JHS-183

Automatic Identification System

INSTRUCTION MANUAL

JRC Japan Radio Co., Ltd.

Preface

Thank you for purchasing the JHS-183 Automatic Identification System (AIS).

The JHS-183 is a Class A shipborne AIS equipment that communicates ship's static data and ship's dynamic data with other vessels or coast stations on VHF channels using TDMA techniques.

- Be sure to read this manual before using the equipment.
- Keep this manual near at hand for quick reference.

FCC Warning

Changes or modifications not expressly approved by JRC, could void your authority to operate this radiotelephone.

Radio Frequency Interference Statement

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

RF exposure compliance (MPE* compliance by FCC)

The antenna used for this transmitter must be installed to provide a separation distance of at least 0.6 meters (2 feet) from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. Users and installers must be provided with antenna installation instructions and transmitting operating conditions for satisfying RF exposure compliance.

* Maximum Permissible Exposure (MPE): The rms and peak electric and magnetic field strength, their squares, or the plane-wave equivalent power densities associated with these fields to which a person may be exposed without harmful effect and with an acceptable safety factor.

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 attempt to check or repair the interior of this equipment by non-qualified service personnel, as doing so may cause fire, electric shock or malfunction. If any malfunctions are detected, contact our service center or agents.

⚠ CAUTION

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

Do not adjust 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.

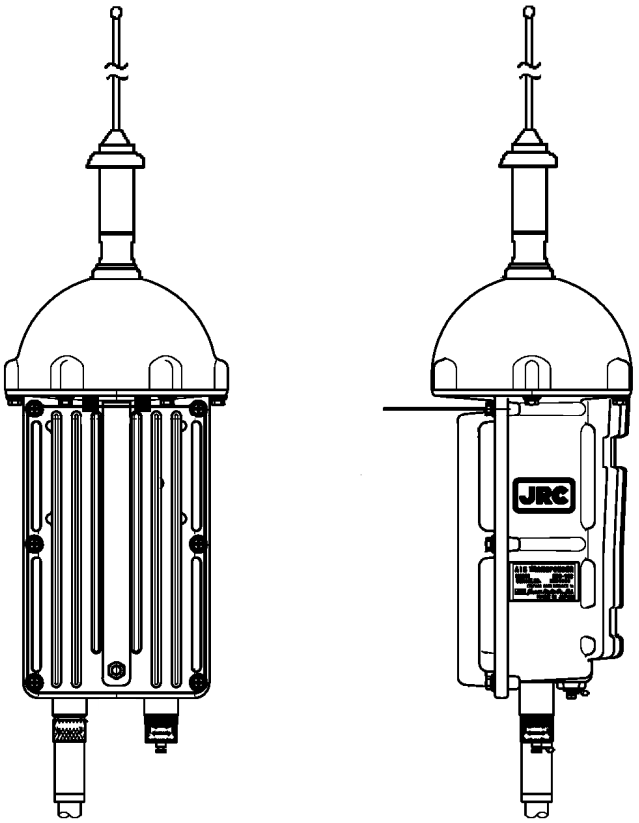
Do not place anything on this equipment.
Doing so may cause a fall, malfunction or damage to property and persons.

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

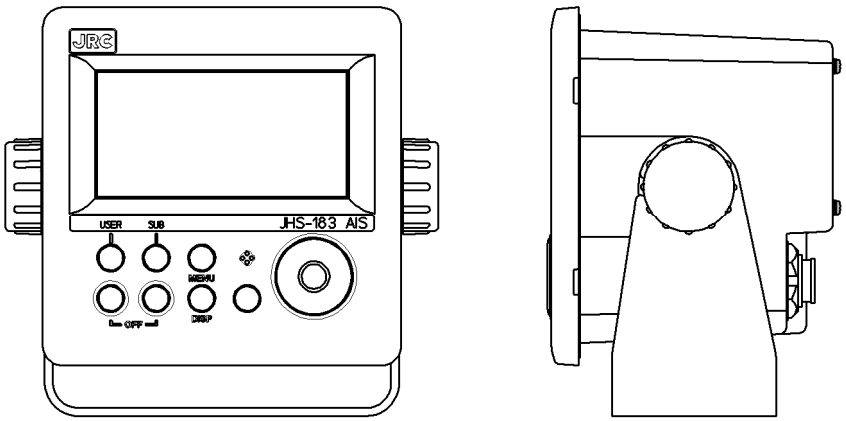
Use this AIS equipment only as assisting device for collision avoidance. Also, the officer should make the final decision to maneuver by himself.
The AIS may not give certainly complete information of shipping traffic in its vicinity.

External Views

NTE-183 AIS Transponder

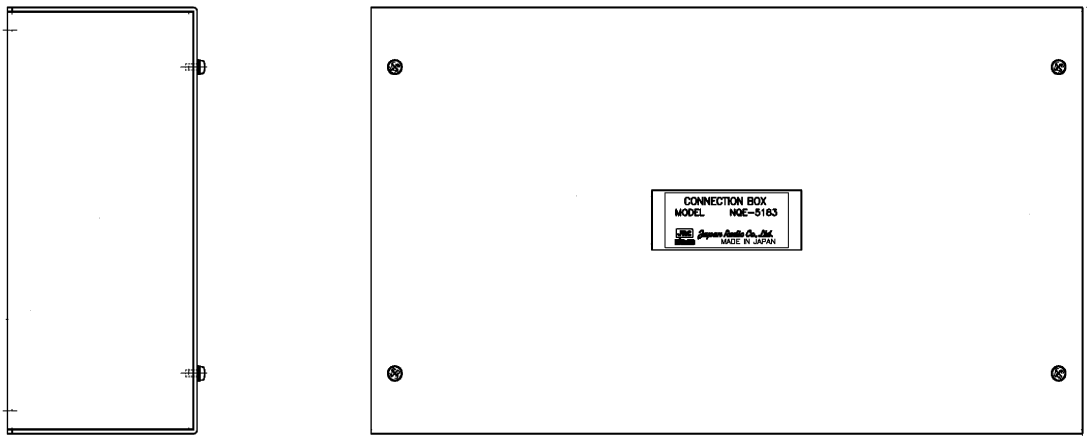


NCM-983 AIS Controller

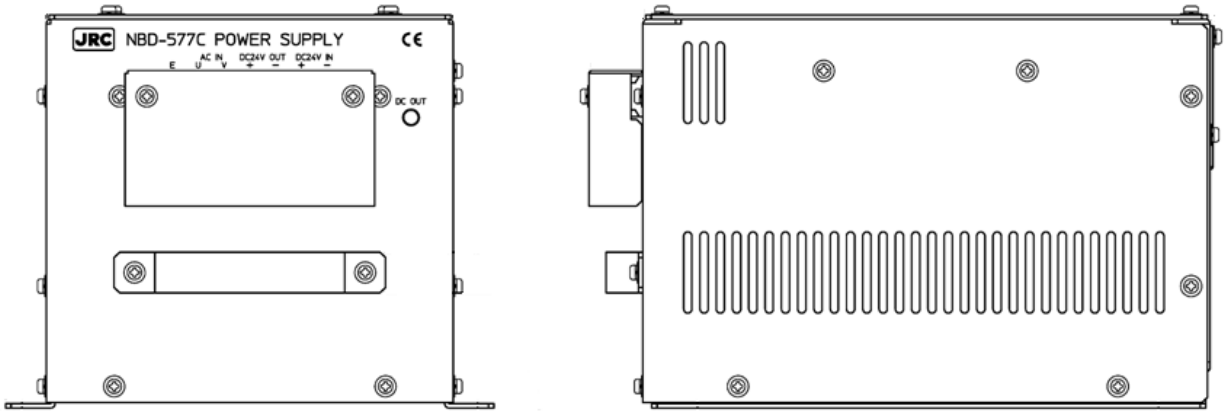


· Optional equipment

NQE-5183 Connection Box



NBD-577C Power Supply Unit



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 to ship and ship to shore.
JHS-183 meets the requirements of the SOLAS Conventions for the Class A shipborne equipment of the universal AIS. JHS-183 mainly consists of AIS Transponder, Connection Box and AIS Controller. The combined antenna and transponder design allows installation at any convenient location on any vessel. The small and simple design controller allows easy installation and operation. JHS-183 employs the latest technologies such as digital signal processing, circuit integration technology, complies ensure high performance and high reliability.

1.2 Features

● Fully Complies with International Regulations

JHS-183 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-183 employs the combined antenna and transponder design. This design allows installation at any convenient location on any vessels. For the connection between above deck component and below deck component, only one cable is needed.

● Increased Probability of Vessel Detection

JHS-183 is equipped with a guard zone alert function. When preset guard zone range and other vessel enters into the zone, JHS-183 indicates and sounds the alert. This function enhances probability of vessel detection.

● Recognition of Own-group Vessels

JHS-183 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-183 is equipped with a built-in automatic self-diagnosis function. This function allows easy maintenance and high system reliability.

● System Integration Availability

JHS-183 is equipped with various interfaces. These interfaces allow system integration and future expansions.

1.3 Components

1. 3. 1 Standard Components

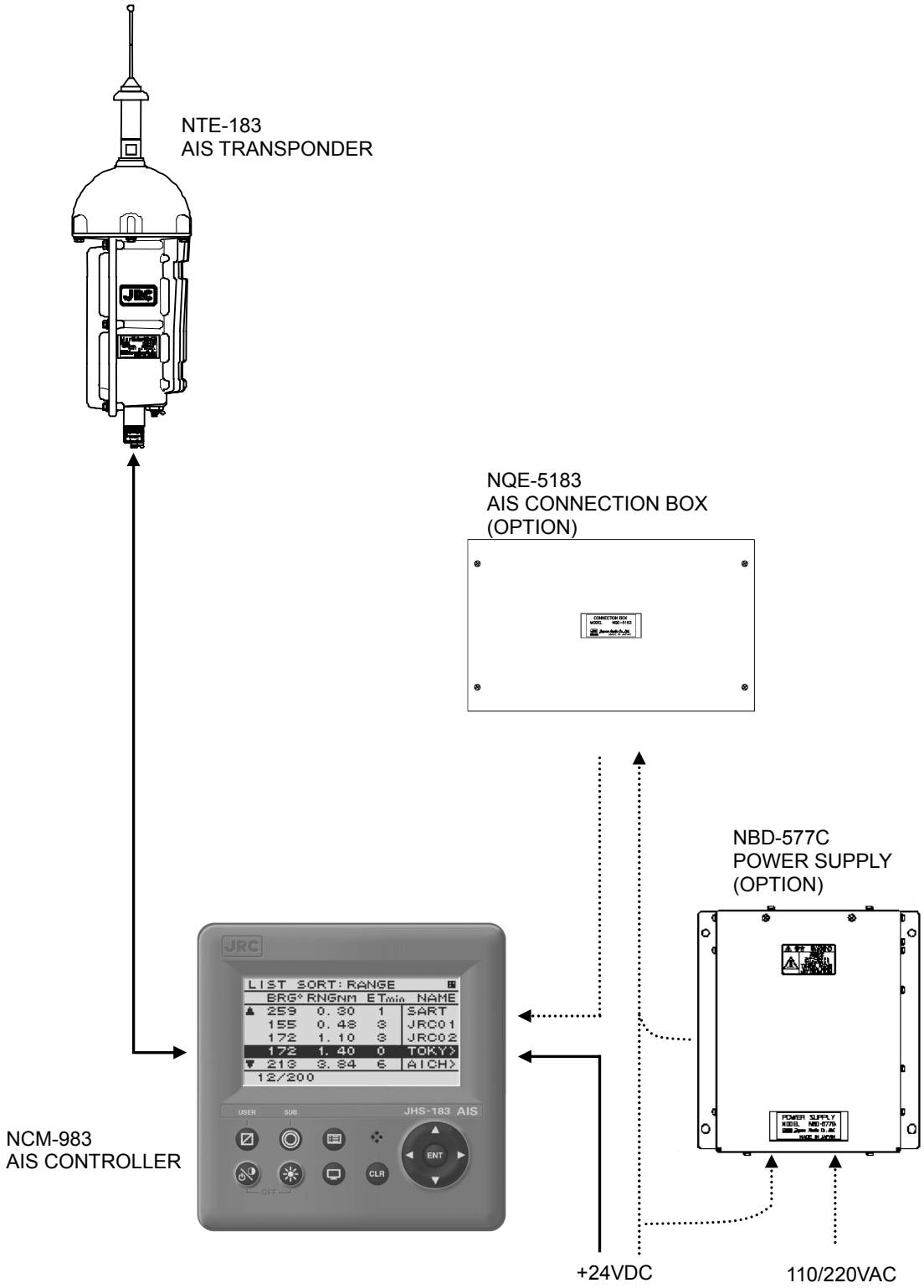
No.	Description	Model	Qty	Notes
1	AIS Transponder	NTE-183	1	With 1 whip antenna, 2 fitting bands 1 connector N-P-10U 2 Rubbers 10 x 10 x 10
2	AIS Controller	NCM-983	1	With 4 tapping screws
3	Spare parts	7ZXJD0136	1	
4	Instruction manual	7ZPJD0553A	1	English

1. 3. 2 Options

No.	Description	Model	Qty	Notes
1	AC/DC Power supply unit	NBD-577C	1	100/220V Manual Change
2	Control cable for NCM-983	CFQ-9183A	1	Length=2m
3		CFQ-9183D	1	Length=10m
3		CFQ-9183F	1	Length=20m
4	Connection box	NQE-5183	1	With 4 tapping screws
5	Data cable for NQE-5183	CFQ-9193A	1	Length=2m
6		CFQ-9193D	1	Length=10m
7		CFQ-9193F	1	Length=20m
8	AC power supply unit for Pilot PC	NBG-380	1	120Vac output
9	Pilot plug cable	CFQ-9173A	1	Wall mount cable Length=0.3m
10	Pilot plug cable	CFQ-6961	1	Length=20m
11	Pilot plug box	NQE-3150	1	Wall mount type
12	Console mounting kit for NQE-3150	MPBX40498	1	Color: 7.5BG7/2
13		MPBX45388	1	Color: N4.0
14	L-type adapter	CFQ-9184	1	

