM-779, With Pilot Plug
6	Pilot Plug Cable	CFQ-6961	1	L=20m
7	Pilot Plug Box	NQE-3150	1	Wall mount type
8	Console Mount Kit for NQE-3150	MPBX40498	1	

1.4 Configuration

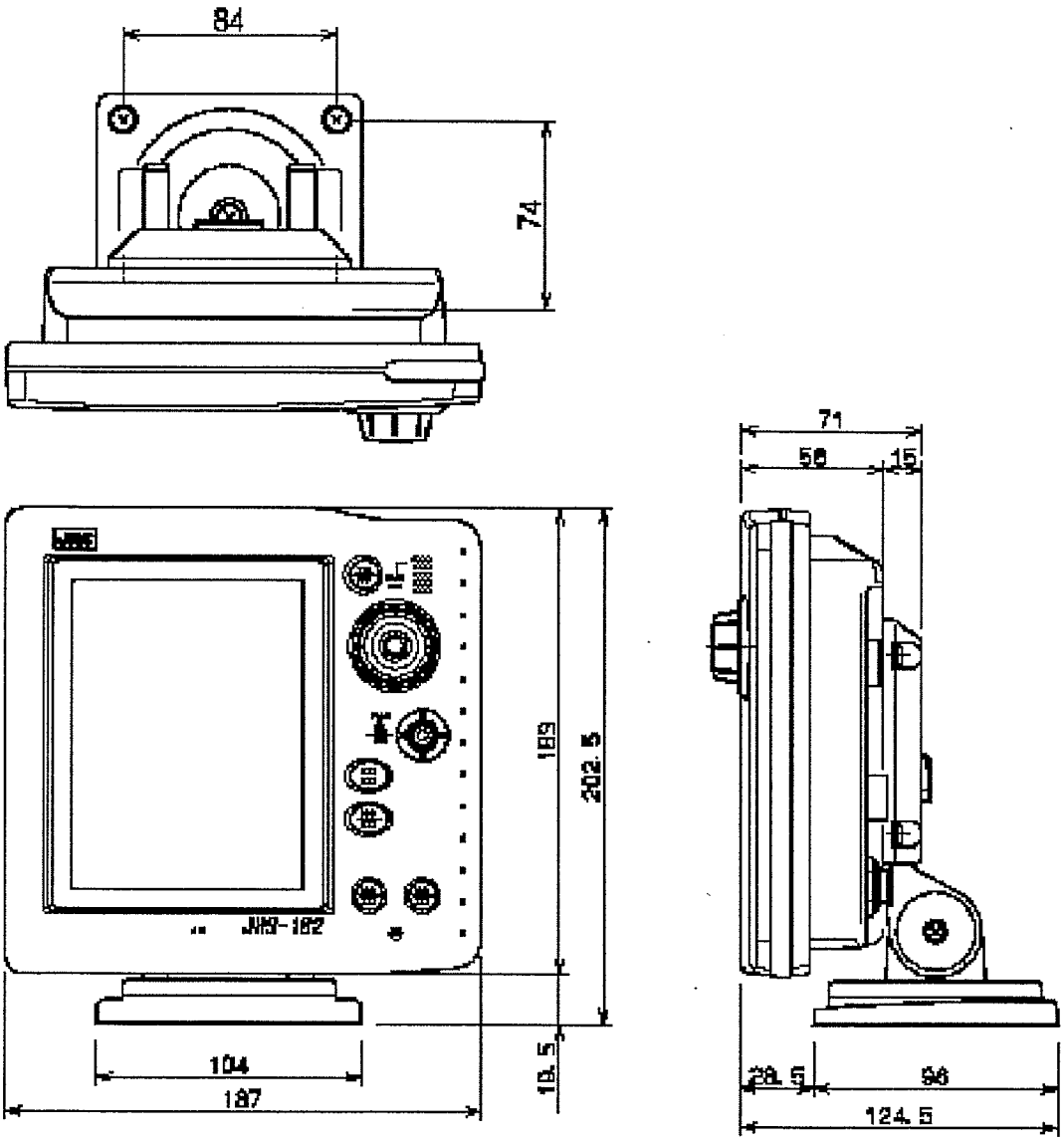
- **System Block Diagram**





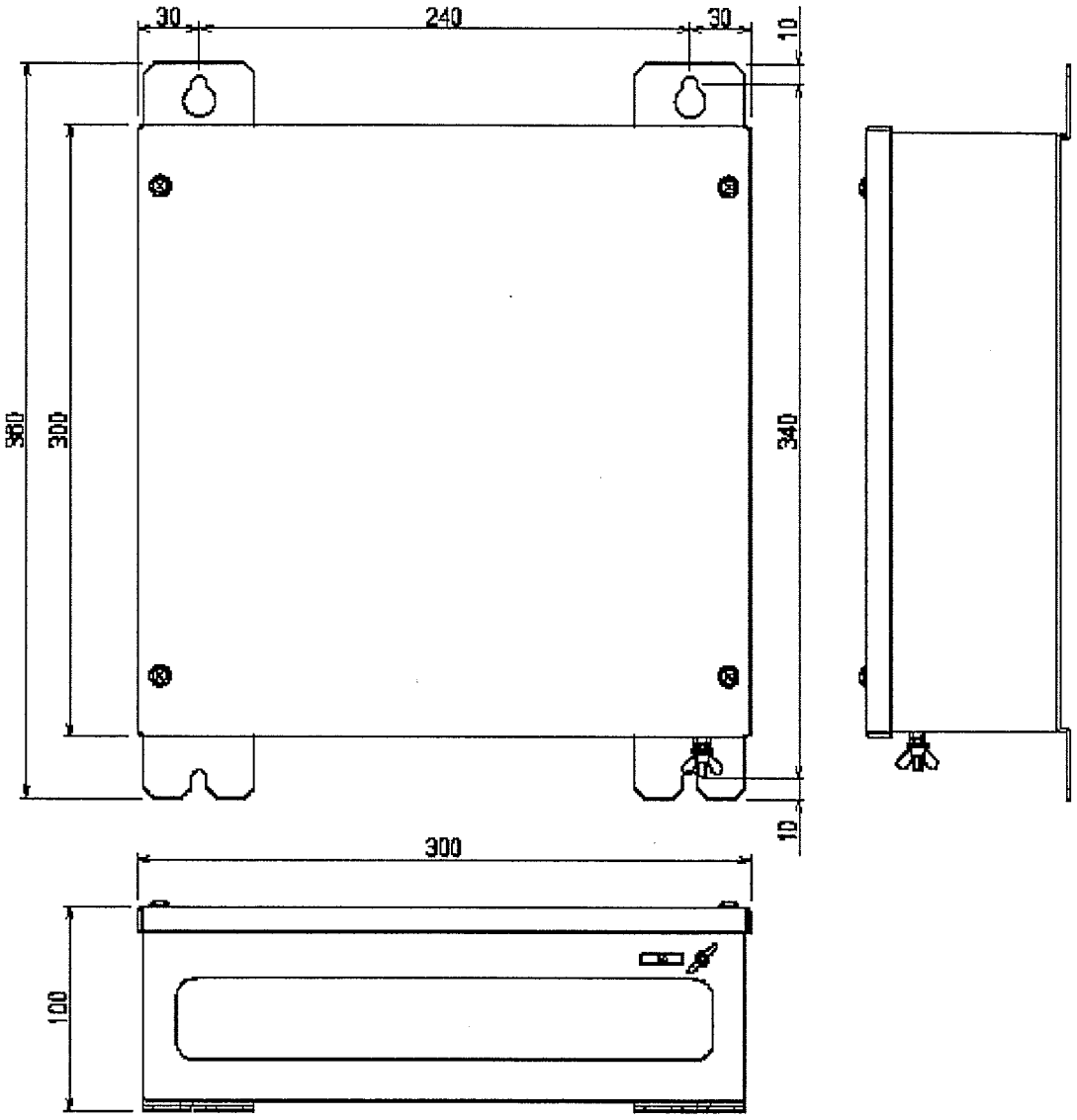
Unit: mm
Mass: approx. 2.5 kg

• Outline Drawing of NCM-779 AIS Controller



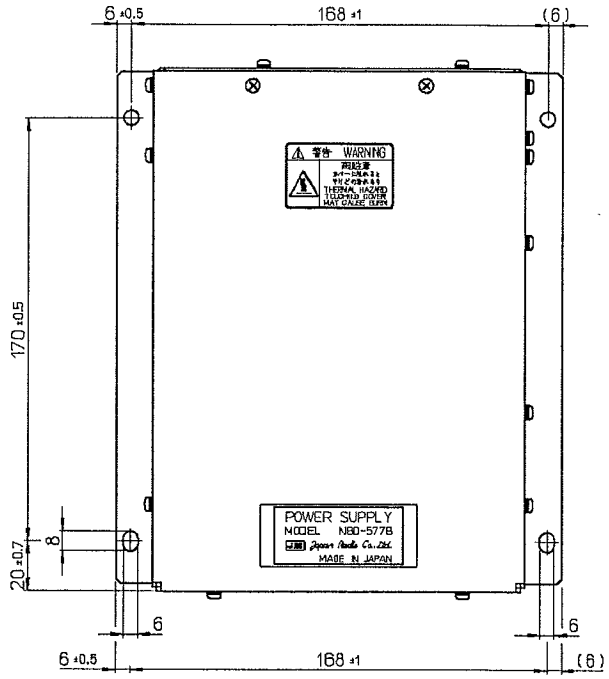
Unit: mm
Mass: approx. 1.1 kg

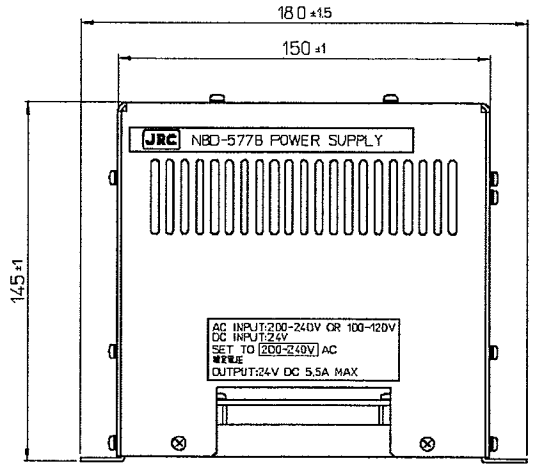
• Outline Drawing of NQE-3182 Connection Box

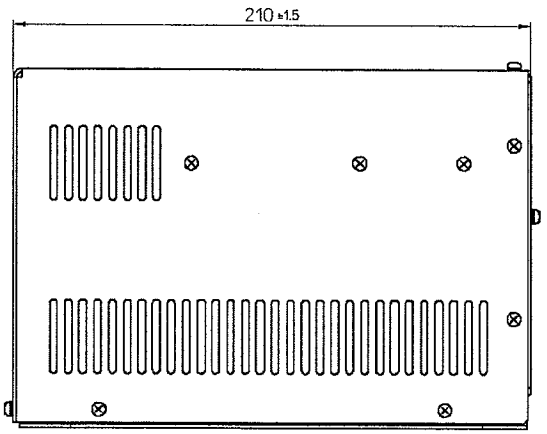


Unit: mm
Mass: approx. 2.4 kg

• Outline Drawing of NBD-577B Power Supply Unit





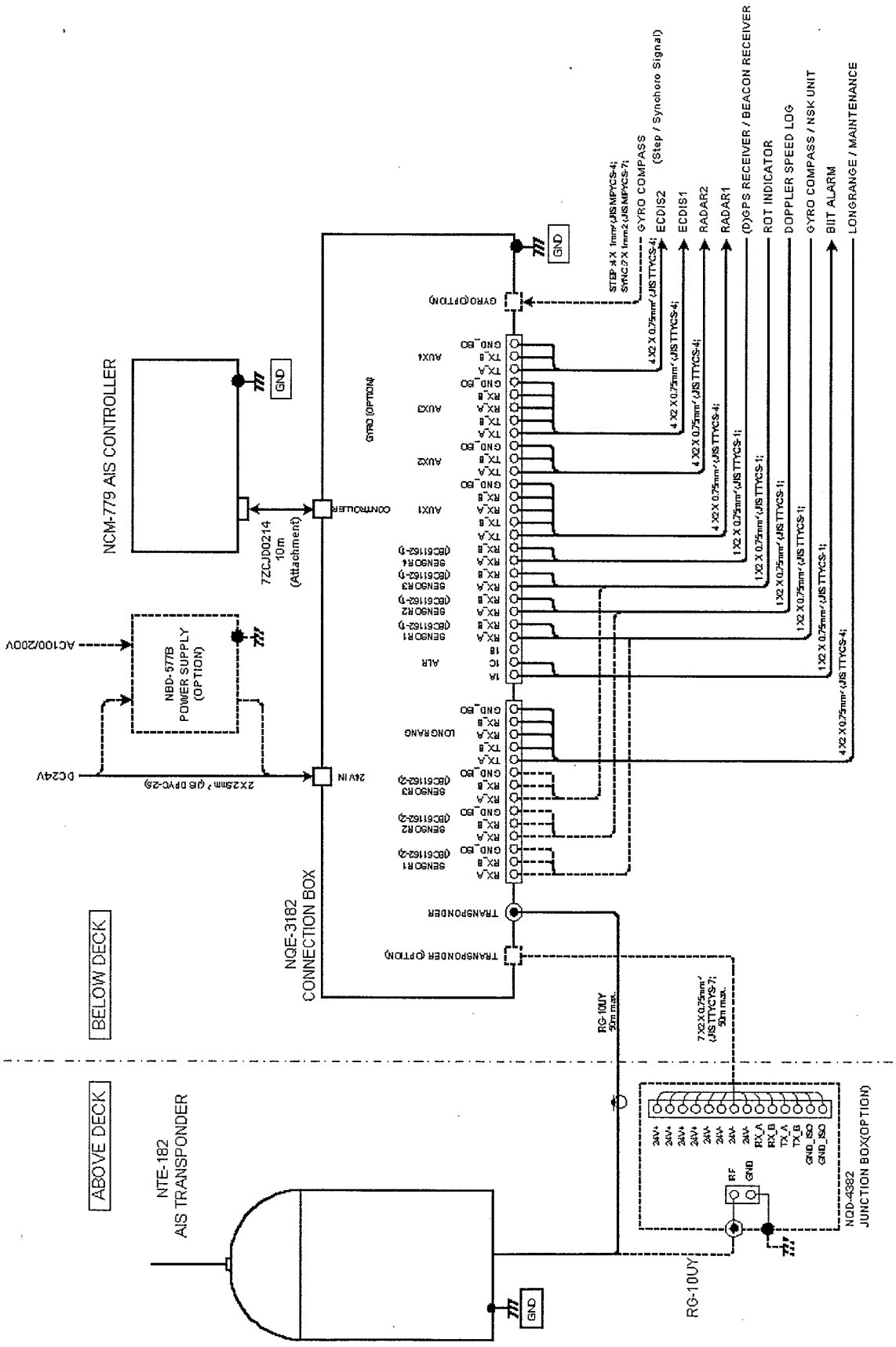


Unit: mm
Mass: approx. 3.8 kg

2. INSTALLATION DIAGRAM

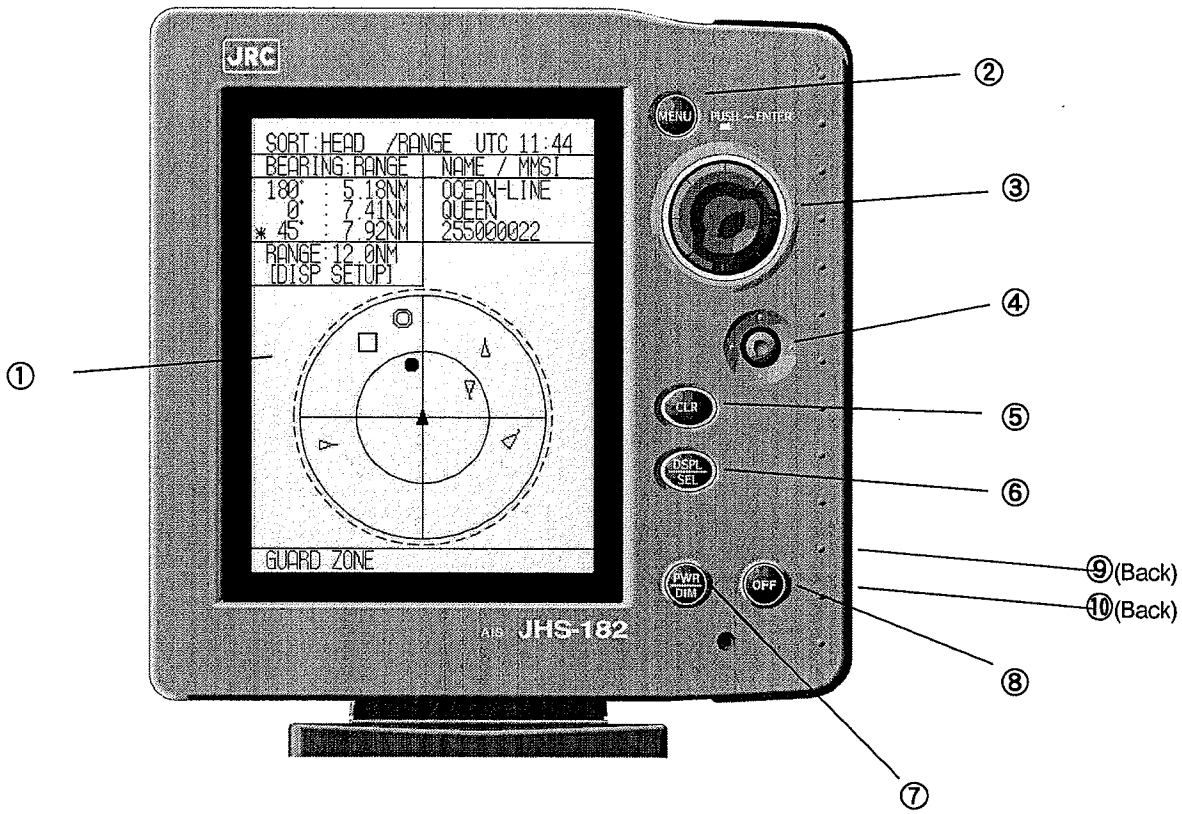
Notes:

Leave installation of this equipment to our service center or agents.
Installation by an unauthorized person may results in malfunction.



3. PART NAMES AND FUNCTIONS

3.1 NCM-779 AIS controller



① **LCD Panel**
For further information, refer to "4. Display".

② **Menu key**
Displays the Main-menu.

③ **Jog Dial**
Moves the cursor to a clockwise rotation or a counterclockwise rotation to choose the items. Pressing the dial makes the selection.

④ **Stick**
Moves the cursor when Graphic display is displayed (Keyboard display, etc.).

⑤ **CLR key**
Clears input errors.
Turns Off the alarm sound when beeping alarm sound.

⑥ **DSPL – Select key**
Changes the screen.

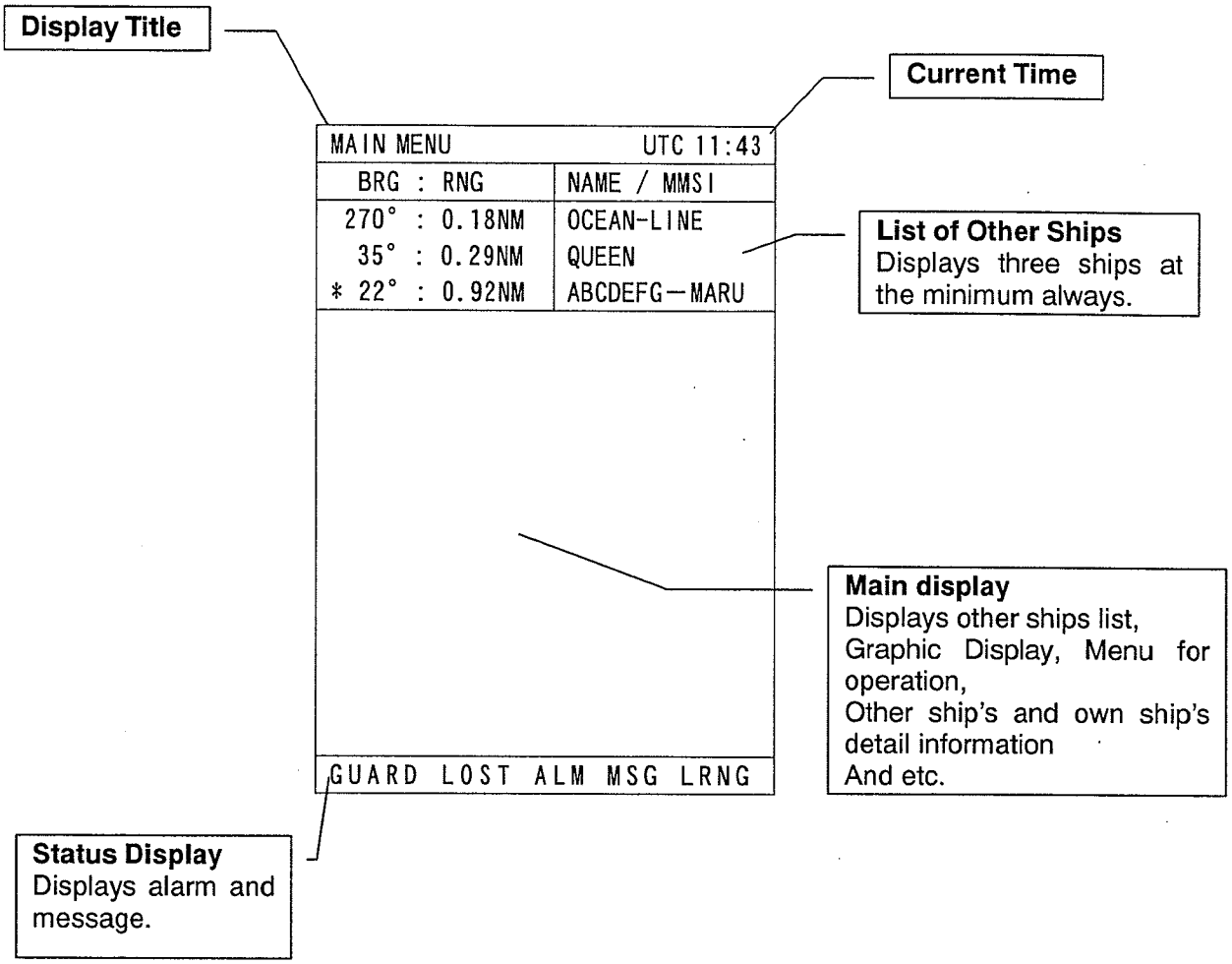
⑦ **Power/Dimmer key**
Turns the power ON when power is OFF.
Adjusts the back light brightness of the LCD and key in four stages when power is ON.
(Each time [PWR/DIM] is pressed, the display dims one stage at a time.)

⑧ **Power OFF key**
Pressing [PWR/DIM] and [OFF] at the same time turn the power OFF.

⑨ **Pilot Plug (Back)**
Pilot Plug is available on the back.