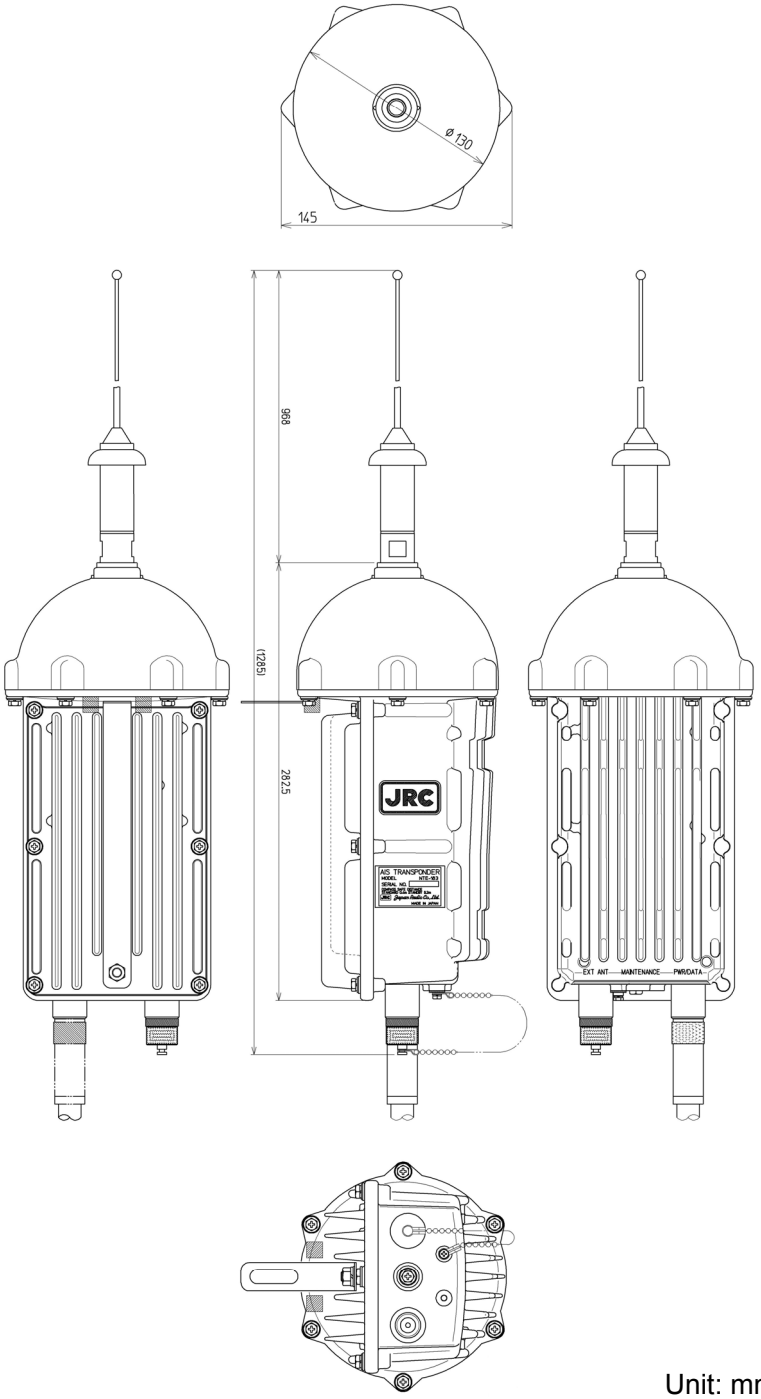
1. 3. 3 Configuration

- **System Block Diagram**



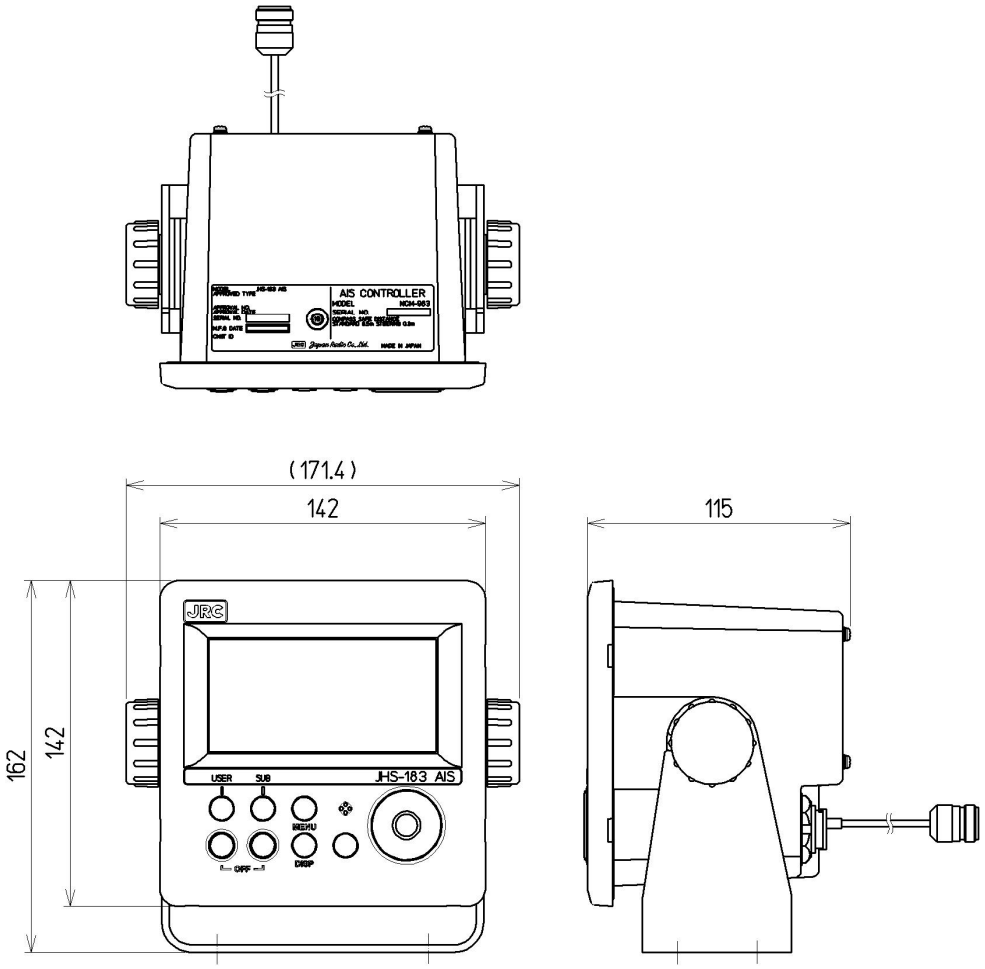
1.4 Outline

- **Outline Drawing of NTE-183 AIS Transponder**



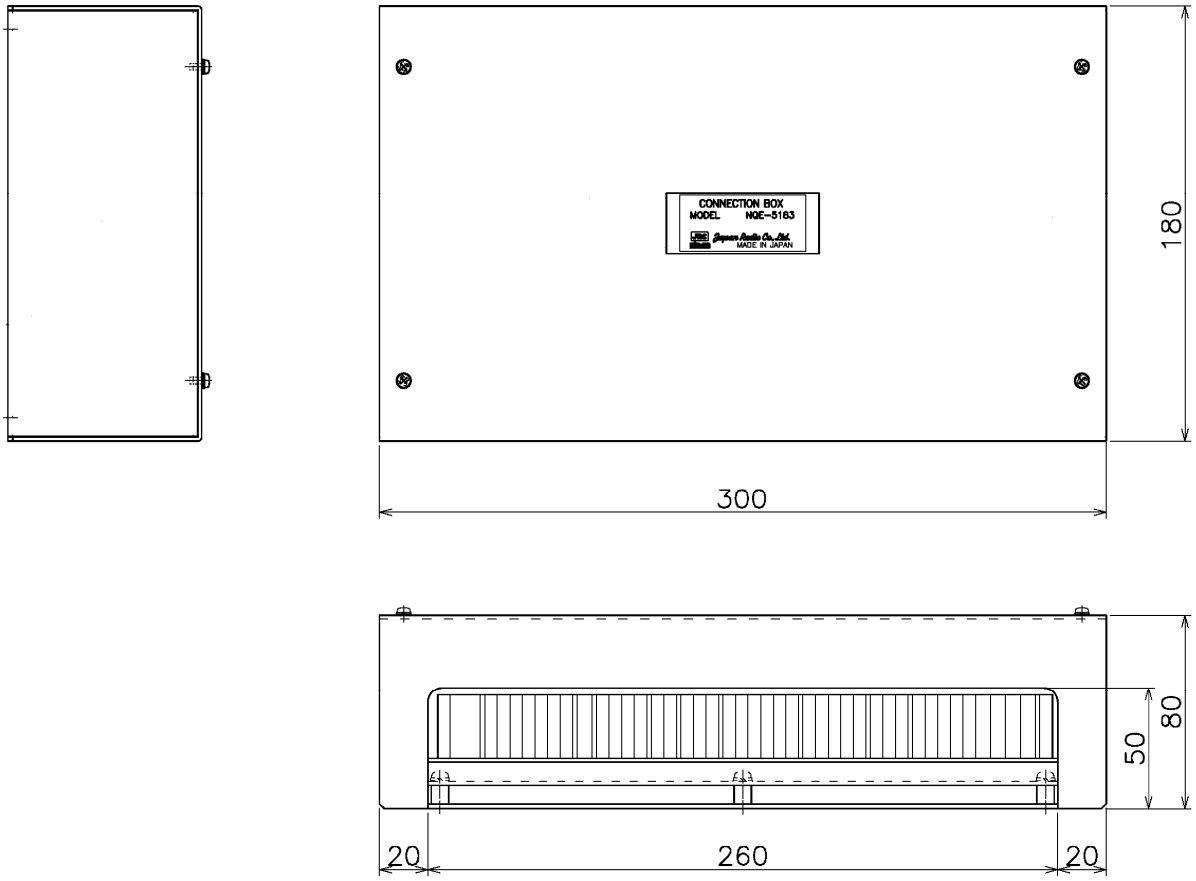
Unit: mm
Mass: approx. 2.6kg

- **Outline Drawing of NCM-983 AIS Controller**



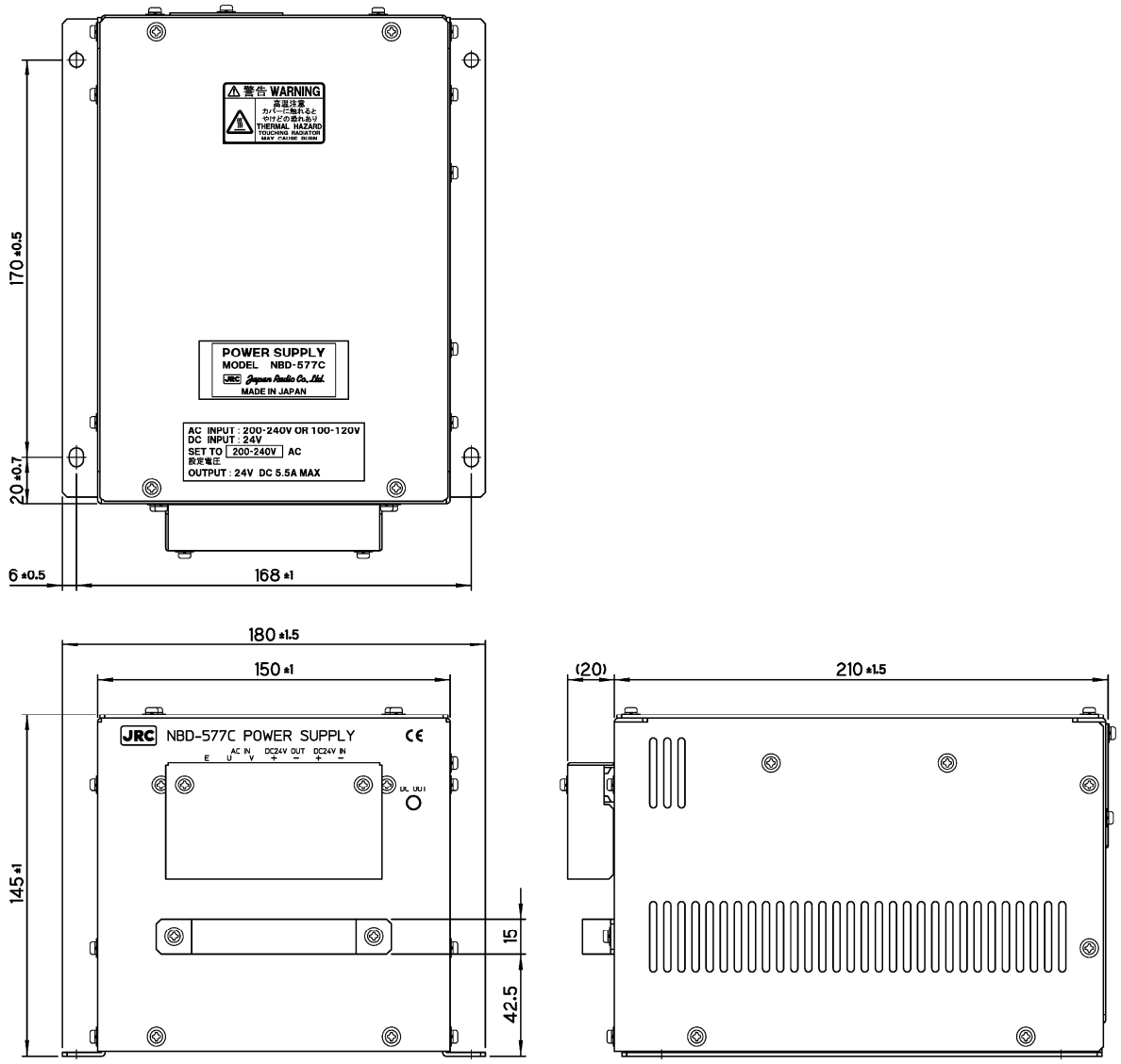
Unit: mm
Mass: approx. 2.1 kg

- **Outline Drawing of NQE-5183 Connection Box**



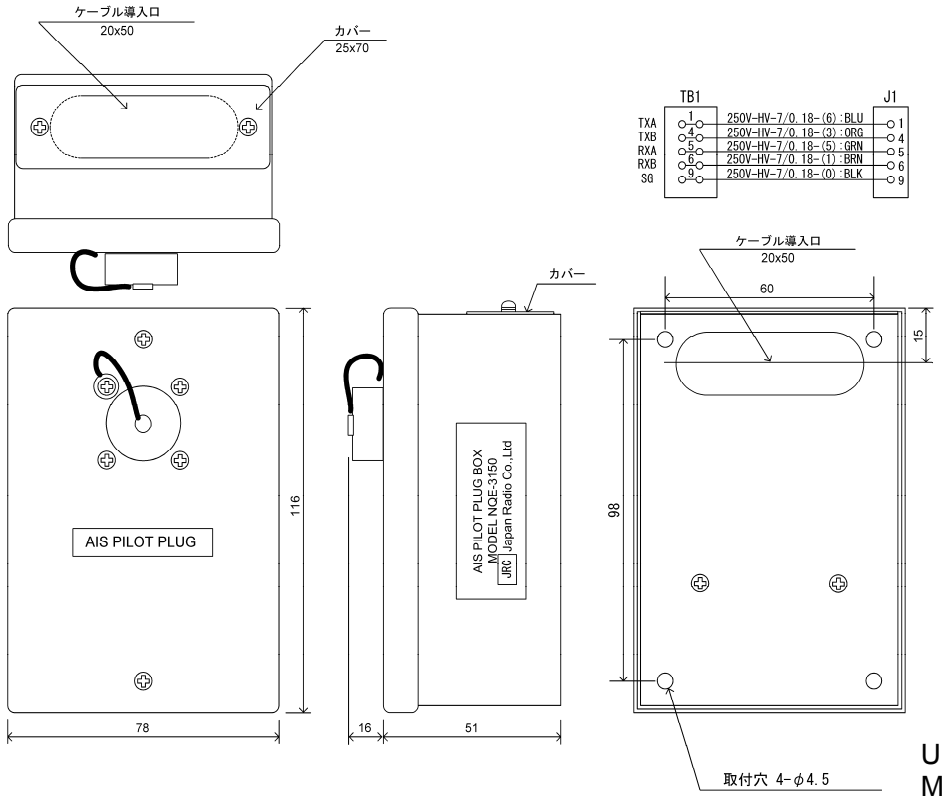
Unit: mm
Mass: approx. 2.5 kg

- **Outline Drawing of NBD-577C Power Supply Unit**



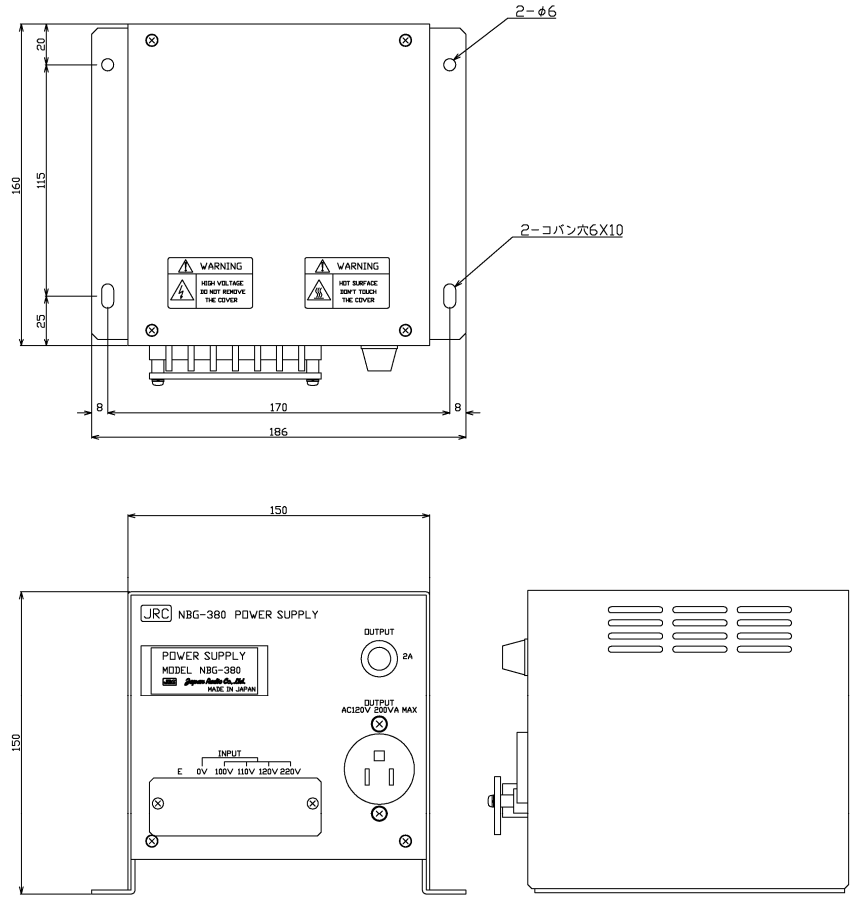
Unit: mm
Mass: approx. 5.2 kg

- **Outline Drawing of NQE-3150 Pilot Plug Box**



Unit: mm
Mass: approx 0.36kg

- **Outline Drawing of NBG-380 Power Supply Unit for Personal Pilot Unit**

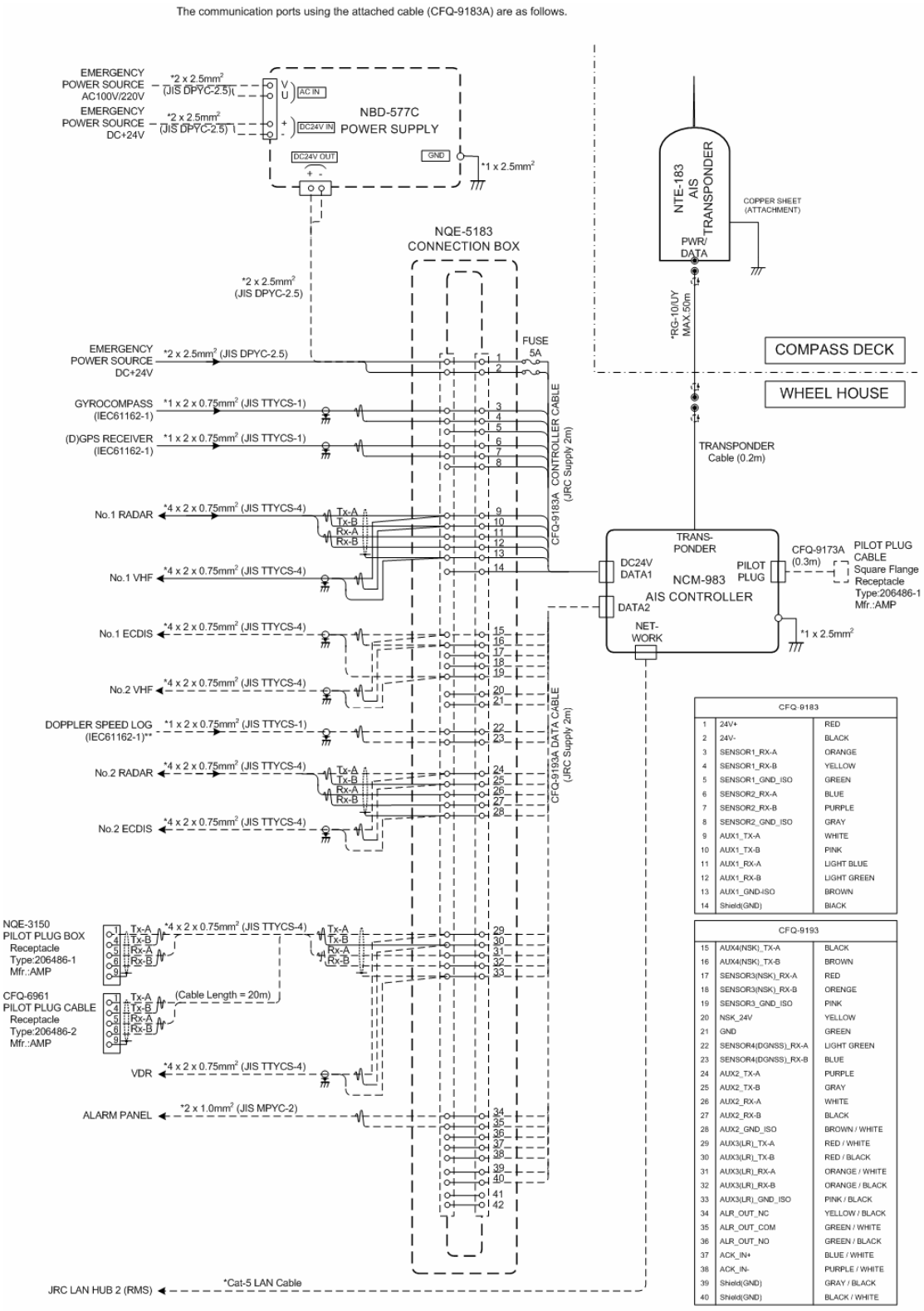


Unit: mm
Mass: approx 6.5kg

2. INSTALLATION DIAGRAM

Notes:

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



CFQ-9183		
1	24V+	RED
2	24V-	BLACK
3	SENSOR1_RX-A	ORANGE
4	SENSOR1_RX-B	YELLOW
5	SENSOR1_GND_ISO	GREEN
6	SENSOR2_RX-A	BLUE
7	SENSOR2_RX-B	PURPLE
8	SENSOR2_GND_ISO	GRAY
9	AUX1_TX-A	WHITE
10	AUX1_TX-B	PINK
11	AUX1_RX-A	LIGHT BLUE
12	AUX1_RX-B	LIGHT GREEN
13	AUX1_GND-ISO	BROWN
14	Shield(GND)	BIACK

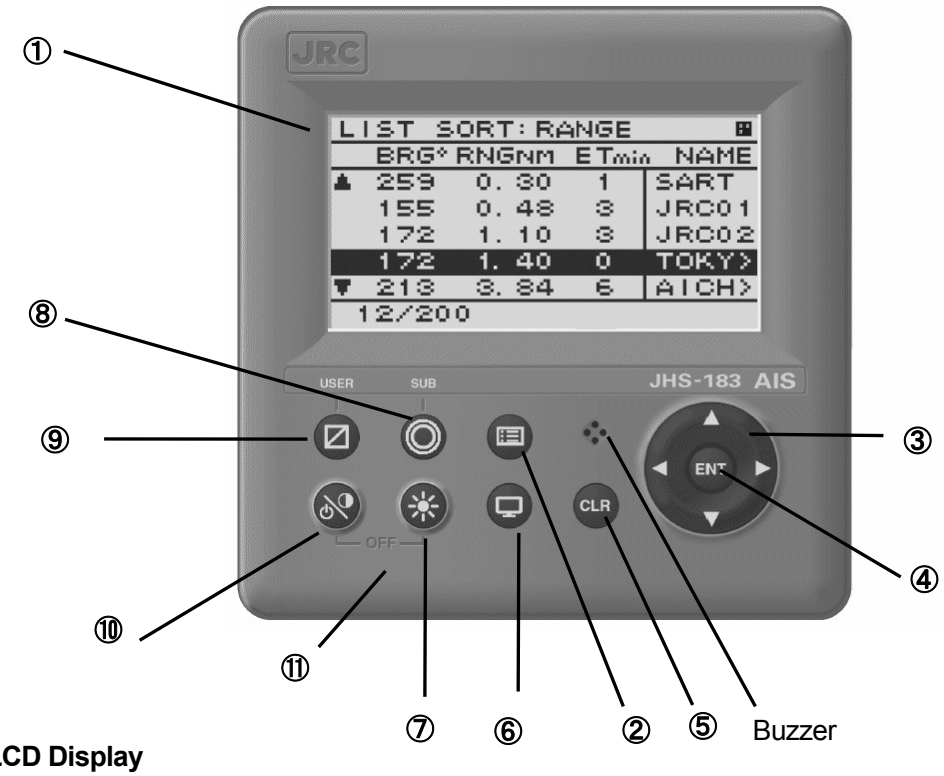
CFQ-9193		
15	AUX4(NSK)_TX-A	BLACK
16	AUX4(NSK)_TX-B	BROWN
17	SENSOR3(NSK)_RX-A	RED
18	SENSOR3(NSK)_RX-B	ORENGE
19	SENSOR3_GND_ISO	PINK
20	NSK_24V	YELLOW
21	GND	GREEN
22	SENSOR4(DGNSS)_RX-A	LIGHT GREEN
23	SENSOR4(DGNSS)_RX-B	BLUE
24	AUX2_TX-A	PURPLE
25	AUX2_TX-B	GRAY
26	AUX2_RX-A	WHITE
27	AUX2_RX-B	BLACK
28	AUX2_GND_ISO	BROWN / WHITE
29	AUX3(LR)_TX-A	RED / WHITE
30	AUX3(LR)_TX-B	RED / BLACK
31	AUX3(LR)_RX-A	ORANGE / WHITE
32	AUX3(LR)_RX-B	ORANGE / BLACK
33	AUX3(LR)_GND_ISO	PINK / BLACK
34	ALR_OUT_NC	YELLOW / BLACK
35	ALR_OUT_COM	GREEN / WHITE
36	ALR_OUT_NO	GREEN / BLACK
37	ACK_IN+	BLUE / WHITE
38	ACK_IN-	PURPLE / WHITE
39	Shield(GND)	GRAY / BLACK
40	Shield(GND)	BLACK / WHITE

Note: * marked cables are supplied by dockyard
**speed log for speed over ground

JHS-183 AIS
Interconnection Diagram
(Including Options)

3. PART NAMES AND FUNCTIONS

3.1 NCM-983 AIS Controller



① LCD Display

For further information, refer to "4 DISPLAYS on page 4-1".

② MENU key

Displays the Main-menu.

③ Up, Down, Right, Left key

Moves the cursor, scrolls the display screen, and selects the item.

④ ENT key

Determines the selection of an item and fixes a setup.

⑤ CLR key

When menu screen is displayed, return to upper menu.

When inputting some items, these inputs are canceled.

When the buzzer sounds, stop the buzzer.

⑥ DISP key

Change the screen. refer to "4 DISPLAYS".

⑦ DIM key

Adjust the back light brightness of the LCD. the value is up or down by 4 steps by each pressing.

⑧ SUB key

Display SUB MENU screen.

⑨ USER key

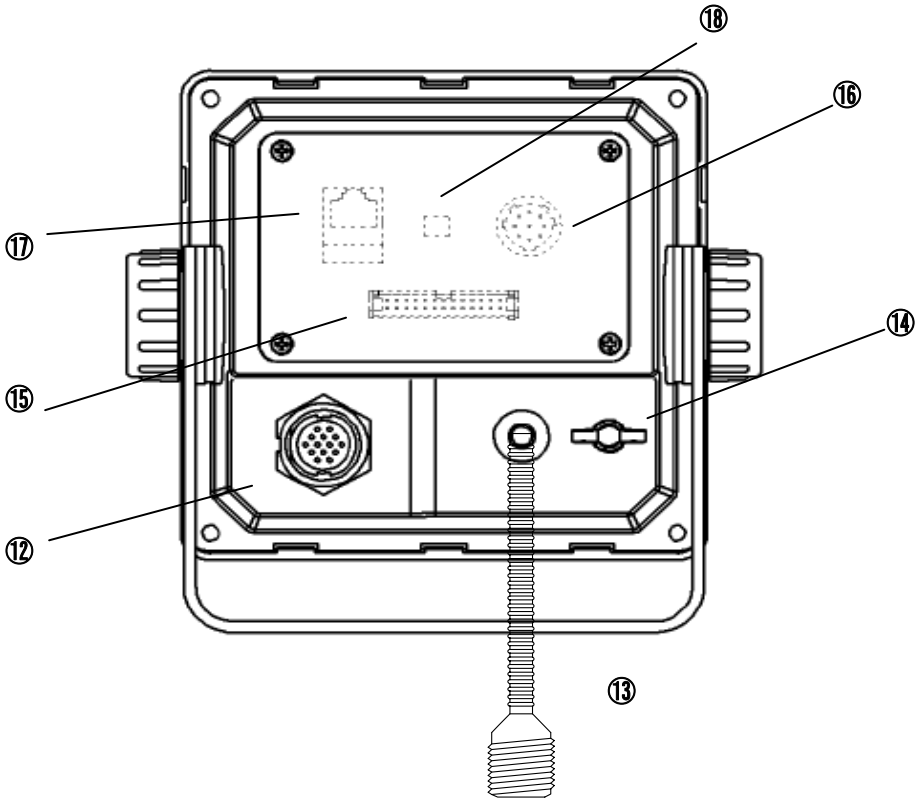
Display the screen that is used frequently. In order to assign the activity to the key, refer to the "5.3.4.2 MY CONTROLLER".

⑩ PWR/CONT key

Turn the power ON. Adjusts the contrast of the LCD, while the power is turned on. The value is up or down by 13 steps by pressing the key in turn.

⑪ PWR/CONT key and DIM key

Turn the power off with pressing both PWR/CONT key and DIM key at the same time.



⑫ **POWER/DATA1 connector**

Connect to power supply, sensor and external equipment by using controller cable or connect to connection box (option).

⑬ **AIS transponder connector**

Connect to AIS transponder by a coaxial cable.

⑭ **GND terminal**

Connect to Ship ground.

⑮ **DATA2 connector**

Connect to sensor and external equipment by data cable. Or connect to the optional connection box.

⑯ **Pilot Plug**

Connect to PC for Pilot by Pilot cable.

⑰ **LAN connector**

Connect to LAN network.
When performing maintenance, connect to PC.

⑱ **Dip switch for terminator**

When external sensors are connected in parallel, perform the terminator setting.

==========

Serial number label (Upper side)

Indicates the own serial number and AIS equipment number.

4. DISPLAYS

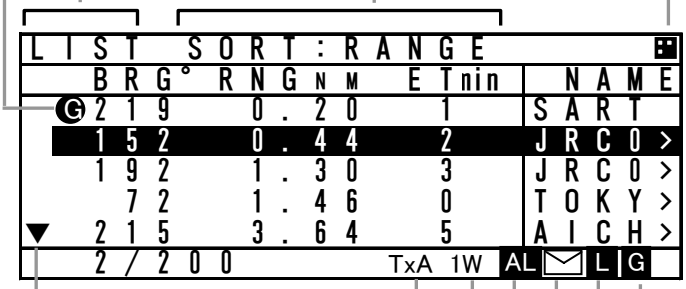
Operation indicator
Indicates the equipment condition.
When these 4 squares are flashing in order, it means normal condition.

The display order of other ships
Indicates the order displayed at the LIST SORT screen.

Screen Title
Indicates the screen's content

G Guard mark indication
When other ships enter the guard zone,
this mark is displayed and alarm buzzer sounds.

＊GROUP SHIP
When AIS has received the other ships data that is registered as group ships in the AIS, then this mark is displayed.



Main display
Displays "Other ship's list", "Other ship's detail", "Own ship's detail", "Menu display", "Graphic display" and so on.

Status bar
Displays "equipment condition", "the number of other ships" and so on.

▲/▼ Arrow indication
If there are ▲ or ▼ mark,
It means the screen continues.

TxA/TxB/RX Transmission condition
When AIS is transmitting, TxA or TxB is displayed.
When AIS operates in Silent Mode, RX is displayed.

1W Power reduction
When the transmission Power is reduced to 1W, the mark is displayed.

AL AIS Alarm
When an alarm occurs during operation, this mark flashes, this mark is flashed.
If CLR key is pressed or external equipment outputs the ACK of this alarm,
This mark is changed from flashing to being permanently on.
When the alarm condition returns to normal, the mark is turned off.

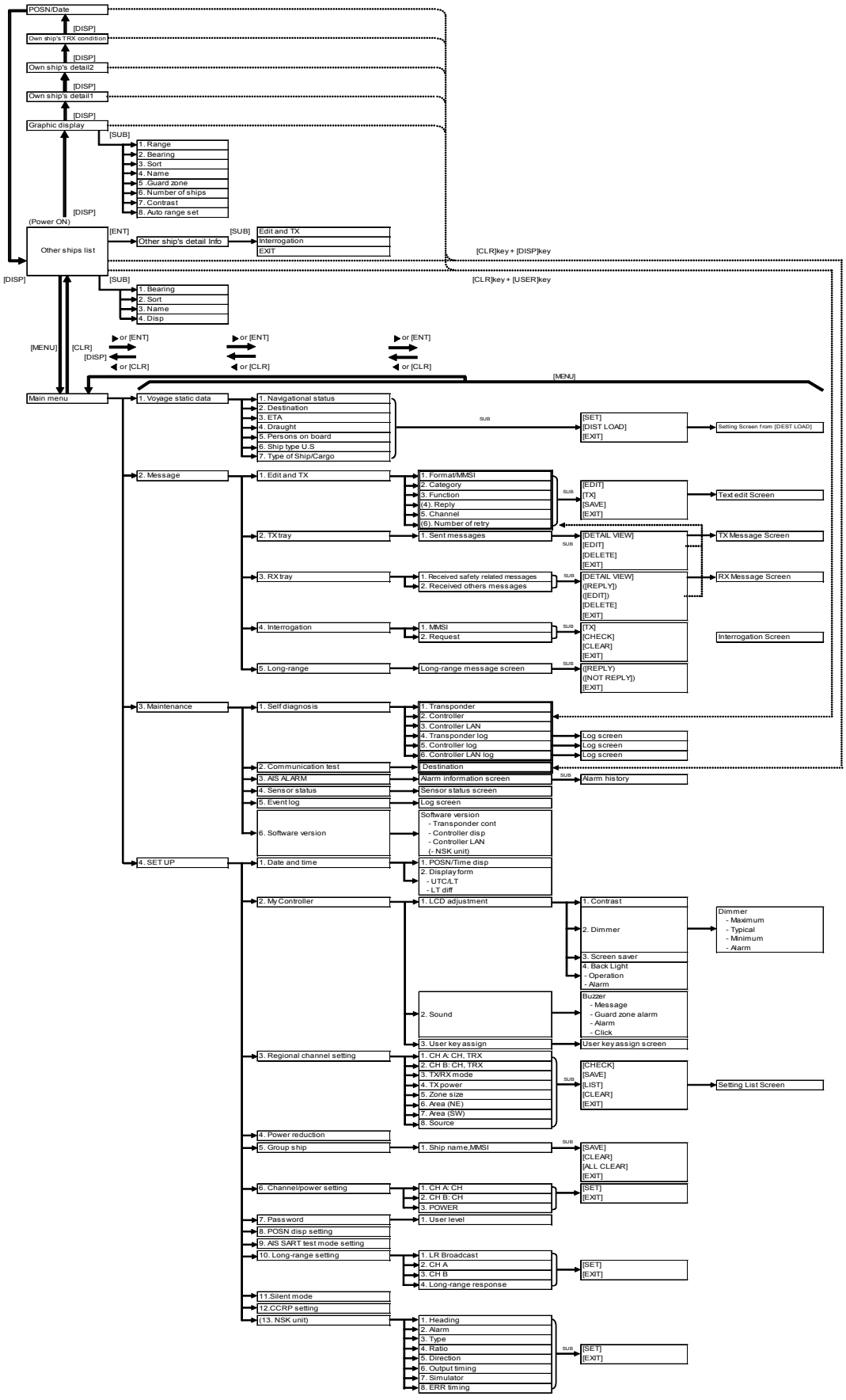
Received message indication
When a message is received, this mark is displayed and buzzer sounds.
After opening the message, this mark is turned off.

L Long range message
When a long range (LR) message is received, this mark is displayed.

G Guard zone Alarm
When the guard zone alarm occurs, this mark is displayed.

5. OPERATION

5.1 Menu Tree



5.2 Basic Operation

5.2.1 Turning ON the power

Holding down the PWR/CONT key for 1 second turns on the power, the starting screen appears about 2 seconds later, and then the Other Ships List display appears about 10 seconds later.

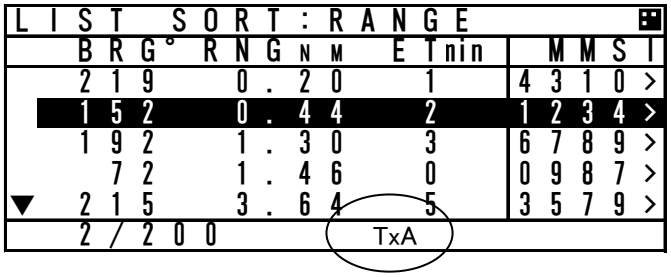
⚠Caution	Check the main power supply of the switchboard and a cable connection of NCM-983 AIS controller when the power cannot be turned on.

During operation,
Pressing MENU key displays MAIN MENU.
Pressing DISP key switches the screen.
Press and hold PWR/CONT key and DIM key displays the screen for turning off the power.