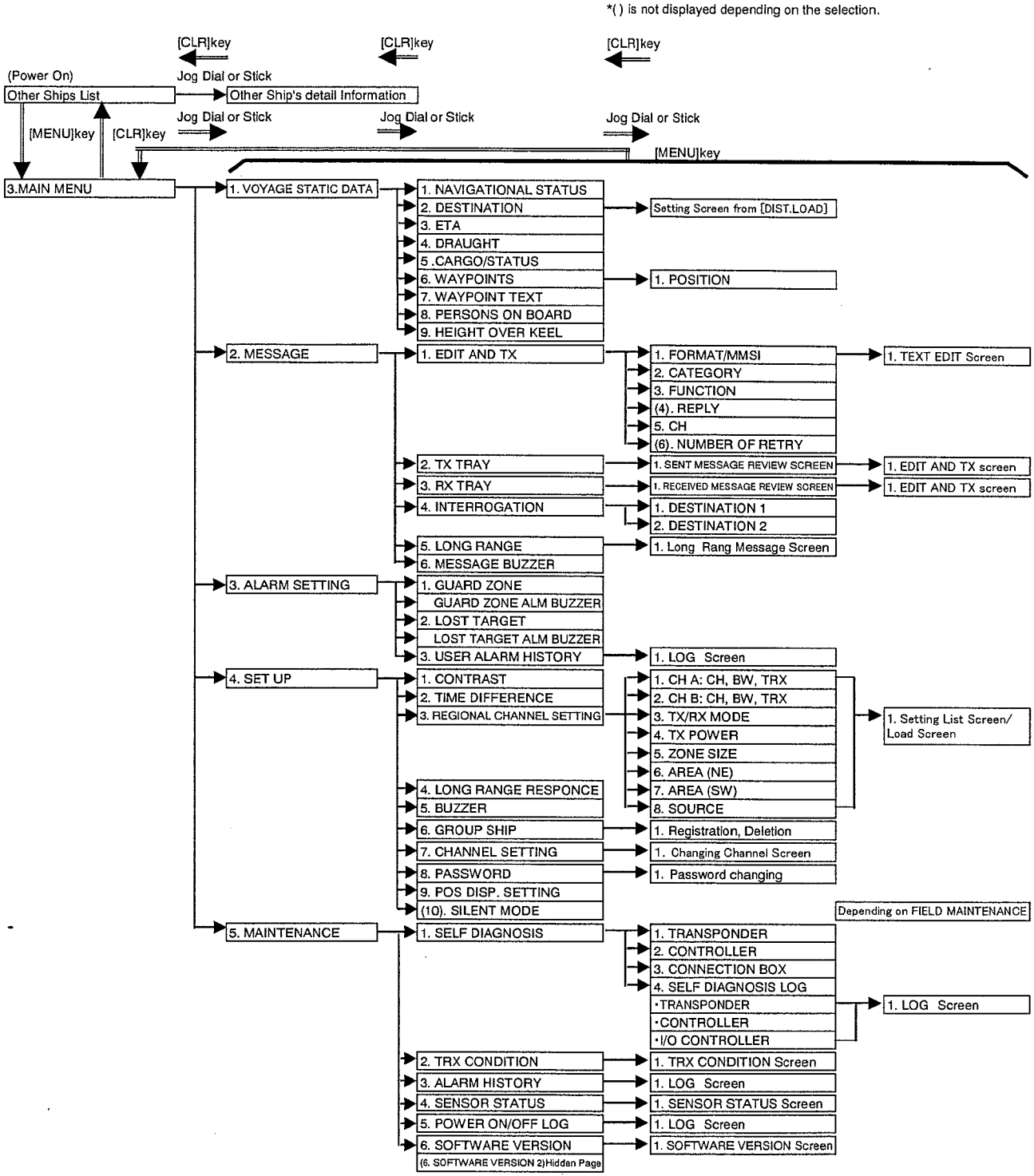
⑩ **POWER/DATA connector (Back)**
Attached cable connects between AIS controller and Connection Box.

4. DISPLAYS


Display Title
Current Time
MAIN MENU UTC 11:43
BRG : RNG
NAME / MMSI
270° : 0.18NM
OCEAN-LINE
35° : 0.29NM
QUEEN
* 22° : 0.92NM
ABCDEFG−MARU
GUARD LOST ALM MSG LRNG
List of Other Ships
Displays three ships at the minimum always.
Main display
Displays other ships list, Graphic Display, Menu for operation,
Other ship's and own ship's detail information
And etc.
Status Display
Displays alarm and message.

5. OPERATION

5.1 Menu TREE



5.2 BASIC OPERATION

5.2.1 Turning ON the power

Holding down the PWR/DIM key for one second turns on the power and the starting screen appears 30 seconds later.

Warning : Check the main power supply of a switchboard, the switch in the NQE-3182 connection box and a cable connection of NCM-779 AIS controller when the power cannot be turned on.

5.2.1.1 Other Ships List

SORT:NORTH/RANGE UTC11:43	
BRG : RNG	NAME / MMSI
▲270° : 0.18NM	OCEAN-LINE
35° : 0.29NM	QUEEN
* 22° : 0.92NM	ABCDEFG-HIJK>
121° : 4.85NM	498755431
52° :12.47NM	AABBCCDD243
010° :99.99NM	111111111
111° :99.99NM	111111112
001° :99.99NM	111111113
000° :99.99NM	111111114
222° :99.99NM	111111115
223° :99.99NM	111111116
224° :99.99NM	111111117
225° :99.99NM	111111118
226° :99.99NM	111111119
227° :99.99NM	111111120
▼228° :99.99NM	111111123
TOTALL:128 CURSOR:103	

Other Ships List (A)

The Other Ships List as shown in the above figure (A) appears after the starting screen.
In the Other Ships List, rotate the Jog Dial or use the Stick to select a ship.
The Other Ship's Detail Information is displayed if the Jog Dial or the Stick is pressed in the Other Ships List. (See the Other Ship's Detail Information, 5.2.1.2)
The Other Ships List is displayed again if the CLR key is pressed in the Other Ship's Detail Information.

'▼' is displayed on the bottom of the screen if there are more than 16 ships(14 ships when the Own Position Display is displayed).
When the cursor is moved upward from the top of the screen by rotating the Jog Dial counter clockwise the next ship is displayed. (The cursor scrolls one by one in the Other Ships list.)

Other ship is displayed if the Jog Dial is rotated clockwise from the line with '▲'. (Except when the ship which is closest of TCPA or distance is on the first line)

OWN DETAIL	UTC11:43
BRG : RNG	■ NAME / MMSI
270° : 0.18NM	OCEAN-LINE
35° : 0.29NM	QUEEN
* 22° : 0.92NM	ABCDEFG-HIJK>
121° : 4.85NM	498755431
52° :12.47NM	AABBCCDD243
010° :99.99NM	111111111
111° :99.99NM	111111112
001° :99.99NM	111111113
000° :99.99NM	111111114

Other Ships List (B)

222° :99.99NM	111111115
223° :99.99NM	111111116
224° :99.99NM	111111117
225° :99.99NM	111111118
▼228° :99.99NM	111111123
N 35° 32.8484	SOG 15.2KT
E 123° 45.2264	COG 44.4°
TOTALL:128	CURSOR:***

Other Ships List (C)

The Other Ships List as shown in the above figure (B) or (C) is displayed if the Jog Dial is rotated clockwise one time when the cursor is on the first ship of the Other Ships List.
The Own Ship's Detail Information is displayed if the Jog Dial or Stick is pressed in the state of (B) or (C). (See the Own Ship's Detail Information 5.2.1.3)

The Other Ships List is displayed again if the CLR key is pressed.

The display setup of the Other Ships List is displayed if the Jog Dial is rotated clockwise when the cursor is on the first ship in the list. (See the display setup of Other Ships List 5.2.1.4)

The Other Ships List is displayed again when the CLR key is pressed.

When the selected ship's name has more than 11 letters, move the Stick to the right or the left for scrolling the ship's name. (See the following figure and PAGE SCROLL 5.2.1.4)

SORT:NORTH/RANGE	UTC11:43
BRG : RNG	NAME / MMSI
270° : 0.18NM	OCEAN-LINE
35° : 0.29NM	QUEEN
* 22° : 0.92NM	ABCDEFG-HIJK>
121° : 4.85NM	498755431
52° :12.47NM	AABBCCDD243
010° :99.99NM	111111111

Move the Stick to the right.

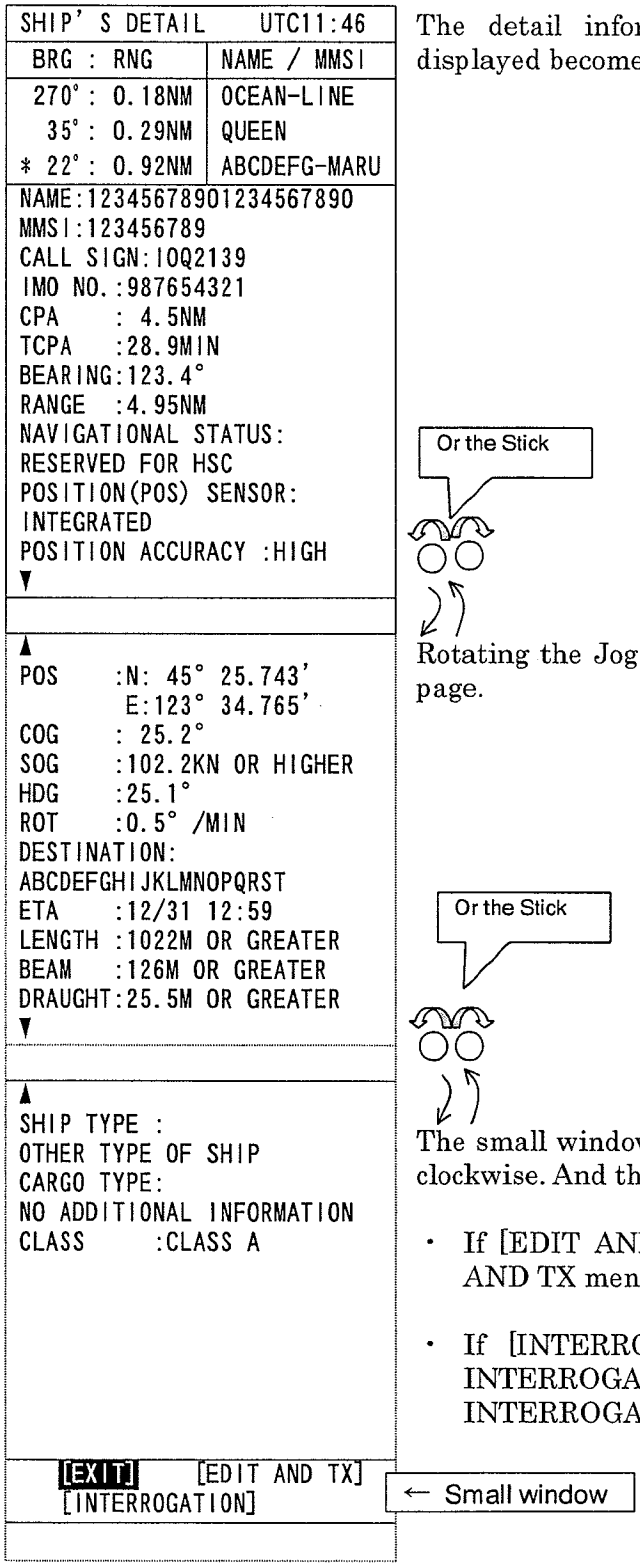
Move the Stick to the left.

SORT:NORTH/RANGE	UTC11:43
BRG : RNG	NAME / MMSI
270° : 0.18NM	OCEAN-LINE
35° : 0.29NM	QUEEN
* 22° : 0.92NM	BCDEFG-HIJK>
121° : 4.85NM	498755431
52° :12.47NM	AABBCCDD243
010° :99.99NM	111111111

Scrolling of the ship's name

5.2.1.2 Other Ship's Detail Information

The Other Ship's Detail Information is displayed if the Jog Dial or Stick is pressed when the other ship is selected on the Other Ships List or the Graphic Display.



Other Ship's Detail Information

The detail information of the other ships that cannot be displayed becomes blank.

Rotating the Jog Dial or moving the Stick can display the next page.

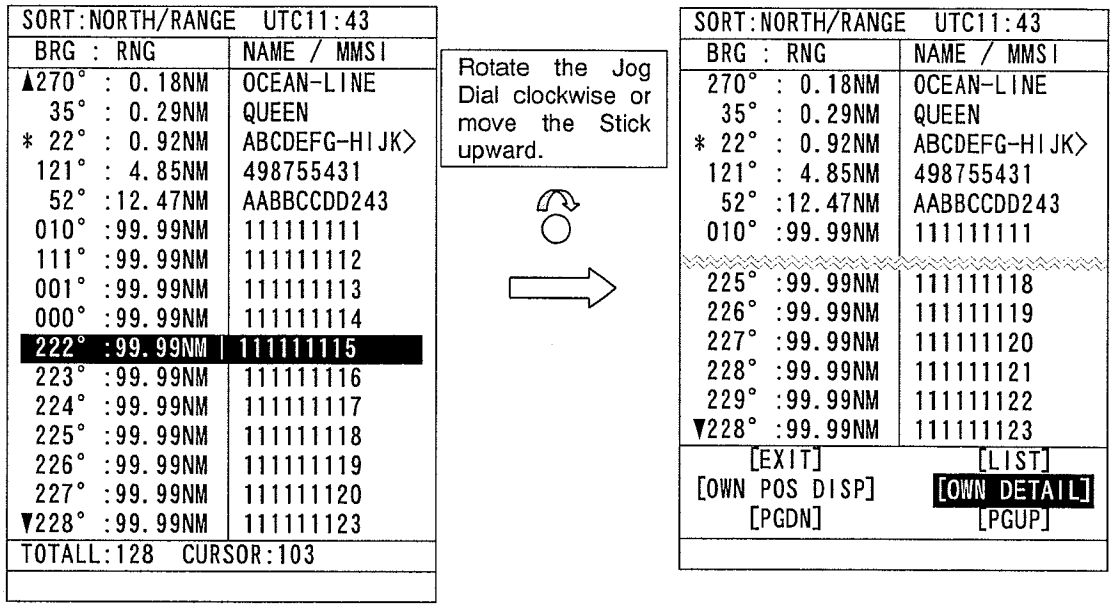
The small window appears when the Jog Dial is rotated counter clockwise. And the cursor moves into the small window.

- If [EDIT AND TX] in the small window is selected, EDIT AND TX menu is displayed. (See the EDIT AND TX 5.3.2.1)
- If [INTERROGATION] in the small screen is selected, INTERROGATION screen is displayed. (See the INTERROGATION 5.3.2.5)

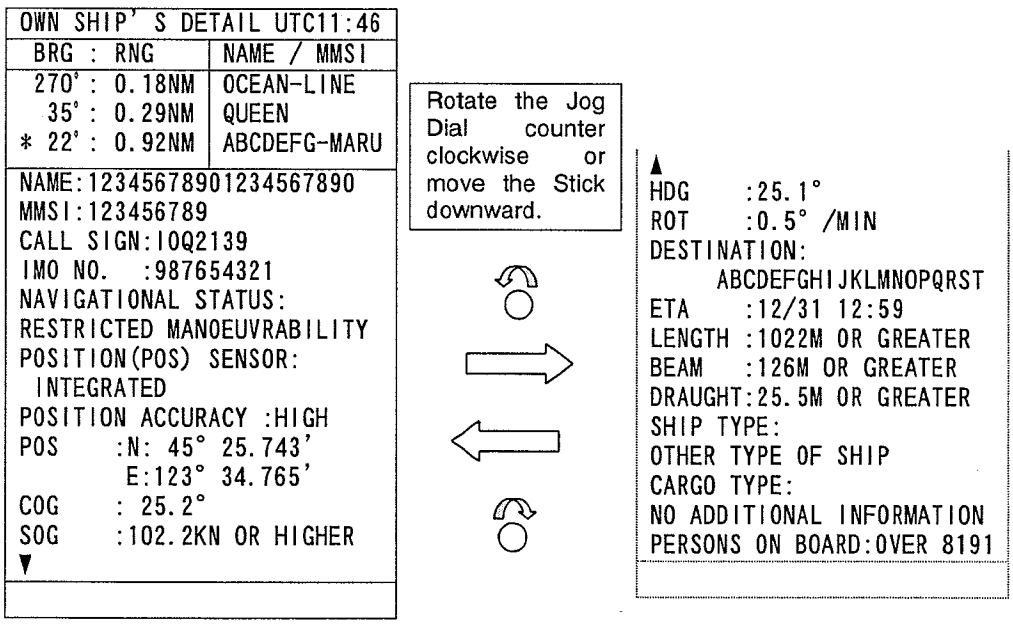
The Other Ships List is displayed again if CLR key is pressed or [EXIT] in the small window is selected.

5.2.1.3 Own Ship's Detail Information

The Own Ship's Detail Information is displayed if [OWN DETAIL] in the small window is selected by using the Jog Dial or the Stick.



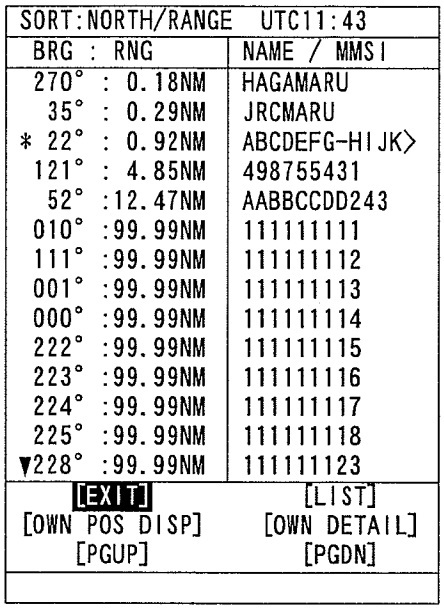
Rotating the Jog Dial or moving the Stick can display the next page in the Own Ship's Detail Information.
The Other Ships List is displayed again if CLR key or the Jog Dial is pressed.



Own Ship's Detail Information

5.2.1.4 Display Setup of Other Ships List

The Other Ships List can display a maximum of 16 ships (14 ships when the Own Position Display is displayed) in one time.
And the ships can be displayed by doing a following order figure if there are more ships.



The small window can be displayed if the Jog Dial is rotated clockwise (Or the Stick is moved upward) when the cursor is on the position that can display the Own Ship's Detail Information.

The cursor is on [EXIT] first when the small window is displayed.

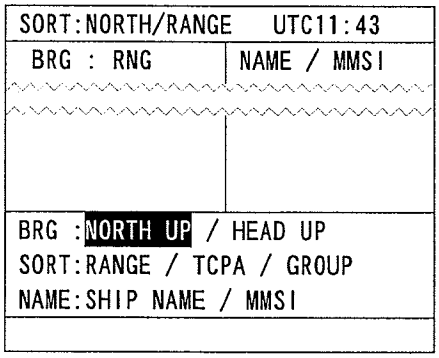
In addition, although there is a display of [PGUP] and [PGDN] with the left figure.

[PGUP] and [PGDN] can be displayed only when there are more than 2 pages.

Pressing CLR key or selecting [EXIT] moves the cursor back to the position that can display the Own Ship's Detail Information.

a) Setting of the LIST

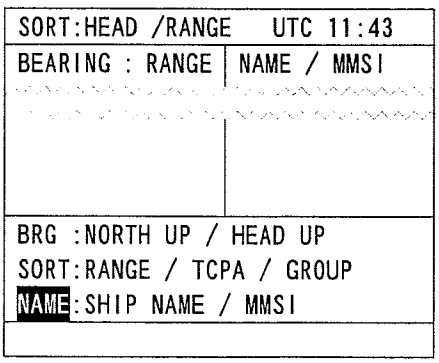
The order of a row and the setting of display in the Other Ships List can be set up when [LIST] is selected in the small window of the Other Ships List.



Press the Jog Dial or the Stick after selecting [LIST] in small window.

With the left figure, the BRG display setup of the first line in the screen is displayed with NORTH since the "NORTH UP" is selected.

The cursor moves to the SORT setup after the BRG setup and the NAME setup after the SORT setup.

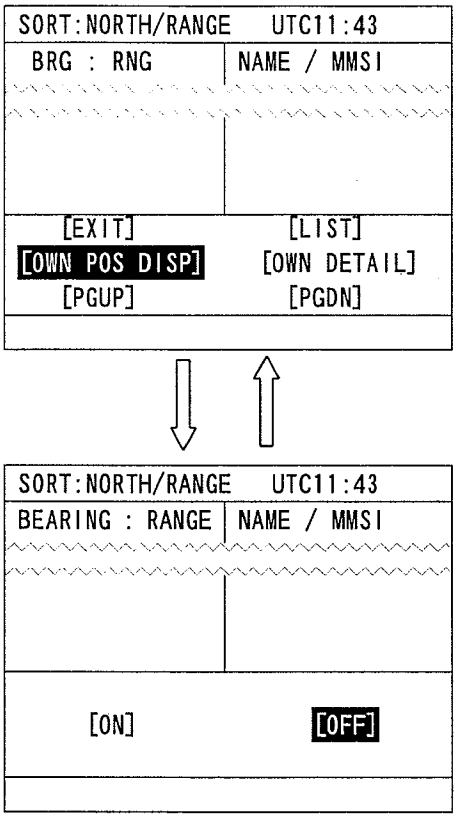


The Jog Dial and the Stick can select selections of BRG, SORT, and NAME.

Pressing CLR key quits the setting and moves the cursor to the same position as before.

b) Display setup of the Own Position Display

The displaying/un-displaying selection of the Own Position Display can be selected if the [OWN POS DISP] in the small window of the Other Ships List menu is selected.



Press the Jog Dial or the Stick after selecting [OWN POS DISP] in the small window.

The initial setting is OFF.

The Jog Dial and Stick can select the ON/OFF selection.

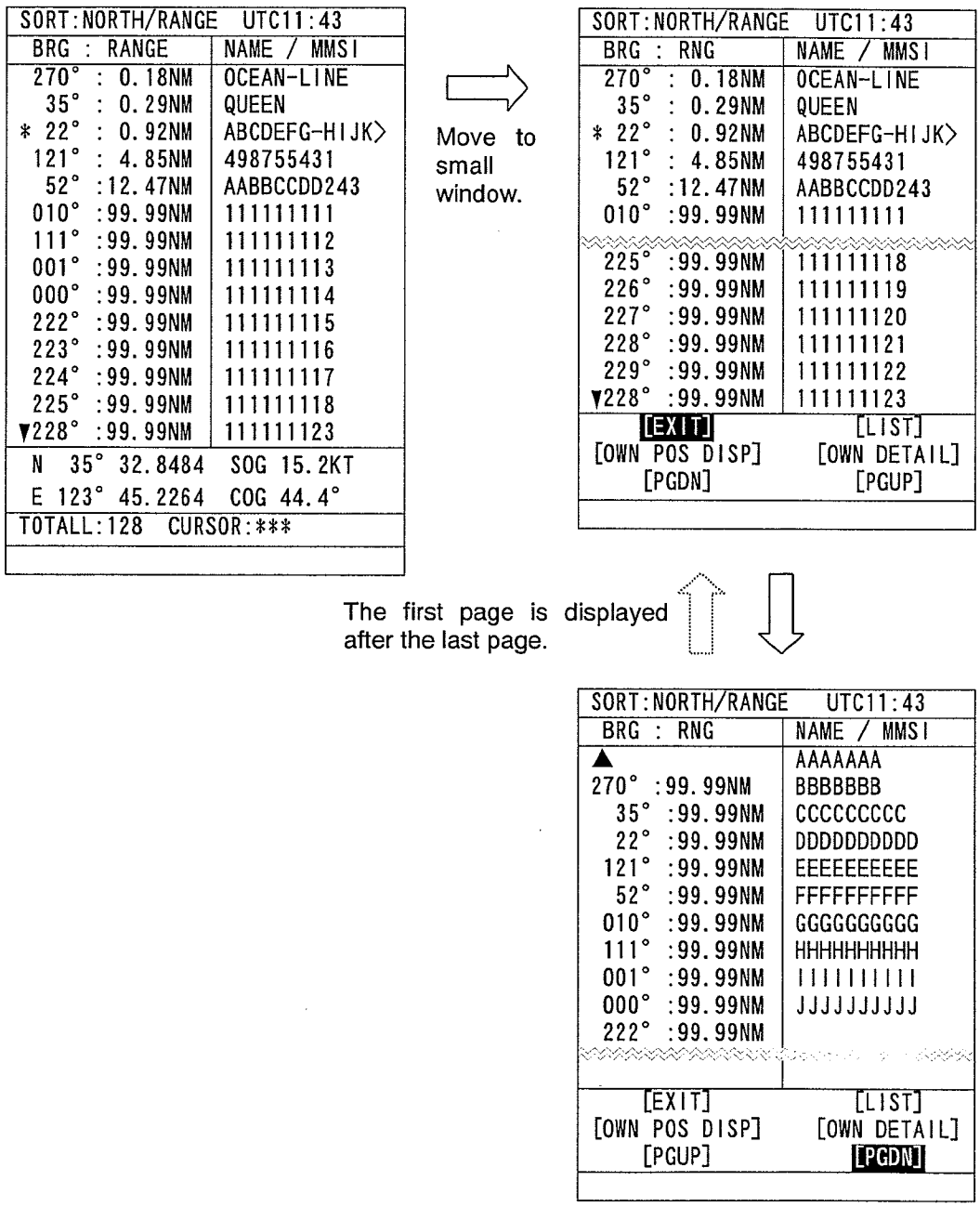
The setup can be saved if the Jog Dial or Stick is pressed, and the cursor is moved to same position as before.

The setup can be quitted if CLR key is pressed, and the cursor is moved to same position as before.

c) Page Scroll

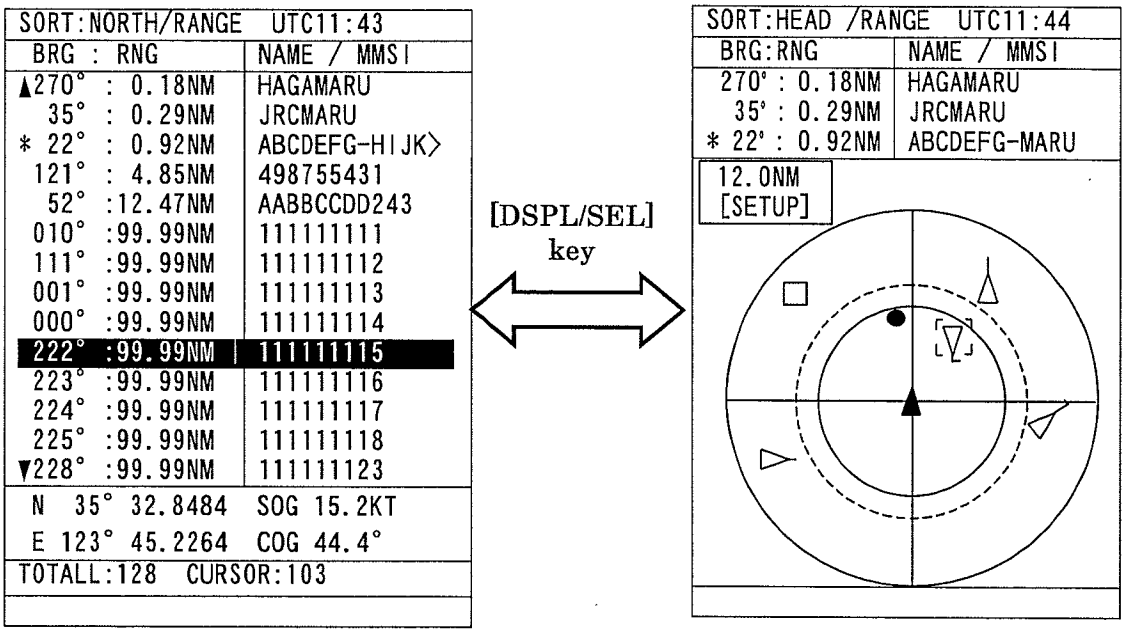
- '▼' is displayed on the bottom of screen if there are more ships than 16 ships (14 ships when the Own Position Display is displayed).
- The cursor scrolls into the small window if the cursor is moved upward from first line. (See the next item about small window)
- [PGDN] and [PGUP] appears as following figure when the Other Ships List displays more than 2 pages. ([PGDN] and [PGUP] don't appear if it is only one page.)
- Selecting [PGDN] displays the next page of the Other Ships List. Each next pages are displayed every time [PGDN] is selected. The first page is displayed after the last page.

In addition, the cursor can get out from the small window for moving onto the page



5.2.1.5 Graphic Display

Pressing [DSPL/SEL] key switches alternately between text and graphic display. (See 5.4)



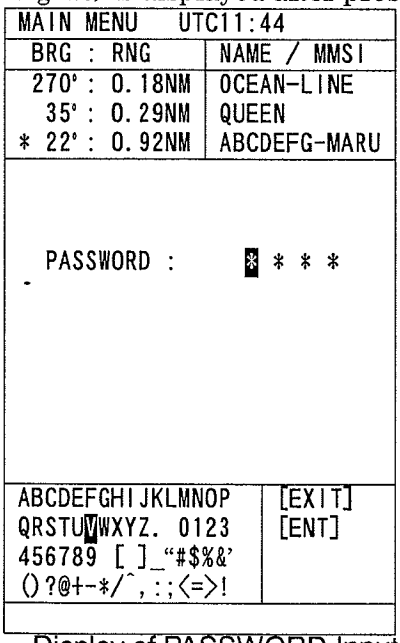
Text display(Other Ship list)

Graphic display

5.2.2 Turning OFF the power

warning : To turn off the power, the PASSWORD must be entered. The password preset before shipment is "0000". The administrator must manage PASSWORD.

Press OFF key for turning off the power at first. The Display of PASSWORD Input (following figure) is displayed after pressing OFF key.



Display of PASSWORD Input

Next page is displayed if the Jog Dial is pressed after the password of four figures is entered.
Hold pressing the PWR/DIM and OFF keys together for one second until the power is turned off.

warning : The setup contents or the received message may not be saved when the power supply is shut off without inputting the password.

5.2.3 Alarm

5.2.3.1 Guard Zone Alarm

When a ship enters into the area within the guard zone range, the alarm status "GUARD" appears on the display and an alarm goes off. Refer to "5.3.4 Setting Alarm.

SORT:NORTH/RANGE UTC11:43	
BRG : RNG	NAME / MMSI
▲270° : 0.18NM	OCEAN-LINE
35° : 0.29NM	QUEEN
* 22° : 0.92NM	ABCDEFG-HIJK>
121° : 4.85NM	498755431
52° :12.47NM	AABBCCDD243
010° :99.99NM	111111111
111° :99.99NM	111111112
001° :99.99NM	111111113
000° :99.99NM	111111114
222° :99.99NM	111111115
223° :99.99NM	111111116
224° :99.99NM	111111117
225° :99.99NM	111111118
226° :99.99NM	111111119
227° :99.99NM	111111120
▼228° :99.99NM	111111123
TOTALL:128 CURSOR:103	
GUARD	

The ship within the guard zone range is displayed inverted.
"G" is displayed between BRG and RANGE

Press CLR key.
The alarm turns off, and the list is sorted by range.

5.2.3.2 Lost Target Alarm

When the information on a ship within the lost target range is not received for 6 minutes or more, the alarm status display "LOST" appears and an alarm goes off. When not received for 6 minutes or more after the alarm, a ship eliminates from the list. To see the lost target range, refer to "4.3.4 Setting Alarm."

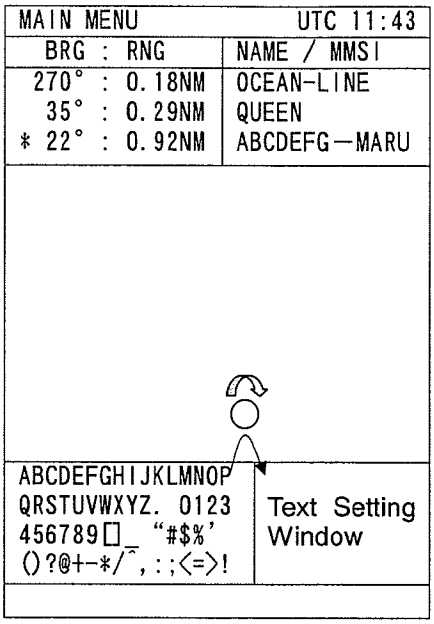
SORT:NORTH/RANGE UTC11:43	
BRG : RNG	NAME / MMSI
▲270° : 0.18NM	OCEAN-LINE
35° : 0.29NM	QUEEN
* 22° : 0.92NM	ABCDEFG-HIJK>
121° : 4.85NM	498755431
52° :12.47NM	AABBCCDD243
010° :99.99NM	111111111
111° :99.99NM	111111112
001° :99.99NM	111111113
000° :99.99NM	111111114
222° :99.99NM	111111115
223° :99.99NM	111111116
224° :99.99NM	111111117
225° :99.99NM	111111118
226° :99.99NM	111111119
227° :99.99NM	111111120
▼228° :99.99NM	111111123
TOTALL:128 CURSOR:103	
LOST	

Setting of Lost Target Alarm

The lost-target ship is displayed inverted.
"L" is displayed between BRG and RANGE.

Press CLR key.
The alarm turns off and the list is sorted by range.

5.2.4 KEYBOARD DISPLAY AND INPUT METHOD



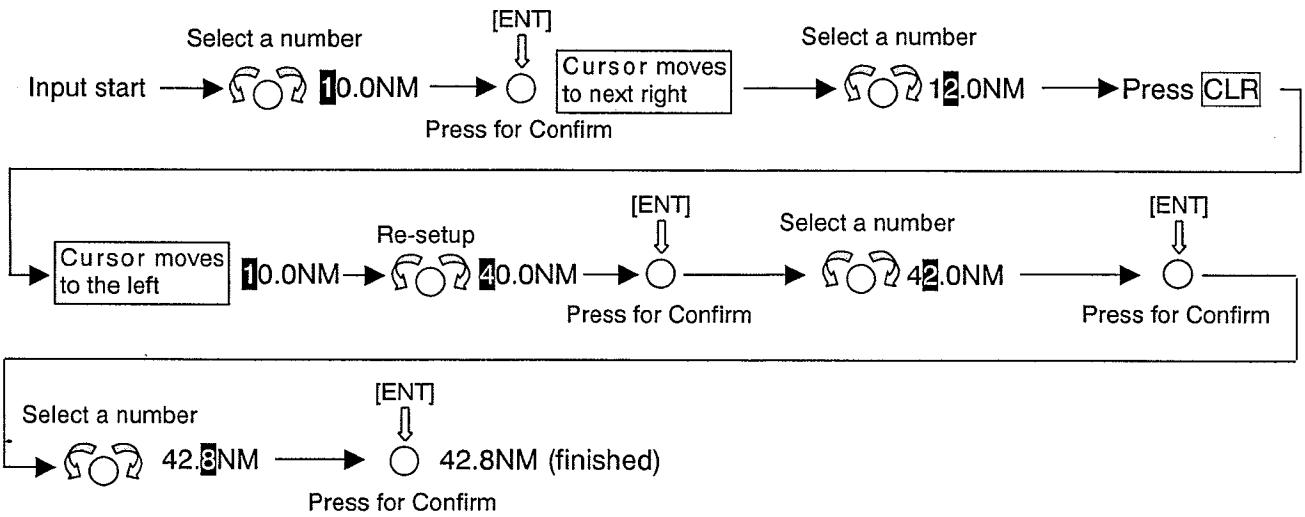
When input operation begins, the cursor is on "A" in the keyboard Area at the bottom left of the screen.

The cursor jumps into the Text Setting Window if the Jog Dial is rotated clockwise when the cursor is on "!" in the keyboard area.

The cursor jumps back onto "!" in the Keyboard area if the Jog Dial is rotated counter clockwise when the cursor is on the top-row in the Text Setting Window.

5.2.5 NUMERICAL INPUT

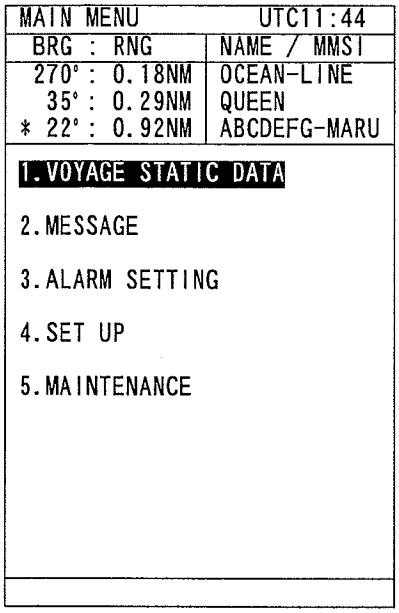
The method for entering numbers is mentioned below.



The numbers are always entered from left to right.
When CLR key is pushed, the input position (Cursor) moves back to the left.

5.3 MAIN MENU

Main Menu displays menu items for making changes/confirmations of setting, and creating / confirming messages.
Main Menu is reachable from any screens by pressing MENU key.



Main Menu

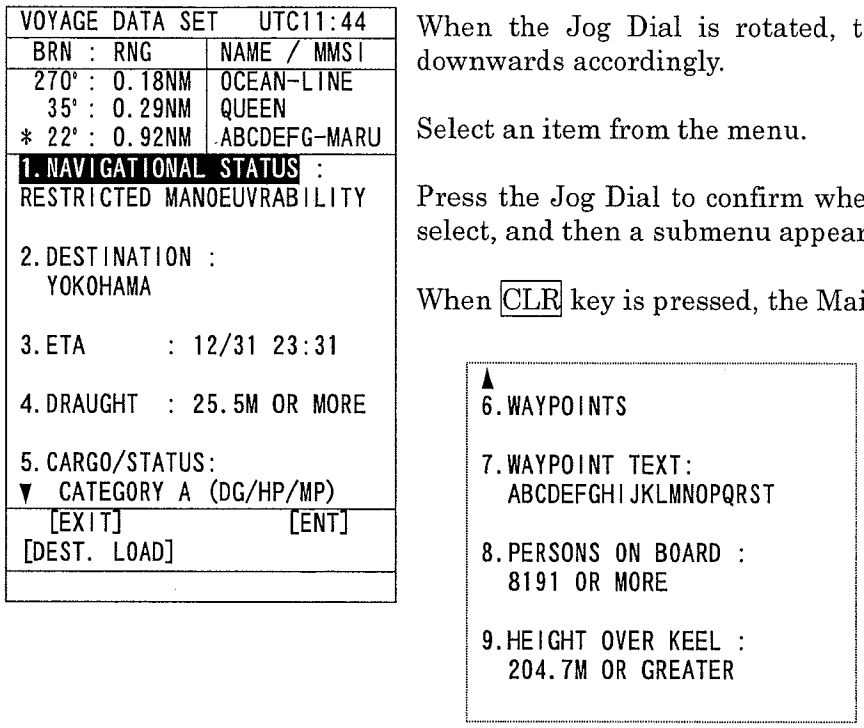
Rotate the Jog Dial for moving the cursor over the menu.
When the Jog Dial is pressed, the selected menu is displayed.

The outlines of Menus are below:

1. VOYAGE STATIC DATA SETTING···displays a menu for setting voyage information (See 5.3.1)
2. MESSAGE···displays a menu for sending/receiving messages (See 5.3.2).
3. ALARM SETTING···displays a menu for setting alarms (See 5.3.3).
4. SET UP···displays a menu for setting the device (See 5.3.4).
5. MAINTENANCE···displays a menu for setting the display of device conditions (See 5.3.5).

5.3.1 VOYAGE DATA SETTING

When **1. VOYAGE STATIC DATA SETTING** is selected, a menu for setting voyage data appears



Voyage Data Setting Menu

When the Jog Dial is rotated, the cursor moves upwards or downwards accordingly.

Select an item from the menu.

Press the Jog Dial to confirm when the cursor is on the item to select, and then a submenu appears.

When CLR key is pressed, the Main Menu appears.

The outlines of menu items are:

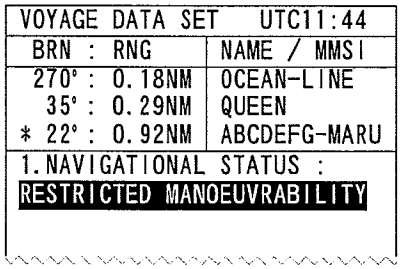
1. NAVIGATIONAL STATUS・・・select navigational status. (See 5.3.1.1)
2. DESTINATION・・・input information of the destination. (See 5.3.1.2)
3. ETA・・・input ETA(expected time for arrival). (See 5.3.1.3)
4. DRAUGHT・・・input draught value.(See 5.3.1.4)
5. CARGO/STATUS・・・select cargo/status.(See 5.3.1.5)
6. WAYPOINTS・・・set waypoints (max 14 points)(See 5.3.1.6)
7. WAYPOINTS TEXT・・・input waypoints name.(See 5.3.1.7)
8. PERSONS ON-BOARD・・・input a number of persons on-board.(See 5.3.1.8)
9. HEIGHT OVER KEEL・・・input value of the height over keel(See 5.3.1.9)

5.3.1.1 NAVIGATIONAL STATUS

When 1.NAVIGATIONAL STATUS is selected, the navigation status is ready to be selected.

When the Jog Dial is pressed on 1.NAVIGATIONAL STATUS, the cursor is moved down to the second line.
On the line, the displayed item changes as the Jog Dial is rotated.
Therefore rotate the Jog Dial until the item to select is displayed.
Press the Jog Dial to confirm when the cursor is on the item.
The cursor moves to next item (2. DESTINATION) after the selection was made.

When CLR key is pressed, the input procedure is canceled and the Voyage Data Setting Menu appears.



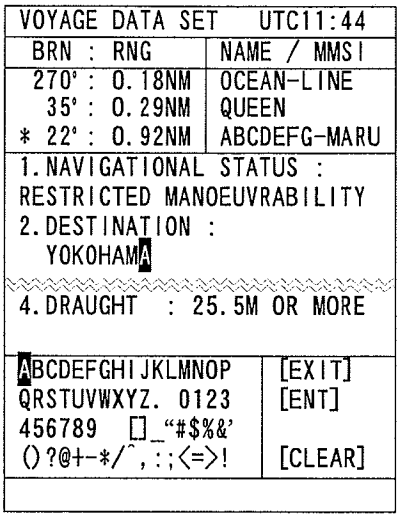
Navigational Status

The Navigational Status will be selected from the list below:

UNDER WAY USING ENGINE
AT ANCHOR
NOT UNDER COMMAND
RESTRICTED MANOEUVRABILITY
CONSTRAINED BY HER DRAUGHT
MOORED
AGROUND
ENGAGED IN FISHING
UNDER WAY SAILING
RESERVED FOR HSC
RESERVED FOR WIG
NOT DEFINED

5.3.1.2 DESTINATIONS ENTRY

When 2.DESTINATION is selected, the name of the destination is ready to be entered. The name can be entered with the keyboard on the bottom left of the screen.
See"5.1.1 KEYBOARD DISPLAY AND INPUT METHOD" for the operation of the keyboard.



The name of the destination

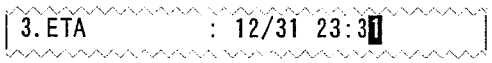
The function of the keyboard setting window is as below:

- Up to 20 characters can be entered for naming destination.
- If [EXIT] on the bottom right of the screen is selected to confirm, the entered contents will be canceled and the cursor returns to 2.DESITINATION. (The keyboard display disappears)
- When [ENT] is selected, the entered contents are applied(The keyboard display disappears). The cursor moves to the next item (3. ETA)
- If [CLEAR] is selected, the entered contents are canceled and the cursor will return to the top of the inputs.

5.3.1.3 ESTIMATED TIME OF ARRIVAL (ETA) ENTRY

When 3. ETA is selected, ETA (Expected Time of Arrival) is ready to be entered.
Enter ETA in the order of Month-Day-Hour-Minute.

See 5.1.2. the methodology of the numerical input
'/' will be inserted automatically.



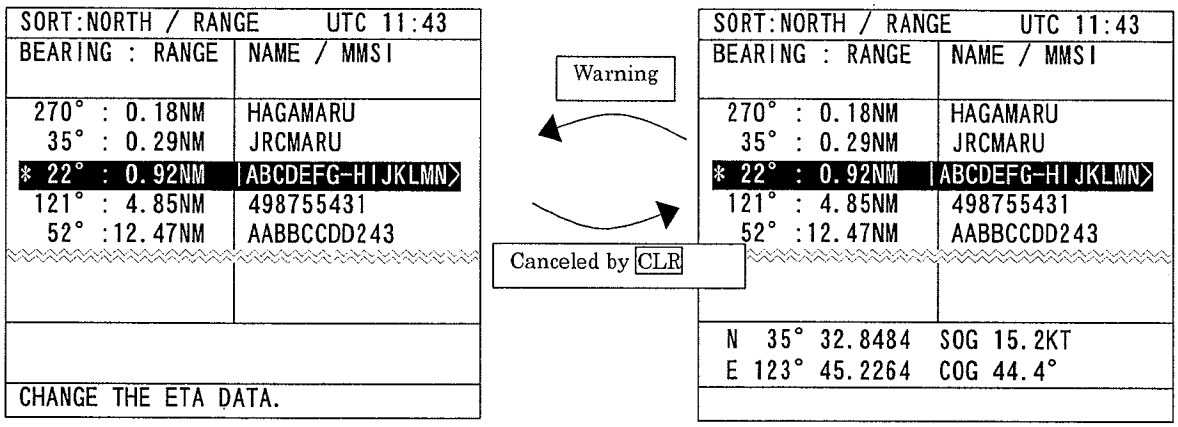
ETA (Expected Time of Arrival)

a) ETA SETTING METHOD

Enter Expected Time of Arrival (date and UTC) with jog dial.
Enter ETA in the order of "Year-Month-Day-Hour-Minute."
After MINUTE is entered, the cursor moves to the next item (4.DRAUGHT).

b) ETA VALUE AND WARNINGS

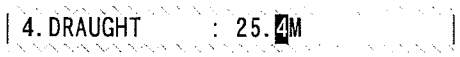
Although a date that is prior to the actual date cannot be set in principle, it is acceptable on the condition of performing this setting when UTC data is not obtainable.
But if UTC is obtained after such setting and current value is older than UTC, a warning display below will appear and a buzzer will be rung.
The warning screen and buzzer can be canceled by CLR button. Then the input value returns to a default value.



Warnings on SORT: NORT/RANGE

5.3.1.4 DRAUGHT VALUE ENTRY

When 4. DRAUGHT in the Voyage Data Setting Menu (5.3.1) is selected, the draught value is ready to be entered. Enter the value according to the procedure of 『5.1.2 Numerical Input.』 Up to 25.5 can be entered as the draught value.

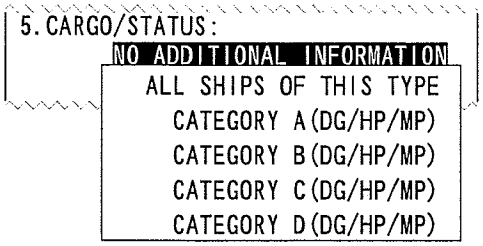


Draught Value Entry

After pressing the Jog Dial to confirm, the cursor moves to the next item (5.CARGO/STATUS).