When alarm buzzer is beeping, press CLR key to stop the beeping. When alarm display is displaying, press CLR key to close the display. The alarm buzzer can be disabled through the initial setting menu. (Refer to "5.3.4.2 b) Sound".)

When the Other Ships List is displayed, transmission is started after 1 minute later.

While the transponder transmits normally, "Tx A (Tx B)" is displayed in the status line. ("TxA" and "TxB" are indicated alternately. If the transmission interval is 10s, the controller displays "TxA" for 10s and then "TxB" for 10s and repeats the operation.)



When the saved data is different between AIS Transponder and AIS Controller, the information screen is displayed.

The following items are displayed in the information screen.

- VOYAGE STATIC DATA : The voyage static data mismatching.
- SHIP STATIC DATA : The ship static data mismatching.
- MMSI / IMO NO. : The MMSI and IMO No. mismatching.
- MMSI SETTING : 000000000 : The MMSI No. is '000000000' setting.
- NG AIS TRANSPONDER [CONTROL UNIT] : Failure of the control unit (CDJ) in the AIS TRANSPONDER

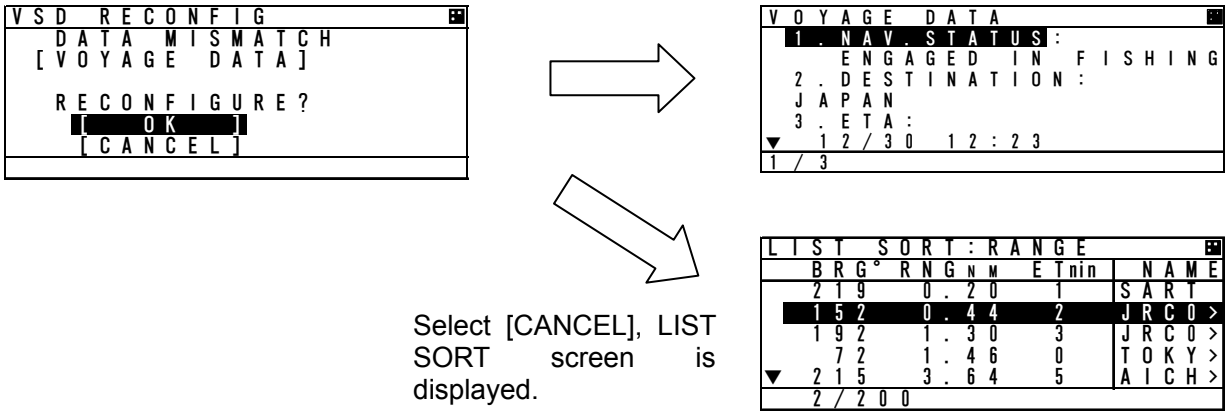
The cases when there can be a data difference is explained on the following page.

a) The voyage static data mismatch

When only voyage data is different, it is displayed as follows.
When [OK] is selected, voyage static data setting screen is displayed.
When [CANCEL] is selected, LIST SORT screen is displayed.

Confirms the voyage data and select [ENT].
Refer to 5.3.1 VOYAGE DATA SETTING for the change of the setting and the operating method.

Select [OK], VOYAGE DATA screen is displayed.



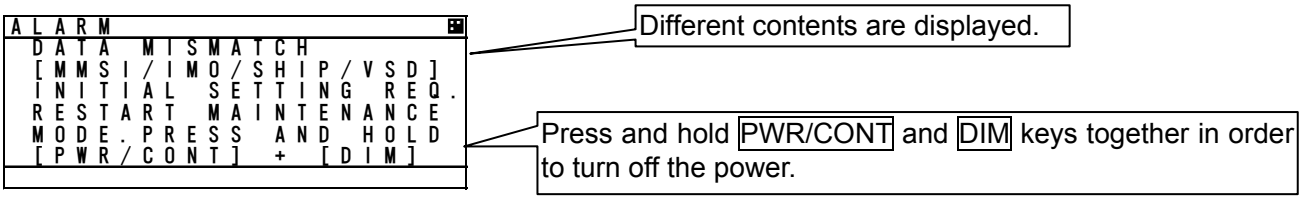
Select [CANCEL], LIST SORT screen is displayed.

b) Other data mismatching

When the following item is displayed, press and hold PWR/CONT and DIM keys together until the power is turned off (refer to 5.2.2).
- SHIP STATIC DATA
- MMSI / IMO NO.
- MMSI SETTING : 000000000

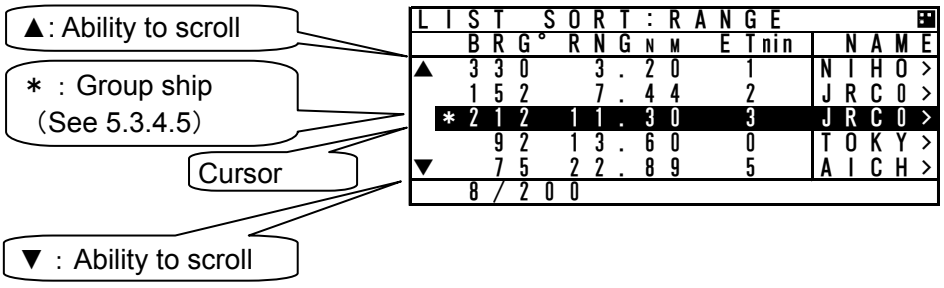
According to the information screen, contact our service center or agents.

Example) Ship static data, MMSI/IMO No., Voyage static data mismatching



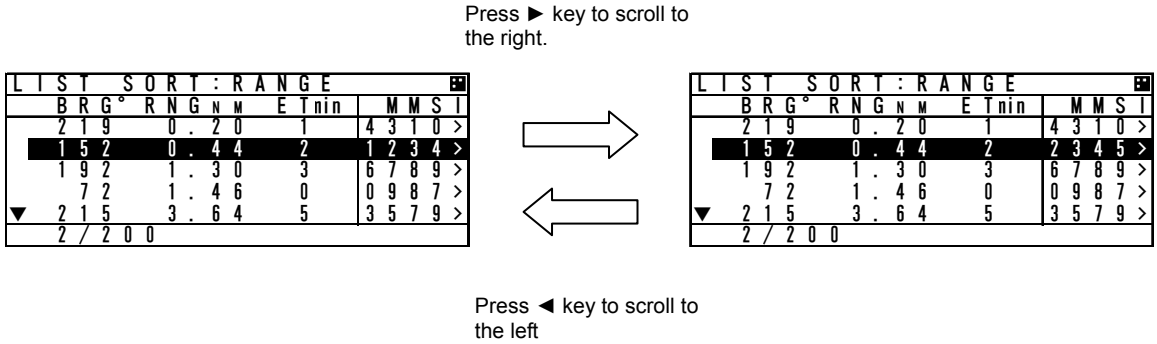
5.2.1.1 Other Ships List

After turning on the power, “LIST SORT” screen for other ships list appears. If “MAIN MENU” screen is displayed, press CLR key and “LIST SORT” screen is appeared.



In order to select a ship in “LIST SORT” screen, press “▲”key or “▼“key.
Press ENT key, the display is switched to “OTHER SHIP’S DETAIL” information screen. (Refer to 5.2.1.2 Other Ship’s Detail Information). Press CLR key at “OTHER SHIP’S DETAIL” information screen, the display is switched to “LIST SORT” screen again.

When other ship’s MMSI or ship’s name is more than 5 characters, “>” is displayed at the right edge in “MMSI” display. In this case, press “►” key in order to scroll it. To return its display, press “◄” key.

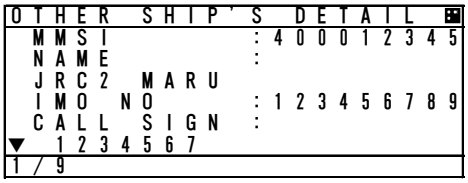


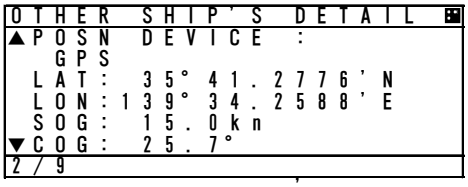
When the other ships list has more than 5 ships, “▼” mark is displayed on the bottom line in “LIST SORT” screen. Press the “▼” key to move the cursor to the last line in the screen, and press the “▼” key one more time to scroll the other ships list downward.
When the other ships list can be scroll upward, “▲” mark is displayed on the top line. Press the “▲” key to move the cursor to the first line in the screen, and press the “▲” key one more time to scroll the other ships list upward.
When scroll a lists, press and hold “▲” key or “▼” key.

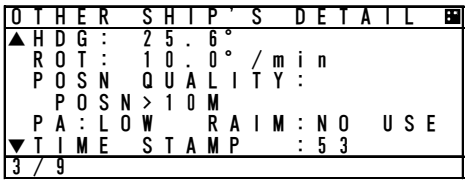
Note) The AIS-SART is displayed at the top of other ships list.

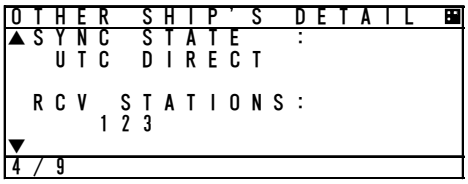
5.2.1.2 Other Ship's Detail Information

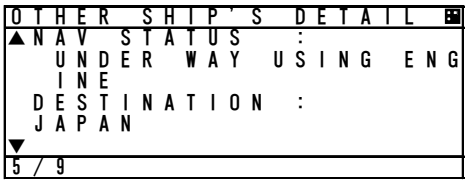
In order to see detail information of a ship selected at "LIST SORT" screen or "GRAPHIC" display screen, Press ENT key, and then the screen is switched to "OTHER SHIP'S DETAIL" information screen.

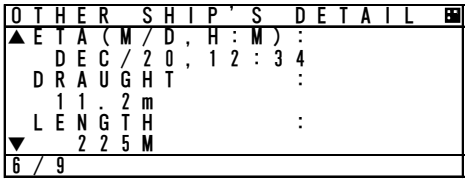


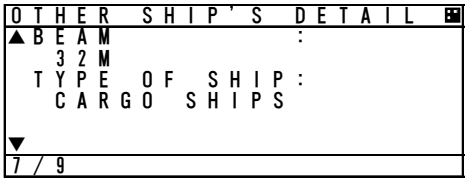


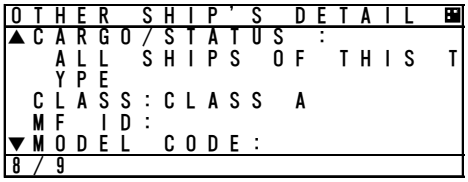


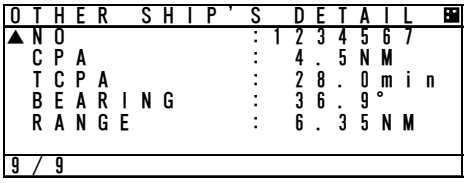




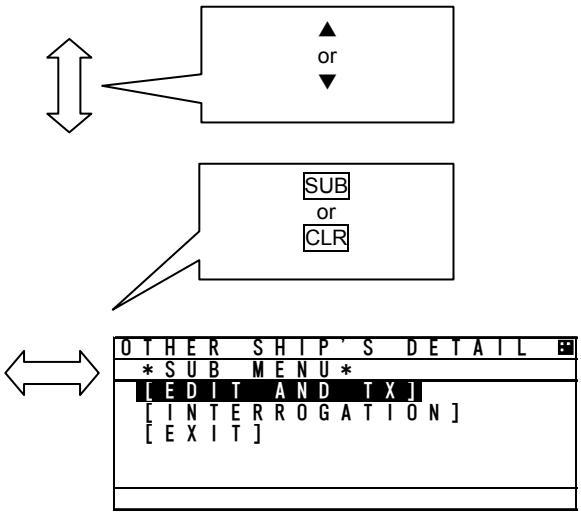








When the display is changed the next page / the previous page, press "▲"key or "▼"key.



Press SUB key in order to display the Sub menu, and then the cursor can be moved with "▲"key or "▼"key.

- When the display is switched to "LIST SORT" screen for other ships list, select [EXIT], and then press ENT key.
- When the display is switched to "EDIT AND TX" screen for sending message, select [EDIT AND TX], and then press ENT key. (refer to "5.3.2.1 Editing / Sending Messages.")
- When the display is switched to "INTERROGATION" screen for interrogating to other ship, select [INTERROGATION], and then press ENT key. (refer to "5.3.2.4 Interrogation.")

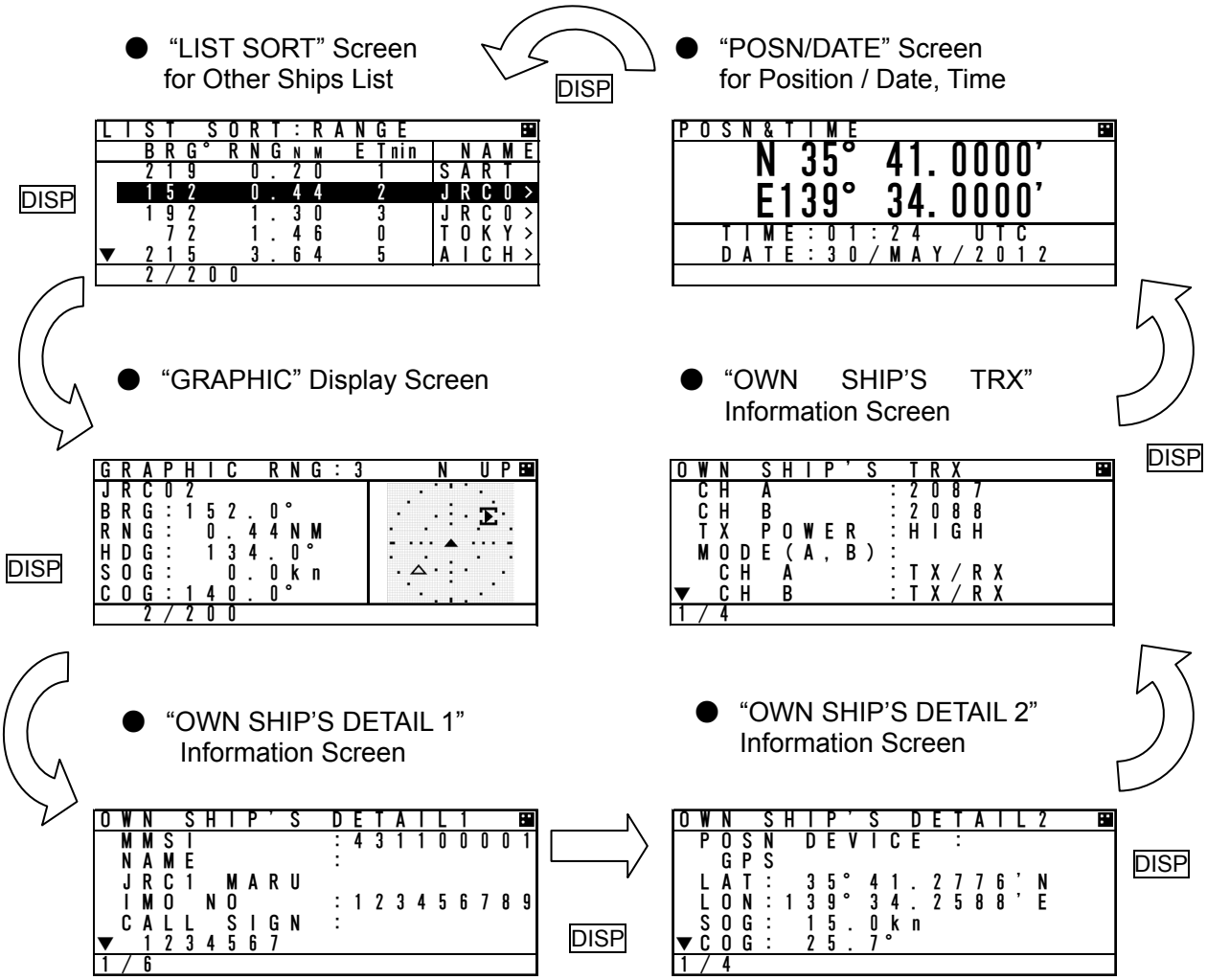
In order to switch to "LIST SORT" screen for other ships list (or "GRAPHIC" display screen), press CLR key.

The contents of screen 8/9, 9/9 are shown below.
CARGO/SATUS: Cargo type
MF ID: Manufacture code (factory code)
MODEL CODE: Model information
(e.g. AIS JHS-183, MF ID:JRC、MODEL CODE:3)
NO: Serial number of the other's AIS
CPA: Closest point of approach
TCPA: Time to closest point to approach
BEARING: The direction of the ship
RANGE: The range from the ship.

⚠ Caution:
The AIS may not give certainly complete information of shipping traffic in its vicinity.

5.2.1.3 Own Ship's Detail Information

Press DISP key at "GRAPHIC" display screen and then "OWN SHIP'S DETAIL" screen is displayed.
Own ship's information consist of 2 kinds of own ship's detail information screens and own ship's TRX information screen.
When DISP key is pressed, each screen is switched according to the following flow:



Contents for “OWN SHIP’S DETAIL 1” information screen are shown below.
Static information of own ship is mainly displayed.

To see the next page/the previous page,
press “▲”key or “▼“key.

```
OWN SHIP'S DETAIL 1
  MMSI            : 431100001
  NAME            :
  JRC1 MARU
  IMO NO          : 123456789
  CALL SIGN       :
▼  1234567
1 / 6
```

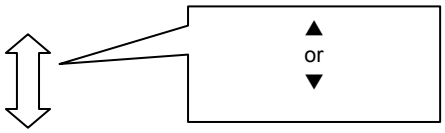
```
OWN SHIP'S DETAIL 1
▲ANT POSN  EXT      INT
   BOW       : 200m   180m
   STR       : 100m   120m
   POR       :  20m    20m
   STA       :  10m    10m
▼LENG 300m  BEAM    30m
2 / 6
```

```
OWN SHIP'S DETAIL 1
▲POSN DEVICE  :
   GPS
  NAV STATUS    :
   ENGAGED IN FISHING
▼
3 / 6
```

```
OWN SHIP'S DETAIL 1
▲DESTINATION  :
  JAPAN
  ETA(M/D,H:M) :
   DEC/21,12:23
▼
4 / 6
```

```
OWN SHIP'S DETAIL 1
▲DRAUGHT        :
   12.5m
  PERSONS:8191 OR MORE
  TYPE OF SHIP:
   PASSENGER SHIPS
▼
5 / 6
```

```
OWN SHIP'S DETAIL 1
▲CARGO/STATUS  :
   ALL SHIPS OF THIS T
   YPE



6 / 6
```



Contents for “OWN SHIP’S DETAIL 2” information screen are shown below.
Dynamic information of own ship is mainly displayed.

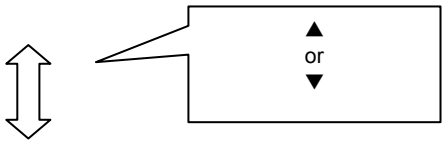
```
OWN SHIP'S DETAIL2
 POSN DEVICE :
   GPS
 LAT:  35° 41.0000N
 LON: 139° 34.0000E
 SOG:  10.0kn
▼COG:  30.0°
1/4
```

```
OWN SHIP'S DETAIL2
▲HDG:   6.4°
 ROT:  10.0°/min
 POSN QUALITY:
   POSN>10M
 PA:LOW   RAIM:NO USE
▼TIME STAMP   :27
2/4
```

```
OWN SHIP'S DETAIL2
▲ACC FROM RAIM:
   NO RAIM PROCESS AVA
   ILABLE


▼
3/4
```

```
OWN SHIP'S DETAIL2
▲SYNC STATE   :
   UTC DIRECT

 RCV STATIONS:
       10
▼
4/4
```

To see the next page/the previous page, press “▲”key or “▼“key.



Contents for “OWN SHIP’S TRX” information screen are shown below.
Own ship radio information is mainly displayed.

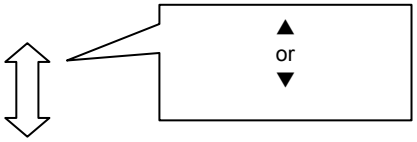
```
OWN SHIP'S TRX
  CH A          :2087
  CH B          :2088
  TX POWER      :HIGH
  MODE(A,B):
    CH A        :TX/RX
▼   CH B        :TX/RX
1/4
```

```
OWN SHIP'S TRX
▲AREA(NE)
    N 36° 0.0000
    E139° 45.0000
  AREA(SW)
    N 35° 20.0000
▼   E139° 15.0000
2/4
```

```
OWN SHIP'S TRX
▲SOURCE           :
    MANUAL INPUT
  BASE STN MMSI:

  UTC
▼   2012/MAY/16  02:09
3/4
```

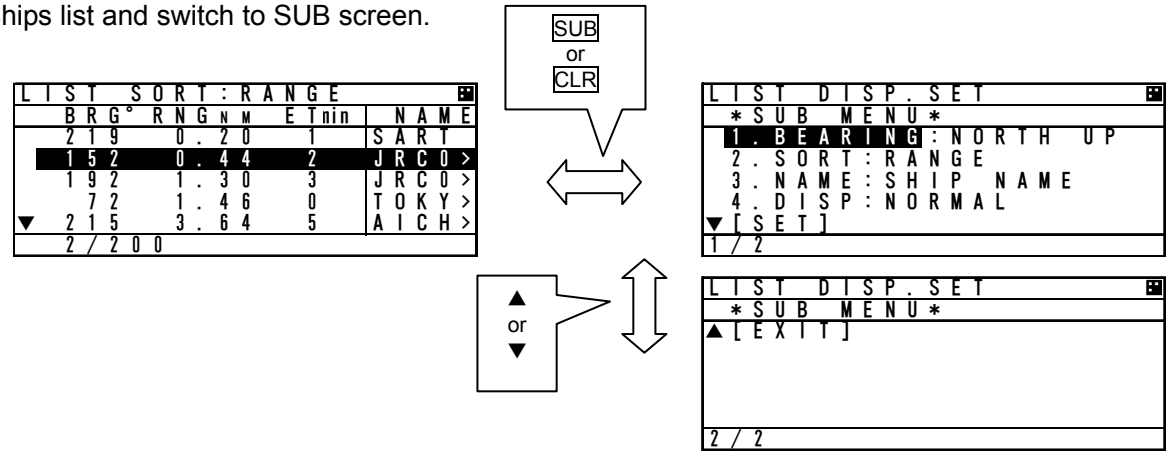
```
OWN SHIP'S TRX
▲ZONE SIZE        :5NM




4/4
```

To see the next page/the previous page,
press “▲”key or “▼“key.



5.2.1.4 Display Setup of Other Ships List

In order to change the display setting of other ship list, press SUB key at “LIST SORT” screen for other ships list and switch to SUB screen.



When the screen is switched from the SUB menu screen to “LIST SORT” screen, press CLR key or select [EXIT], and then press ENT key.

At SUB menu screen, Other ship’s bearing basis, sorting of range, TCPA or own group priority order, and ship’ s name indication in “LIST SORT” screen (upper left figure) can be set.
Select item at the SUB screen and press ENT key, then select a desirable indication and press ENT key again.

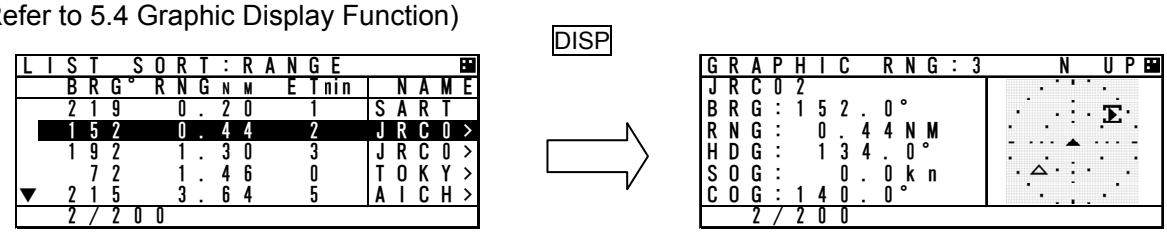
1. BEARING:	HEAD UP	: Other ship’s bearing value is displayed on the basis of own ship’s bearing.
	NORTH UP	: Other ship’s bearing value is displayed with the north base.
2. SORT	: RANGE	: Other ships are displayed in the order of small range from own ship.
	TCPA	: Other ships are displayed in the order of small TCPA with own ship.
	GROUP	: Other ships are displayed with the priority for own group ships.
3. NAME	: SHIP NAME	: When receiving static information, the ship’s NAME is displayed.
	MMSI	: Ship’s MMSI is displayed.
4. DISP	: NORMAL	: “LIST SORT” screen is displayed with BRG, RNG, ET and NAME.
	TYPE 1	: “LIST SORT” screen is displayed with BRG, RNG, and NAME.
	TYPE 2	: “LIST SORT” screen is displayed with BRG, and NAME.

“ETmin” means the “elapsed time” from the last data received, After 7 minutes elapsed, the ship is erased from the other ship’s list. After 18 minutes elapsed, the AIS-SART is erased from the other ship’s list.

Select [SET] and then press ENT key to determine. “LIST SORT” screen for other ships list is displayed with the setting.

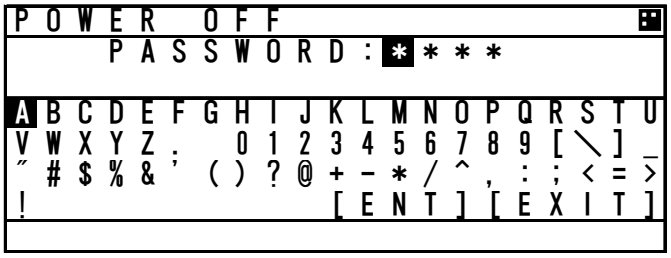
5.2.1.5 Graphic Display

In order to switch from “LIST SORT” screen for other ships list to “GRAPHIC” display screen, press DISP key.
(Refer to 5.2.1.3 for DISP key operation)
(Refer to 5.4 Graphic Display Function)



5.2.2 Turning OFF the Power

⚠ CAUTION: The PASSWORD must be entered to turn off the power.
The password preset at shipment is “0000”. The administrator must manage PASSWORD.



When turn off the power, press and hold PWR/CONT key and DIM key together for 1 second and then “PASSWORD” input screen is displayed. Enter 4 digits of password, select [ENT] and press ENT key. Password is composed of alphanumeric “A～Z” and “0～9”.
(Refer to “5.2.4 Character Pad Window Display and Input Method” to input the password.)
After the correct password is inputted, the power is turned off.