5.3.1.5 CARGO TYPE SELECTION

When 5.CARGO/STATUS is selected, Cargo Type is ready to be selected.
After 5.CARGO/STATUS is selected, the cursor moves to the second line.
Rotate the Jog Dial until the menu item to select.
If the Jog Dial is pressed, the selection is made and the cursor moves to the next item (6. Waypoint)



CARGO TYPE SELECTION

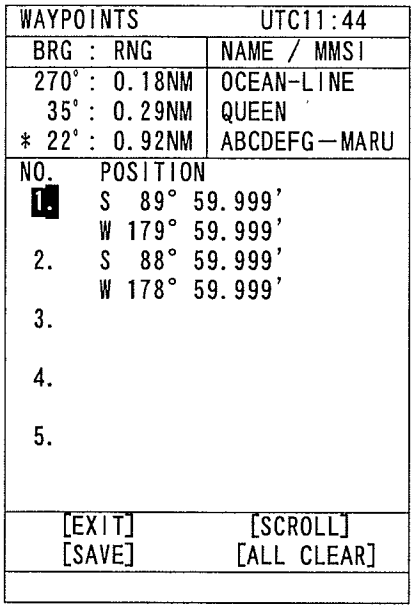
The cargo type selection item changes by the setting of the Ship Type as follows.
Some CARGO TYPE cannot be selected depends on the type of the ship
In such cases, "NONE" is displayed.

Ship Type	CARGO TYPE
• WIG • HIGH SPEED CRAFT	CATEGORY A (DG/HP/MP)
	CATEGORY B (DG/HP/MP)
	CATEGORY C (DG/HP/MP)
	CATEGORY D (DG/HP/MP)
	NO ADDITIONAL INFORMATION
	ALL SHIPS PF THIS TYPE

• PASSENGER SHIPS • CARGO SHIPS • TANKER • OTHER TYPE OF SHIP	CATEGORY A (DG/HP/MP)
	CATEGORY B (DG/HP/MP)
	CATEGORY C (DG/HP/MP)
	CATEGORY D (DG/HP/MP)
	NOT UNDER COMMAND
	RESTRICTED BY MANOEUVRE
	CONSTRAINED BY DRAUGHT
	NO ADDITIONAL INFORMATION
	ALL SHIPS PF THIS TYPE

5.3.1.6 WAYPOINTS SETTINGS

When 6. WAYPOINTS is selected, the Waypoints Setting appears. Up to 14 Waypoints can be set up.



Waypoints Setting

Rotate the jog dial to move the cursor for selecting the number of the voyage plan.

If the Jog Dial is pressed, the selected position is ready to be entered.

If CLR is pressed, the process is canceled and the Voyage Data Setting menu (5.3.1) appears.

After completing the setting for No.5 above, the cursor moves into the small window on the bottom of the screen.

- When [EXIT] is selected, the entered contents are canceled and "VOYAGE DATA SETTING" appears.
- When [SCROLL] is selected, the process continues to enter another 5 items (positions). For example, if you press [SCROLL] after you filled No.1-5, the cursor moves to No.6 and you can set up No.6 to No.10. (For setting up the next 6 items, you must complete entering the last item of the screen. This means you have to complete No.6 for going to the next screen and entering No.6-10. If you are still between No.1 and No.5, you cannot go to the next screen.)
- When [SAVE] is selected, the process goes back to "VOYAGE DATA SETTING" after saving the entered data.
- When [ALL CLEAR] is selected, the entered data is lost and the cursor returns to No.1 after the screen turns blank .

a) WAYPOINTS SETTING PROCEDURE

SETTINGS WAYPOINTS ITEMS

WAYPOINTS	UTC11:44
BRG : RNG	NAME / MMSI
270° : 0.18NM	OCEAN-LINE
35° : 0.29NM	QUEEN
* 22° : 0.92NM	ABCDEFG−MARU
NO. POSITION	
1. ° .	
° .	

Waypoints Setting

WAYPOINTS	UTC11:44
BRG : RNG	NAME / MMSI
270° : 0.18NM	OCEAN-LINE
35° : 0.29NM	QUEEN
* 22° : 0.92NM	ABCDEFG−MARU
NO. POSITION	
1. N 89° 59.999'	
E 179° 59.999'	
2.	

Displaying Next Item

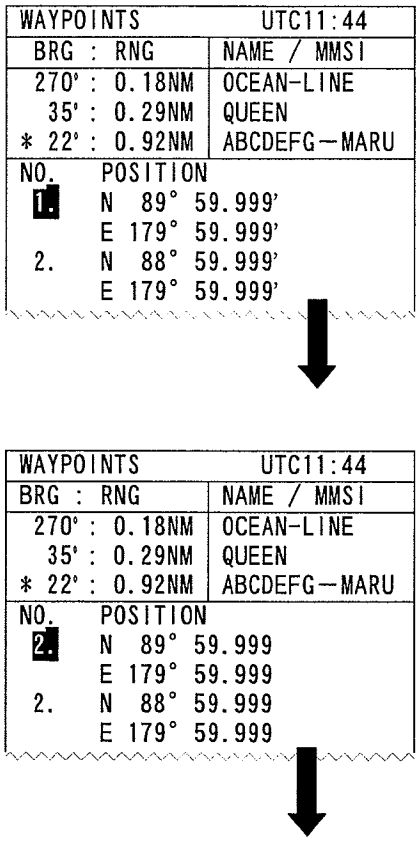
WAYPOINTS CONTENTS SETTINGS

1. Rotate the Jog Dial to select the number of the sailing plan.
2. Bring the cursor on "No." of the selected Waypoint and click the Jog Dial once. Then cursor moves to the latitude input.
3. Press the jog dial once again, and the cursor moves to "N".
4. For setting up latitude, rotate the Jog Dial for selecting N or S, and confirm the selection by pressing the Jog Dial.
5. Set up degree/minute/second of the latitude.
   The ranges of each category are:
   Degree: 0~89° , Minute: 0~60, Second: 0~59.9999
   Therefore, the ranges for latitude and longitude are:
   Latitude: N/S 0~89° 59.9999
   Longitude: E/W 0~89° 59.9999
6. The entry for latitude has finished, the cursor jumps to longitude entry. Following the entry method for latitude, set up longitude also.
7. When the entry for longitude has been completed, the cursor jumps to the next NO. So set the waypoint up same as above.

If CLR key is pressed, the procedure will be canceled and "Sailing Information Setting Menu" appears.

Addition of Waypoints

For adding new items between existing items, follow the procedure below:

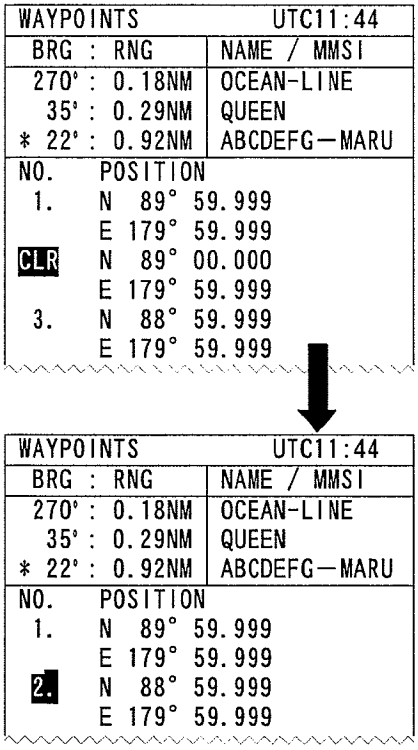


Addition of Waypoints

a. If you want to add a setting between No.1 and No.2, then put a cursor on No.1.
b. Press the Jog Dial one time for making 1. blink.
c. Rotate the Jog Dial clockwise until "2" appears. Then press the Jog Dial.
d. As to the items after NO.2, the numbers advance by one (e.g. No.2→No.3, No.3→No.4, etc.), and No.2 that is not set up yet is newly created.
e. Set up the newly created No.2 following (1) WAYPOINTS CONTENTS SETTINGS above.

Deletion of Waypoints

For deleting existing waypoints, follow the deletion procedure below. But please **do not** use [ALL CLEAR] on the bottom of the screen for deleting Waypoints.



Deletion of Waypoints

a. Move the cursor on the number of Waypoint item that you want to delete, and press the Jog Dial once.
b. While No. is blinking , rotate the Dial counter clockwise. Then the display of CLR appears.
c. Set the cursor on CLR and press the Jog Dial again.
d. Make sure the selected item was deleted and the numbers of the items following the deleted one decrease by one.

5.3.1.7. GIVING NAMES TO WAYPOINTS

The Waypoints for each point can be given the name with 20 characters.
The naming method is same as the one mentioned in "5.3.1.2 Destinations Entry "

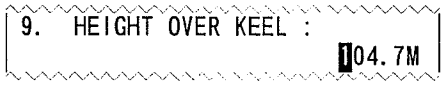
5.3.1.8 PERSONS ON BOARD ENTRY

When 8. PERSONS ON BOARD is selected, the number of persons on board can be entered. Enter the number with the Jog Dial. A maximum number of the persons on board that can be entered are 8191.

Press the Jog Dial to confirm. And the cursor moves back to 8. PERSONS ON BOARD

5.3.1.9. HEIGHT OVER KEEL ENTRY

When 9. HEIGHT OVER KEEL is selected, the height over keel is ready to be entered. Enter the height over keel with the Jog Dial. Maximum 204.7 meters can be entered.

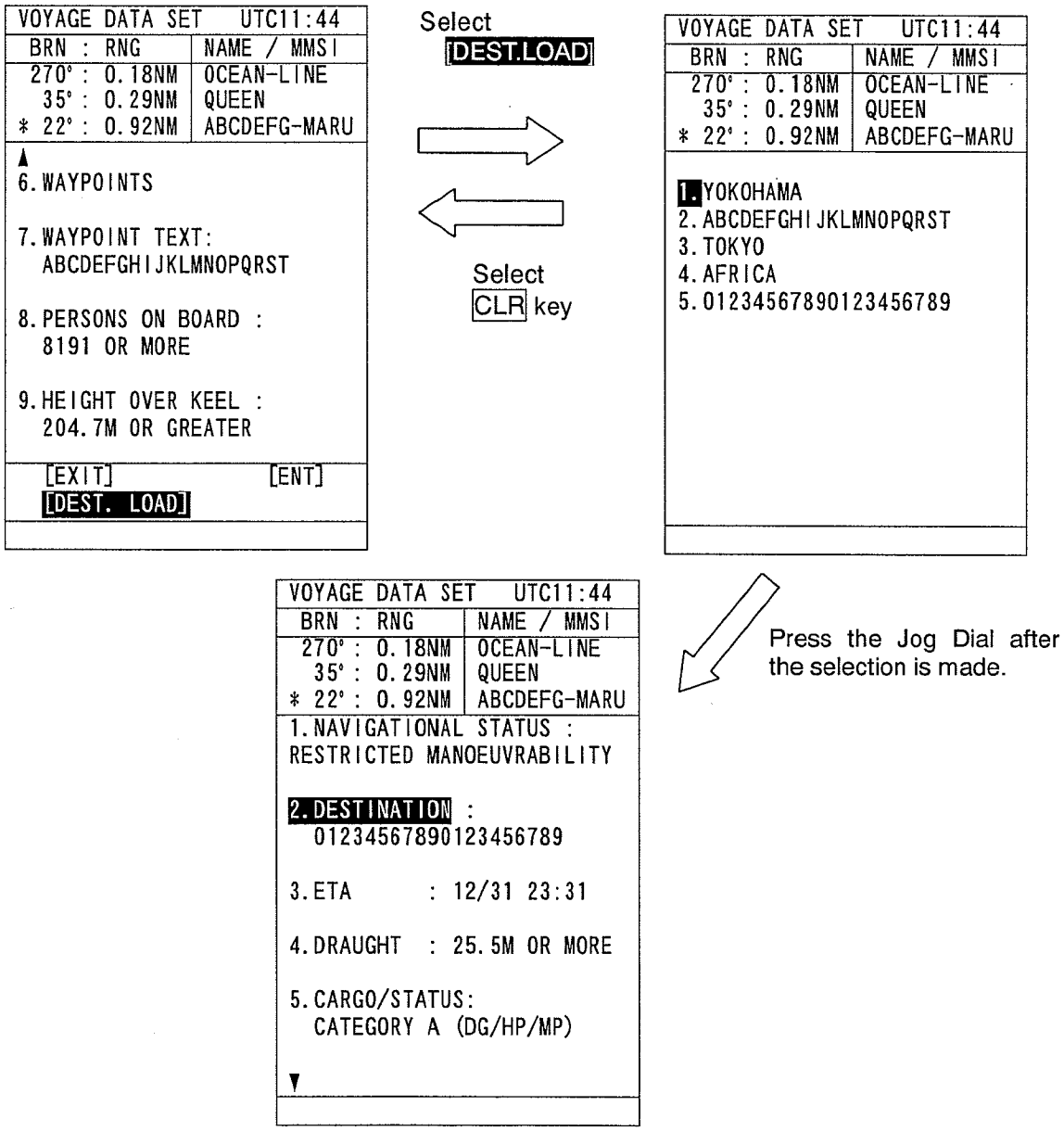


Press the Jog Dial to confirm. Then the cursor returns to 9.HEIGHT OVER KEEL.

If CLR is pressed, the entry procedure is canceled and the Voyage Data Setting appears (5.3.1).

Setting of [DEST. LOAD] in the small window

When the [DEST. LOAD] in the small window is selected, 5 entered destinations (the present destination and 4 destinations in the past) which can be displayed.



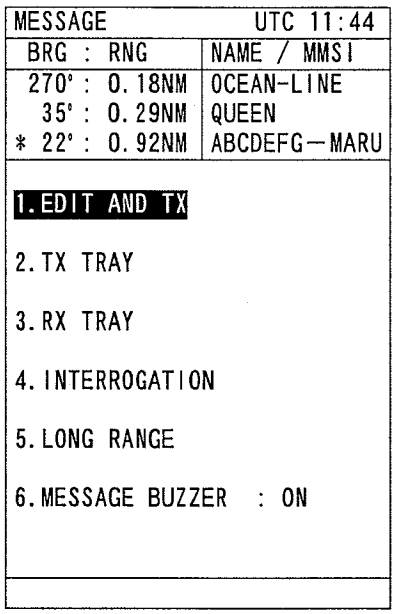
When the destination is selected from 5 entered destinations on the screen, the destination can be displayed under the 2.DESTINATION and the Voyage Data Setting menu can be displayed.
If CLR is pressed, the contents are canceled and Voyage Data Setting menu is displayed.
In the screen that displays 5 destinations, the content is displayed as the newest destination when the destination was selected. For example, the following figure can be displayed after the 3.TOKYO was selected on above.
In the above figure, 3.TOKYO is displayed as follows after selection as the example.

(Example)

1. YOKOHAMA	1. TOKYO
2. ABCDEFGHIJKLMNOPQRST	2. YOKOHAMA
3. TOKYO	3. ABCDEFGHIJKLMNOPQRST
4. AFRICA	4. TOKYO
5. 01234567890123456789	5. AFRICA

5.3.2 MESSAGE ENTRY

When 2. MESSAGE is selected, MESSAGE MENU (a menu for sending/receiving messages) appears.



Message Menu

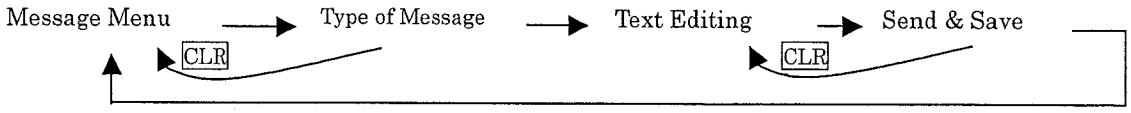
Rotate the Jog Dial to move the cursor for selecting the item from menu.
Press the Jog Dial to confirm on the selected item.
Then the corresponding sub-menu appears.

The outlines of each menu items are below:

1. EDIT AND TX ···displays a menu for message editing and transmission. (See. 5.3.2.1)
2. TX TRAY ···displays a menu for TX (transmission) tray. (See. 5.3.2.2)
3. RX TRAY ···displays a menu for RX (reception) tray. (See. 5.3.2.3)
4. INTERROGATION ···displays a menu for interrogation. (See. 5.3.2.4)
5. LONG RANGE ···displays a menu for long-rang messages. This menu only works when a long-range communication device is connected. (See. 5.3.2.5)
6. MESSAGE BUZZER ···Sets the buzzer on/off when a message is received. (See. 5.3.2.6)

5.3.2.1 EDITING/SENDING MESSAGES

When **1.EDIT AND TX** is selected, the screens transit as the chart below shows.



Edit: after defining the Type of Message, edit it in 『EDIT AND TX』 screen.
Send: after editing a message, make a selection if send it or save it. After the selected procedure completed, return to "MESSAGE MENU"
Return: If CLR is pressed, return to the prior screen.

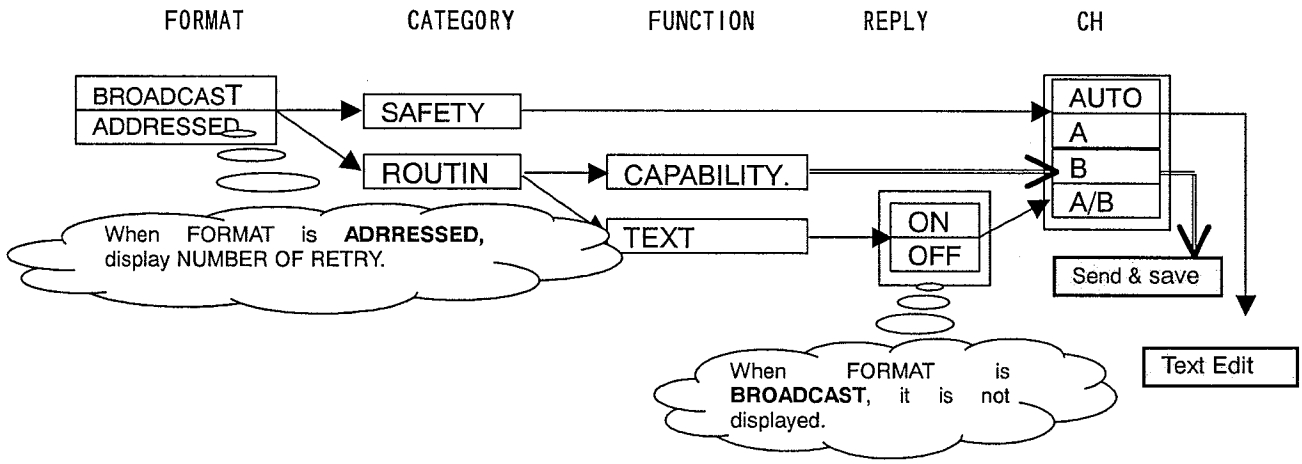
a) MESSAGE TYPE

For defining a type of each message, select items for each category that consists of the message.

Message Types

Categories	Items	SUPPLEMENT
FORMAT	BROADCAST	Send to all ships
	MMSI	Send to individual ships
CATEGORY	SAFETY	Message relating to safety
	ROUTINE	Messages relating to daily tasks
FUNCTION (Function Identifier)	TEXT	Sending text message
	CAPABILITY INTERROGATE	Sending interrogation for items which can be answered
REPLY	ON	Requirement of rely for sent messages
	OFF	No reply
CH	AUTO	Select channel automatically and send messages
	A	Send on Ach
	B	Send on Bch
	A/B	Send on both (A&B) ch

Following the illustration below, select one "item" for each "category." And combine them and finally define the type of message.



b) MESSAGE TYPE SETTINGS - setting example

Selection and Confirmation

EDIT AND TX	UTC11:44
BRG : RNG	NAME / MMSI
270° : 0.18NM	OCEAN-LINE
35° : 0.29NM	QUEEN
* 22° : 0.92NM	ABCDEFG—MARU
1.FORMAT : ADDRESSED	
MMSI : 987654322	
2.CATEGORY : ROUTINE	
3.FUNCTION :	
TEXT	
4.REPLY : ON	
5.CH : A/B	
6.NUMBER OF RETRY : 3	
	[EXIT]
	[SAVE]
	[EDIT]
	[ALLCLR]

1. From MESSAGE MENU (5.3.2), select **1. EDIT AND TX** and press the Jog Dial.
2. EDIT AND TX opens. When "EDIT AND TX" opens, the cursor is on **1.**
3. Rotate the Jog Dial, then the cursor moves up and down over the numbers (1, 2, 3, 4...) and the items at the bottom ([EXIT], [SAVE], [EDIT], [ALL CLEAR]).
4. Make a selection and press the Jog Dial.
5. If a confirmation is made while the cursor is at 1-6, the cursor jumps to the right side of ":" of each items. (e.g. If the Jog Dial is pressed when the cursor is on **5.** , the cursor moves to "A/B." Then "A/B" turns into" **A/B** ")
6. By rotating Jog Dial, view the selections and press the Jog Dial when you want to confirm the selection being displayed on the screen. (In this example, the selection varies AUTO → A → B → A/B → AUTO...)

(1) FORMAT

Setting up directions of messages.

1. "ADDRESSED" or "BROADCAST" can be selected by rotating the Jog Dial.
2. Select "ADDRESSED" for sending messages to individuals and confirm it by pressing the Jog Dial.
3. Select "BROADCAST" for sending messages to all ships and confirm it by pressing the Jog Dial
4. Only when "ADDRESSED" is selected, enter MMSI. Initially "000000000"is displayed so select 9 digits with the Jog Dial and confirm it by pressing the Dial.

(2) CATEGORY
Select category of message.

1. By rotating the Jog Dial, select "SAFETY" OR "ROUTINE."
2. Select "SAFETY" for sending a message about safety, and select "ROUTINE" for sending an message on ordinary tasks.
3. After making a selection, press the Jog Dial for confirmation.

(3) FUNCITON
Select the function of messages:
1. "TEXT" and" CAPABILITY INTERROGATE" are selectable by rotating the Jog Dial.
2. If you send a text message, select "TEXT", and if you send an interrogation select "CAPABILITY INTERROGATE".

(4) REPLY
Select the response to messages is requested or not requested:
1. "ON" and "OFF" are selectable by rotating the Jog Dial.
2. For messages which are sent personally, if response to reception required, then select "ON",if not "OFF"

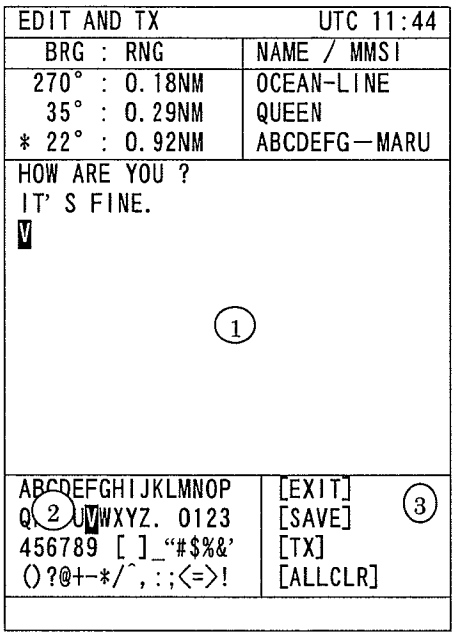
(5) CH (Channel)
Select the transmitting channel:
1. "AUTO", "A", "B" and "A/B" are selectable by rotating the Jog Dial.
2. If the transmitting channel is selected automatically, select "AUTO", use channel A then select "A", use channel B then select "B", and use channel A and B then select "A/B".

(6) NUMBER OF ENTRY
See 『5.3.2.2. Retry Setting』 for "NUMBER OF ENTRY".

c) TEXT EDIT SCREEN

Select [EDIT] on the bottom of the screen and display TEXT EDIT SCREEN for transmitting a text message.

Enter texts, according to the procedure of "5.1.1 KEYBOARD DISPLAY AND INPUT METHOD".