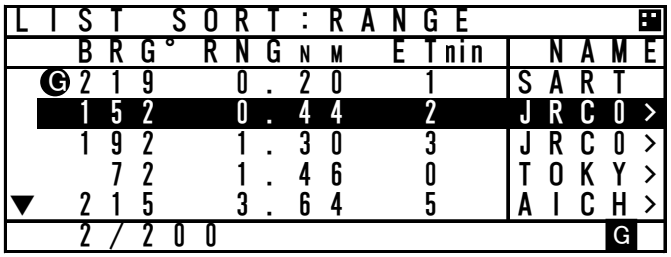
⚠ Caution: If the power is turned off by main power supply, the setup contents or received messages may not be saved.

5.2.3 Alarm

5.2.3.1 Guard Zone Alarm

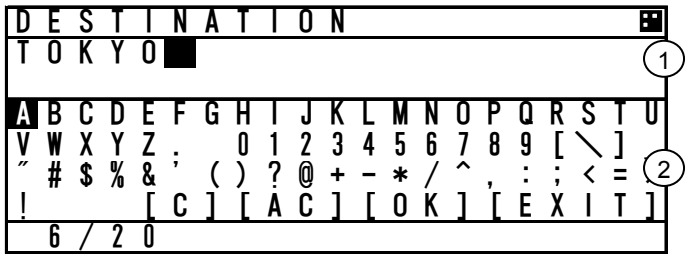
If a ship enters within the guard zone range, the alarm status “G” appears on the bottom of the screen and an alarm buzzer sounds. In order to set GUARD ZONE, refer to “5.4.3.2 Display Item Explanation”. The setting default is “OFF”. In case GUARD ZONE alarm is set “ON” and the alarm sound is set “OFF” in the BUZZER setting, the GUARD ZONE alarm does not sound.

The ship within the guard zone range is displayed “G” in the left side of the line.
In order to stop the alarm buzzer, press CLR key.



5.2.4 Character Pad Window Display and Input Method

a) Inputting characters
When character input is needed, the character pad window is displayed.



When character input operation starts, the cursor is on “A” in the character pad window.
Pressing “►“ in the arrow key, the cursor is moved to like that “B”, “C”, “D”, ----.
Set the cursor on a desirable input character, and then press ENT key.

The number of characters is displayed in the bottom.

①Text Setting Window ②Character Pad Window

- In order to move the cursor to the other window (①window ←→②window), press SUB key.
- When clear all inputting characters, select [AC] and then the cursor is moved to the top in the character input line.
- When clear the current inputting character, select [C] and then the cursor is moved to the one-character front.

b) Inserting a character

The procedure which inserts a character in the text is followings:

1. Press SUB key in order to move the cursor in Text window.

2. Then the cursor in Text Window can be moved with the arrow key.
   Therefore move the cursor to insert position in the text.

3. Press SUB key in order to move the cursor in Character pad window.
   Select a desirable insert character and press ENT key.
   Therefore the selected character is inserted at the cursor position in Text window.

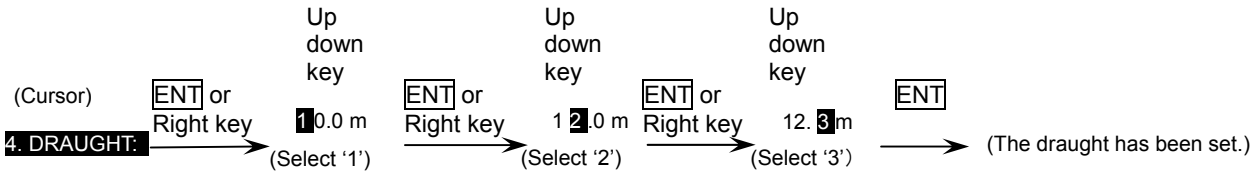
4. After inserted characters, if you wish to move the cursor to the end of the text, press SUB key to move the cursor in Text window, and then move the cursor to the end of the text.

5. Additional characters can be inputted at the end of the text.

5.2.5 Numerical Input

The procedure for numerical input is as follows:
The following is inputting a draught value to explain the procedure.

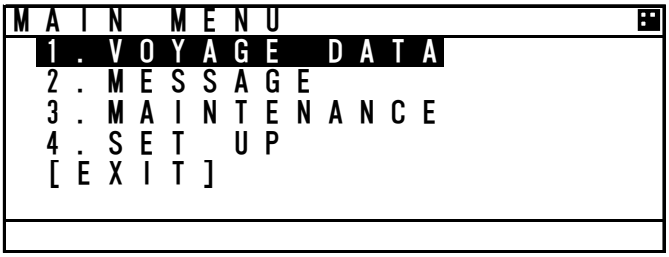
e.g.) DRAUGHT: 12.3 m



When CLR or left key is pressed, the cursor is moved back to 1 digit left position.

5.3 Main Menu

“MAIN MENU” screen displays menu items for setting, sending messages, and maintenance, etc.
In order to display “MAIN MENU” screen, press MENU key during displaying any screen.
(At “Power off screen” and “ALARM popup screen”, MENU key is invalid.)



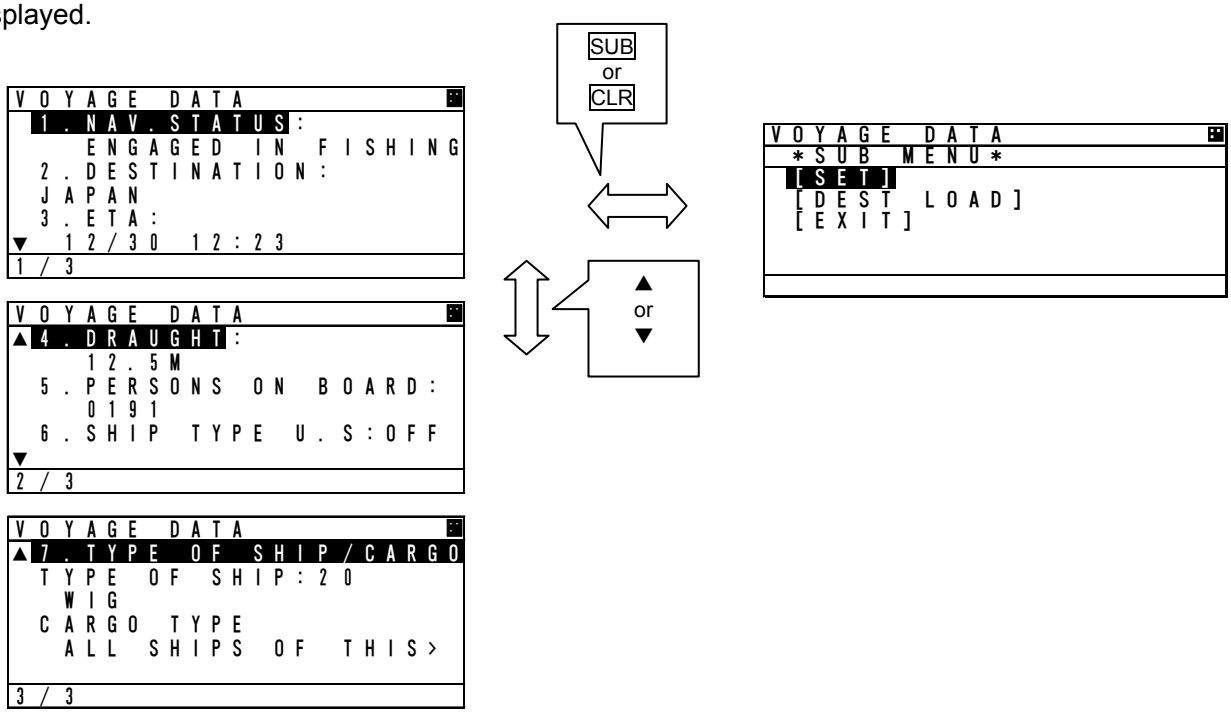
Press ▲ key or ▼ key for moving the cursor over the menu to select a desirable item.
Press ENT key, and then the selected menu is displayed.

The outline of the each menu is as follows:
1. VOYAGE DATA ･･･displays a menu for setting voyage information (Refer to 5.3.1)
2. MESSAGE･･･displays a menu for sending/receiving messages (Refer to 5.3.2).
3. MAINTENANCE･･･displays a menu for setting maintenance conditions (See 5.3.3).
4. SET UP･･･displays a menu for setting the device (See 5.3.4).

Note)
When the screen same in a menu screen is displayed for 10 minutes, pop-up (Attention The menu will be closed automatically, soon) is displayed and a display is updated to other ship list.

5.3.1 Voyage data setting

Select 1. VOYAGE DATA in “5.3 MAIN MENU” screen, “VOYAGE DATA” menu screen for setting is displayed.



Press ▲ key or ▼ key to select a desirable setting item and press ENT key, then selecting item and inputting data are available.
To switch to “VOYAGE DATA” menu screen, press CLR key during selecting item or inputting data.
To switch to “MAIN MENU” screen, press CLR key at “VOYAGE DATA” menu screen.

When the SUB menu screen is displayed, press SUB or CLR key and switch to “VOYAGE DATA” menu screen.
Select [SET] at the sub menu screen, the setting is saved. If [EXIT] is selected at the sub menu screen, the screen is returned to “MAIN MENU”.

In order to select a destination from past inputted destinations, Select [DEST LOAD] at the sub menu. (Refer to “5.3.1.7 Re-load destination”.)

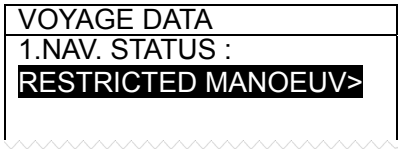
⚠ Caution:	In order to save the setting, select [SET] at the SUB menu. If you switch to any other screen without selecting [SET], the setting is not saved.

The outline of the each menu is as follows:

1. NAV. STATUS･･･select navigational status. (Refer to 5.3.1.1)
2. DESTINATION･･･input the destination. (Refer to 5.3.1.2)
3. ETA･･･input ETA(expected time for arrival). (Refer to 5.3.1.3)
4. DRAUGHT･･･input draught value.(Refer to 5.3.1.4)
5. PERSONS ON-BOARD･･･input the number of persons on-board.(Refer to 5.3.1.5)
6. SHIP TYPE U.S･･･select type ship.(Refer to 5.3.1.6)
7. TYPE OF SHIP/CARGO･･･select ship/cargo/status.(Refer to 5.3.1.7)

5.3.1.1 Navigational Status

Select 1. NAV. STATUS at “VOYAGE DATA” menu screen (refer to “5.3.1 VOYAGE DATA SETTING”), the navigational status can be selected. Press ▲ key or ▼ key in order to select a desirable item, and then press ENT key.



The Navigational Status can be selected from listed below:

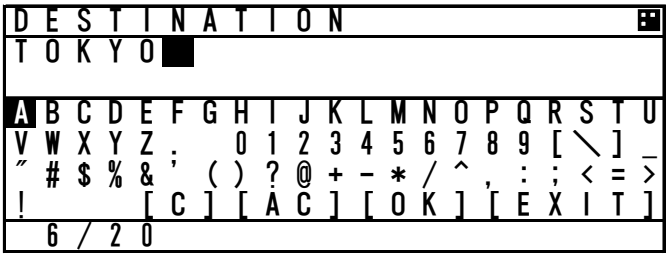
UNDER WAY USING ENGINE
AT ANCHOR
NOT UNDER COMMAND
RESTRICTED MANOEUVRABILITY
CONSTRAINED BY HER DRAUGHT
MOORED
AGROUND
ENGAGED IN FISHING
UNDER WAY SAILING
RESERVED FOR HSC (High Speed Craft)
RESERVED FOR WIG (Wing-in-Ground Effect Craft)
NOT DEFINED

5.3.1.2 Destination Input

Select 2.DESTINATION at “VOYAGE DATA” menu screen (refer to “5.3.1 VOYAGE DATA SETTING”), the name of the destination can be inputted. The name can be inputted with using the Character Pad window at the bottom of the screen.
Refer to “5.2.4 Character Pad Window Display And Input Method” in order to input characters.

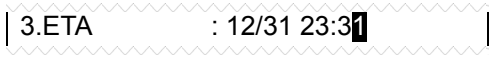
Operation at the Destination Name Input screen is as follows:

- Up to 20 characters can be entered for naming destination.
- Select [EXIT] on the bottom right of the Character Pad window, discard a current inputting characters and the cursor is returned to 2.DESTINATION.
- Select [OK], Name of destination has been set. and the cursor moves to the next item “3.ETA”.
- Select [AC], all characters inputted are cleared, and the cursor moves to the top of the line.
- Select [C], the current character is cleared, and the cursor moves to the one- character front.



5.3.1.3 Estimated Time of Arrival (ETA) Input

Select 3. ETA at “VOYAGE DATA” menu screen (refer to “5.3.1 VOYAGE DATA SETTING”), ETA (Expected Time of Arrival) can be inputted.
(Refer to “5.2.5 Numerical Input” for numerical input procedure.)



ETA input procedure is as follows:
Input numerals for ETA on UTC in the order of Month-Day-Hour-Minute with ▲ key or ▼ key.
‘/’ will be inserted automatically.
After inputting the last “Minute”, the cursor moves to the next item “4. DRAUGHT” (Draught Value Input).

5.3.1.4 Draught Value Input

Select 4. DRAUGHT at “VOYAGE DATA” menu screen (refer to “5.3.1 VOYAGE DATA SETTING”), the draught value can be inputted. Input a value according to the procedure of ”5.2.5 Numerical Input”.
The input range of draught is between 0 and 99.9 m.
When the inputted value is greater than 25.5 m, “25.5M OR GREATER” is displayed.

After pressing ENT key and the draught value has been set. Then the cursor moves to the next item “5.PERSONS ON BOARD”.

5.3.1.5 Persons on Board Input

Select 5. PERSONS ON BOARD at “VOYAGE DATA” menu screen (refer to “5.3.1 VOYAGE DATA SETTING”), the number of persons on board can be inputted.
Input a value with ▲ key or ▼ key according to the procedure of ”5.2.5 Numerical Input”. The input range of PERSONS is between 0 and 9999.
When the inputted number is more than “8191”, “8191 OR MORE” is displayed.

After pressing ENT key and the draught value has been set. Then the cursor moves to the next item “6.SHIP TYPE U.S.”.

5.3.1.6 Ship type U.S.

When 6.SHIP TYPE U.S. is selected, ship types is ready to be selected.
Press the▲ key or ▼ key and select the “ON” or “OFF”.
When "ON" is selected, the ship types are changed to US coast guard' from 'international'.
When "OFF" is selected, the ship types are changed to ' international' from US coast guard '.
If the ENT key is pressed, the selection is made and the cursor moves to the next item ”7. Type of ship/cargo”.

OFF : International
ON : US

Ship types for U.S.

5.3.1.7 Type of Ship/Cargo Type Selection

When 7.TYPE OF SHIP/CARGO is selected, Ship and Cargo Type are ready to be selected.
When 7.TYPE OF SHIP/CARGO is selected, the cursor moves to the second line.

Press ▲ key or ▼ key in order to select a desirable item, and then press ENT key.

```
TYPE OF SHIP : 80
                    TANKER
```

The ship type table of international.

No	Type of ship	Note
30	FISHING VESSEL	Cargo type: Selection is impossible.
31	TOWING VESSEL	
32	TOWING VESSEL L>200M B>25M	
33	DREDGE OR UNDERWTR OPE	
34	VESSEL - DIVING OPE	
35	VESSEL - MILITARY OPE	
36	SAILING VESSEL	
37	PLEASURE CRAFT	
50	PILOT VESSEL	
51	SERCH AND RESCUE VESSEL	
52	TUGS	
53	PORT TENDERS	
54	WITH ANTI-POLLUTION EQUIP	
55	LAW ENFORCEMENT VESSELS	
58	MEDICAL TRANSPORTS	
59	SHIP/AIR NO ARM CNFLCT	
2x	WIG	Cargo type: Selection is possible.
4x	HIGH SPEED CRAFT	
6x	PASSENGER SHIP	
7x	CARGO SHIPS	
8x	TANKER	
9x	OTHER TYPE OF SHIP	

The ship type table of U S.

No	Type of ship	Note
20	WIG IN GROUND	
21	TOWING OTHER THAN BARGE	Cargo type: Selection is impossible.
22	TOWING BARGES	
23	LIGHT BOATS	
24	MODU/FPS/FPSO/LIFTBOAT	
25	OFFSHORE SUPPLY VESSEL	
26	PROCESSING VESSEL	
27	SCHOOL/SCIENTIFIC/RESEARCH	
28	U.S.PUB OR GOVT VESSEL	
29	AUTONOMOUS/REMOTELY-OPE	
30	FISHING VESSEL	
31	TOWING BY PULLING	
32	TOWING BY PUL L>200M B>25M	
33	DREDGE OR UNDERWTR OPE	
34	VESSEL – DIVING OPE	
35	VESSEL – MILITARY OPE	
36	SAILING VESSEL	
37	PLEASURE CRAFT	
50	PILOT VESSEL	
51	SERCH AND RESCUE VESSEL	
52	HARBOR TUGS	
53	FISH/OFFSHORE/PT TENDER	
54	WITH ANTI-POLLUTION EQUIP	
55	LAW ENFORCEMENT VESSEL	
56	LOCAL VESSEL	
57	LOCAL VSL MARINE EVENT	
58	MEDICAL TRANSPORTS	
59	SHIP/AIR NO ARM CNFLCT	
4x	HSC OR PASSENGER < 100GT	Cargo type: Selection is possible.
6x	PASSENGER SHIP > 100GT	
7x	CARGO SHIPS	
8x	TANKER	
9x	OTHER TYPE OF SHIP	

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.

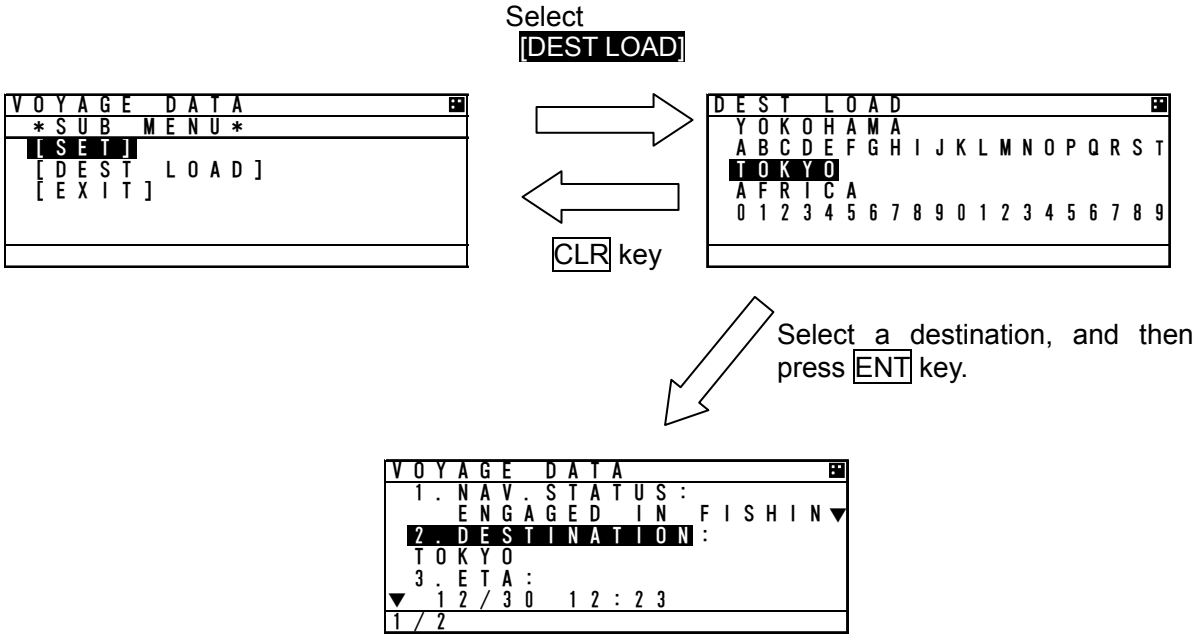
SHIP TYPE	CARGO TYPE
WIG	CATEGORY X(DG/HS/MP)
HIGH SPEED CRAFT	CATEGORY Y(DG/HS/MP)
PASSENGER SHIPS	CATEGORY Z(DG/HS/MP)
CARGO SHIPS	CATEGORY OS(DG/HS/MP)
TANKER	NO ADDITIONAL INFORMATION
OTHER TYPE OF SHIP	ALL SHIPS OF THIS TYPE

Press ▲ key or ▼ key in order to select a desirable item, and then press ENT key.
And the cursor returns to “7. TYPE OF SHIP/CARGO”.

⚠ Caution: In order to save the setting, select [SET] at the SUB menu.
If you switch to any other screen without selecting [SET], the setting is not saved.

5.3.1.8 Re-load Destination from history Data

Select [DEST LOAD] in the sub menu in “5.3.1 VOYAGE DATA SETTING”, Destinations list (current destination and 4 destinations in the past) is displayed.



Select the destination from the list and press ENT key, then the screen is switched to “VOYAGE DATA” menu screen and the selected one is displayed at the 2.DESTINATION.
If CLR key is pressed at “DEST LOAD” screen, the re-load operation is canceled and switch back to “VOYAGE DATA” screen.
If a past destination is selected from the DEST LOAD screen, the destination is displayed as the newest at the DEST LOAD screen.

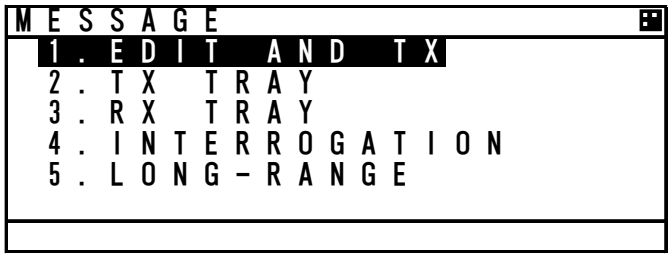
e.g.) If TOKYO is selected on the setting procedure above, the “DEST LOAD” screen is changed as shown below.

（Example）

YOKOHAMA		TOKYO
ABCDEFGHIJKLMNOPQRST		YOKOHAMA
TOKYO	⇒	ABCDEFGHIJKLMNOPQRST
AFRICA		AFRICA
01234567890123456789		01234567890123456789

5.3.2 Message Menu

Select 2. MESSAGE in “MAIN MENU” screen, “MESSAGE” menu screen is displayed.



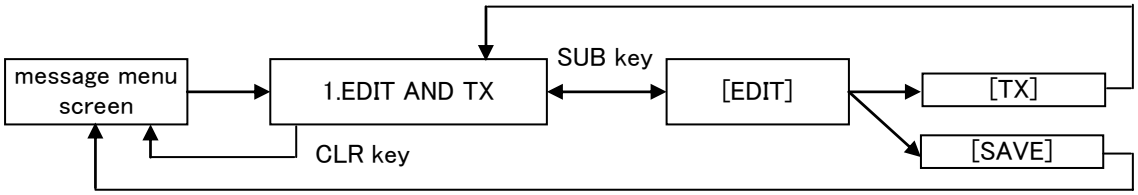
When move the cursor for selecting a desirable item in menu, press ▲ key or ▼ key.
then press ENT key to display a screen of the selected item.
Press CLR key at the “MESSAGE” menu screen, then switch back to “MAIN MENU” screen.

The outlines of each menu items are as follows:

1. EDIT AND TX ･･･Displays a menu for message editing and transmission. (Refer to 5.3.2.1)
2. TX TRAY ･･･Displays a menu for TX (transmission) message tray. (Refer to 5.3.2.2)
3. RX TRAY ･･･Displays a menu for RX (reception) message tray. (Refer to 5.3.2.3)
4. INTERROGATION ･･･Displays a menu for interrogation. (Refer to 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. (Refer to 5.3.2.5)

5.3.2.1 Editing / Sending Messages

Editing messages and transmitting is according to the below flow.



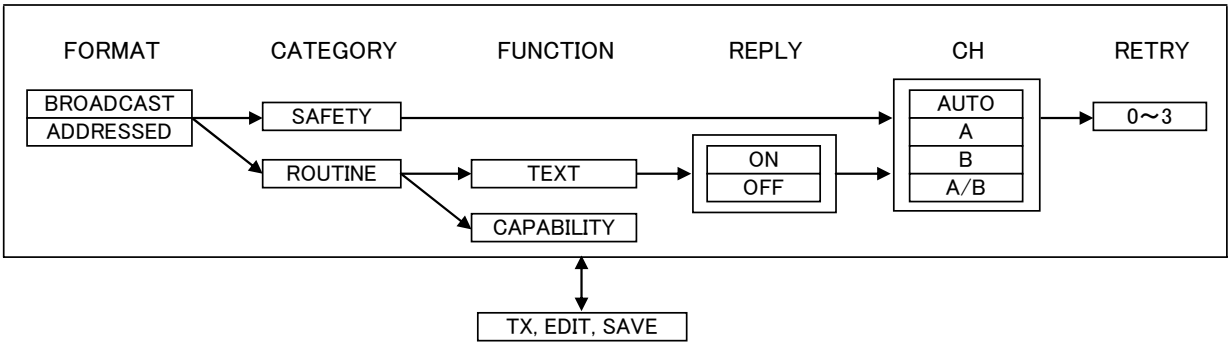
Select 1.EDIT AND TX at “5.3.2 MESSAGE MENU” and then “MESSAGE TYPE” setting screen is displayed.

a) MESSAGE TYPE

For defining a message type of each message, select a status at the each message type.
The procedure is as follows.