Text Edit Screen

TEXT EDIT SCREEN consists of three sub screens :

① Text Screen

② Keyboard Screen (See 5.1.1)

③ Send and Save Screen (See "d)")

1. Rotate the Jog Dial, then the cursor in Keyboard Display Screen (②) moves accordingly.
2. Select a character in ② with the cursor and press the Jog Dial, then the selected character appears on ①.
3. While entering characters with the keyboard, if CLR is pressed, one character under the cursor disappears.
4. Select 『→』 in ② and press the Jog Dial, then the cursor jumps to ③.
5. While the cursor is on ③, if CLR is pressed or [EXIT] is selected and pressed, the cursor returns to ②.
6. If [SAVE] is selected, the message is saved and the process goes back to Message Menu.
7. If [TX] is selected, the message is saved, the sentence is sent, and the process returns to Message Menu.
8. If [ALL CLR] is selected, all the data in ① is canceled and the cursor jumps to ②.

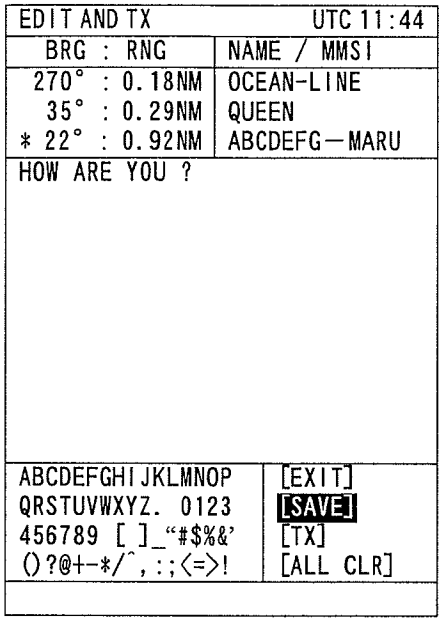
And the maximum numbers of characters to be entered for each condition are below.

Maximum Number of characters to be entered

FORMAT	CATEGORY	CHARACTERS
ADDRESSED	SAFETY	156
	ROUTINE	151
BROADCAST	SAFETY	161
	ROUTINE	161

d) SENDING/SAVING MESSAGES

In case, "FUNCTION" in Message Type Screen (see a), b) Message Type) is TEXT, for sending or saving messages, follow the instruction below:



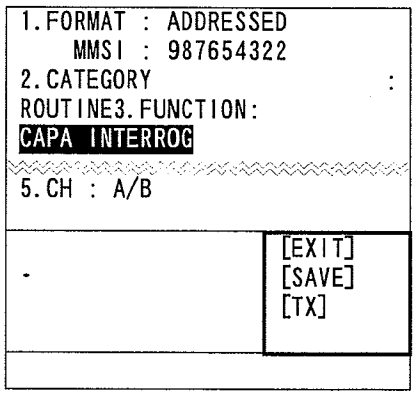
SENDING/SAVING MESSAGES

1. Select [SAVE], and save the sent message. Then go to Message Menu Screen. (The data is displayed at TX TRAY.)

2. Select [TX], then save the sent message, sent sentences and go to Message Menu Screen. (The data is displayed at TX TRAY.)

If [EXIT] is selected, the MESSAGE TYPE SETTINGS Screen appears.

Or in the case" Function" is CAPA INTERROG, sending/saving messages are done in the screen below.

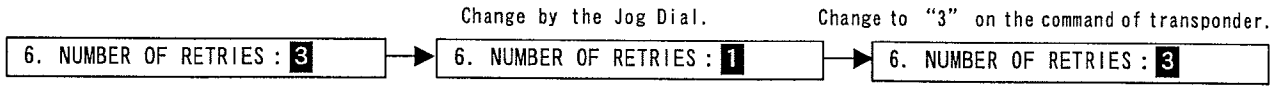


5.3.2.2 RETRY SETTINGS

When a message is sent with FORMAT is ADDRESSED, the sender is supposed to obtain a certification message of receiving from the receiver. When such message is not received because of some reasons, the sender retries to send the certification message. (= Retry)

Setting up Numbers of Retries

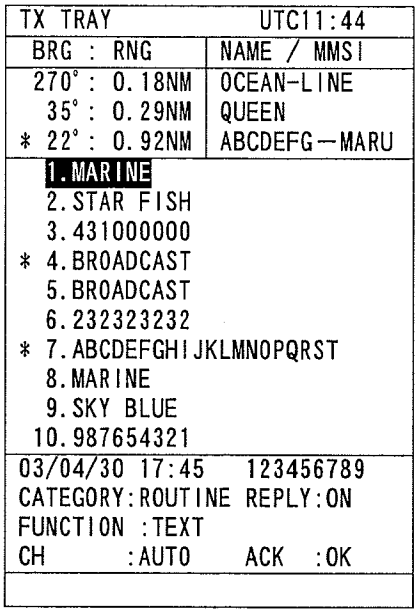
Numbers of retries are changeable. (0~3, default value is three.).



Retry Settings

5.3.2.3 TRANSMISSION (TX) TRAY (VIEWING SENT MESSAGES)

* stands for "not sent yet."



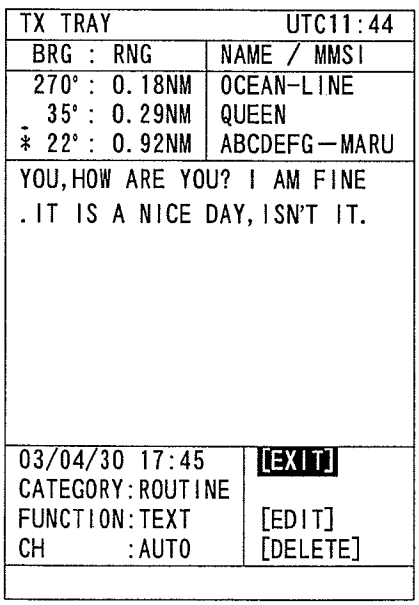
SENT MESSAGE REVIEW SCREEN

The menu of TX (Transmission) TRAY is displayed when **2. TX TRAY** is selected.

1. The information of the message under the cursor is provided in the box on the bottom of the screen.
   Date, Time
   TYPE of Message (9digits number/characters)
   ...9digits for MMSI or "BROADCAST" for CATEGORY
   FUNCTION
   CH
   ACK (see 4.)

2. ACK
   (1) When the message was sent individually (=not BROADCAST) and "REPLY ON":
   1) RECEIVED A REPLY→ 『ACK:OK』
   2) NOT RECEIVED A REPLY → 『ACK:NACK』
   (2) When the message was sent to all(=BROADCASTED),
   1) Successfully Transmitted→ 『TRANSMITTED』
   2) Transmission Failed → 『NG』
   (3) If "BROADCAST" is selected above, 『ACK:』 is not displayed.
   (4) When the message has *, it shows that the message has not been sent yet. 『ACK:』 is not displayed either then.

If CLR is pressed, return to Message Menu (5.3.2).



SENT MESSAGE CONFIRM SCREEN

With Jog Dial, select message and confirm it by pressing the Jog Dial. Then the content of the message can be confirmed.

1. Press CLR key or select [EXIT] with Jog Dial, return to the Message Menu.

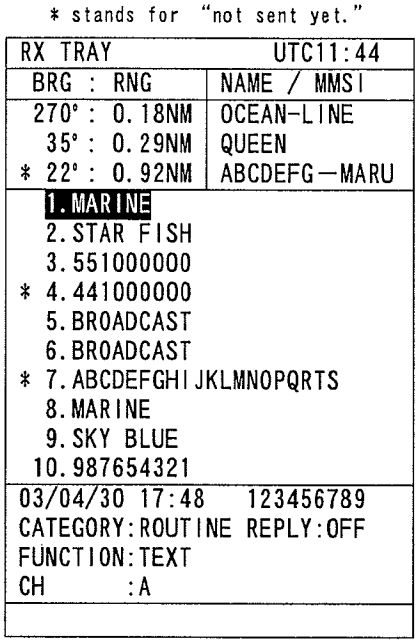
2. When [EDIT] is pressed, go to EDIT AND TX screen (5.3.2.1) for editing the message.

3. For deleting a message, press [DELETE], then the message will be deleted and the process returns to SENT MESSAGES REVIEW SCREEN.

5.3.2.4 RECEPTION (RX) TRAY (VIEWING RECEIVED MESSAGES)

The menu of RX (Reception) TRAY is displayed when **3. RX TRAY** is selected,.

RX tray stores received messages and edited messages for sent.

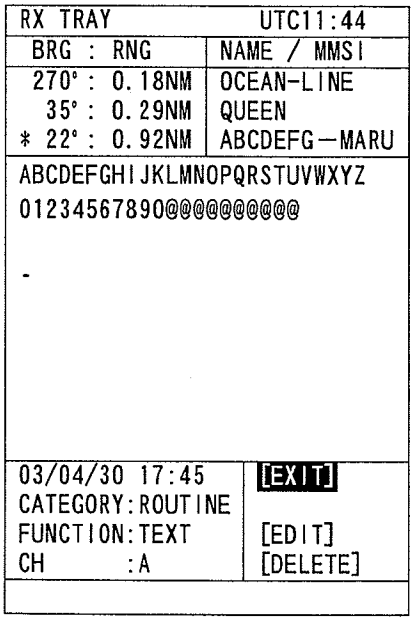


RECEIVED MESSAGES REVIEW SCREEN

1. As the Jog Dial is rotated, the cursor moves up and down over the messages.

2. The information of the message under the cursor is provided in the box on the bottom of the screen.
   Date, Time
   TYPE of Message (9digits number/characters)
   ...9digits for MMSI or "BROADCAST" for BROADCAST
   CATEGORY
   ACK

With Jog Dial, select message and confirm it by pressing the Jog Dial. Then the content of the message can be confirmed.



RECEIVED MESSAGE CONFIRM

1.Press CLR key or select [EXIT] with Jog Dial, return to the Message Menu..

2.When [EDIT] is pressed, go to EDIT AND TX screen (5.3.1.2) for editing the message.

3.For deleting a message, press [DELETE], then the message will be deleted and the process returns to RECEIVED MESSAGES REVIEW SCREEN.

4. When [EDIT] is selected go to EDIT AND TX screen in 5.3.1.2. Reply to BROADCAST is not accepted.

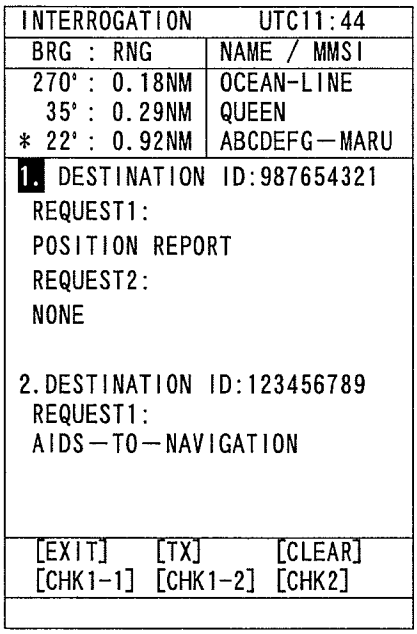
5.3.2.5 INTERROGATION

When 4.INTERROGATION is selected in Message Menu (5.3.2), the screen below is displayed.
Users can request information for destinations that MMSI is known.

a) INTERROGATION SETTINGS

In INTERROGATION screen, two destinations (DESTINETION 1 and DESTINETION 1) can be selected as interrogations simultaneously.

When the Jog Dial is rotated, the cursor moves between 1. and 2.
Press the Jog Dial, then the destination is confirmed.



INTERROGATION screen

(1) DESTINATION 1
For DESTINATION 1, two interrogations can be made in one time.
When DESTINATION 1 is selected and confirmed, then the first destination ID is ready to be entered. Then enter 9 digits with Jog Dial.
Press the Jog Dial and then the entry was confirmed and the cursor jumped to REQUEST1.
(See b) for how to select)

For entering REQUEST 1, rotate the Jog Dial for scrolling the contents.
Press the Jog Dial for confirming the entry. (See b) for how to select)

Set up the REQUEST 2 same as 1.

(2) DESTINATION 2
For DESTINATION 2, one interrogation can be made in one time.
Set up the DESTINATION and REQUEST, follow the same procedure for setting up DESTINATION 1.

DESTINATION 1 is selected and confirmed, and then the first destination ID is ready to be entered. Then enter 9 digits with Jog Dial.
Press the Jog Dial, and then the entry was confirmed and the cursor jumped to REQUEST1.
After confirming REQUEST by pressing the Jog Dial, then the cursor jumps to the lower box. (for the operation in the lower box, see c))

b) INTERROGATION REQUEST PATTERNS

The possible patterns of interrogation are below:

patterns of interrogations

Interrogation	Request1-1	Request1-2	Request2-1
POSITION REPORT (A)	○	○	○
SHIP STATIC AND VOYAGE (A)	○	○	○
SAR AIRCRAFT POS. REPORT	○	○	○
POSITION REPORT (B)	○	○	○
SHIP STATIC AND VOYAGE (B)	○	○	○
AIDS-TO-NAVIGATION REPORT	○	○	○
BASE STATION REPORT	○	○	○
DATA LINK MANAGEMENT MSG	○	○	○
CHANNEL MANAGEMENT	○	○	○
NONE	×	○	○

c) ITEMS IN THE BOTTOM BOX

In the Interrogation Screen (5.3.2.5), when one of the items in the bottom of the box, the system operates as mentioned below.

[EXIT] ····· Cancel the contents and return to Message Manu.
[TX] ····· Transmit to 『DESTINATION1』 (and 『DESTINATION2』)
[CLEAR] ·····Cancel the contents and move the cursor on 『1.DESTINATION ID』
[CHECK1-1],[1-2],[2-1] ·····Return respond messages correspond to each item.

If there is no response to interrogations, this means respond message correspond to the interrogation doesn't exist. So when such selection is made in Interrogation Screen, a short warning buzzer rings.

Screens don't change the.

Additionally, basically the last line (box) of Interrogation screen is for displaying received messages or alarms, but after an interrogation request is made, it displays if response for the request was made or not.

Ex. Responded · · · · · · · · ACK : OK
Not responded · · · · · · ACK : NONE

Responded for both requests

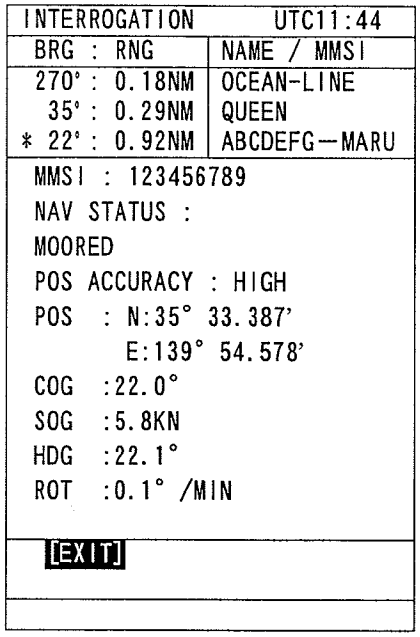
SORT:NORTH/RANGE	UTC11:43
BRG : RNG	NAME / MMSI
270° : 0.18NM	OCEAN-LINE
35° : 0.29NM	QUEEN
* 22° : 0.92NM	ABCDEFG-HIJ>
121° : 4.85NM	498755431
52° :12.47NM	AABBCCDD243
N 35° 32.8484	SOG 15.2KT
E 123° 45.2264	COG 44.4°
ACK1 : OK	ACK2 : OK

Only REQUEST1 was responded.

SORT:NORTH/RANGE	UTC11:43
BRG : RNG	NAME / MMSI
270° : 0.18NM	OCEAN-LINE
35° : 0.29NM	QUEEN
* 22° : 0.92NM	ABCDEFG-HIJ>
121° : 4.85NM	498755431
52° :12.47NM	AABBCCDD243
N 35° 32.8484	SOG 15.2KT
E 123° 45.2264	COG 44.4°
ACK1 : OK	ACK2 : NONE

Examples of Display of having responses

d) VIEWING RESPONSED MESSAGES



At Interrogation screen(5.3.2.5), when [CHECKo-o] ([CHECK1-1], [1-2], or [2-1]) is selected, response messages are provided.

Select [EXIT] at the bottom or press CLR key, and you can go back to Interrogation Menu (5.3.2.5).

The response screens vary depend on the type of interrogation.

5.3.2.6 LONG RANGE MESSAGES

In Message Screen (5.3.2), if 5.LONG RANGE is selected, Long Rang Message Screen will be displayed.

The set up of Long Range Message is mentioned in 5.3.4. (SET UP MENU).

In SET UP MENU, select 4.LONG RANGE RESPONSE SETTING (5.3.4.4), and next select from AUTO or MANUAL.

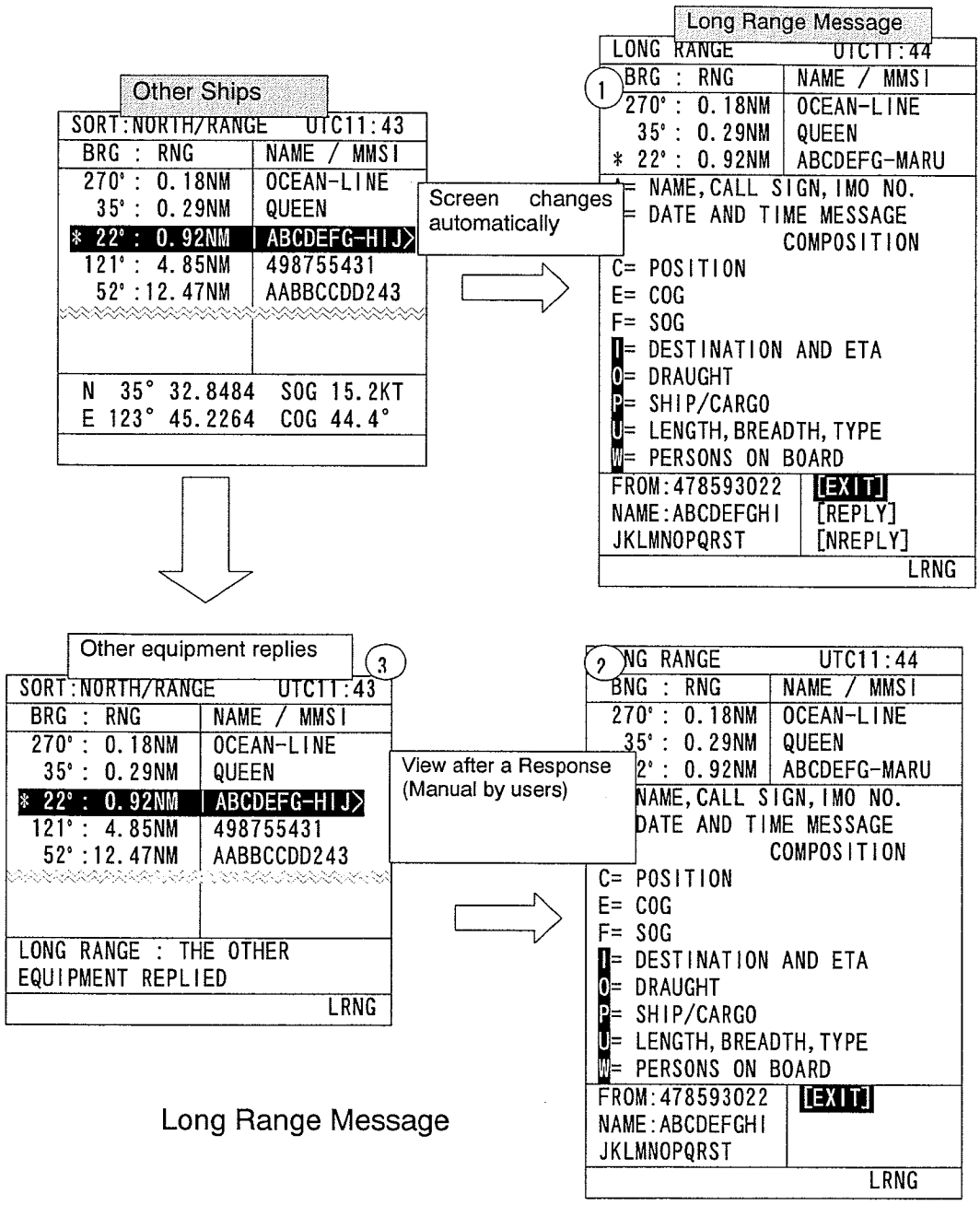
When Long Range is requested, "LRNG" is displayed at the bottom line.

a) MANUAL RESPONSES

For Long Range Message, when MANUAL RESPONCES is set, when the system receives Long Range Request, Long Range Screen is opened automatically

Check the Response and REPLY manually to the message.

1.After Long Range Request, "Long Range Message ①"opens automatically.
2.When Other Ships reply, 『The other equipment replied』 is displayed for 2 seconds. (③)



Long Range Message

In Manual Response (①),

- Show the Name and MSI, in the box at down-left of ①.
- Reverse display the requested items
- Initially, the cursor appears on [EXIT].

In bottom right of LONG RANGE screen,

- If [EXIT] is selected or CRL key is pressed, return to Message Menu.
- If [REPLY] is pressed, display a sentence of accepting the request and change the display of down right of the screen. (see ① and ② above)
- If [NOT REPLY] is pressed, display a sentence of "No Reply" and change the display of down right of the screen. (see ① and ② above)

b) AUTOMATIC RESPONSES

For Long Range Message, when AUTOMATIC RESPONCES is set, the reply to the message will be performed background. In this case, LONG RANGE MESSAGE SCREEN does not open automatically.

When uses see the message, the response has been already done.

Long Range Message Screen is same as a). ②.

Setting of MESSAGE BUZZER

When 5.MESSAGE BUZZER is selected, the on/off selection of the MESSAGE BUZZER can be selected.
Whether a reception check buzzer is sounded or it stops can be selected in the MESSAGE BUZZER menu when the massage is received.
In the setting of MESSAGE BUZZER, when a message is received, it can choose whether a buzzer is sounded or it does not sound.
When it is "ON", the buzzer tells the message received.

```
6. MESSAGE BUZZER  : OFF
```

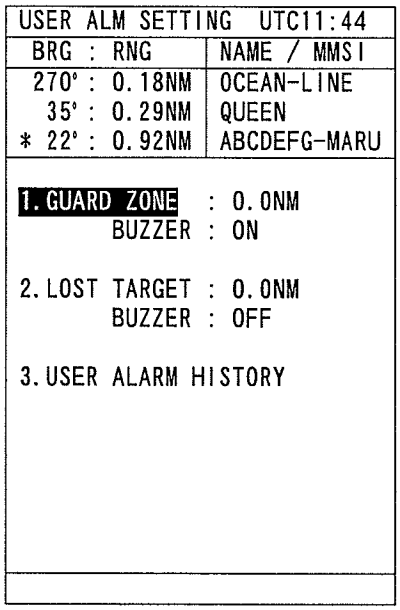
- Setting of MESSAGE BUZZER

5.3.3 USER ALARM SETTING

When 4.ALARM SETTING is selected from Main Menu, USER ALARM SETTING screen appears.

The alarms that users can change the alarm settings are GUARD ZONE ALARM and LOST TARGET ALARM. From this screen, users can change the settings of these alarms.

Initially the cursor is on 1.GUARD ZONE. When the Jog Dial is rotated, the cursor moves over the selections (1.GUARD ZONE → 2.LOST TARGET → 3. USER ALARM HISTORY) , so select one of them and confirm the selection by pressing the Jog Dial.



User Alarm Setting

1.GUARD ZONE

When 1.GUARD ZONE is selected, the range of GUARD ZONE ALARM can be set. If a ship come into the range, a warning message-"GUARD" will be displayed and a beep will be rung.

The value stands for the radius centered by own ship.
It can be set between 0 and 99.9(M).
When the value is zero (0), then GUARD ZONE ALARM (the beep also) is canceled.

When other ships come into within the radius set up above,
(1) When 『BUZZER : ON』 , ring a beep and display "GUARD" at the bottom line.
(2) When 『BUZZER : OFF』 , no not ring beeps, nut "GUARD" is displayed.

The display/alarm can be cleared by CLR.

(1). From USER ALARM SETTING MENU, use the Jog Dial and select 1.GUARD ZONE
(2). With the Jog Dial, input the radius.(see 5.3.3)
① Maximum 99.9NM.
② When it is set 0.00NM, then the alarm will be canceled.
③ When the Jog Dial is pressed, the selection is confirmed.
④ When CLR key is pressed, the selection is canceled.
(3). The cursor moves to BUZZER:, then select and confirm ON/OFF by the Jog Dial.
(4). The cursor jumps to the next item.

2.LOST TARGET

When 2.LOST TARGET is selected, the range of LOST TARGET ALARM can be set.
If a communication with the target is lost for more than six minutes, a warning message-"TARGET" will be displayed and a beep will be rung.

The display/alarm can be cleared by CLR.

1.
(1). From USER ALARM SETTING MENU, use the Jog Dial and select 2.LOST TARGET
(2). With the Jog Dial, input the radius.(see 5.3.3 for numeric input)
① Set the distance which is sufficiently possible to communicate
② When the Jog Dial is pressed, the selection is confirmed.
③ When CLR key is pressed, the selection is canceled.
(3). The cursor jumps to BUZZER:, then select and confirm ON/OFF by the Jog Dial.
(4). The cursor jumps to the next item.

3. USER ALARM HISTORY

When **USER ALARM HISTORY** is selected, USER ALARM HISTORY Screen appears.
The day and time of the alarms above are recorded.
The newest record comes to the top.
The newest ten records are displayed and older records are discarded.

When CLR key is pressed, USER ALARM SETTING Screen appears.

USER ALM HISTORY UTC11:44	
BRG : RNG	NAME / MMSI
270° : 0.18NM	OCEAN-LINE
35° : 0.29NM	QUEEN
* 22° : 0.92NM	ABCDEFG-MARU
1. 2004/01/01 12:34 GUARD	
2. 2003/12/31 23:40 GUARD	
3. 2003/12/31 23:34 GUARD	
4. 2003/12/31 10:10 TARGET	
5. 2003/12/21 12:00 GUARD	
6. 2003/11/09 12:59 GUARD	
7. 2003/11/09 12:58 GUARD	
8. 2003/11/09 12:57 TARGET	
9. 2003/11/07 12:01 TARGET	
10. 2003/11/01 19:48 GUARD	

USER ALARM HISTORY Screen

5.3.4 SET UP MENU

When **4. SETUP** is selected from MAIN MENU, the menu for setting AIS Controller appears.

```
SET UP                    UTC11:44
 BRG : RNG        NAME / MMSI
 270° : 0.18NM    OCEAN-LINE
  35° : 0.29NM    QUEEN
* 22° : 0.92NM    ABCDEFG-MARU
1. CONTRAST              : 49

2. TIME DIFFERENCE       : OFF
   (LOCAL TIME)          : 22:22
3. REGIONAL CHANNEL SETTING

4. LONG RANGE RESPONSE
                         : MANUAL
5. BUZZER                : ON

6. GROUP SHIP

7. CHANNEL SETTING
▼
```

Setup of the AIS Controller functions and channel management of the transponder.

```
▲

8. PASSWORD

9. POS DISP. SETTING : OFF
```

SET UP MENU

The outlines of menu items are:

1. CONTRAST · · · adjust the shade of this display. (See 5.3.4.1)
2. TIME DIFFERENCE · · · input Local time. (See 5.3.4.2)
3. REGIONAL CHANNEL SETTING · · · input . (See 5.3.4.3)
4. LONGRANGE RESPONSE · · · select MANUAL/AUTO response.(see 5.3.4.4)
5. BUZZER · · · select buzzer ON/OFF.(See 5.3.4.5)
6. GROUP SHIP · · · entry of group ships (max 10 ships)(See 5.3.4.6)
7. CHANNEL SETTING · · · set channels.(See 5.3.4.7)
8. PASSWORD · · · entry of a new password.(See 5.3.4.8)
9. POS DISP. SETTING · · · set up the display of the position (See 5.3.4.9.)

5.3.4.1 CONTRAST ADJUSTMENT

When **1. CONTRAST** is selected, CONTRAST is ready to be entered.

See 5.3.3 for Numerical Input for the methodology of the numerical input.

```
1.CONTRAST          : 20
```

CONTRAST ADJUSTMENT

5.3.4.2 TIME DIFFERENCE SETTING

Setup of local time, and select a display change of time.

SET UP	LMT13:22
BRG : RNG	NAME / MMSI
270° : 0.18NM	OCEAN-LINE
35° : 0.29NM	QUEEN
* 22° : 0.92NM	ABCDEFG-MARU
1.CONTRAST : 49	
2.TIME DIFFERENCE : ON	
(LOCAL TIME) : 22:22	

LMT

1. Rotate the Jog Dial and select the "2.TIME DIFFERENCE".
2. Input the Local Time. (See 5.3.3.1)
3. Enter the Local Time with the Jog Dial. The cursor moves to the lower line.
4. Rotate the Jog Dial and select the "ON/OFF".
5. When "ON" is selected, Current Time (the upper line) is changed to 'LMT' from 'UTC'.

* When UTC time is not obtained, Local Time cannot set up.

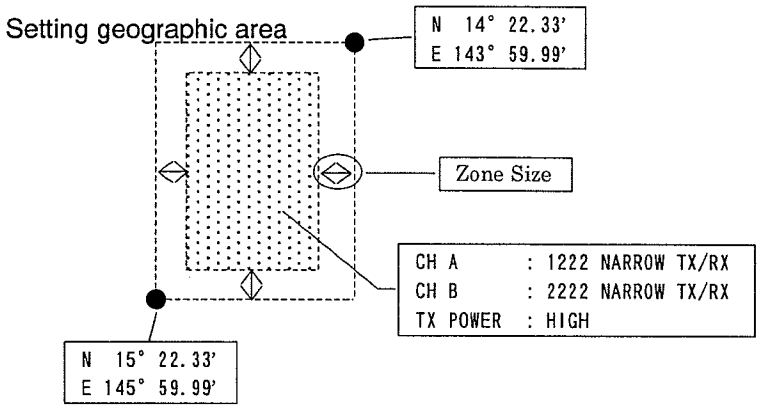
5.3.4.3 REGIONAL CHANNEL SETTING

When 3. REGIONAL CHANNEL SETTING is selected, Regional Channel Setting Menu appears.

A maximum eight channel management information can be inputted.

Rotate the jog dial to left/right and move the cursor for selecting the menu.
Press the Jog Dial, then the sub menu displayed
If CLR is pressed, the set up menu is displayed (5.3.4).

REGIONAL CH. SET UTC11:44	
BRG : RNG	NAME / MMSI
270° : 0.18NM	OCEAN-LINE
35° : 0.29NM	QUEEN
* 22° : 0.92NM	ABCDEFG-MARU
1. CH A :	1222 NARROW
2. CH B :	2222 NARROW
3. TX/RX MODE:	TX/RX, TX/RX (CH A, CH B)
4. TX POWER :	HIGH
5. ZONE SIZE :	5NM
6. AREA (NE) :N	15° 22.33'
E	145° 59.99'
7. AREA (SW) :N	14° 22.33'
E	143° 59.99'
8. SOURCE:	BROADCAST MSG. 22
MMSI :	123456789
UTC :	2004/07/29 12:49



The range of coordinates is set up in distance less than 200NM [20NM or more].

Regional channel setting

[Setting Up Procedure]
1. Set up a new transmission as the picture above. Check if the settings work or not. If OK, you can save the setting.
2. Additionally, if you want to see settings that had already been registered (maximum 9), it is available from a list.

When this menu opens, the cursor is on 1. Press the Jog Dial then the cursor jumps to the channel number. (e.g. In the picture above, if the Jog Dial pressed while the cursor is on 1., then it jumps to "1222" .)

And if you rotate the Jog Dial while it is on 1., then the cursor moves 1 → 2 → 3 → 4 ...

[Explanation of the setting menus]

1. CH A
2. CH B

1. 2. are a menu for setting channel number and bandwidth.
By rotating Jog Dial, input the channel number and confirm it by pressing the Dial.

No. : Set up to the channels which are used.
BANDWIDTH : Select the bandwidth from WIDE/NARROW

3. TX/RX MODE :

This menu is used for setting the transmission/receive (TX/RX) mode of CH A and CH B.

With Jog-Dial, select a combination of communication method.
Turn the Jog Dial left then the number changes 1→2→3 from 3 patterns below:

1.TX/RX,TX/RX (CH A → TX/RX、 CH B → TX/RX)
2.TX/RX, RX (CH A → TX/RX、 CH B → RX)
3.RX, TX/RX (CH A → RX、 CH B → TX/RX)

Press the Jog Dial for confirming the selection.

Setting as (RX, RX) cannot be selectable.

4.TX POWER: Select the TX Output Power(HIGH/LOW).
This menu is for setting the transmission power.
The power of each setting is:
High.....12.5W
Low.....2W
Rotate Jog Dial and select from High or Low.
Press the Jog Dial for confirming the selection.

5.ZONE SIZE : Set up the width of the channel change zone.
Set the range with Jog Dial.
The range can be input between 1 and 8NM.
Press the Jog Dial for confirming the entry.

6,7. Coordinates in area : Set up the coordinates of area.
By setting NE at 6, SW at 7, define the area.

When cursor is on 6, press the Jog Dial.
The cursor moves to the right of ":", turn the Jog Dial and select "N".
Press the Jog Dial for confirming "N".
Enter numeric value for "xxx° xx.xx'" and press for confirmation.

Follow the procedure above, enter value for E (East), S(South) and W(West).

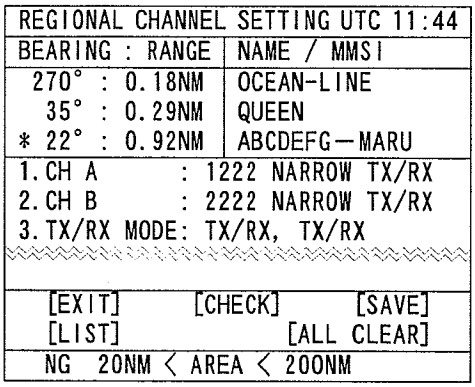
8. Change direction of the Regional Channel :
When 8. is selected, the information about a setting direction is provided.
Here only displaying the information, no selections/changes are made.

SOURCE...The contents of directions received
MMSI...MMSI of the origin of the setting direction
UTC...The UTC time when the direction was accepted

a) CONFIRMATION OF SETTINGS

When you completed step 7 above, the cursor moves down to [EXIT] at the bottom of the screen. Bring the cursor on [CHECK] with the Jog Dial and press it. Then the result of diagnosis is displayed at the bottom of the screen.

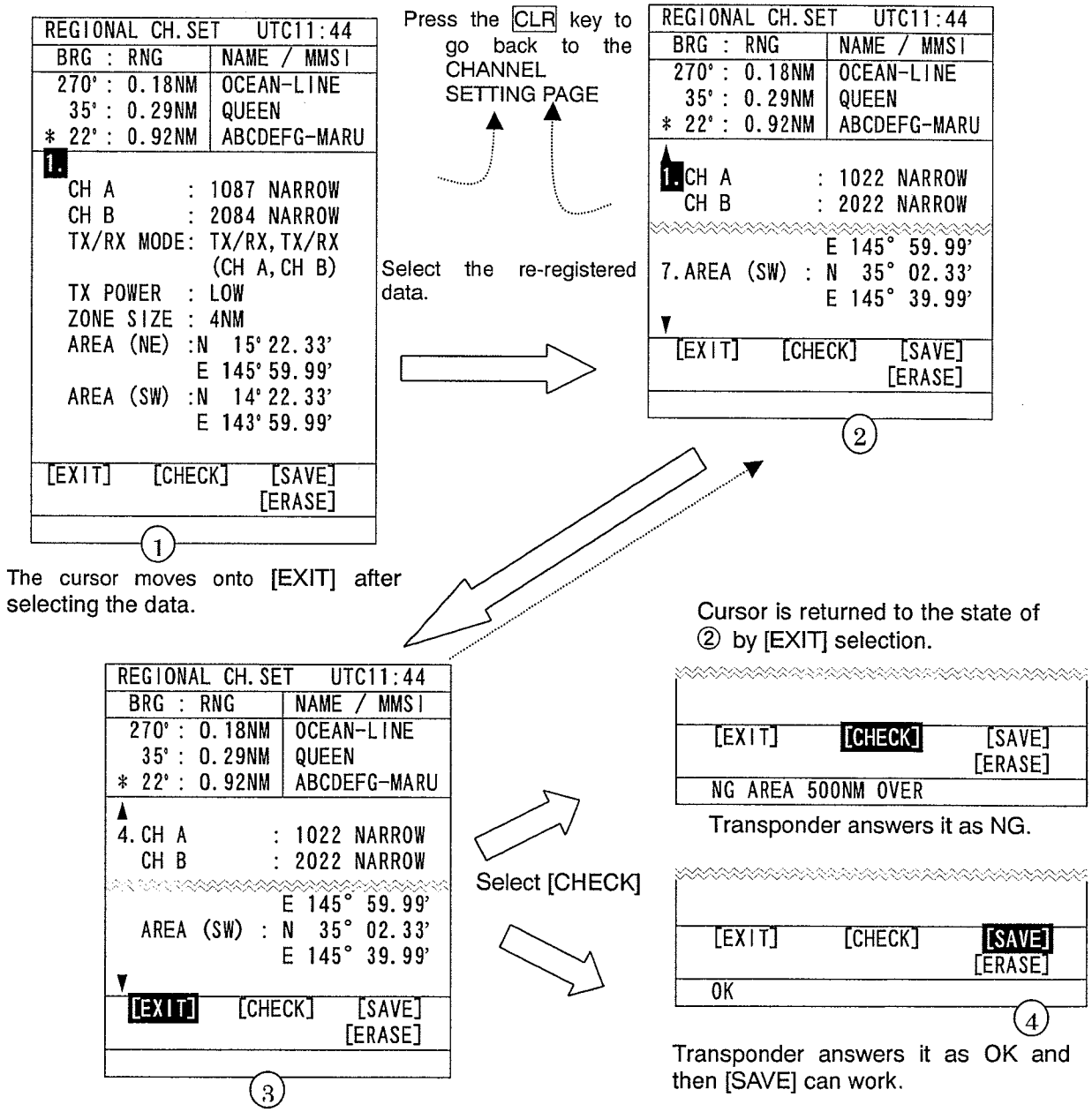
If the message does not show an error, you can register it by selecting and confirming [SAVE].



Diagnosis Results is being displayed

Information	Notes
20NM<AREA<200NM	Display the message for 2 seconds.
AREA CORNER ERR	
AREA 500NM OVER	
CH BW ERR	
OTHER ERR	
OVERTIME ERR	

When the [LOAD] in the small screen is selected in the Regional Channel Setting Menu, the preservation list of manual inputs is displayed.
Moreover, the contents of the setting selected from preservation lists can be registered.
Transponder saves a maximum of nine channel management information.
The data applicable to the condition is eliminated when the ship is separated more than 500NM from the set-up area or when five weeks pass from the saved time.
This is for saving the time to input the same data manually every time.
A maximum of 8 affairs from the newest manual input settings can be reconfirmed and re-registered.



The screen ① is displayed if the [LOAD] is selected after the cursor is moved into small screen of the Regional Channel Setting Menu.
Move the cursor onto 1. at ①. "NO DATA" is displayed if there is no data and then the cursor is on [EXIT] in the small window.
[CHECK], [SAVE], etc. cannot be selected.

- The registered setup can be seen when the Jog Dial is rotated. Only the saved number of data is displayed.
- The CHANNEL SETTING display is displayed when the CLR key is pressed on the screen ① and ② states as the cursor is on the numbers.
- The cursor moves onto [EXIT] in the small window when the item is selected by Jog Dial from the screen ① and ② states.
- If [EXIT] is selected, the cursor returns to the state of Screen ②.
- If [CHECK] is selected, the transponder outputs the command of the contents. (See 5.3.4.3.1.)
- When the result is NG, the contents are displayed on the last line. (See 5.3.4.3.1)
- When the result is OK, the setting can be saved after [SAVE] is selected. (See 5.3.4.3.1)
- If [SAVE] is selected, the transponder outputs the command of the contents. (See 5.3.4.3.2.)
- If [ERASE] is selected, the selected contents are erased and then the cursor moves onto [EXIT].
- If there are any data which are saved after erased data, all of the data put upward.

5.3.4.4 LONG RANGE RESPONSE SETTINGS

If 4.LONG RANGE RESPONSE is selected, the screen is ready to set up for Long Range Response. Auto response (AUTO) and manual response (MANUAL) can be selected.

This setting works when a long range communication device is connected.

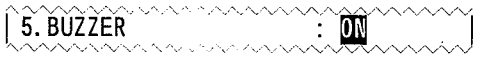
The default setting is AUTO. Use the Jog Dial for selection and confirmation.

Long Range Response Screen

5.3.4.5 BUZZER SETTINGS

5.BUZZER is the setting for buzzer sound.

By changing this setting, user can select on/off of the buzzer.
If OFF is selected, all the sound devices including alarms, key-click sounds are stopped.

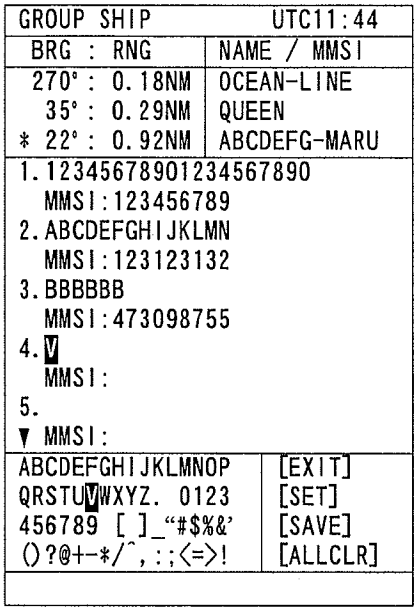


Buzzer sound setting Screen

ON: Buzzer sound on
OFF: No buzzer sound

5.3.4.6 GROUP SHIP REGISTORATION

When 6.GROUP SHIP is selected, GROUP SHIP opens.
Use this screen for registering group ships.



Group Ships Registration Screen

Maximum 10 ships can be registered as a group ship.
When [SAVE] is selected, the information is saved.

Other ships which are registered as group ships, obtain "*" on the other ships list. And the Ship Name shown in other ships list succeeds the names which are registered from this screen.

1. Entering Name

When this menu opens, the cursor is on 1.
Rotate the Jog Dial and the cursor move up/down over the numbers.
Select the number and press the Jog Dial, the cursor jumped to the entry of NAME and at the same time, a cursor is on A in the keyboard area. Then the name can be entered.
The method of using keyboard, see 5.1.1

2. Entering MMSI

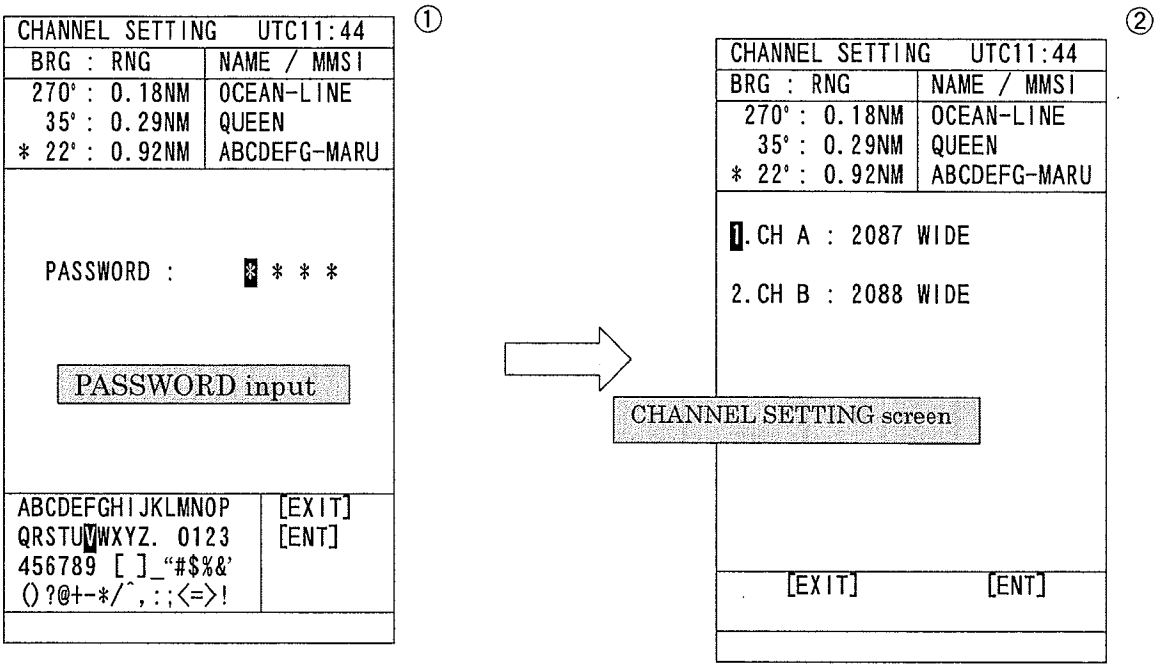
After completing the name entry, select and push [NEXT] by the Jog Dial, then the cursor jumps to the MMSI entry area.
Numeric Entry for MMSI, see 5.1.2.
When the entry of MMSI has completed, the cursor move to next line.

While the cursor is between 1 and 10, if it is rotated counter clockwise, then jump down to [EXIT]. (Not Keyboard Area)

Select [EXIT], then discard the contents and return to SETUP.
Select [SAVE], then save the contents and return to SETUP.
Select [ALL CLEAR], and then discard all contents and the cursor returns to 1.

5.3.4.7 CHANGING THE CHANNEL

In case, a user want to change a channel, select 7.CHANNEL SETTING
After that, type in password from Password Input Screen(①) and the proper password is entered, go to Next screen(②)



1. **Entering Password**
   For creating password which consists of 4 digit, using 『A～9』 by the Jog Dial.
   Enter 4 digits and finally confirm by pressing the Jog Dial, then the cursor jumps to [EXIT].
   - □ Select [EXIT], and return to SETUP
   - □ Select [ENT], and proceed to Changing Channel Screen.

2. **Changing Channel**
   Enter channel number and select the width.
   In Changing Channel screen, bring the cursor on 1.