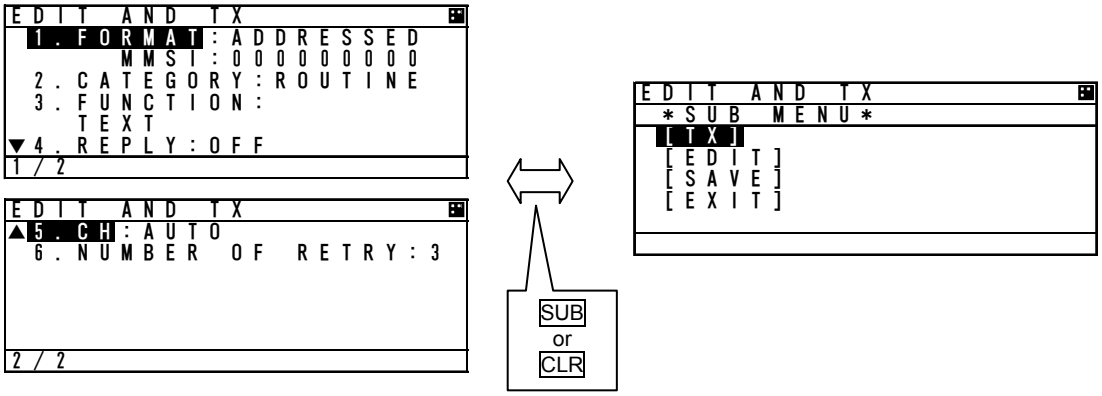
Message Type

Message Type	Status	Remarks
FORMAT	BROADCAST	Send to all ships
	ADDRESSED	Send to individual ship
CATEGORY	SAFETY	Message relating to safety
	ROUTINE	Messages relating to daily tasks
FUNCTION (Function Identifier)	TEXT	Sending text message
	CAPABILITY INTERROGATE (In case, FORMAT: ADDRESSED, CATEGORY:ROUTINE)	Sending interrogation for items which can be answered
REPLY (In case, FORMAT: ADDRESSED)	ON	Reply request for sent messages
	OFF	No reply request
CH	AUTO	Select channel automatically and send messages
	A	Send on Ach
	B	Send on Bch
	A/B	Send on both A&B ch
NUMBER OF RETRY (In case, FORMAT: ADDRESSED)	0 - 3	Times of resending



b) MESSAGE TYPE SETTING

Status Setting of Each Message Type:



1. Press ▲ key or ▼ key in “EDIT AND TX” screen and move the cursor to a desirable item, and then press ENT key. The cursor is moved to a selecting portion at the right side (The above example; Press ENT key at the “FORMAT”, the cursor is moved to ADDRESSED.)
2. While the required display status is highlighted, pressing ▲ key or ▼ key changes the selection.

(1) FORMAT
Set the message style and destination
1. Press ▲ key or ▼ key , “ADDRESSED” or “BROADCAST” can be selected.
2. If sending a message to all ships, select ”BROADCAST”. (In this case, MMSI input is not available.)
   If send a message individually, select “ADDRESSED”.
3. Select “ADDRESSED” and press ENT key, the cursor move to the left end of MMSI input.
4. Input each digit of MMSI with ▲ key or ▼ key.
   If a numeral needs to be changed, press CLR key, and the cursor move to the previous digit, and then set the cursor and revise the number. Confirm that all the numbers are entered in order to set the MMSI.

(2) CATEGORY
Select the message type
1. Press ▲ key or ▼ key, “SAFETY” or “ROUTINE” can be selected.
2. If send a safety related message, select “ROUTINE”.
   If sending a message as part of regular operations, select “ROUTINE”.
3. After the selection, press ENT key in order to set the category.

(3) FUNCTION (In case addressed)
Select the message function
1. Press ▲ key or ▼ key, “TEXT” or “CAPABILITY INTERROGATE” can be selected.
2. If sending a text message, select “TEXT”.
   If send a request for the interrogation capability, select “CAPABILITY INTERROGATE”,
3. After the selection, press ENT key in order to set the function.

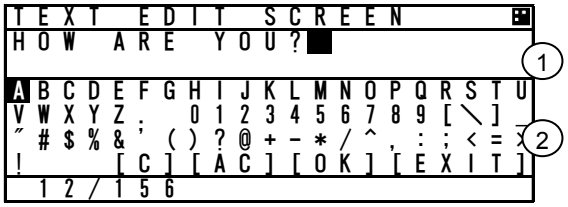
(4) REPLY
Select whether the response is requested or not.
1. Press ▲ key or ▼ key, “ON” or “OFF” can be selected.
2. If the response is requested, “select “ON”.
   If the response is not requested, select “OFF”.
3. After the selection, press ENT key to set the REPLY.

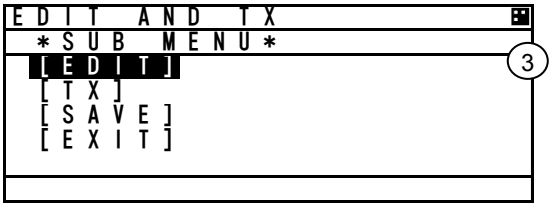
(5) CH (Channel)
Select the channel for transmission
1. Press ▲ key or ▼ key, “AUTO”, “A”, “B”, “A/B” can be selected.
2. If the transmission channel is set A, select “A”.
   If the transmission channel is set B, select “B”.
   If channels are set both A and B, select “A/B”.
   If “AUTO” is selected, the channel is fixed automatically.
3. After the selection, press ENT key to set the CHANNEL.

(6) NUMBER OF RETRY
Refer to Page 5-27 “e) NUMBER OF RETRY SETTINGS”.

c) TEXT EDIT SCREEN

In order to transmit a text message, press SUB key at “EDIT AND TX” screen and SUB menu screen is displayed and then select [EDIT].
Refer to the procedure of “5.2.4 Character Pad window Display and Input Method” to input character..





TEXT EDIT screen is composed of 2screens.

1. After editing the text, move the cursor to [OK] in Character Pad window and press ENT key.
   The edit has been set and the cursor is jumps back to the SUB menu screen.
2. If cancel the editing text, move the cursor to [EXIT] and press ENT key.
   The text has been canceled and the cursor is returns to the SUB menu screen.

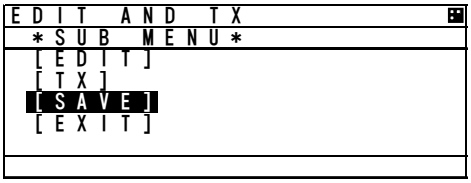
- Maximum number of characters to send a message

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

d) Transmitting and Saving

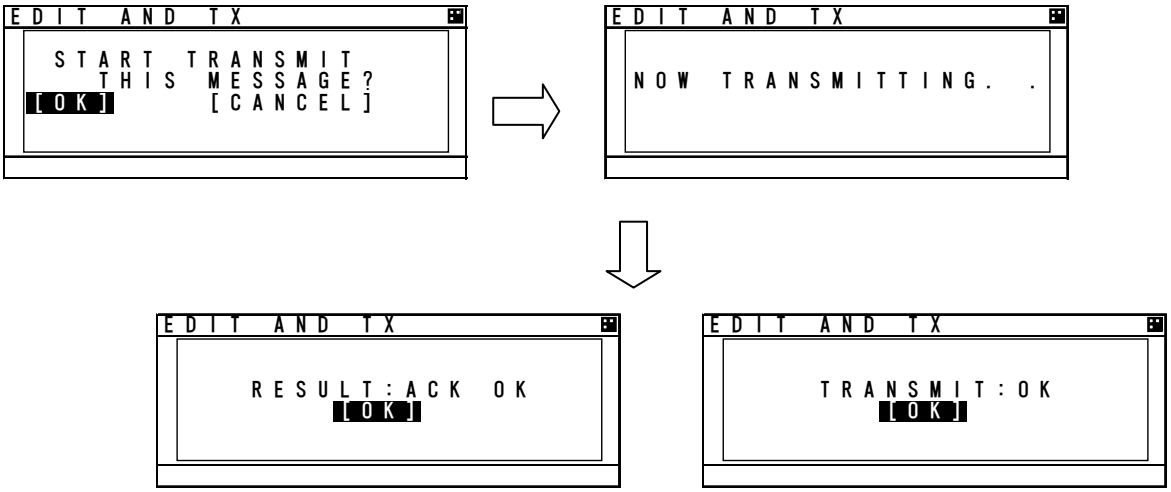
If “FUNCTION” in Message Type (refer to “a) MESSAGE”, and “b) MESSAGE TYPE SETTING”) is “TEXT”, operate transmitting or saving a message according to the following procedure:

- After editing, select “SAVE” in SUB menu. Then the message is saved in TX TRAY.



- If [EXIT] is selected, return to “EDIT AND TX” screen for message type setting.

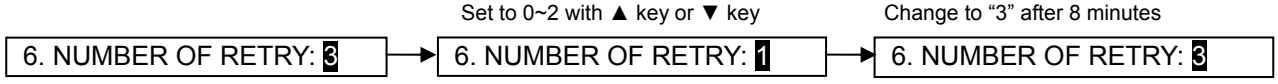
Select [TX] in “EDIT AND TX” sub screen and press ENT key. A confirmation message is appeared.
If select [OK], the message is transmitted. After its acknowledgement is received, “RESULT: ACK OK” is displayed. Press [OK] and then return to “EDIT AND TX” screen.



In case of ADDRESSED

In case of BROADCAST

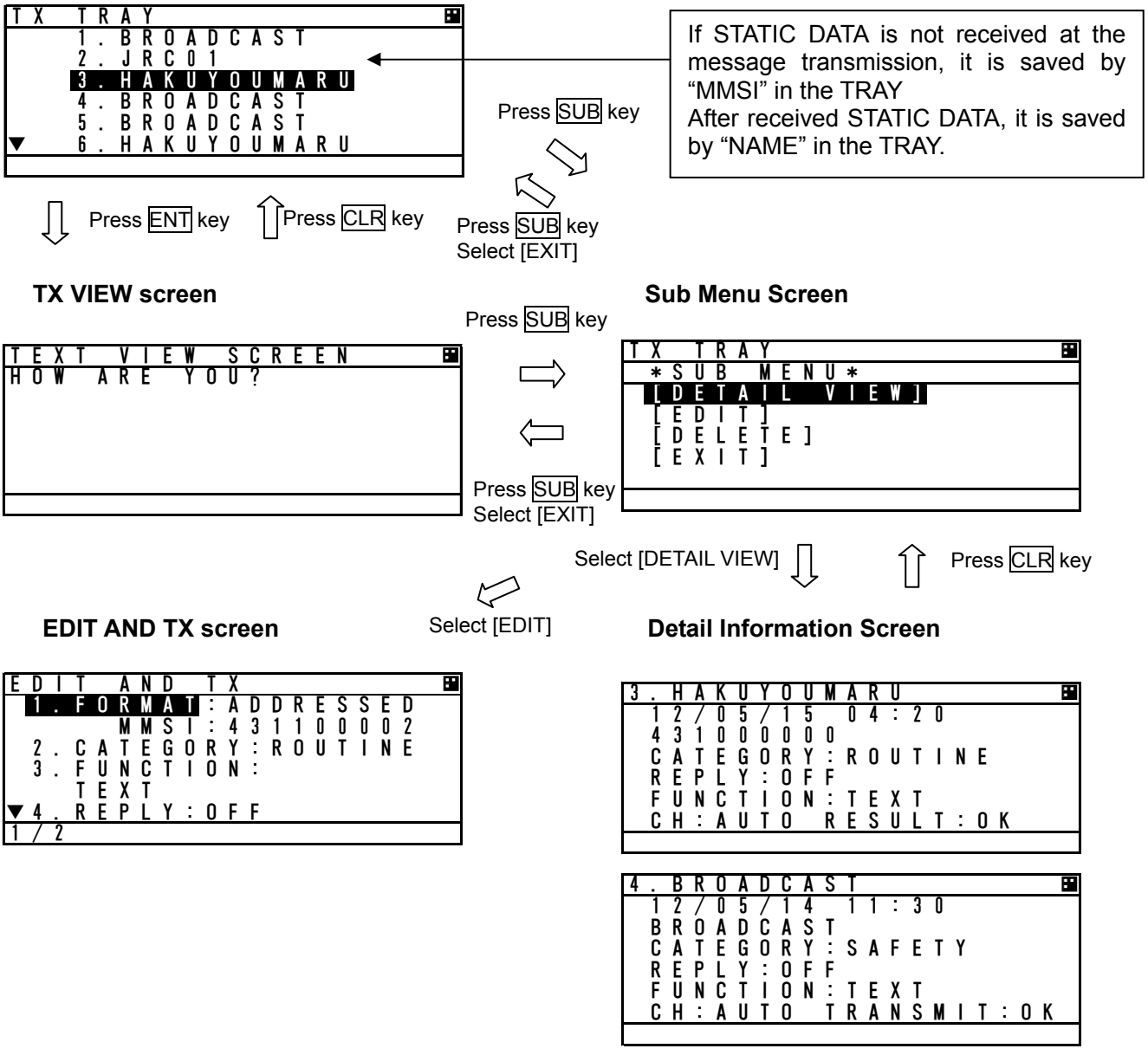
e) SETTING TIMES OF RETRY
When AIS transmits the individual message (FORMAT: ADDRESSED), the acknowledgement of receiving the message is replied from the destination. If the acknowledgement could not be received after transmitting, the transmission is retried.
The Numbers of retry can be set between 0 and 3 times. However, when the numbers of retry is set to 0~2 times (except 3 times), its numbers is changed to 3 times as the default after 8 minutes.



5.3.2.2 TX Tray (Viewing Transmitted Messages)

Select 2. TX TRAY at “MESSAGE” menu screen (refer to “5.3.2 MESSAGE MENU”), “TX TRAY” screen is displayed. Transmitted and edited messages can be saved up to 10 massages in the transmitted message list.
The listed messages can be edited and/or can be transmitted again.

Transmitted Message List



Press ▲ key or ▼ key in order to select a desirable message in the display list in “TX TRAY” screen, and then press ENT key. The selected message is displayed in ”TEXT VIEW SCREEN”.

“ ∗ ” mark in the front of a message number indicates not transmitted message.

In order to display SUB menu screen, press SUB key at the list screen or text view screen.

Select [DETAIL VIEW] and press ENT key, detail information screen is displayed with the following information:

1. Transmitted or edited date and time with UTC.
2. FORMAT: 9 digits MMSI for “ADDRESSED”
   “BROADCAST” as BROADCAST.
3. Other items (CATEGORY, FUNCTION, REPLY, CH) of message type: Refer to the above selected TX message detail information screen.
4. ACK (Acknowledgement):
   (1) Set “REPLY ON” at “ADDRESSED”, ACK display is as follows:
   “ACK: OK” is displayed at received ACK.
   “ACK: NG” is displayed at not received ACK.
   (2) Set “BROADCAST”, its display is as follows:
   “TRANSMIT OK” is displayed at succeeded transmission.
   “TRANSMIT NG” is displayed at Failed Transmission.

When return to SUB menu screen, press CLR key at TX message detail information screen.

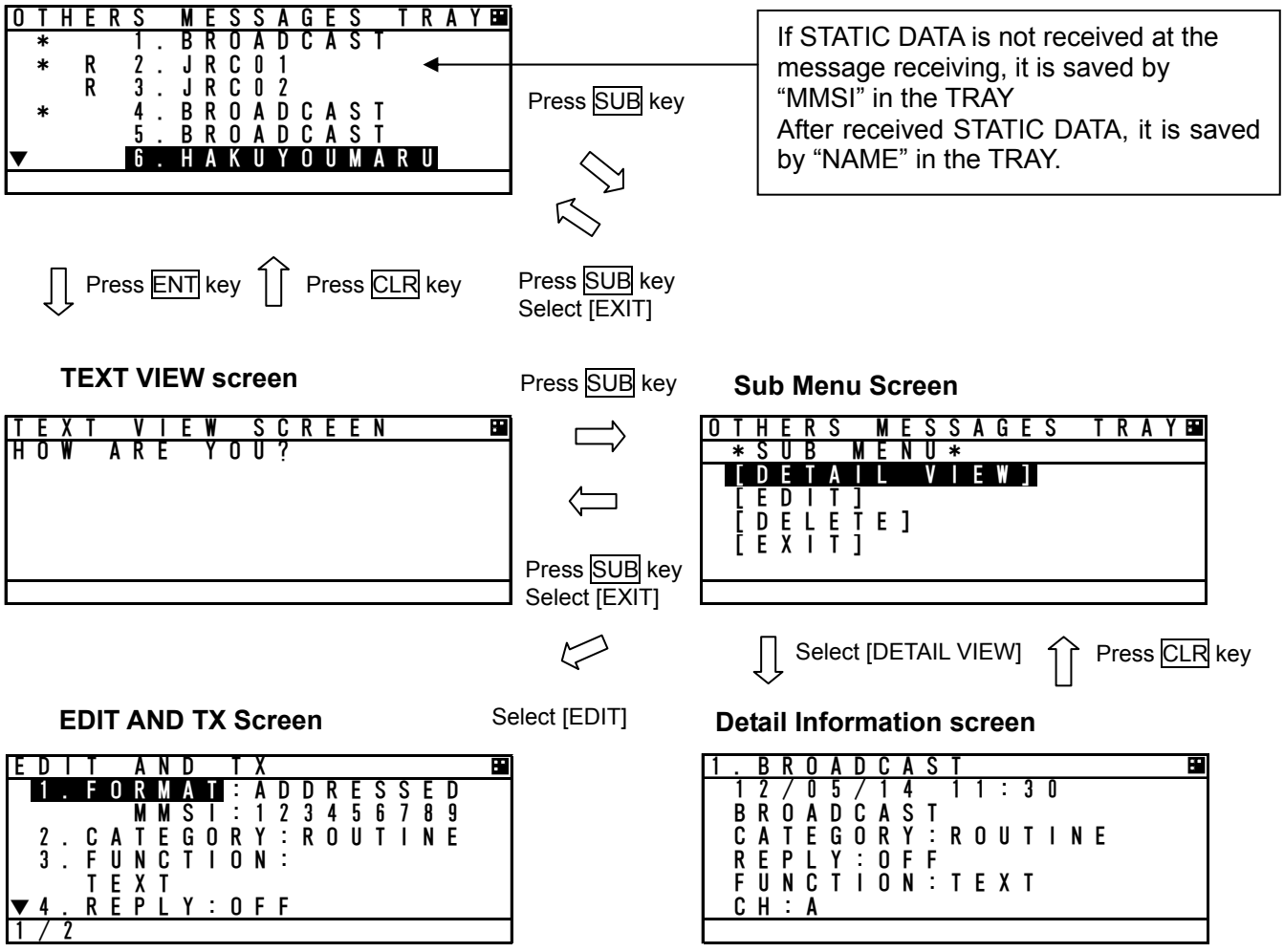
In order to edit newly a message, select [EDIT] at the selected message’s SUB menu screen, and then the screen is switched to “EDIT AND TX” screen for message type setting.

In order to delete the selected message, select [DELETE] at the selected message’s SUB menu screen, and then the message is deleted.

5.3.2.3 RX Tray (Viewing Received Messages)

Select 3. RX TRAY at “MESSAGE” menu screen (refer to “5.3.2 MESSAGE MENU”), “RX TRAY” screen is displayed.
In the RX TRAY, safety related messages can be saved up to 20, others messages can be saved up to 10. Confirmation of contents and reply are performed by selecting a message in the TRAY.
When messages are received, receiving alarm sounds normally. If the message buzzer is set “OFF” in the BUZZER setting, receiving alarm does not sound. (“Message received popup” is appeared.)

RX TRAY” Screen



Press ▲ key or ▼ key in order to select a desirable message in the list “1. SAFETY MESSAGES” tray and “2. OTHERS MESSAGES” tray in “RX TRAY” screen, and then press ENT key. The selected message is displayed in TEXT VIEW screen.
“ ∗ ” mark in the front of a message number indicates an unread message.
“R” mark in the front of a message number indicates that it is a received message with reply and a reply is not carried out at that time.
“A” mark in the front of a message number indicates an receive replay message.

In order to display SUB menu screen, press SUB key at the list screen or text view screen.
Select [DETAIL VIEW] and press ENT key, detail information screen is displayed with the following information:

1. Received or edited date and time with UTC
2. FORMAT: 9 digits MMSI for ADDRESSED
   “BROADCAST” as BROADCAST
3. Other items (CATEGORY, FUNCTION, REPLY, CH) of message type: Refer to the above selected RX message detail information screen.

In order to return to SUB menu screen, press CLR key at TX message detail information screen.

In order to edit newly a message such as replay, select [EDIT] at the selected message’s sub menu screen, and then the screen is switched to “EDIT AND TX” screen for message type setting. However the reply cannot be performed with BROADCAST, since the [EDIT] selection is reply for a receiving “ADDRESSED” message.

In order to delete the selected message, select [DELETE] at the selected message’s sub menu screen and then the message is deleted.

A received message with Reply: The message type of the received message is the following setting.

1. Received Message Type = FORMAT: ADDRESSED, CATEGORY: ROUTINE, FUNCTION: TEXT, REPLY: ON
2. Received Message Type = FUNCTION: CAPABILITY INTERROGATION

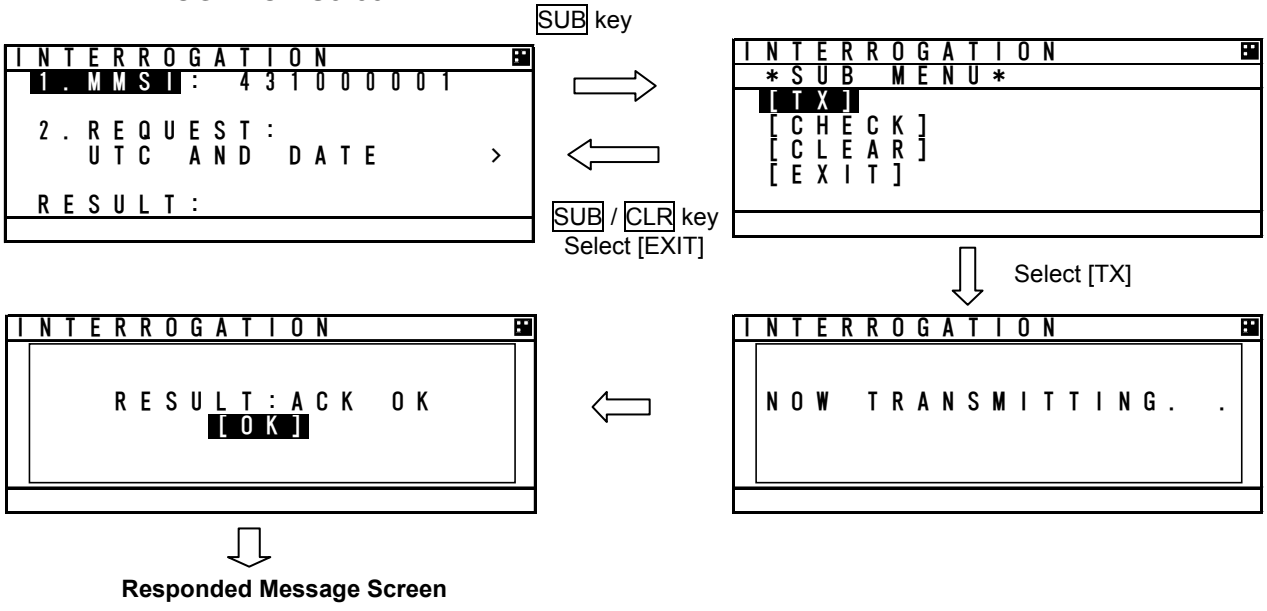
In case of transmitting by CAPABILITY INTERROGATE, the contents of FI number in the received message is shown below.

0) TEXT TELEGRAM
1) APPLICATION ACK
2) INTERROGATION FM
3) CAPABILITY INTERROGATION
4) CAPABILITY INTERROGATION REPLY

5.3.2.4 Interrogation

Select 4. INTERROGATION at “MESSAGE” menu screen (refer to “5.3.2 MESSAGE MENU”), “INTEROGATION” screen is displayed.
An interrogation message can request information with an addressed “MMSI” specified.

INTERROGATION Screen



a) INTERROGATION SETTINGS
Set an address and its interrogation request item in “INTERROGATION” screen.

Its interrogation request can be performed with the times in “b) INTERROGATION REQUEST ITEM LIST” below.

Select 1. MMSI, and then the cursor move to the left end of the digit at “1. MMSI” right side.
Input the each digit of MMSI with▲ key or ▼ key. After inputted all 9 digits, press ENT key and then the MMSI has been set and the cursor is moves to “2. REQUEST:”.
Select 2. REUEST, Press ▲ key or ▼ key to move the cursor to a desirable item, and then press ENT key and the selected item has been set.
(The interrogation request item are shown in “b) INTERROGATION REQUEST ITEM LIST” below.)

b) INTERROGATION REQUEST ITEM LIST
The following table is the list for possible interrogation request items. (“CLASS” in the list indicates a kind of AIS on board.) (○: selective)

Interrogation Item	Request	Note
POSN REPORT(A)	○	Class A shipborne AIS Position Report
STATIC / VOYAGE(A)	○	Class A shipborne AIS ship static and voyage data
SAR AIRCRAFT POSN REPORT	○	Search and rescue aircraft AIS position report
UTC AND DATE	○	Date and time data with UTC
POSN REPORT(B)	○	Class B shipborne AIS Position Report
STATIC / VOYAGE(B)	○	Class B shipborne AIS ship static and voyage data
AIDS-TO-NAVIGATION REPORT	○	Aids to navigation AIS report
BASE STATION REPORT	○	Base station AIS report
STATIC DATA REPORT	○	Static data report

⚠Caution: Check the class of the destination station at “OTHER SHIP’S DETAIL” screen in “5.2.1.2 Other Ship’s Detail Information”.
If mismatch the class, the ship does not receive the interrogation message.

c) SUB menu screen

Select an item in SUB menu screen, the operation is as follows:

[TX] ·····Transmit the interrogation message
[CHECK] ·····The responded message for the interrogation message is displayed.
[CLEAR] ·····The cursor move to “1. MSSI”.
[EXIT] ·····Return to “INTERROGATION” screen.

If there is no response to the interrogation, the replied message that corresponds to the interrogation does not exist, therefore the screen does not switch to the response message screen,

After transmitting an interrogation message, the last line “RESULT” in the INTERROGATION screen indicates the result of interrogation response.

Responded ---------- RESULT : OK
Not responded ---------- -RESULT : NG

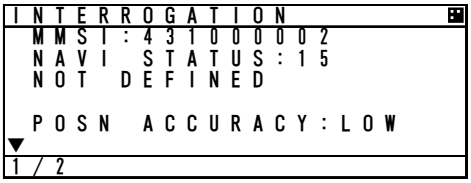
The following is shown an example for receiving a response.

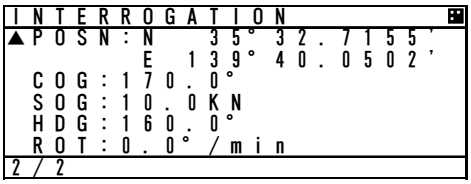
d) VIEWING RESPONDED MESSAGE

After a responded message (ACK) has been received, select [CHECK] in the SUB menu, the screen is switched to the following “Responded Message Screen”.
In order to switch to “INTERROGATION” sub screen, press CLR key.
The contents in the responded message screen are dependent on the type of interrogation.