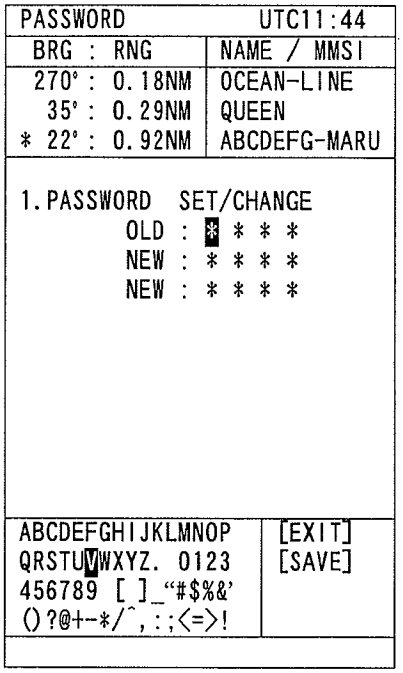
   - ① On 1. , press the Jog Dial for confirming and bring the cursor to the Channel number (in the picture above, channel numbers are 2087 and 2088)
   - ② See 5.0.2. for entering numeric values
   - ③ The channels that can be chosen at this moment are acceptable. But numbers besides registered channel number is specified, then the contents are discarded and the cursor jumps to the channel number entry area.
   - ④ As to the Channel Number, see 『command list; 』
   - ⑤ If the Jog Dial is pressed at the right edge of the channel number input area, the cursor moves to WIDE.
   - ⑥ The width can be selected from: a) WIDE, b) NARROW
   - ⑦ Select the width and press the Jog Dial, the cursor jumps to the next item

The setting procedure for 2 is same as the procedure for 1.
When the setting for 2 has completed or while the cursor is over 2, if the Jog Dial is rotated to left, the cursor moves down to [EXIT].

1. If [EXIT] is selected, discard the contents and return to SETUP screen.
2. If [ENT] is selected, output a command and return to SETUP screen.

5.3.4.8 CHANGING PASSWORD

Select 8. PASSWORD, then the screen for Password setting appears.
The passwords for turning off the electricity or changing channel are set up from this screen.
A person who is in charge of ship should administrate passwords.



Password setting screen

Rotate the Jog Dial for moving the cursor.

Press the Jog Dial and submenus will be displayed.

Press CLR key for returning to SETUP MENU.

1. When the submenu is opened, the cursor is on * of the leftmost of the line of OLD. At the same time, there is a cursor in the keyboard area of the screen.
2. Use keyboard and type in 4 digits password after "OLD:".
3. When you type in the fourth letter and confirm by pushing the Jog Dial, then
   - If the password now input matched the current password, then the cursor jumps to the next line.
   - If the password now input does not match the current password, the cursor return to 1.
4. Type in the 4 digits new password, after upper "NEW:" for creating new password.
5. When you type in the fourth letter, then the cursor jumps to the next line. Then type in new pass word after the lower "NEW:"
   - If two passwords match, then the cursor moves to [EXIT]
   - If two new passwords don't match, the cursor returns to 1.

6. And
   - If you select [EXIT], discard the contents and return to SETUP MENU.
   - If you select [SAVE], save the contents and return to SETUP MENU.

Caution :
Only alphabets and numbers can be used for password.
You cannot move cursor irregularly, (such as "from 1. to keyboard area" or "Keyboard area to [EXIT]" etc.) by rotating left the Jog Dial.

5.3.4.9 Changing of Position Display Setting

When the **9. POS DISP. SETTING** is selected, the Position Display Setting (displaying position of N/S, E/W) can be changed.

Position Display Setting

When the setting is

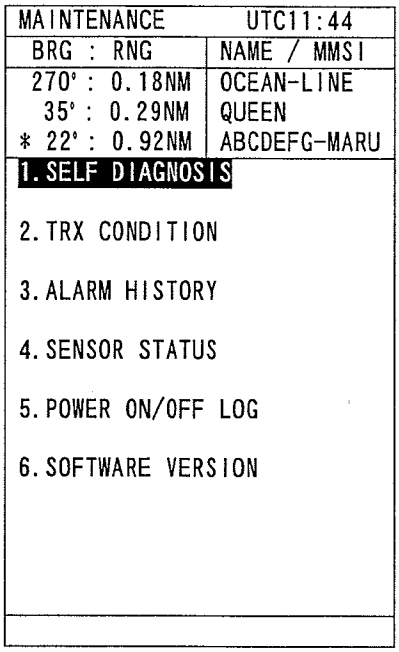
OFF : N xx° xx.xxx
Wxxx° xx.xxx
→ N, W, etc. are before the coordinates.

ON : xx° xx.xxx N
xxx° xx.xxx W
→ N, W, etc. are after the coordinates

The screen that changes by this setup is the following item.

- OWN POS DISP.
- OWN DETAIL
- SHIP'S DETAIL
- WAYPOINTS
- The result of INTERROGATION
- REGIONAL CH SETTING
- GROUP SHIP
- TRX CONDITION

5.3.5 MAINTENANCE



When 5.MAINTENANCE is selected from Main Menu (5.3) Maintenance Menu appears.

Users can check current status of the system by the menu.

Outlines of the menu:

1. SELF DIAGNOSIS
   Perform Self Diagnosis test.

2. TRX CONDITION
   Display Logs, which enable to confirm what sea area the ship, has been crossing. (Maximum eight items)

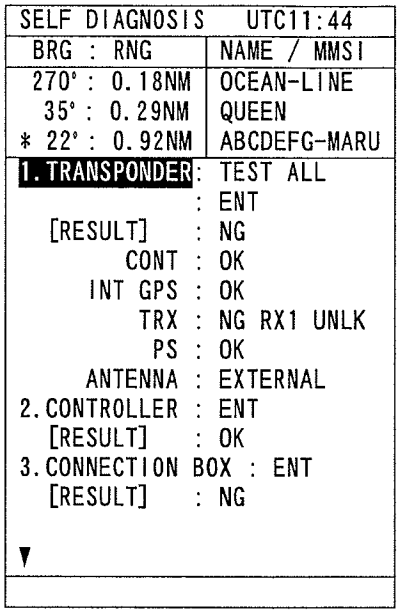
3. ALARM HISTORY
   Display alarm logs for disorders. (Maximum ten items)

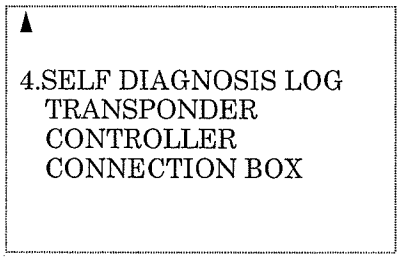
4. SENSOR STATUS
   Display current status of sensors working.

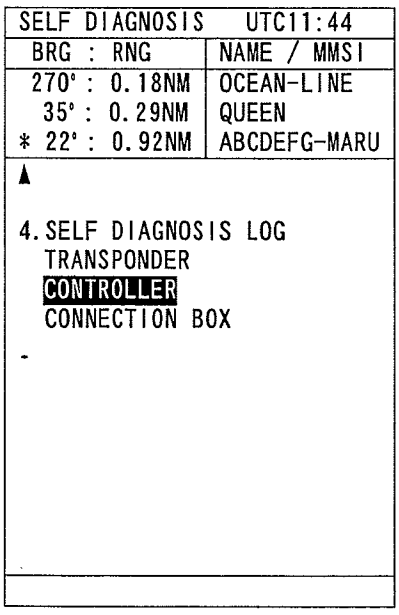
5. POWER ON/OFF LOG
   Display data and time of Power on and off. (Maximum twenty items)

6. SOFTWARE VERSION
   Display versions of software installed in computers.

5.3.5.1. SELF DIAGNOSIS







SELF DIAGNOSIS screen

a) SELF DIAGNOSIS- OPERATIONS AND DISPLAYS

When **1.SELF DIAGNOSIS** is selected from Maintenance Menu (5.3.5), SELF DIAGNOSIS screen appears.

Initially, the cursor is on **1.TRANSPONDER**. And is the Jog Dial is pressed, the cursor moves to the right hand of ":"as **TEST ALL**.

Turn the Jog Dial and the displayed item changes as:
TEST ALL → CONTROL → INT GPS → PLL LOCK
→ LOOP TEST→ (LOOP TEST2) → PS →TEST ALL → ...

Push the Jog Dial and confirm the selection. After the confirmation the cursor move down to ENT.

Turn the Jog Dial and the displayed item changes as:
ENT → CANCEL → ENT → ...

Make a selection and confirm it by pushing the Jog Dial.

[About the contents of a display]

The result and contents that accord to each diagnostic value are displayed as shown of the following figure. And the last diagnostic time is displayed.
In addition,"--/-- --:--" is displayed when time is not able to be acquired.
Rotating the Jog Dial or moving the Stick can display the next page.

```
DIAGNOSIS LOG        UTC11:44
 BRG : RNG     | NAME / MMSI
 270° : 0.18NM | OCEAN-LINE
  35° : 0.29NM | QUEEN
* 22° : 0.92NM | ABCDEFG-MARU

1.TRANSPONDER : NG
          CONT : NG
                 (257)
       INT GPS : OK
                 (0)
           TRX : NG PA
                 (0000.00.13)
            PS : NG PS LOW
                 (1)
       ANTENNA : INTERNAL
                 (0)
          DATE : 11/24 09:31
▼
```

Log screen of SELF DIAGNOSIS (TRANSPONDER)

```
DIAGNOSIS LOG        UTC11:44
 BRG : RNG     | NAME / MMSI
 270° : 0.18NM | HAGAMARU
  35° : 0.29NM | JRCMARU
* 22° : 0.92NM | ABCDEFG-MARU

1.CONTROLLER  : OK
              : OK
                (00)
          DATE: 11/24 20:45
2.CONTROLLER  : NG
              : NG SRAM
                (04)
          DATE: 11/21 20:40
3.CONTROLLER  : OK
              : OK
                (00)
          DATE: 11/11 20:35
▼
```

Log screen of SELF DIAGNOSIS (CONTROLLER)

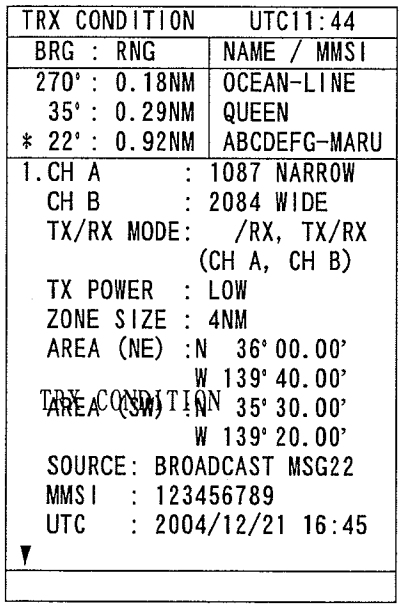
```
DIAGNOSIS LOG        UTC11:44
 BRG : RNG     | NAME / MMSI
 270° : 0.18NM | HAGAMARU
  35° : 0.29NM | JRCMARU
* 22° : 0.92NM | ABCDEFG-MARU

1.CONNECTION BOX: OK
                : OK
                  (00)
            DATE: 11/24 20:45
2.CONNECTION BOX: NG
                : CPU FROM
                  (08)
            DATE: 11/21 20:40
3.CONNECTION BOX: OK
                : OK
                  (00)
            DATE: 11/11 20:35
▼
```

Log screen of SELF DIAGNOSIS (CONNECTION BOX)

5.3.5.2. TRX CONDITION

When **2.TRX CONDITION** is selected from Maintenance Menu (5.3.5), TRX CONDITION screen appears.

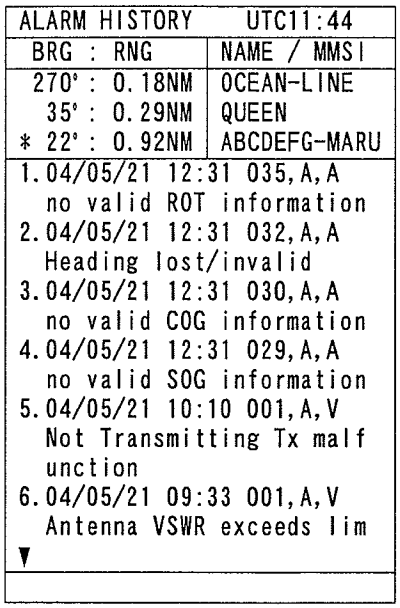
This menu provides the information of how the setting has been changing.



Eight records from the newest are displayed. 1. of this menu is showing the current transmission.

5.3.5.3. ALARM HISTORY

When 3.ALARM HISTORY is selected from Maintenance Menu (5.3.5), ALARM HISTORY screen appears.



Alarm History Screen

This screen displays a history of alarms which occur while the power is on. It displays the alarm history from the most recent one maximum 20 lines. If the history consists of more than 20 lines, the lines after 21st line will be displayed on the next screens.

If there is no more information to be displayed on the next screen, [SCROLL] is not selectable. (▼ does not appear either.)

If CLR key is pressed, the procedure goes back to "Maintenance Menu.

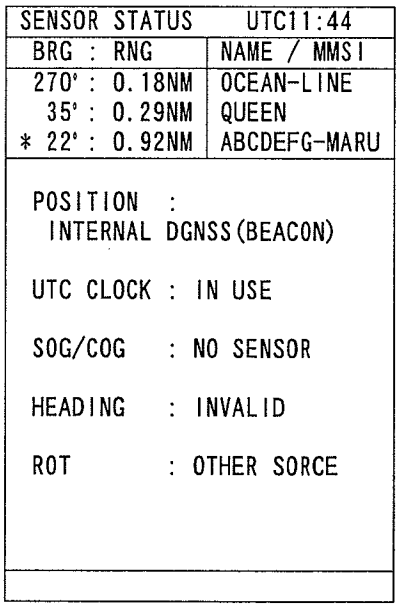
Alarm NO.	Text of the Alarm	The contents of unusual detection
001	Not Transmitting TX ma l function	Unusual detection at the transmission.
002	Antenna VSWR exceeds limit	Unusual detection of antenna output.
003	Rx channel 1 malfunction	Unusual detection of Rx channel 1.
004	Rx channel 2 malfunction	Unusual detection of Rx channel 2
005	Rx channel 70 malfunction	Unusual detection of DSC.
006	General failure	Detected a general failure
008	MKD connection lost	Detected the connection between AIS and TRANSPONDER is lost.
025	External EPFS lost	No information of sensor position from outside.
026	No sensor position in use	No information of sensor position.
029	No valid SOG information	No information of SOG.
030	No valid COG information	No information of COG.
032	Heading lost/invalid	No information of HEADING.
035	No valid ROT information	No information of ROT.
051	TX power down	Detected TX power is down.
052	TX power supply error	Unusual detection of TX power supply.
053	Power supply error	Unusual detection of power supply.
055	Pa temp error	Detected the PA temperature is warming up.
056	TX power low	Detected the TX power is lower.
057	Vr error	Unusual detection of TX output.
060	TX pll unlock	Detected the TX PLL is unlocked.
061	Not TX	Detected the TX is not outputting.
062	Program Flash memory err	Unusual detection of check sum in the TOM with CPU.
063	Data Flash memory err	Unusual detection of check sum in the other ROM.
064	MKD connection lost	No serial input from the transponder. (detected by AIS)
065	SSD mismatch	Mismatch static information between transponder and AIS.

Alarm Table

5.3.5.4. SENSOR STATUS

When **4.SENSOR STATUS** is selected from Maintenance Menu, SENSOR STATUS screen appears. The information of current status of sensor connection is displayed on this screen.

Select [EXIT] at the bottom or press CLR key, and you can go back to Maintenance Menu.



Sensor Status Screen

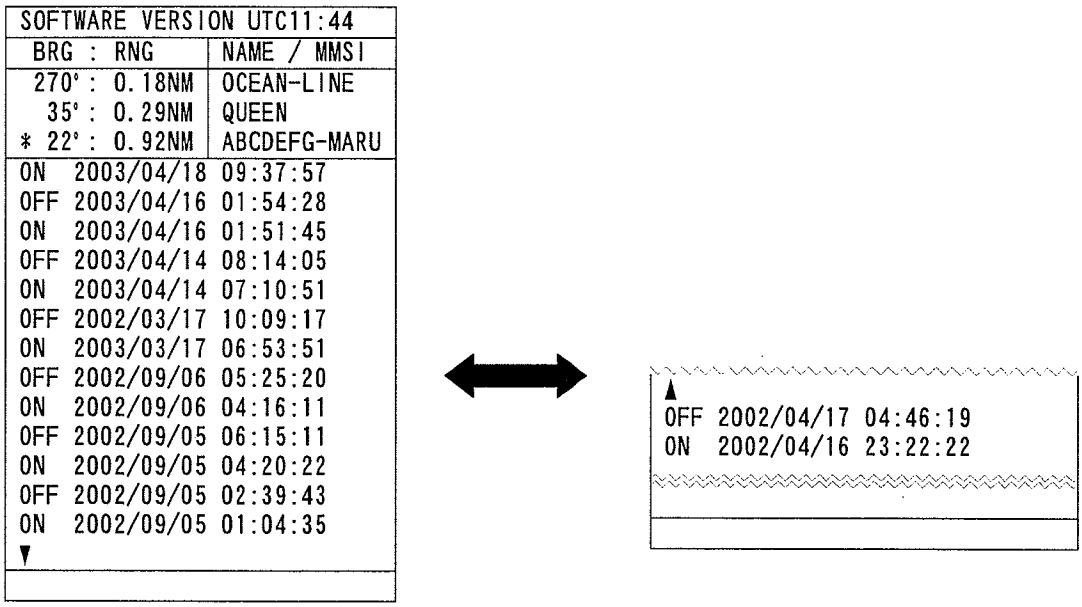
SENSOR TYPE	Screen display
POSITION	EXTERNAL DGNSS
	EXTERNAL GNSS
	INTERNAL DGNSS(BEACON)
	INTERNAL DGNSS(MSG.17)
	INTERNAL GNSS
	NO SENSOR
UTC CLOCK	LOST
	IN USE
SOG/COG	EXTERNAL
	INTERNAL
	NO SENSOR
HEADING	VALID
	INVALID
ROT	IN USE
	OTHER SORCE
	NO SENSOR

5.3.5.5. POWER ON/OFF LOG

When 5.POWER ON/OFF LOG is selected, maximum 20 lines of Power ON/OFF LOG is displayed.

There is more than 20 lines of data, ▼▲ arrears at the bottom of the screen for indicating there are more information. You can scroll down/up the screen by clicking [SCROLL] when ▼ or ▲ exists on the screen.

Select [EXIT] at the bottom or press CLR key, and you can go back to Maintenance Menu.

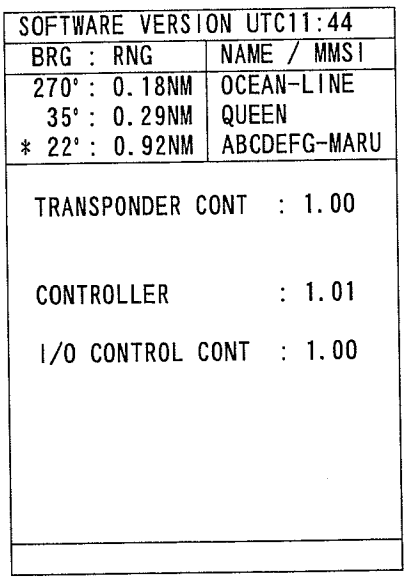


Power ON/OFF LOG screen

5.3.5.6. SOFTWARE VERSION

When 6.SOFTWARE VERSION is selected from Maintenance Menu, the version information of the software of each part are displayed.

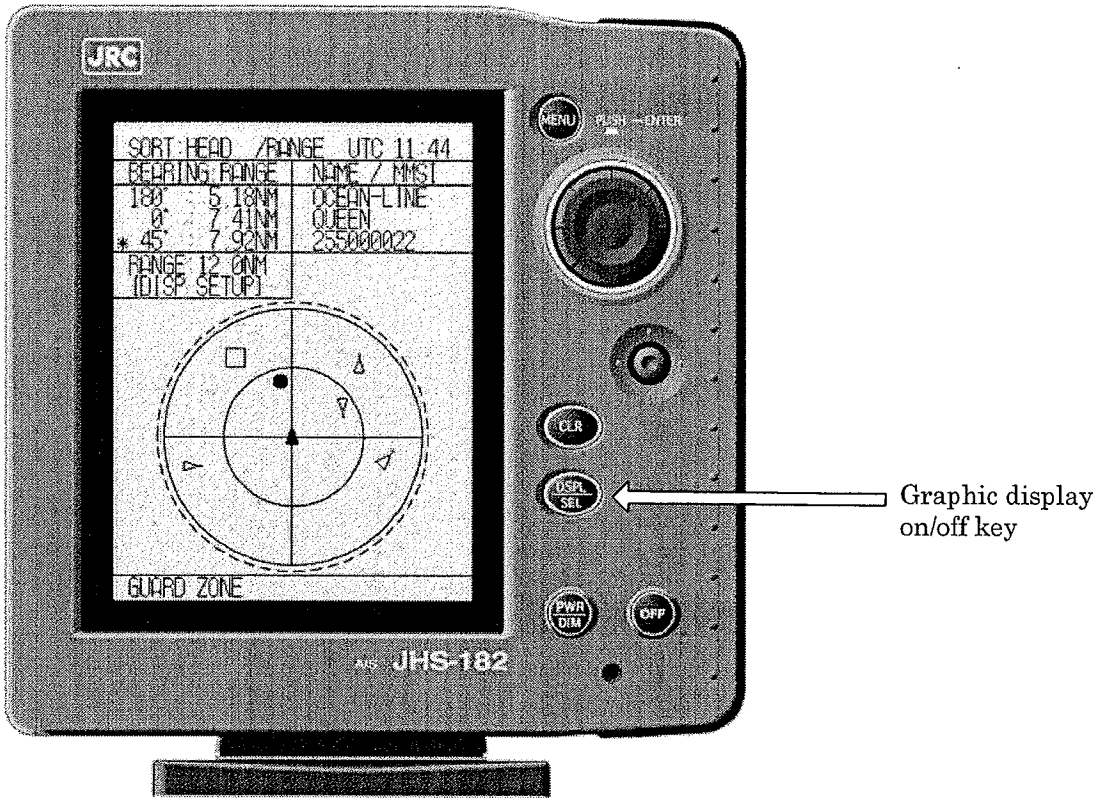
Select [EXIT] at the bottom or press CLR key, and you can go back to Maintenance Menu.



Software Version Screen

5.4 Graphic Display Function

5.4.1 Operation keys for Graphic Display Function



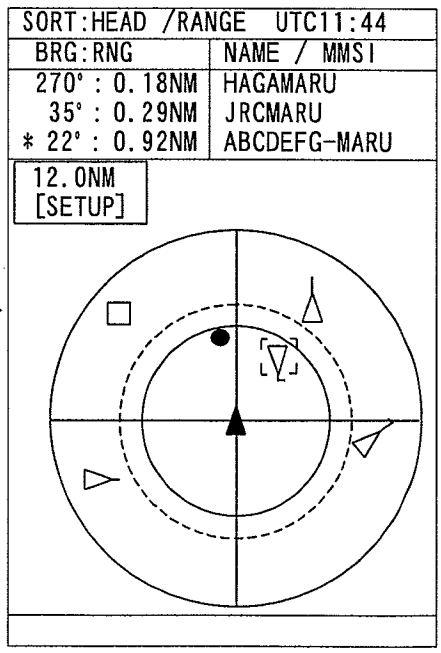
NCM-779 Panel and Graphic Display

5.4.2 Operating Graphic Display

Press [DSPL/SEL] key, then the display is alternated between text display and graphic display.

SORT:NORTH/RANGE UTC11:43	
BRG : RNG	NAME / MMSI
▲270° : 0.18NM	HAGAMARU
35° : 0.29NM	JRCMARU
* 22° : 0.92NM	ABCDEFG-HIJK>
121° : 4.85NM	498755431
52° :12.47NM	AABBCCDD243
010° :99.99NM	111111111
111° :99.99NM	111111112
001° :99.99NM	111111113
000° :99.99NM	111111114
222° :99.99NM	111111115
223° :99.99NM	111111116
224° :99.99NM	111111117
225° :99.99NM	111111118
▼228° :99.99NM	111111123
N 35° 32.8484	SOG 15.2KT
E 123° 45.2264	COG 44.4°
TOTALL:128 CURSOR:103	

[DSPL/SEL] key



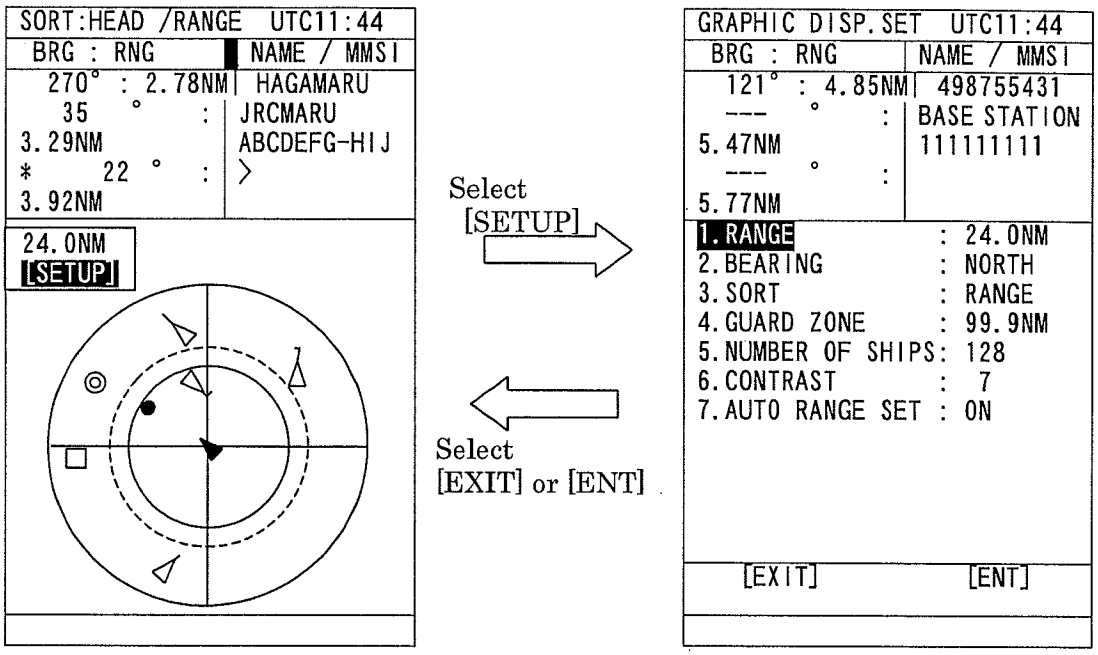
Text display(Other Ship list)

Graphic display

5.4.3 Operation

5.4.3.1 SETUP menu

Press [CLR] key in the graphic display, the cursor moves to the SETUP window.
Press Jog dial with selecting [SETUP], the SETUP menu of graphic display appears.



5.4.3.2 SETUP details

(1) RANGE scale
Outside circle scale and inside circle scale are followings.

RNG [NM]	Outside Scale [NM]	Inside Scale [NM]
0.75	0.75	0.375
1.5	1.5	0.75
3.0	3.0	1.5
6.0	6.0	3.0
12.0	12.0	6.0
24.0	24.0	12.0

(2) BEARING
Select the bearing from NORTH UP and HEAD UP.

(3) SORT
Select the sort item from RANGE, TCPA, and GROUP for text display of other ship list.

(4) GUARD ZONE range
Set GUARD ZONE range for guard zone alarm.
The maximum range is 99.9 nautical miles (NM).
If it is set as 0.00NM, the range alarm does not work.

(5) NUMBER OF SHIPS
Select NUMBER OF SHIPS to limit maximum number of displayed other ship from 22, 32, 64, and 128.

(6) CONTRAST
Set the contrast of the display between 1 and 13.

(7) AUTO RANGE SET function
Set the AUTO RANGE SET function ether ON or OFF.
When this function set ON, graphic dispray RANG is change to display the furthest distance ship.

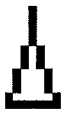
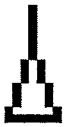
Select [ENT] and press the Jog dial after above setting is finished, then the Graphic display appears.

5.4.3.2 Symbol display

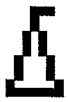
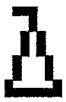
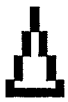
(1) Heading: The direction of symbol indicates the ship's heading with 45 degrees steps as follows.

Heading [deg]	337.6 – 22.5	22.6 – 67.5	67.6 – 112.5	112.6 – 157.5	157.6 – 202.5	202.6 – 247.5	247.6 – 292.5	292.6 – 337.5	
Symbol									

(2) Speed over ground (SOG): The length of vector indicates the ship's SOG as follows.

SOG [knot]]	0.0	0.1 – 14.0	14.1 – 23.0	23.1 –	
Symbol					

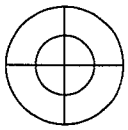
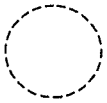
(3) Rate of turn (ROT): The flag on vector indicates the ship's ROT (turning direction) as follows.

ROT	+ (Right)	– (Left)	0
Symbol			

(4) Other symbols

Status	Symbol
Own ship	
Other ship	
Base Station	
Non COG / non HDG	
Waypoint	
Lost target	
Selected target	

(5) Displayed circle line

Type	Line	note
Range scale circle		Inside circle is half of outside circle. **1NM=1852**m
GUARD ZONE range circle		When GUARD ZONE is set validly.

6. MAINTENANCE AND INSPECTION

The performance and longevity of this equipment depend on careful maintenance. To maintain the best performance, the following periodic inspections are highly recommended.

(1) Keep the power supply voltage within the specified value.
(2) Know the condition of normal status when the equipment is properly functioning. Keep comparing the current status to the normal status to immediately detect any malfunctions.

⚠WARNING

With the exception of qualified service personnel, do not attempt to service the interior of this equipment, as doing so may cause fire, electric shock or malfunction.

Each internal circuit has been fine-tuned, therefore be sure not to tune or modify without measuring instruments. If any malfunctions are detected, contact our service center or agents.

6. 1 General Maintenance and Inspection

Below are listed general maintaining and inspecting items, which can be done with usual tools and apparatus.

No.	Item	Maintenance and inspection
1	Cleaning	Gently clean the surface of the panel, knobs, switches, and upper/bottom cover with soft cloth or silicon oil. Remove dust in the unit using a brush or vacuum cleaner. No oil is needed because this unit has no moving mechanisms inside.
2	Looseness of parts	Inspect for looseness and correctly tighten the following: Screws, nuts, knobs, switches, volume pots, connectors and relays inserted into sockets.
3	Fuse	If the power source fuse is blown, be sure to inspect the cause before replacing the blown fuse with a new one.
4	PCB Unit	Remove screws mounting the unit, demount the unit from the main chassis, and inspect the unit for discoloration and parching of components. To exchange parts, call our service center or agents.

Note If you remove the PCB unit, be sure to store it in a non-conductive bag.

6. 2 Periodic Inspection

Regarding the functions for performing self-diagnosis and monitoring the system status, please refer to "5.3.5 Maintenance Menu"

6.2.1 Confirming the Own Ship's Information

To check own ship's information, please refer to 5.2.1.3. Be sure that the static (ship name, MMSI etc.) and dynamic (position, heading etc.) information is correct.

6.2.2 Confirming the TRX Channel

To check the TRX channel, refer to 5.3.5.2 and display the transponder status. Be sure that the TRX Channel information is correct.

In case international frequencies are used, the information is displayed as below.

```
TRX CONDITION      UTC11:44
 BRG : RNG       | NAME / MMSI
 270° : 0.18NM   | OCEAN-LINE
  35° : 0.29NM   | QUEEN
* 22° : 0.92NM   | ABCDEFG-MARU
1.CH A       : 2087 WIDE
  CH B       : 2088 WIDE
  TX/RX MODE: TX/RX, TX/RX
              (CH A, CH B)
  TX POWER   : HIGH
  ZONE SIZE :
  AREA (NE) :N  00° 00.00'
             W 000° 00.00'
  AREA (SW) :N  00° 00.00'
             W 000° 00.00'
  SOURCE:
  MMSI   :
  UTC    :
▼
```

In case local frequencies are used, the information is displayed as below.

```
TRX CONDITION      UTC11:44
 BRG : RNG       | NAME / MMSI
 270° : 0.18NM   | OCEAN-LINE
  35° : 0.29NM   | QUEEN
* 22° : 0.92NM   | ABCDEFG-MARU
1.CH A       : 1087 NARROW
  CH B       : 2084 WIDE
  TX/RX MODE:   /RX, TX/RX
              (CH A, CH B)
  TX POWER   : LOW
  ZONE SIZE : 4NM
  AREA (NE) :N  36° 00.00'
             W 139° 40.00'
  AREA (SW) :N  35° 30.00'
             W 139° 20.00'
  SOURCE: BROADCAST MSG22
  MMSI   : 123456789
  UTC    : 2004/12/21 16:45
▼
```

JHS-182 Alarm Table

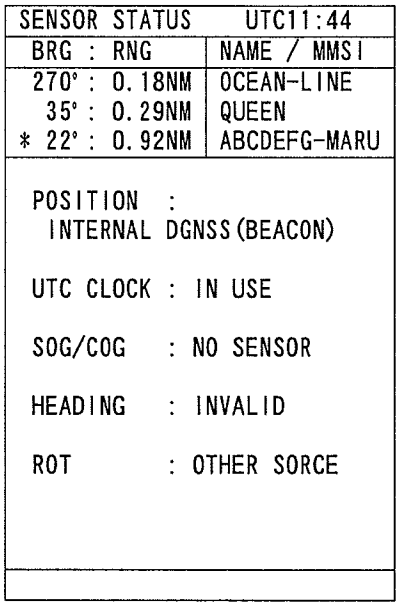
Fatal error (ALR sentence output)

Alarm No.	Indication	Alarm Occurrence Conditions
001 052	Tx malfunction Tx power supply error	The voltage became abnormal during transmission because of PA failure.
006 053	general failure Power supply error	The voltage became abnormal during reception because of PA failure.
001 054	Tx malfunction Pa current error	The PA collector current became abnormal during transmission.
001 055	Tx malfunction Pa temp error	The PA temperature became abnormal during transmission.
002 051	Antenna VSWR exceeds limit Tx power down	Computed result of VSWR is 3 or greater but no greater than 4 during rated transmission output or transmission level is lowered.
001 002	Tx malfunction Antenna VSWR exceeds limit	The computed result of VSWR is 4 or greater.
001 057	Tx malfunction Vr error	The antenna is open or broken.
001 058	Tx malfunction Ic error	The PA protection circuit operates.
001 060	Tx malfunction Tx pll unlock	The TX synthesizer is unlocked.
003	Rx channel 1 malfunction	The RX CH A synthesizer is unlocked.
004	Rx channel 2 malfunction	The RX CH B synthesizer is unlocked.
005	Rx channel 70 malfunction	The RX CH70 synthesizer is unlocked.
008	MKD connection lost	Communication between the transponder and controller is failed. (Transponder generates the alarm.) AIS Transponder setting is initialized.
	MKD CONNECTION lost	Communication between the transponder and controller is failed. (Controller generates the alarm.)
025	external EPFS lost	The any of following commands has not been entered from the external sensor or data is invalid. GNS, GLL, GGA, RMC
026	no sensor position in use	The internal GPS is invalid and any of the following commands has not been entered from the external sensor or data is invalid. GNS, GLL, GGA, RMC
029	no valid SOG information	The internal GPS is invalid and any of the following commands has not been entered from the external sensor or data is invalid. VBW, VTG, OSD, RMC
030	no valid COG information	The internal GPS is invalid and any of the following commands has not been entered from the external sensor or data is invalid. RMC, VTG, OSD
032	Heading lost/invalid	Any of the following commands has not been entered from the external sensor or data is invalid. HDT, OSD, HDG
035	no valid ROT information	Any of the following commands has not been entered from the external sensor or data is invalid. HDT, OSD, HDG, ROT
062	Program flash memory error	The flash memory for programs is abnormal.
063	Data flash memory error	The flash memory data is abnormal.

6.2.4 Confirming the Conditions of the Sensors

To check the conditions of the sensors, refer to 5.3.5.4.

POSITION: Be sure that the indicated status is not NO SENSOR.
UTC CLOCK: Be sure that the indicated status is IN USE. (It takes some time before IN USE appears in case the power has been off for a long time.)
SOG/COG: Be sure that the indicated status is not NO SENSOR.
HEADING: Be sure that the indicated status is not INVALID.
ROT: Be sure that the indicated status is not NO SENSOR.



The variation of the sensors' conditions is tabulated below.

Sensor	Indication	Sensor's Condition
POSITION	EXTERNAL DGNSS	The external DGNSS is in use.
	EXTERNAL GNSS	The external GNSS is in use.
	INTERNAL DGNSS (BEACON)	The internal DGNSS (beacon) is in use.
	INTERNAL DGNSS (MSG.17)	The internal DGNSS (message 17) is in use.
	INTERNAL GNSS	The internal GNSS is in use.
	NO SENSOR	The position data is not yet entered or invalid.
UTC CLOCK	IN USE	The internal GPS compensates PPS.
	LOST	The internal GPS has not compensated PPS.
SOG /COG	EXTERNAL	The external SOG/COG is in use
	INTERNAL	The internal SOG/COG is in use
	NO SENSOR	The SOG/COG data are not yet entered or invalid.
HEADING	VALID	Heading data are entered.
	INVALID	Heading data are not yet entered.
ROT	IN USE	During input from a rate-of-turn indicator.
	OTHER SOURSE	During input from other than the rate-of-turn indicator.
	NO SENSOR	The ROT data are not yet entered or invalid.

6. 3 Trouble Shootings

6.3.1 Trouble Shootings

This section presents a troubleshooting guideline for finding defective sections.

Symptom of Error	Possible Cause or Cause of Fault	Countermeasures
Power is not supplied when the power switch is pressed.	Power is not distributed from the inboard distribution panel.	Supply power from the distribution panel.
	Power is not supplied from the power supply unit.	Check that the wiring of the power unit is correct. Check that the output voltage of the power unit is correct.
	Power that the power unit supplies is out of range.	Replace the power unit.
	Power is not supplied to the DC-DC converter in the connection box.	Supply power.
	The fuses in the connection box are blown out.	Check that the wiring is correct and replace the fuses.
	The power supplied by the DC-DC converter in the connection box is outside the range.	Replace the CDJ-3182 circuit board.
	Power is not supplied from the DC-DC converter in the connection box.	Check that the power switch in the Connection Box is ON. Replace the CDJ-3182 circuit board.
	The IC in the AIS controller power circuit is broken.	Replace the CDJ-2779 circuit board.
	The power supply cable of the transponder is broken.	Replace the power supply cable of the transponder.
	The IC in the transponder power circuit is broken.	Replace the AIS transponder.
	The controller switch is broken.	Replace the switch panel.
The transponder software version is 0.00.	The transponder power is not turned on.	Check the transponder cable.
No response after depressing a key on the operation panel.	The panel unit malfunctions.	Replace the CCK-2779 circuit board.
	The control unit malfunctions.	Replace the CDJ-2779 circuit board.
Some dots are missing on the LCD.	The LCD malfunctions.	Replace the LCD.
	The control unit malfunctions.	Replace the CDJ-2779 circuit board.
No alarming sound is generated.	The buzzer malfunctions.	Replace the CDJ-2779 circuit board.
	The control unit malfunctions.	
The illumination does not light.	The control unit malfunctions.	Replace the CDJ-2779 circuit board.
	The LCD malfunctions.	Replace the LCD.
No AIS message is received.	The transponder power supply is not turned on.	Turn on the transponder power unit.
	The whip antenna is damaged.	Replace the whip antenna.
	The following alarm number appears: 003, 004, or 005. The synthesizer in the receiving circuit is unlocked.	Replace the transponder.

No AIS message is transmitted.	The following alarm number appears.	Replace the transponder.
	001, 052, 53: Power circuit fault	
	001, 054: PA collector current abnormal	
	001, 055: PA temperature abnormal	
	001, 058: PA protection circuit operated	
	001, 060: TX synthesizer unlock operated	
	003, 004, 005: RX synthesizer unlock operated	
	001, 057: Antenna not connected	Check that the antenna is connected. Check setting of the external and internal antennas.
	001, 002: VSWR abnormal	Check that the antenna is connected. Check that there are no objects around the antenna. Replace the antenna and check for normal transmission.
Sensor data (external GPS, gyro, and rate-of-turn) cannot be loaded.	The polarity of the serial cable is incorrect.	Check if the polarity is correct and connect it.
	The interface between the sensor and connection box is incorrect.	Check if the interface is correct before its connection.
	The sentence that the sensor generates is not supported by the AIS.	Check the output command and the version.
	The serial format (baud rate, etc.) does not meet the setting of the controller.	Check the serial format of the sensor.
	The sentence that the sensor generates does not match the sentence setting of the controller.	Check the serial format of the sensor.
	The valid/invalid sensor data flag is invalid.	Check if the sensor is working correctly.
	The sensor (GPS, gyro, rate-of-turn indicator) malfunctions.	Replace the sensor.
-	The control unit malfunctions.	Replace the CDJ-3182 circuit board.
Internal GPS data cannot be loaded.	Execute TEST2 of self-diagnosis. PPS GPS malfunctions in displaying GPS-INFO.	Replace the AIS transponder.
	Execute self-diagnosis of the transponder. The receiving level of PPS GPS from the satellite is low in displaying GPS.	Check the external GPS-receiving status from the satellite when the external GPS is provided.

6.3.2 Maintenance Unit

Parts that should be replaced as a whole are tabulated below.

No.	Unit Name	Model	Note
1.	AIS Transponder	NTE-182	Transponder
2.	VHF Antenna	CAV-2182	Whip antenna
3.	I/O CONTROL	CDJ-3182	Circuit board for NQE-3182
4.	TERMINAL UNIT	CQD-3182	Circuit board for NQE-3182
5.	PANEL UNIT	CCK-2779	Circuit board for NCM-779
6.	CONTROL UNIT	CDJ-2279	Circuit board for NCM-779
7.	Power Supply unit	NBD-577B	

7. AFTER-SALES SERVICE

Before returning repair

If what appears to be a defect is detected, refer to "6.3 Troubleshooting" to check if the equipment is actually defective before requesting repair.
If the defect persists, immediately stop operation and call our service center or agents.

- During the warranty period, our agencies or we (*1) will repair the malfunction without any fee, according to the specified procedure.
- After the warranty expires, we will repair the malfunction for a fee, if repair is possible.
- Item for notification
  Product name, type, manufactured data, serial number,
  information about the malfunction (the more detailed, the better),
  your company or organization name, address and phone number.

Periodical maintenance recommended

Performance of this equipment may degrade over time because parts wear out, although degradation depends on how this unit has been maintained.
We recommend periodic professional maintenance checks in addition to daily maintenance.
Call our service center or agents for periodic professional maintenance (This maintenance requires a service charge).

Call our office or the nearest agency for detailed information about after-sales service.

(*1) Refer to the inside of the back cover for contact numbers.

8. SPECIFICATIONS

8.1 AIS TRANSPONDER (NTE-182)

(1)	Frequency range	: 156.025MHz to 162.025MHz,
		: Default channels: 161.975MHz, 162.025MHz
(2)	Channel spacing	: 25kHz/12.5kHz
(3)	Frequency accuracy	: Within $\pm 3 \times 10^{-6}$
(4)	Type of emission	: F1D, F2B
(5)	Type of modulation	: GMSK, FSK
(6)	Output power	: 12.5W/2W
(7)	Rated power supply voltage	: 24Vdc (-10%, +30%)
(8)	Current consumption	: 4.5A max: when transmitting
		: 1.5A max: when receiving
(9)	Operating temperature	: -25°C to +55°C (IEC 60945)

8.2 AIS CONTROLLER (NCM-779)

8.2.1 Operation panel

(1)	Type of display	: 5.7-inch FSTN LCD, 320×240 dots
(2)	Keyboard	: 7 keys
(3)	Back-light	: For LCD and keyboard
(4)	Dimmer control	: Bright, medium1, medium2, off (Selectable from keyboard)

8.2.2 Environmental condition

(1)	Operating temperature	: -15°C to +55°C (IEC 60945)
(2)	Power voltage	: 24Vdc -10% to +30% (IEC 60945)

8.2.3 External interfaces

(1) Connection Box communication ports
One communication port meets the requirements of IEC 61162-2.

(2) External display equipment communication ports with Pilot Plug
One communication port meets the requirements of IEC 61162-2

(3) Maintenance ports
One communication port meets the RS-232C (D-sub 9pin).

8.3 CONNECTION BOX (NQE-3182)

8.3.1 Environmental condition

(1) Operating temperature : -15°C to +55°C (IEC 60945)
(2) Power voltage : 24Vdc -10% to +30% (IEC 60945)

8.3.2 External interfaces

(1) Sensor data input ports SENSOR1-1 / SENSOR2-1/ SENSOR3-1/ SENSOR4-1
Four input ports meet the requirements of IEC 61162-1.
SENSOR4-1 can receive data from IEC61162-1 sensor and half signal drive sensor such as photo-coupler driver.
(2) Sensor data input ports SENSOR1-2 / SENSOR2-2/ SENSOR3-2
Four input ports meet the requirements of IEC 61162-2.
(3) NSK for Gyro communication port
One communication port for current loop
(4) External display equipment communication ports
Two communication ports meet the requirements of IEC 61162-2
(5) External display equipment output ports
Two output ports meet the requirements of IEC 61162-2
(6) Long range communication port
One communication port meets the requirements of IEC 61162-2
(7) GNSS differential correction data communication port
One communication port meets the requirement of ITU-R M.823-2
(8) Relay terminals
One port for external alarm device

Note: IEC61162-2 interfaces comply with the following specifications.
- Output drive capacity: Differential driver output voltage is 2.0V or more (RL=100 ohms), Driver output current 50mA
- Load on the line of inputs: 100 ohms. 1 IEC61162-1 output can drive 1 IEC61162-2 input.
- Electrical isolation of input circuits: Input circuits are electrically isolated from internal circuit with opto-isolator.

8.3.3 Supported interface sentences

	Indication	Sentence format	Supported sentence formatters		
1.	SENSOR1-1 SENSOR2-1 SENSOR3-1	IEC61162-1/2	Input data	Recommend	Optional
			Longitude/Latitude Position Accuracy Time of Position	GNS GLL	GGA RMC
	SENSOR1-2 SENSOR2-2 SENSOR3-2		Datum Reference	DTM	
			RAIM Indicator	GBS	
			Speed Over Ground (SOG)	VBW	VTG OSD RMC
			Course Over Ground (COG)	RMC	VTG OSD
			Heading	HDT	OSD
			Rate of Turn (*1)	ROT	
	SENSOR4-1	ITU-R M.823-2	Input: RTCM SC-104 Ver.2.0 Type 1, 2, 7, 9		
2.	NSK	IEC61162-1	Input: VHW		
3.	AUX1 AUX2 AUX3 AUX4	IEC61162-2 IEC61993-2	Input: ABM, ACA, ACK, AIR, BBM, LRI, LRF, VSD, SSD(AUX1,AUX3) Output: ABK, ACA, ALR, DSC, DSI, LRF, LR1, LR2, LR3, TXT, VDO, VDM		
4.	LONGRANGE	IEC61993-2	Input: LRI, LRF Output: LRF, LR1, LR2, LR3		
5.	MAINTE		Prepared for future use		

(*1) Rate of Turn includes errors caused by calculation in the range of +/- 5.6 degree/minute.

8.4 POWER SUPPLY UNIT (NBD-577B)

(1) Input voltage : 100 or 220Vdc ±10% 50/60Hz Single phase
: 24Vdc (Back up power supply)

(2) Output voltage : 24Vdc