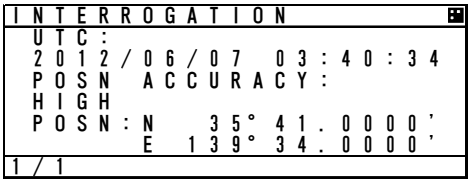
In case of receiving the response (example)

POSN REPORT (A)

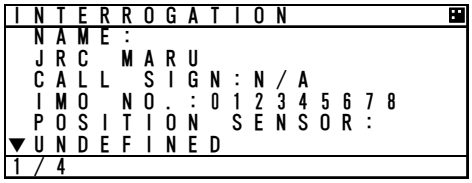


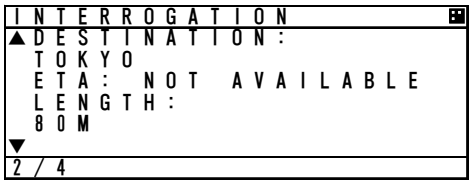


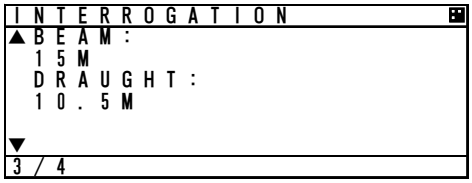
BASE STATION REPORT

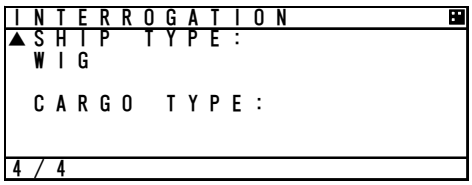


STATIC/VOYAGE (A)





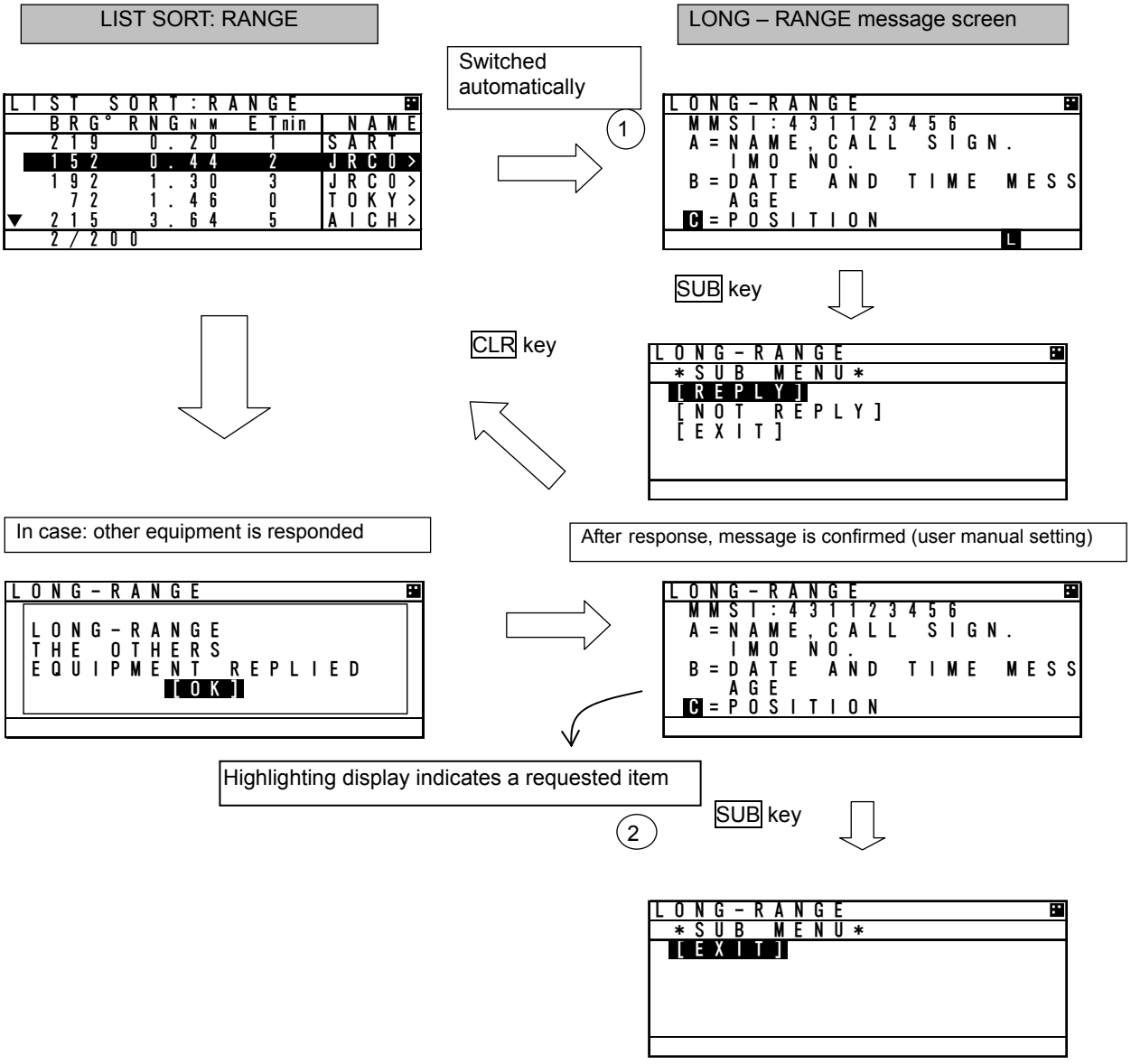




5.3.2.5 Long Range Messages

Select 5.LONG-RANGE at “MESSAGE” menu screen (refer to “5.3.2 MESSAGE MENU”), “LONG - RANGE” message screen is displayed.

The display/operation of a long range message is differed depending on whether “MANUAL” or “AUTO”。
To select “MANUAL” or “AUTO”, refer to the “5.3.4.10 LONG-RANGE SET”.
When LONG-RANGE messages are received, “L” is displayed at the bottom line of the display. The operation does not depend on whether "MANUAL" or "AUTO" setting is selected.



a) MANUAL response condition

While “MANUAL” is set, Long Range message screen is appears automatically on any screen after receiving a Long Range Request.
In case other equipment responds, “THE OTHERS EQUIPMENT REPLIED” is displayed.
If other equipment responds while displaying LONG-RANGE message screen, AIS displays the same message.
○ Manual response operation (refer to Long Range message screen shown previously.)
- When “LONG – RANGE” message screen is displayed, the requested contents are displayed.

The operation after pressing SUB key is as follows:
- Select [REPLY], AIS transmits the response containing contents for the request and then “L” is disappeared and the display switches to the Long Range message screen.
- Select [NOT REPLY], the AIS will transmit the message that it is not going to reply and then “L” is disappeared and the display switches to the Long Range message screen.
- Select [EXIT] or CLR key is pressed, Switched to LIST SORT: RANGE screen.

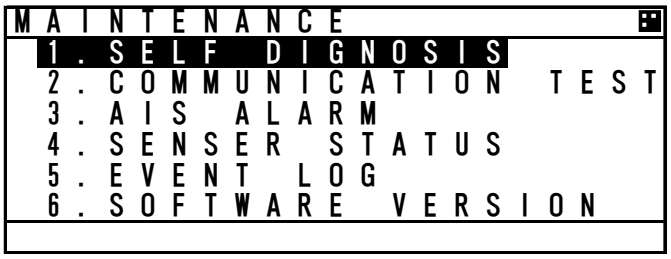
b) AUTO response condition

While “AUTO” is set in “4. SET UP” in MAIN MENU, the reply operation is performed in the background. In this case, LONG RANGE message screen is not switched automatically.
However “L” is displayed at the bottom line of the display.

When confirming the message, the response has been already replied. Therefore after pressing SUB key at LONG RANGE” message screen, only [EXIT] is displayed at SUB menu screen. After EXIT is selected, “L” is disappeared.

5.3.3 Maintenance

Select 3.MAINTENANCE in “MAIN MENU” screen, “MAINTENANCE” menu screen is displayed.
It is possible to check the current status with “Maintenance” menu screen.
In order to return to MAIN MENU screen, press CLR key.

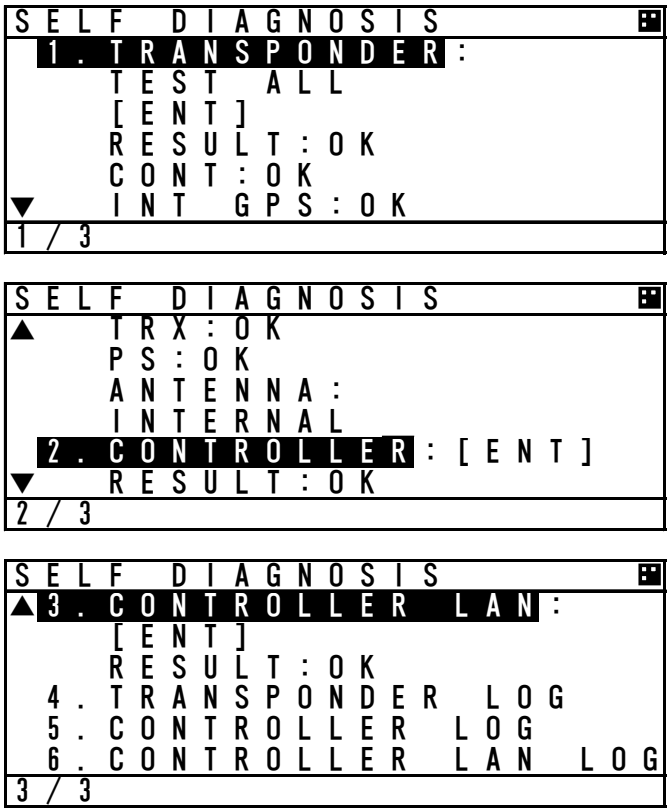


The outline of the each menu item is as follows:

1. SELF DIAGNOSIS ･･･Execute the self diagnosis test. (Refer to 5.3.3.1)
2. COMMUNICATION TEST ･･･Transmits an interrogation message and then confirms the result for communication check.(Refer to 5.3.3.2)
3. AIS ALARM ･･･Displays malfunction alarms. (Refer to 5.3.3.3)
4. SENSOR STATUS ･･･Displays current status of sensors. (Refer to 5.3.3.4)
5. EVENT LOG ･･･Displays the history of power ON/OFF and so on. (Refer to 5.3.3.5)
6. SOFTWARE VERSION ･･･ Displays software versions installed. (Refer to 5.3.3.6)

5.3.3.1. Self Diagnosis

Select 1.SELF DIAGNOSIS at “MAINTENANCE” menu screen (refer to “5.3.3 MAINTENANCE”), SELF DIAGNOSIS screen is displayed.
In order to return to “MAINTENANCE” menu, press CLR key.



Press ▲ key or ▼ key and select the unit for performing diagnosis test and press ENT key, and then test item for its self-diagnosis test can be selected.

a) TRANSPONDER

Select a desirable test item from the following items for 1.TRANSPONDER:

TEST ALL:	Test all the units.
INT GPS:	Test the internal GPS unit.
TRX:	Test the transceiver unit (TRX unit).
PS:	Test the PS unit is performed.

Press ENT key at a desirable test item, and the cursor is moved [ENT].
In order to perform self-diagnosis, select [ENT] and press ENT key.
Select [CANCEL], then the cursor is returned back without doing the test.

When the result of the self-diagnosis test is normal, "OK" is displayed.
The displayed result of the antenna is not a diagnosis result. It indicates the antenna terminal during operation.

The diagnosis result of abnormal

The list of the diagnosis result of abnormal is shown in the following table.

Diagnosis Item	Diagnosis Result	Defective Unit	Contents of Failure	Corrective Action
CONT	NG CPU FROM	CDJ-2483	CPU internal Flash ROM error	CDJ-2483 is defective. Replace NTE-183.
	NG SRAM	CDJ-2483	SRAM error	
	NG FROM	CDJ-2483	Flash ROM error	
	NG TX DAC	CDJ-2483	Transmission DA converter error	
	NG RX1 PORT	CDJ-2483	GMSK receiver CH A input port error	
	NG RX2 PORT	CDJ-2483	GMSK receiver CH B input port error	
	NG RX3 PORT	CDJ-2483	DSC reception input port error	
	NG	CDJ-2483	Multiple errors in CDJ-2483.	
INT GPS	NG PPS CONT.	CDJ-2483	Internal GPS unit error	
	NG SAT.RCV.	CDJ-2483	Internal GPS unit receives signal from only less than four satellites.	Check the NTE-183 installation conditions. (*1)
	NG	CDJ-2483	Multiple errors	CMN-2183 is Defective. Replace NTE-183.
TRX	NG RX1 UNLK	CMN-2183	GMSK receiver CH A synthesizer unlock	
	NG RX2 UNLK	CMN-2183	GMSK receiver CH B synthesizer unlock	
	NG RX3 UNLK	CMN-2183	DSC receiver synthesizer unlock	
	NG TX UNLK	CMN-2183	Transmitter synthesizer unlock	
	NG RX1 LOOP	CMN-2183	GMSK receiver CH A loop back test error	
	NG RX2 LOOP	CMN-2183	GMSK receiver CH B loop back test error	
	NG RX1 RSSI	CMN-2183	GMSK receiver CH A loop back test Reception level error	
	NG RX2 RSSI	CMN-2183	GMSK receiver CH B loop back test Reception level error	
	NG RX3 RSSI	CMN-2183	DSC receiver loop back test Reception level error	
	NG PA	CMN-2183	PA error	
	NG	CMN-2183	Multiple errors in CMN-2183	
PS	NG PS LOW	CBD-2183	Output voltage (9.8 V) error	CBD-2183 is Defective. Replace NTE-183.
ANTENNA	INTERNAL	--	The internal antenna terminal is using	
	EXTERNAL	--	The external antenna terminal is using	

(*1): Check that the AIS transponder is not in the shadow of an antenna mast or other antennas. After the installation conditions of AIS transponder is checked, wait for a while and then perform the test again.

⚠Caution: If malfunction is found, contact us or our agency as soon as possible.

b) CONTROLLER

Select 2.CONTROLLER at “SELF DIAGNOSIS” screen, and then press ENT key.
In order to perform the self-diagnosis test, select [ENT], and then press ENT key.
If you do not perform the self-diagnosis test, press ▲ key or ▼ key and select [CANCEL], and then the cursor is returned back without the test.
When the result of the self-diagnosis test is normal, "OK" is displayed at RESULT:.

- The diagnosis result

The list of the diagnosis result is shown in the following table.

Diagnosis Item	Diagnosis Result	Defective Unit	Contents of Failure	Corrective Action
CONTROLLER	NG SRAM	CDJ-2983	SRAM error	Replace CDJ-2983.
	NG FROM	CDJ-2983	Flash ROM error	
	NG	CDJ-2983	Multiple errors in CDJ-2983	

c) CONTROLLER LAN

Select 3.CONTROLLER LAN at “SELF DIAGNOSIS” screen, and then press ENT key.
In order to perform the self-diagnosis test, select [ENT], and then press ENT key.
If you do not perform the self-diagnosis test, press ▲ key or ▼ key and select [CANCEL], and then the cursor is returned back without the test.
When the result of the self-diagnosis test is normal, "OK" is displayed at RESULT:.

- The diagnosis result

The list of the diagnosis result is shown in the following table.

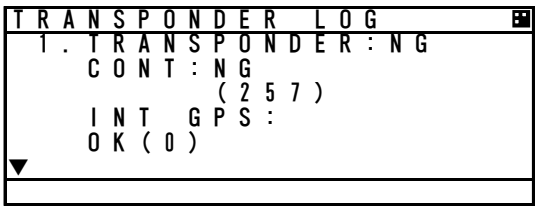
Diagnosis Item	Diagnosis Result	Defective Unit	Contents of Failure	Corrective Action
CONTROLLER LAN	NG CPU FROM	CDJ-2983	CPU internal Flash ROM error	Replace CDJ-2983.
	NG CPU DRAM	CDJ-2983	CPU DRAM error	
	NG CPU RAM	CDJ-2983	CPU RAM error	
	NG LAN	CDJ-2983	LAN error	
	NG	CDJ-2983	Multiple errors in CDJ-2983	

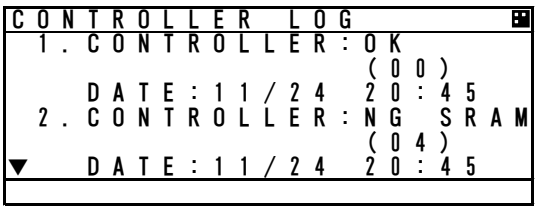
[LOG DISPLAY OF SELF DIAGNOSIS RESULT]

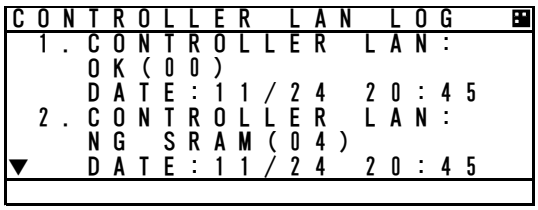
The past self-diagnosis results are displayed at 4.TRANSPONDER LOG, 5.CONTROLLER LOG, and 6.CONTROLLER LAN LOG, .

When any of the logs are selected, the selected unit’s self-diagnosis results are displayed up to last 20 results. Log display order is displayed from first to 20th sequentially from a new result.

Results and contents according to each diagnostic value are displayed as shown in the following figure. In the last diagnostic time is displayed.
In addition,”--/-- --:--“ is displayed when time cannot be acquired.
Press ▲ key or ▼ key to change to next page.

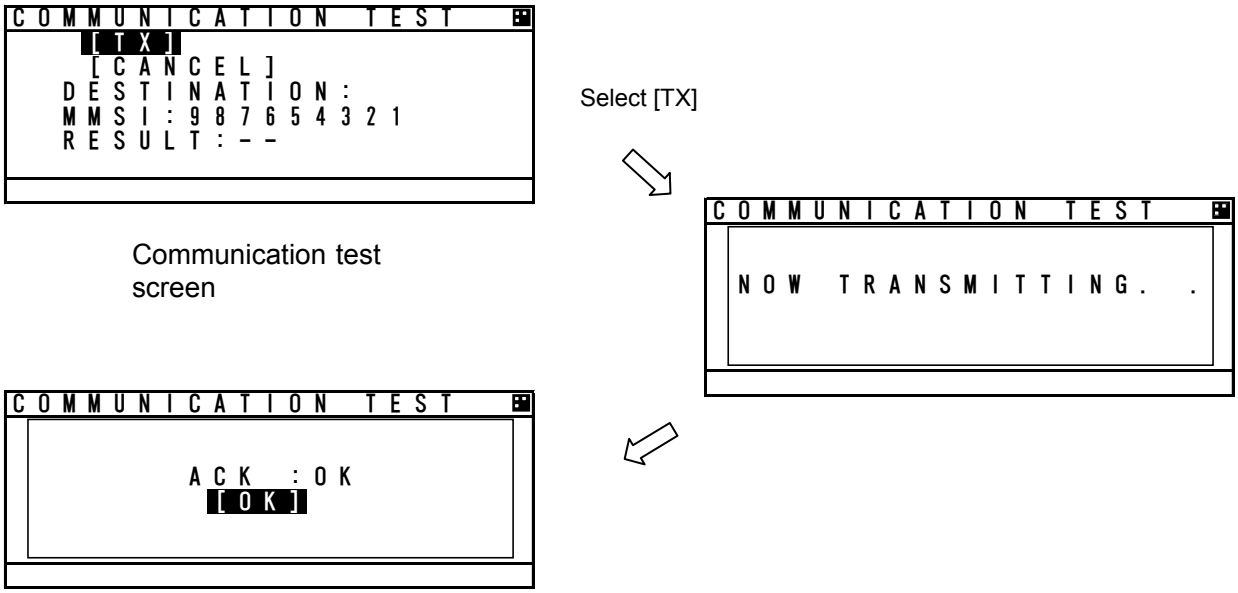






5.3.3.2. Communication Test

Select 2.COMMUNICATION TEST at “MAINTENANCE” menu screen (refer to “5.3.3 MAINTENANCE”) , “COMMUNICATION TEST” screen is displayed.
The address MMSI can be set automatically from nearby ships, and then perform the communication test with others by response request.
To switch to “MAINTENANCE” menu screen, press CLR key.



Communication test screen

In order to transmit communication confirmation contents, select [TX] and then press ENT key.
After transmitted, its responded result is displayed.

Responded ---------- ACK: OK
Not responded ---------- ACK: NG

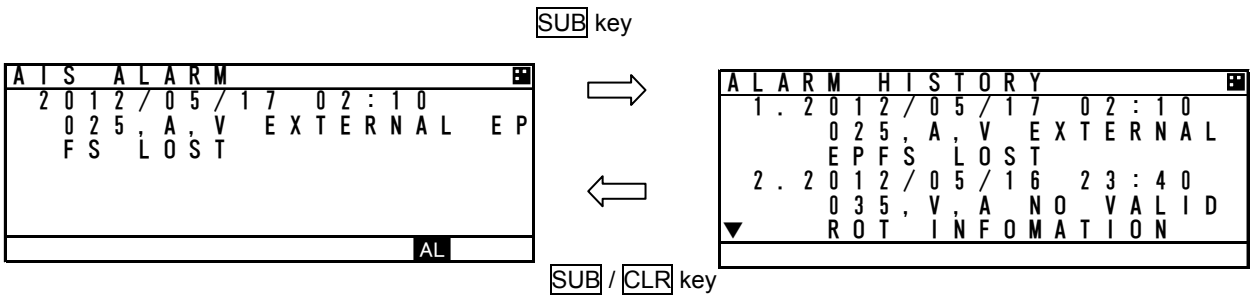
Select [OK] in this Popup, and then press ENT key, and the screen is switched to “COMMUNICATION TEST” screen.

Also “RESULT:“ on the bottom line in “COMMUNICATION TEST” screen is displayed the response result after transmission.

Responded ---------- RESULT: OK
Not responded ----------RESULT: NG

5.3.3.3. AIS Alarm

Select 3.AIS ALARM at “MAINTENANCE” menu screen (refer to “5.3.3 MAINTENANCE”), “AIS ALARM” confirmation screen is displayed.
“ALARM HISTORY” screen can be displayed up to 50 from last defective alarms during the operation.
When the display is switched to “MAINTENANCE” menu screen, press CLR key.



1. Current Alarm status
A current occurring alarm list is displayed in “ALS ALARM” screen.
- When the AIS alarm doesn't occur, “NO DATA” is displayed.
- When alarms are occurring and “▼” mark is displayed on the bottom line, this means that there are contents in the next page. When there is nothing in the next page, “▼” mark is not displayed on the bottom line.
- In order to see the next page, press ▲ key or ▼ key.
  The screen displays consecutive items, press ▲ key or ▼ key to see next items.

2. Alarm history
When SUB key is pressed at “ALS ALARM” screen, the screen is switched to “ALARM HISTORY” screen.
Up to 50 occurred and restored alarms can be confirmed.
When the display is switched to “ALS ALARM” screen, press SUB key or CLR key.

- When “▼” mark is displayed on the bottom line, This means that there are contents in the next page, Therefore press ▲ key or ▼ key to see next.
- Time of all occurred alarm and all their restorations is displayed with UTC.
  If the time cannot to be acquired, ” --/--/-- --:-- “ is displayed there.
- A description of alarm display is shown below.
  Alarm contents: 035, V, A, no valid ROT information
  (1) (2) (3) (4)
  (1): The alarm number (refer to the next page)
  (2): The alarm condition -> “V”: Alarm is restored
  “A”: Alarm is occurring
  (3): Not used
  (4): Alarm’s description text (refer to the following table)

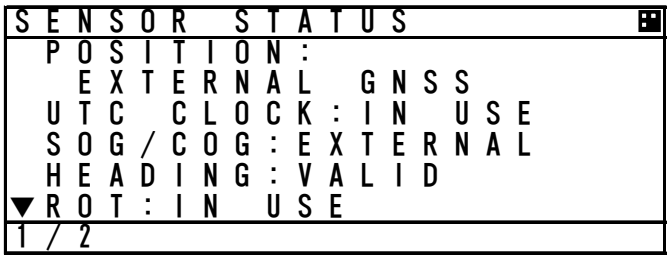
Lists of failure alarms are as follows:

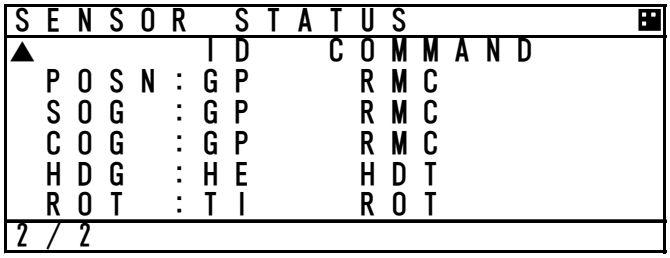
Alarm No.	Alarm's description text	The contents of unusual detection
001	TX MALFUNCTION	Unusual detection at the transmission.
002	ANTENNA VSWR EXCEEDS LIMIT	Unusual detection of antenna output.
003	RX CHANNEL 1 MALFUNCTION	Unusual detection of Rx channel 1.
004	RX CHANNEL 2 MALFUNCTION	Unusual detection of Rx channel 2
005	RX CHANNEL 70 MALFUNCTION	Unusual detection of receiving DSC.
006	GENERAL FAILURE	Detected a general failure
008	MKD CONNECTION LOST	Detected the connection between CONTROLLER and TRANSPONDER is lost.
010	NAVSTATUS INCORRECT	Mismatch information of navigation status.
014	ACTIVE AIS-SART	AIS-SART signal has received.
025	EXTERNAL EPFS LOST	No information of sensor position from external.
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 power supply voltage at TX.
053	POWER SUPPLY ERROR	Unusual detection of power supply voltage.
054	PA CURRENT ERROR	Unusual detection of TX current.
055	PA TEMP ERROR	Detected the PA temperature is warming up at TX.
056	TX POWER TOO LOW	Detected the TX power is lower than Spec.
057	VR ERROR	Unusual detection of TX output.
058	TX STOP INTERRUPT	Unusual detection of transmission (forced outage) with TX watch circuit.
059	TX POWER TOO HIGH	Detected the TX power is higher than Spec.
060	TX PLL UNLOCK	Detected the TX PLL is unlocked.
062	PROGRAM FLASH MEMORY ERR	Unusual detection of check sum in the ROM with CPU.
063	DATA FLASH MEMORY ERR	Unusual detection of check sum in the other ROM.
064	MKD CONNECTION LOST	No response from the transponder. （detected by CONTROLLER）
065	SSD MISMATCH	Mismatch static information between transponder and CONTROLLER.

Alarm List

5.3.3.4. Sensor Status

Select 4.SENSOR STATUS at “MAINTENANCE” menu screen (refer to “5.3.3 MAINTENANCE”), “SENSOR STATUS” screen is displayed.
Also the next page is displayed with obtaining information of sensor device (ID) and command status.
When the display is switched to “MAINTENANCE” menu screen, press CLR key.





Sensor status displays are as follows:

Sensor Type	Display	Explanation
POSITION	EXTERNAL DGNSS	Data is obtained from the external GPS (high accuracy).
	EXTERNAL GNSS	Data is obtained from the external GPS (low accuracy).
	INT DGNSS(BEACON)	Correction data is obtained from the beacon receiver and the internal GPS is used (high accuracy).
	INT DGNSS(MSG.17)	Correction data is obtained from the base station and the internal GPS is used (high accuracy).
	INTERNAL GNSS	Data is obtained from the internal GPS (low accuracy).
	NO SENSOR	No data is available.
UTC CLOCK	LOST	The internal GPS is not synchronized with PPS.
	IN USE	The internal GPS is synchronized with PPS.
SOG/COG	EXTERNAL	Data is obtained from the external equipment.
	INTERNAL	Data is obtained from the internal GPS.
	NO SENSOR	No data is available.
HEADING	VALID	Data is obtained from the external equipment.
	INVALID	No data is available.
ROT	IN USE	Data is obtained from the rate-of-turn indicator.
	OTHER SOURCE	Data is obtained from the equipment other than the rate-of-turn indicator.
	NO SENSOR	No data is available.

The detail of sensor ID is shown at next page.
About the detail of command, refer to “8.3.4 Supported interface sentences”.

ID displayed at SENSOR STATUS is shown below list.

Talker device	ID
Heading/track controller (autopilot) general	AG
magnetic	AP
Automatic identification system	AI
Bilge system	BI
Bridge navigational watch alarm system	BN
Communications: digital selective calling (DSC)	CD
Communications: data receiver	CR
Communications: satellite	CS
Communications: radio-telephone (MF/HF)	CT
Communications: radio-telephone (VHF)	CV
Communications: scanning receiver	CX
Direction finder	DF
Duplex repeater station	DU
Electronic chart system (ECS)	EC
Electronic chart display and information system (ECDIS)	EI
Emergency position indicating radio beacon (EPIRB)	EP
Engine room monitoring system	ER
Fire door controller/monitoring system	FD
Fire extinguisher system	FE
Fire detection system	FR
Fire sprinkler system	FS
Galileo positioning system	GA
Global positioning system (GPS)	GP
GLONASS positioning system	GL
Global navigation satellite system (GNSS)	GN
Heading sensors: compass, magnetic	HC
Heading sensors: gyro, north seeking	HE
Heading sensors: fluxgate	HF

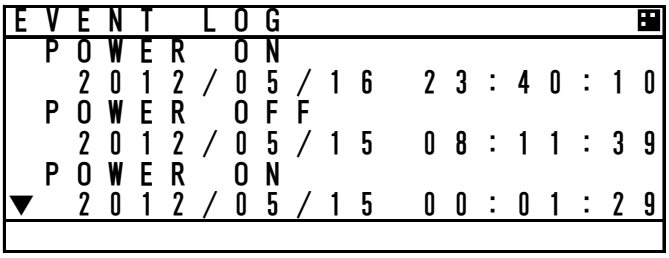
Talker device	ID
Heading sensors: gyro, non-north seeking	HN
Hull door controller/monitoring system	HD
Hull stress monitoring	HS
Integrated instrumentation	II
Integrated navigation	IN
LORAN: LORAN-C	LC
Navigation light controller	NL
Proprietary code	P
Radar and/or radar plotting	RA
Propulsion machinery including remote control	RC
Sounder, depth	SD
Steering gear/steering engine	SG
Electronic positioning system, other/general	SN
Sounder, scanning	SS
Turn rate indicator	TI
Microprocessor controller	UP
Velocity sensors: Doppler, other/general	VD
Velocity sensors: speed log, water, magnetic	VM
Velocity sensors: speed log, water, mechanical	VW
Voyage data recorder	VR
Watertight door controller/monitoring system	WD
Water level detection system	WL
Transducer	YX
Timekeeper, time/date: atomic clock	ZA
Timekeeper, time/date: chronometer	ZC
Timekeeper, time/date: quartz	ZQ
Timekeeper, time/date: radio update	ZV
Weather instrument	WI

5.3.3.5. Event Log

Select 5.EVENT LOG at “MAINTENANCE” menu screen (refer to “5.3.3 MAINTENANCE”), “EVENT LOG” screen is displayed and Event log (e.g. Power ON/OFF) can be displayed up to 20 events.
The stored logs are shown below.

1. POWER ON/OFF
2. SILENT MODE ON/OFF
3. MALFUNCTION ON

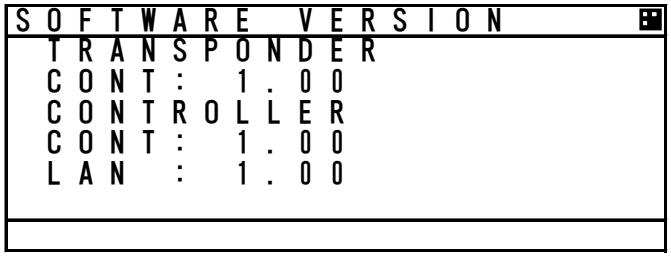
To switch to “MAINTENANCE” menu screen, press CLR key.



When “▼” or “▲” mark is displayed at the left side, Press ▲ key or ▼ key to see next.

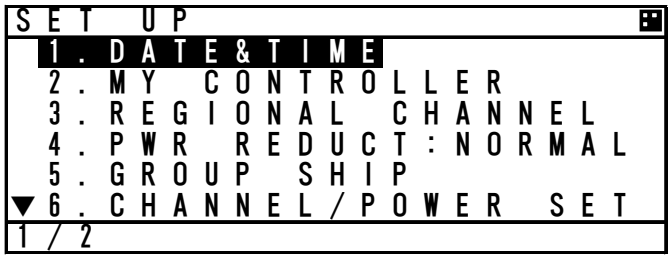
5.3.3.6. Software Version

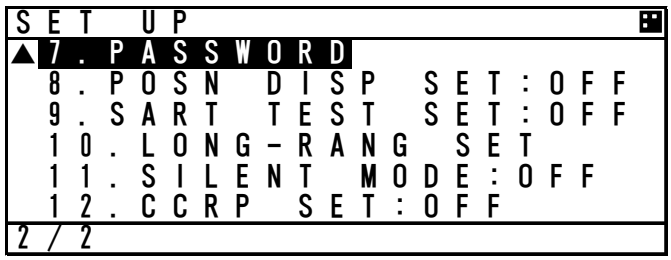
Select 6.SOFTWARE VERSION at “MAINTENANCE” menu screen (refer to “5.3.3 MAINTENANCE”), “SOFTWARE VERSION” screen is displayed.
To switch to “MAINTENANCE” menu screen, press CLR key.



5.3.4 Set up Menu

Select 4.SET UP at “MAIN MENU” menu screen, “SET UP” screen is displayed.
In this SETUP MENU, The controller display function and the operation of transponder can be set.





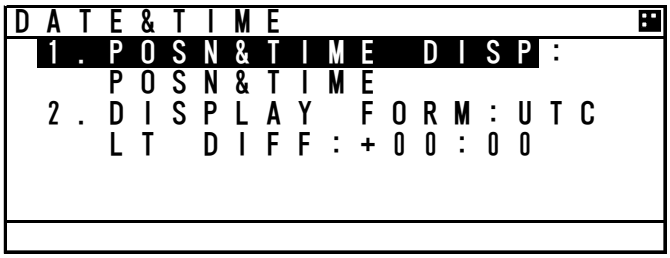
The outline of each menu is as follows.

1.DATE&TIME・・・・・・・・・・・・・・・・・・・・Select display’s setting (e.g. local time) (refer to 5.3.4.1)
2.MY CONTROLLER・・・・・・・・・・・・・・・Set LCD, buzzer and USER key function (refer to 5.3.4.2)
3.REGIONAL CHANNEL・・・・・・・・・・・・Regional channel setting (refer to 5.3.4.3)
4.PWR REDUCT・・・・・・・・・・・・・・・・・・Set Low power transmission(1w) (refer to 5.3.4.4)
5.GROUP SHIP・・・・・・・・・・・・・・・・・・Register group ships(up to 10 ships) (refer to 5.3.4.5)
6.CHANNEL/POWER SET・・・・・・・・・Select channels and power (refer to 5.3.4.6)
7.PASSWORD・・・・・・・・・・・・・・・・・Change password (e.g. power off, channel/POWER) (refer to 5.3.4.7)
8.POSN DISP SET・・・・・・・・・・・・・・・Select the display type of position (lat, long) (refer to 5.3.4.8)
9.SART TEST SET・・・・・・・・・・・・・・・AIS SART test signal display (refer to 5.3.4.9)
10.LONG-RANGE SET・・・・・・・・・・・・Long range setting (auto response, channel) (refer to 5.3.4.10)
11.SILENT MODE・・・・・・・・・・・・・・・Prohibition of transmission (refer to 5.3.4.11)
12.CCRP SET・・・・・・・・・・・・・・・・・・・In case of using CCPR, set the external position (refer to 5.3.4.12)

(OPTION: planning to deal with)
13.NSK UNIT・・・・・・・・・・・・・・・・・NSK initial setting and confirmation of unit condition (refer to 5.3.4.13)

5.3.4.1 Display Setting of Date and Time (DATE＆TIME)

Select 1.DATE&TIME at “MAIN　MENU” menu screen, “DATE&TIME” screen is displayed.
When the display is switched to “SET UP” menu screen, press CLR key.



When 1.POSN&TIME DISP is selected, Displayed contents of POSITION/TIME can be set.

The content can be select between POSN&TIME, POSN&COG&SOG and OFF.
If “OFF” is selected, when you push DISP key, POSN&TIME screen is not displayed.

Setting procedure

1. Select 1.POSN&TIME DISP at DATE&TIME screen and press ENT key
2. Select between POSN&TIME, POSN&COG&SOG and OFF with ▲ key or ▼ key and press ENT key.
3. After selecting, the cursor moves to 2. DISPLAY FORM.

When 2.DISPLAY FORM is selected, Display of local time and the difference in time can be set.

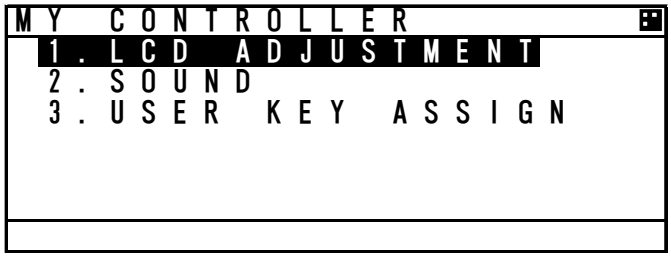
When LT is selected, POSN&TIME screen displays “LT” and the displayed time is compensated by the difference.
When UTC is selected, the screen displays ”UTC” and the time is standard time.

Setting procedure

1. Select 2. DISPLAY FORM at DATE&TIME screen and press ENT key
2. Select between UTC and LT with ▲ key or ▼ key and push ENT key
3. When LT is selected, the cursor move to first digit of DIFF and then input the difference.
   The difference in time can be inputted between -12:00 to +12:00.
   After last digit set, push ENT key.
   When “UTC” is selected, the cursor moves to 2. DISPLAY FORM.

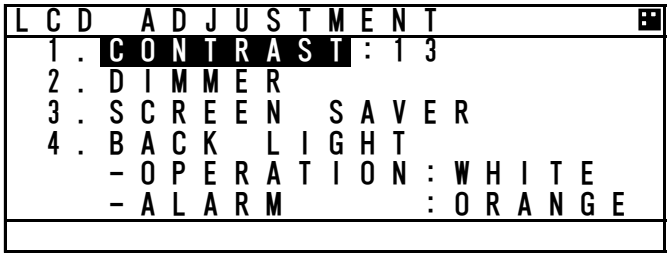
5.3.4.2 My Controller

Select 2.MY CONTROLLER at “MAIN MENU” menu screen, “MY CONTROLLER” screen is displayed.
In this menu, LCD display setting, buzzer ON/OFF and assignment of USER key can be set.
When the display is switched to “SET UP” menu screen, press CLR key.



a) LCD Adjustment

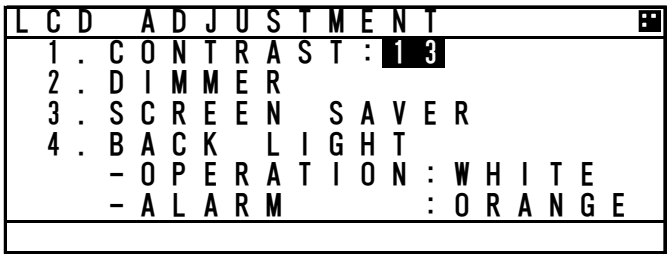
Select 1.LCD ADJUSTMENT, LCD adjustment screen is appeared.
In this menu, Items concerned with display can be set.



The outline of the each menu is as follows.
1. CONTRAST·····Set contrast value
2. DIMMER·····Display the DIMMER adjustment screen
3. SCREEN SAVER····Display the time setting menu of turning off the back light
4. BACK LIGHT·····Set the color of back light

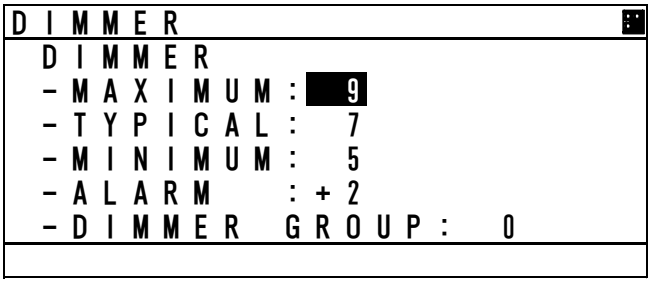
1. CONTRAST
Set the current contrast.

Select 1.CONTRAST and push ENT key and then the contrast can be adjusted.
Press ▲ key or ▼ key to adjust the shade. After the adjustment, press ENT key and the setting is saved.
The adjustment value “1” is the darkest and “13” is the lightest.



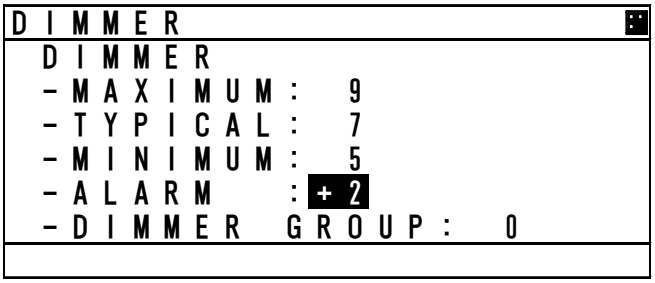
2. DIMMER

Select 2.DIMMER, DIMMER adjustment screen is displayed.
(The cursor move to the right of ”MAXIMUM”.)
The dimmer is adjusted for each pressing of DIM key, and these levels are defined by 4 stages (MAX, TYPICAL, MIN, OFF). In this menu, The value of MAX, TYPICAL, MIN can be set. And set the increasing value in case of alarm.



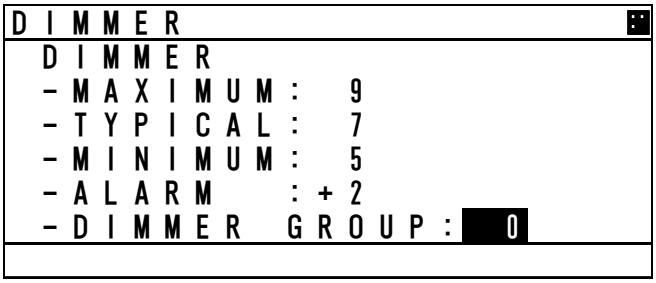
When the cursor is on the right of “MAXIMUM”, the value can be adjusted. Press ▲ key or ▼ key to adjust it and press ENT key and then the cursor moves to the right of “TYPICAL”.
The value of MAXIMUM, TYPICAL and MINIMUM can be set between 1 to 13.

e.g.）If “MAXIMUM” value is set to 9, the “TYPICAL” value can be set less than 9. The "MINIMUM" value is set to a value below the "TYPICAL" value as shown in the above example.



The ALARM value can be set between +1 to +9.
In the case of an alarm, the current dimmer setting is altered by the value set here.

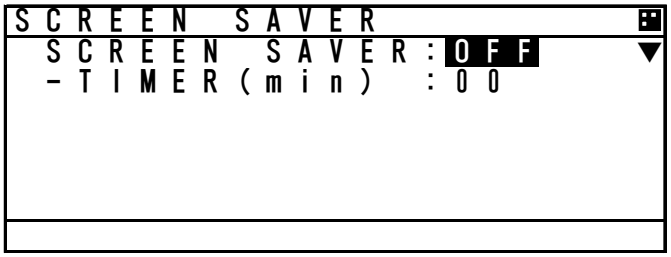
As shown in the above example, when a value of 7 is set for TYPICAL, then the dimmer value is set to 9 during the alarm condition.



When the AIS JHS-183 connect the JRC display equipment, set a group within which dimmer control for this display unit is linked.
The DIMMER GROUP value can be set between 0 to10. Available dimmer group numbers are from 1 to 10.Unavailable dimmer group number is 0.Select the same dimmer unit within the same group. Otherwise, dimmer control cannot be linked within the group.

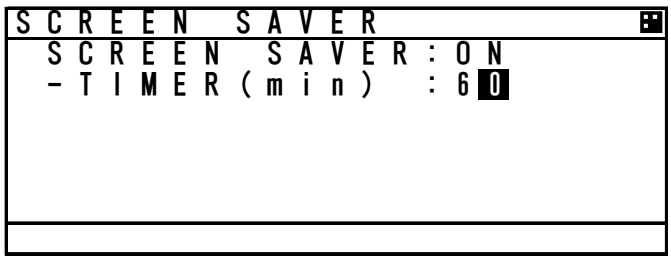
3. SCREEN SAVER

Select 3.SCREEN SAVER, SCREEN SAVER setting menu is displayed.
In this menu, the time to turn off the LCD light after no operation condition can be set.



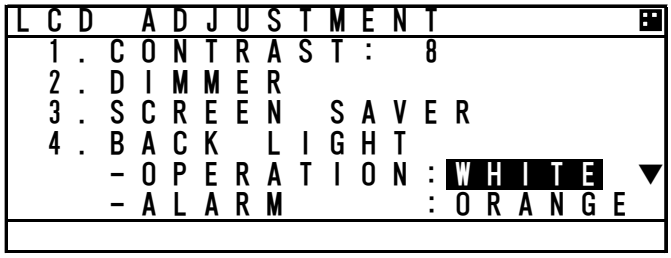
Select from OFF or ON.

If there is no need for this function, Select “OFF” with ▲ key or ▼ key and press ENT key, and then TIMER value is changed into “00” automatically.



Select “ON”, the cursor move to TIMER value.
Set the value between 00 and 60 (minutes) with ▲ key or ▼ key and press ENT key.

4. BACK LIGHT
Select 4.BACK LIGHT, the color of back light can be changed.
In this menu, the back light can be selected.

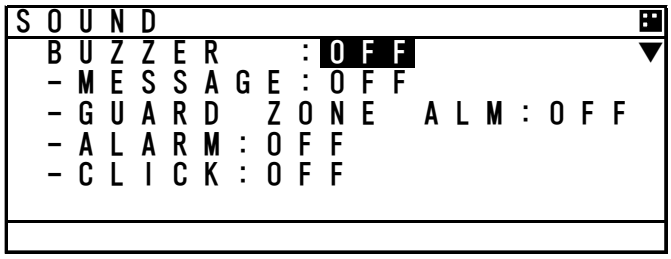


Select WHITE or ORANGE at “OPERATION” with ▲ key or ▼ key.
After setting, press ENT key, and then the cursor move to the right side of “ALARM”.
Take the same procedure.

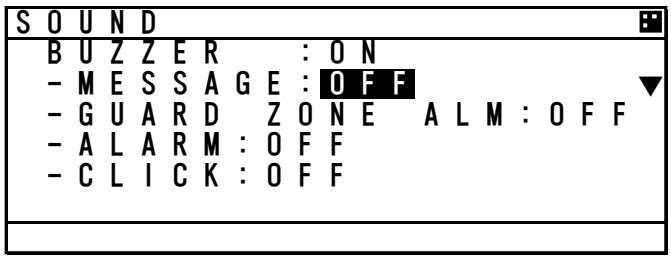
b) Sound

Select 2.SOUND, Buzzer setting screen is appeared.
In this menu, Items concerned with the buzzer can be set.

Select from ON (sounds the buzzer) and OFF and set each item with ▲ key or ▼ key.



If “OFF” is selected at “BUZZER”, all 4 settings are changed into OFF.

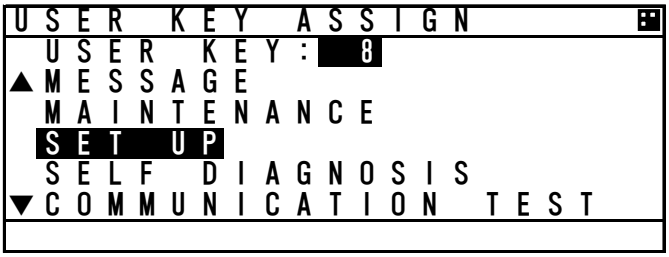


When “ON” is selected at “BUZZER”, select from ON and OFF and set each of items.

MESSAGE ····· In case of receiving message
GUARD ZONE ALM ··· In case some ships enter in the guard zone range
ALARM ····· In case some failure alarm occur
CLICK ····· In case AIS is operated with keys

c) User Key Assign

Select 3.USER KEY ASSIGN, User key assignment screen is displayed.
In this menu, Assignment to USER key can be set.



When USER KEY ASSIGN screen is displayed, the cursor is on the current setting.

Select the item with ▲ key or ▼ key and press ENT key to decide.

When "▲ ▼" mark is displayed on the left side, it means selection items continue.
Press CLR key, and then return to MY CONTROLLER MENU.

Refer to the lists following to select item

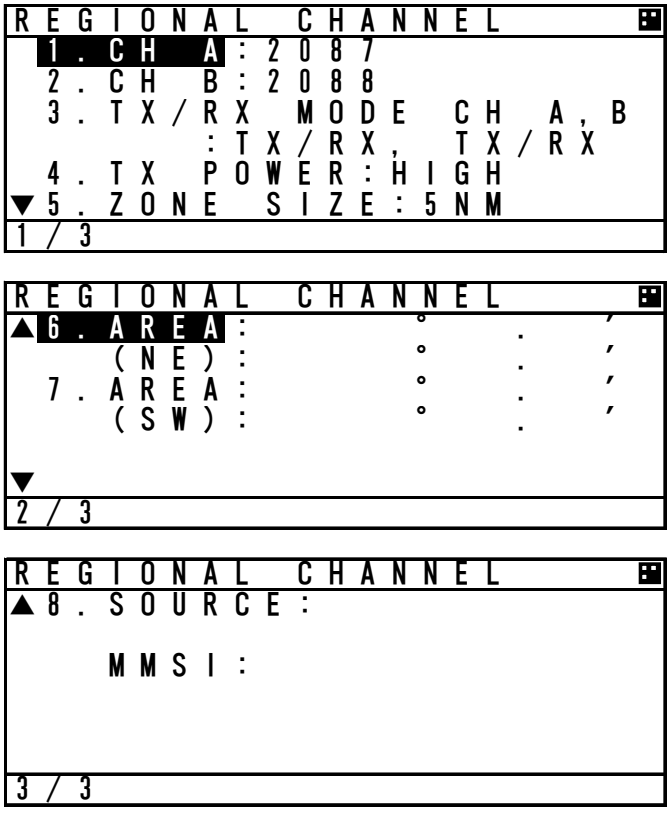
No	items	Explanation
1	GRAPHIC DISPLAY	Displays GRAPHIC screen
2	OWN SHIP'S DETAIL1	Displays OWN SHIP'S DETAIL 1 screen
3	OWN SHIP'S DETAIL2	Displays OWN SHIP'S DETAIL 2 screen
4	POSN&TIME	Displays POSN&TIME screen
5	VOYAGE DATA	Displays VOYAGE DATA menu
6	MESSAGE	Displays MESSAGE menu
7	MAINTENANCE	Displays MAINTENANC menu
8	SET UP	Displays SETUP menu
9	SELF DIAGNOSIS	Displays SELF DIAGNOSIS menu
10	COMMUNICATION TEST	Displays COMMUNICATION TEST menu
11	AIS ALARM	Displays ALARM INFORMATION screen
12	SENSOR STATUS	Displays SENSOR STATUS menu
13	MY CONTLOLLER	Displays MY CONTLOLLER menu
14	REGIONAL CHHANNEL	Displays REGIONAL CH SETTING
15	PASSWORD	Displays PASSWORD screen
16	SART TEST SET	Displays SART TEST MODE SET menu
17	LONG-RANGE SET	Displays LONG RANGE SET menu
18	SILENT MODE	Displays SILENT MODE setting
19	NON USE	No operation by USER key

5.3.4.3 Regional Channel

Select 3.REGIONAL CHANNEL, Regional channel setting screen is displayed.
Set the channel management information in the specified area.
Up to 8 channel management settings can be registered.

> **⚠Caution:**
> When setting the regional channel management, input the information correctly based on the administration. Incorrect setting causes a failure of the communication with other vessels and coast radio station.

Select the item with ▲ key or ▼ key and Press ENT key, the item can be set.
When the display is switched to SET UP menu, press CLR key.

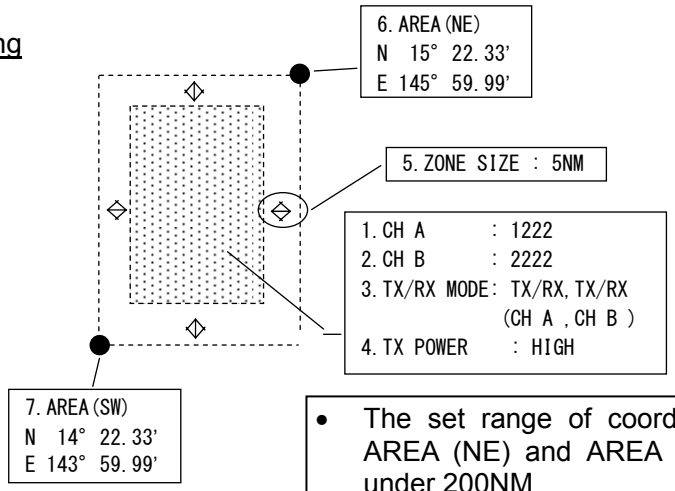


In addition to the channel management information by this AIS
- AIS communication from a coast station to this ship
- AIS communication from a coast station to all ships
- DSC communication from a coast station
- Channel management by other equipment through the connection port.

a) Setting change of each item

Each item settings are as follows

The area of setting



- The set range of coordinates is the distance between AREA (NE) and AREA (SW) and it is over 20NM and under 200NM
- The setting area is within 500NM from own ships position.

1. CH A
2. CH B

- Item 1 and 2 are setting of the channel numbers.
- Select 1.CH A, CH A can be changed. Select 2.CH B CH B can be changed.
- Input the channel number with ▲ key or ▼ key and press ENT key. And then the setting is valid.
- After 1.CH A setting, the cursor move to 2.CH B. The setting procedure is same as CH A.

3. TX/RX MODE

Set the CH A/CH B (specified at item 1,2) TRX mode to “TX/RX” or “RX”.
If “TX/RX” is selected, the setting is changed into transmitter-receiver mode. If “RX” is selected, the setting is changed into receiver mode.

- Select 3. TX/RX MODE CH A,B with ▲ key or ▼ key and select the CH A/B mode from the selection (shown in the table below).

Order	Selection	Dialog
1	TX/RX, TX/RX	CH A and B set transmitter- receiver mode
2	TX/RX, RX	CH A set transmitter-receiver, CH B set receiver
3	RX, TX/RX	CH A set receiver, CH B set transmitter-receiver

- Press ENT key and confirm the setting.
- It is not acceptable that Sets both CH A and CH B to “RX”.

4. TX POWER

Select 4. TX POWER, transmission power can be set.

- Select the transmission power from “HIGH” and “LOW” with ▲ key or ▼ key.
- If “HIGH” is selected, the power is set 12.5W, if ”LOW” is selected, the power is set 1W.
- Press ENT key and confirm the setting.

5. ZONE SIZE

Select 5. ZONE SIZE, zone size width can be input.

- Press ▲ key or ▼ key to input the zone size width. (Input range; from 1NM to 8NM.)
- Press ENT key and confirm the input.

6. AREA (NE)
Select 6. AREA and set “NE” by inputting latitude and longitude.

- If set by north latitude, select “N” with ▲ key or ▼ key. If set by south latitude, select “S”, and then press ENT key and set.
- The cursor moves to the latitude input line, set the figure with ▲ key or ▼ key and press ENT key to determine. (refer to “5.2.5 numerical input method”)
- After determination of the latitude, the cursor move to longitude input line.
- If set by east longitude, select “E”, If set by west longitude, select “W” and then input the longitude. The procedure is same as latitude.
  These setting ranges are shown as follows, latitude from 0°00.00’ to 89°59.99’ and longitude 0°00.00’ to 179°59.99’.
- Press ENT key and determine the input.
- Press CLR key, the cursor return to previous digit.

7. AREA (SW)
Select 7. AREA and set “NE” by inputting latitude and longitude.

- The setting procedure is same as “6. AREA (NE)”.

After setting of item from 1 to 7, carry out the “CHECK” of the setting (as shown nest page)

8. The source of regional channel setting（SOURCE/MMSI/UTC）
This item “8.SOURCE/MMSI/UTC” displays the channel setting information.
This is display only, settings and selection are not available.
These contents are shown below.

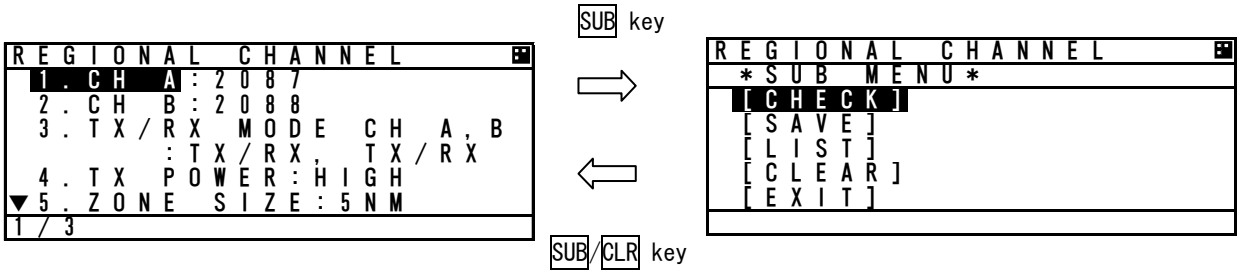
SOURCE… The means of setting
The regional setting is managed by 5 types.
1. ADDRESSED MSG.22 : Channel management to this ship
2. BROADCAST MSG.22 : Channel managements to all ships
3. CH ASSIGNMENT : Managed by other equipments connected with NQE-5183
4.DSC 70CH TELCOM : Channel management by DSC telecommand
5.MANUAL INPUT : Channel management by oneself

MMSI…… MMSI number of the station which operates the setting indication.
UTC……UTC time AIS received the indication

If CLR key is selected, the display is switched to SET UP menu.

b) Check of the setting

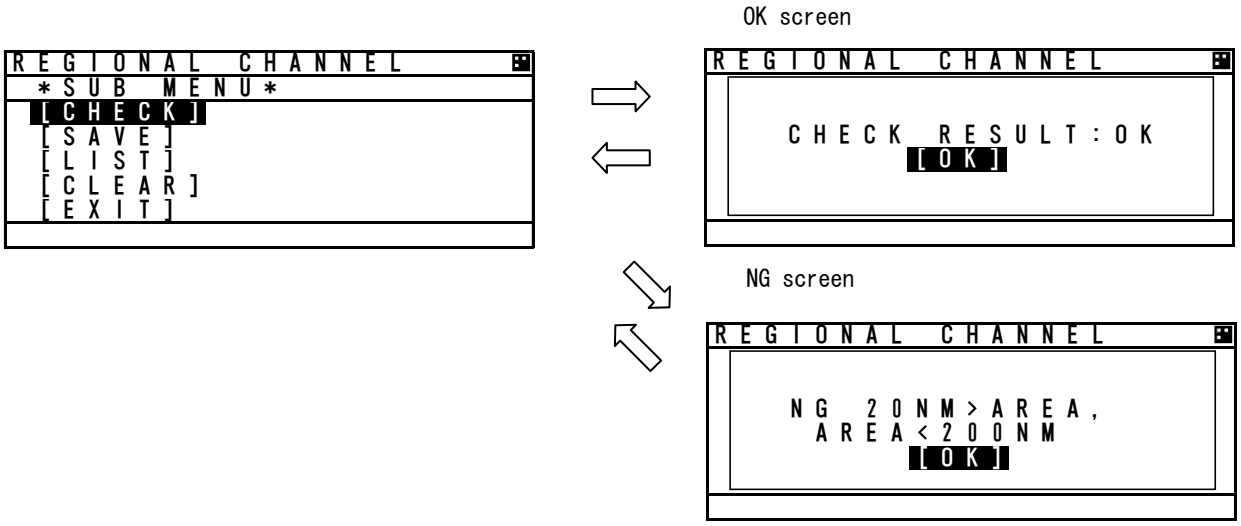
Check the regional management setting whether it is based on the restriction or not.
If there are no errors, the setting can be saved



Press SUB key at the setting screen, SUB menu screen is displayed.

- CHECK ····· Check the setting whether it is based on the restriction or not
- SAVE ····· Save the setting, in case there are no problems.
- LIST ····· See the saved data (up to 8 setting)
- CLEAR ····· Clear the contents that is being set
- EXIT ····· Leave the SUB menu and return to SET UP menu

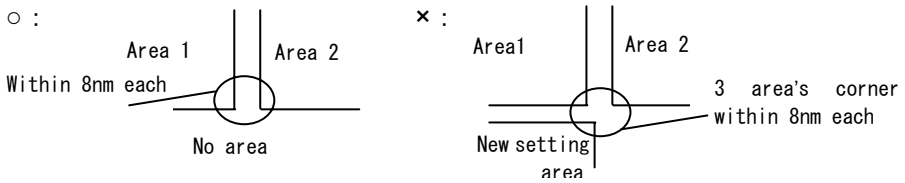
Select [CHECK] and push ENT key, the popup screen which shows the result is appeared.



Result of checking

Indication	note
OK	[SAVE] can be selected
NG 20NM>AREA,AREA>200NM	The range is under 20NM or over 200NM.
NG AREA CORNER ERROR(*1)	Each of the distances of 3 area's corners is within 8NM.
NG AREA 500NM OVER	Set the area separated 500NM from own ship's location.
NG CHANNEL ERROR	Set by invalid channel
NG OTHER ERROR	Set by other invalid matters
NG OVERTIME ERROR	No response from transponder

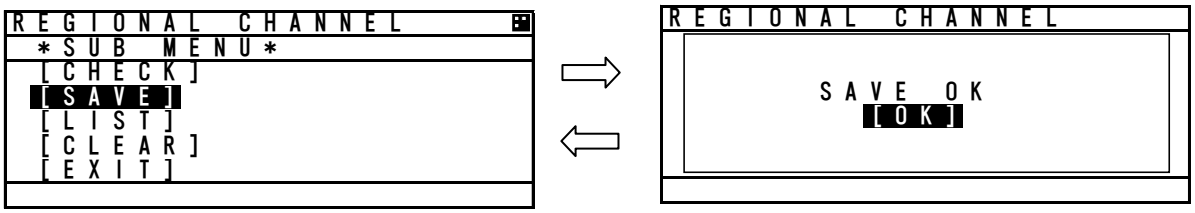
(*1) : In case of the condition below, AREA CORNER ERR is appeared.



c) Save the setting

If the result is OK, the setting is saved by transponder.
While the result is “NG”, [SAVE] can not be selected.

If the setting is saved normally, “SAVE OK” is appeared.

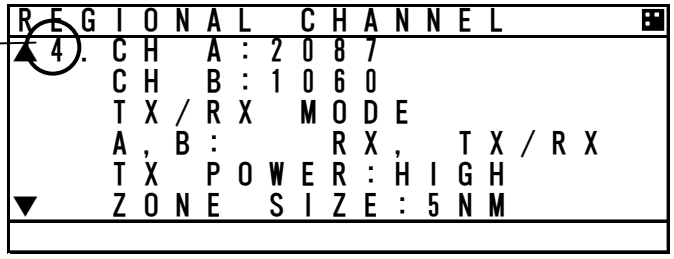


d) Confirmation of saved data

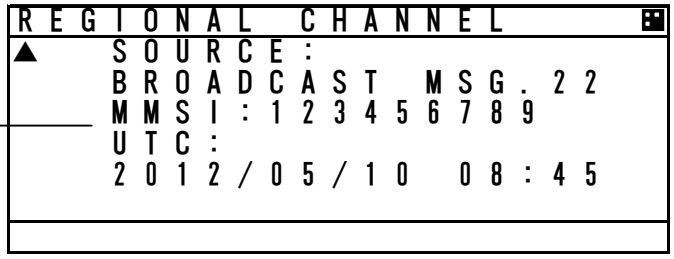
Select [LIST] in the SUB menu, Channel management information lists are displayed.
The list can be scrolled by ▲ key or ▼ key.
If CLR key is selected, the display is switched to SUB menu screen.
If there are no saved data, “NO DATA” is appeared.

Indicates the list number

If there are ▲ or▼ marks on the left side,
This means the list continues.



The last data indicates the time registered.

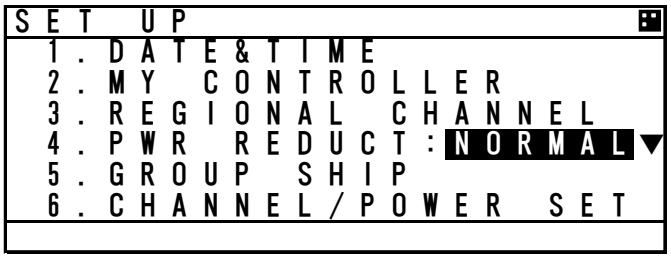


e) Regional setting change

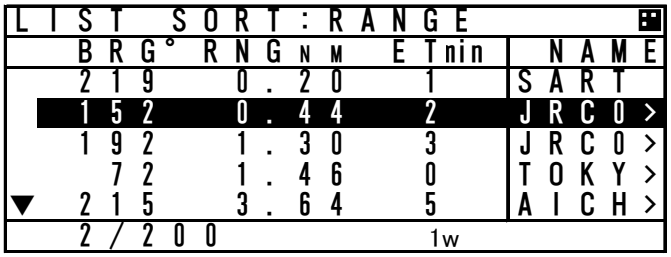
If the regional channel setting is changed, Popup is appeared as shown below.

5.3.4.4 Power Reduction

Select 4. POWER REDUCT, the transmission power can be set.



Select from “NORMAL” and “1W” with ▲ key or ▼ key and press ENT to determine.
NORMAL ・・・ transmit by normal power
1W ・・・・ the power is changed to 1W

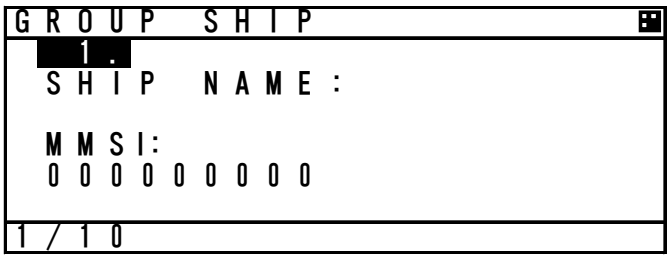


While selecting 1W, there is 1W mark on the bottom line of screen. (as shown below)

⚠ Caution : If the transmission power is changed into 1W, the power revert to normal after moving 0.25 NM from the position where the power reduction was made.

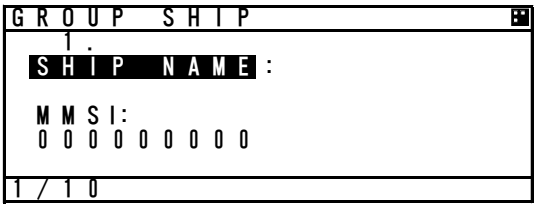
5.3.4.5 Registration of Group Ships (GROUP SHIP)

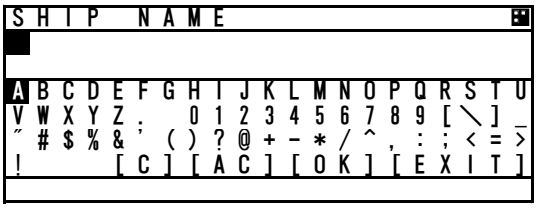
Select 5.GROUP SHIP, GROUP SHIP screen is displayed.
Other ships registered as group ship are displayed as appended “＊” mark on the left side in LIST SORT screen and the registered ship name.
The number of registration is up to 10.
These registrations can be confirmed with ▲ key or ▼ key.



a) Input name

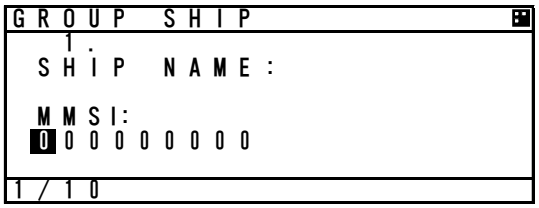
- Select desirable number to change or register and Press ENT key and then the cursor move to SHIP NAME.
- Press ENT key at SHIP NAME, SHIP NAME input screen is displayed.
- Refer to “5.2.4 character input method“ to input.





b) MMSI input

- After the inputting the name, select MMSI and press ENT key, and then MMSI can be inputted.
- MMSI can be inputted one digit at a time. (refer to 5.2.5 Numerical Input)
- After inputting the last digit, press ENT key and MMSI setting is finished. The screen move to the GROUP SHIP screen.

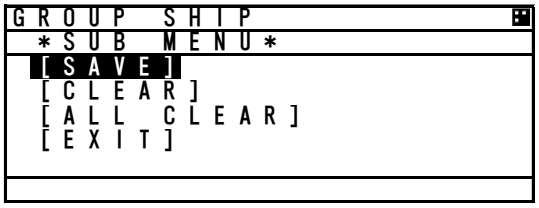


c) Save and Clear

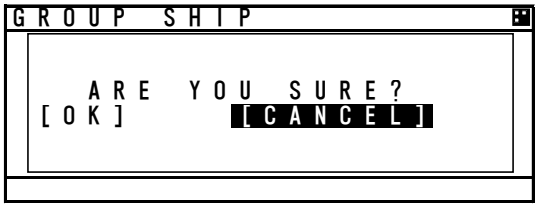
This item is as follows

SAVE ····· Save the input after editing
CLEAR ····· Erase the register which is selected or edited and switch to GROUP SHIP screen
ALL CLEAR ····· Erase all registrations and switch to GROUP SHIP screen
EXIT ····· Return to SET UP menu

Select [SAVE]



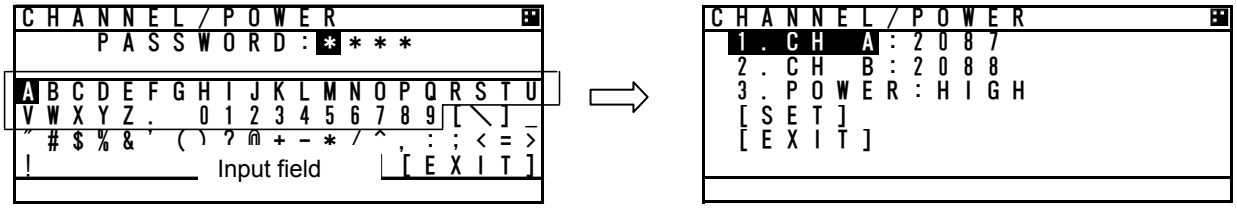
If [CLEAR] or [ALL CLEAR] are selected, Popup screen is appeared. (as shown below)
If [OK] is selected, the registration is deleted.
If [CANCEL] is selected, switch to previous screen.



5.3.4.6 Change of Channels and Transmission Power (CHANNEL/POWER)

Select 6.CHANNEL/POWER SET and enter password, Channels and power can be changed.

⚠Caution：Normally, AIS is operated by regulated channels.
Ship's administrators must be responsible for any change.



a) Password input

- Password is composed of alphabet "A～Z" and numeric "0～9".
- After the 4 digits are input, then the cursor moves to [ENT].
- If [ENT] is selected, Channels and power changing screen is displayed. If [EXIT] is selected, switch to SET UP screen.

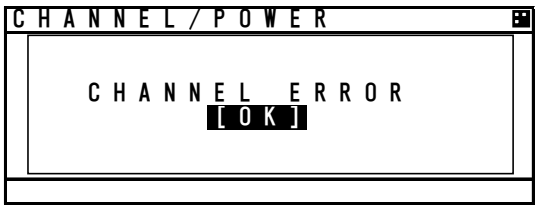
b) Channels and power change

Set the channel number and select transmission power

- After channel and power changing screen is displayed, the cursor is on 1.CH A.
- Select 1. CH A and press ENT key. The cursor move to on the left side of channel number.
- Refer to 5.2.5 character input method to input.
- Press ENT key on the right side of the channel number, the cursor moves to next item. (2.CH B takes same procedure.)
- Transmission power is selected as shown below.
  HIGH·····normal power
  LOW·····1W
  Select the power and press ENT key. The cursor moves to [SET].

- If [SET] is selected, AIS starts operation by the setting.
- If [EXIT] is selected, switch to SET UP screen.

If invalid channels are inputted or it can not be set, error popup screen (same as "5.3.4.3 Regional channel setting") is appeared.

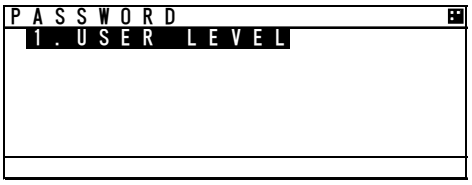


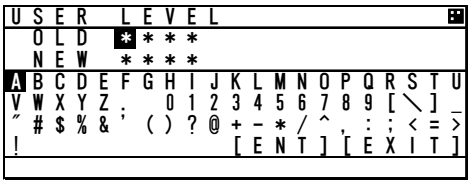
- The transmission power set here is not the same as that of "5.3.4.4 POWER REDUCTION" and the AIS will continue operation by the set power and is not dependent on the distance moved.
- The setting changed in this menu is reverted to default by restarting the equipment.

5.3.4.7 Change Password (PASSWORD)

Select 7. PASSWORD, Password screen is displayed.
In this menu, set the password that is used in case power off or channel change.
The password is managed by ship's administrator.

Select 1.USER LEVEL and press ENT key.
If CLR is selected, the display is switched to SET UP menu screen.





1. The cursor is on the right side of "OLD" and another cursor is displayed in the character pad at the same time.
2. Input the current password after "OLD:" by using character pad.
3. After 4 digits input, select [ENT] and press ENT key.
   - If the password is not matched with current one, the cursor returns to the first digit.
   - Factory default password is set "0000".
   - If the password is matched with current one, the cursor move to first digit of "NEW".
4. Input the new 4 digits password at "NEW:"
5. Press ENT key at last digit
   - If [ENT] is selected, new screen is appeared and the cursor is at [SAVE].
   - If [EXIT] is selected, discard the input and return to PASSWORD screen.

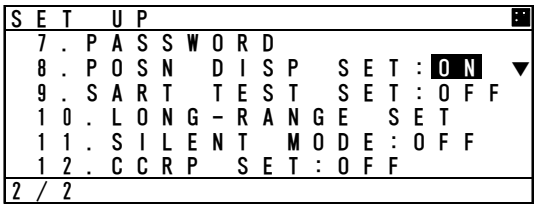
6. At the above screen
   - Select [SAVE], new password is saved and display switches to SET UP menu
   - Select [EXIT] , discards the input and display switches to the PASSWORD screen.

If password setting is not completed, Popup screen (as shown left) appears.
In this case, Select [SAVE] again or change to another password.

Note) Password is composed of alphanumeric "A～Z" and "0～9".

5.3.4.8 Display Style of Latitude and Longitude (POSN DISP SET)

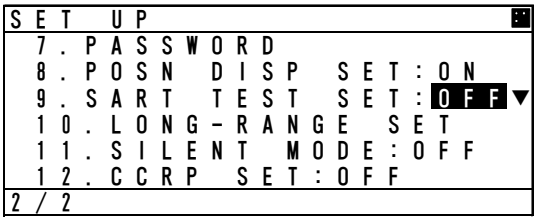
Select 8. POSN DISP SET, the display style (display position of N/S, E/W） can be changed.



Setting OFF： N xx°xx.xxx ┐ → Positioned in front of coordinate
Wxxx°xx.xxx ┘
ON： xx°xx.xxx' N ┐ → Positioned at the back of coordinate
xxx°xx.xxx' W ┘

5.3.4.9 Indication of AIS SART test signal (SART TEST SET)

Select 9.SART TEST SET, The test of AIS SART can be set.
Select the operation whether AIS displays the signal at LIST SORT screen or GRAPHIC screen after receiving the SART test signal or not.

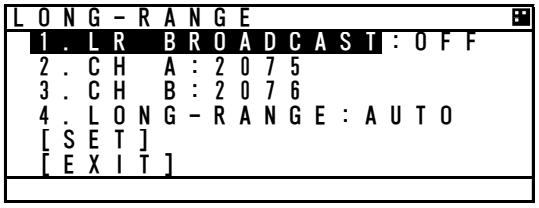


Select the operation
OFF ･･･ Displays only main signal of AIS SART
ON ････ Displays both test signal and main signal.

When the test signal is received, AIS displays “SART TEST” at LIST SORT screen.
When the main signal is received, AIS displays “SART ACTIVE”.

5.3.4.10 Long-Range Set

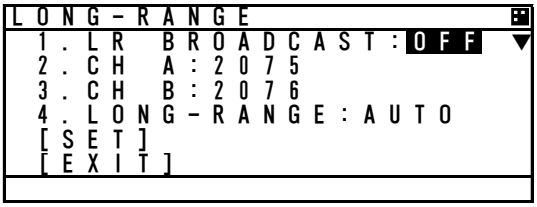
Select 10.LONG-RANGE SET and enter password. Long range setting screen is displayed.
In this menu, Each item concerned with long range can be set
.



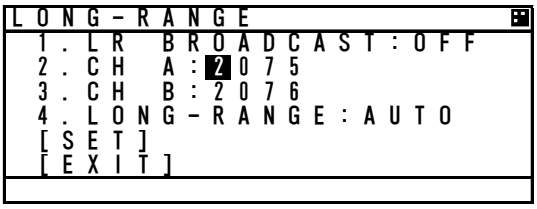
1. LR BROADCAST･･･Select the use of long range broadcast
2. CH A ･･･････････Set the channel for CH A transmission
3. CH B ･･･････････Set the channel for CH B transmission
4. LONG-RANGE･･･････Select the response type from AUTO or MANUAL.

a) Setting of long range management

Select 1.LR BROADCAST, Long range broadcast can be set.
AIS transmits own ship's position or navigation status by long range broadcasting (using satellite etc.)
The channels are specified in item 2.and item3.
The AIS will respond, in cases where a coast radio station requests own ship's information.



Select from ON or OFF with ▲ key or ▼ key.
ON ····· Transmit the response by the setting channel (set at item 2. and item3.) .
OFF ····· Not transmit the response.
But requested by LR port,
Output the response through LR port.
Press ENT key to decide after selection

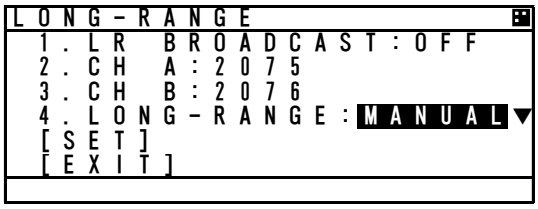


Set the channel to transmit for long range response.
Input the channel number one digit at a time.
(Refer to "5.2.5 numerical input")
Factory default settings are 2075ch and 2076ch.

⚠Caution : Normally, AIS is operated by regulated channels.
Ship's administrators must be responsible for any change.

b) Setting of long range response

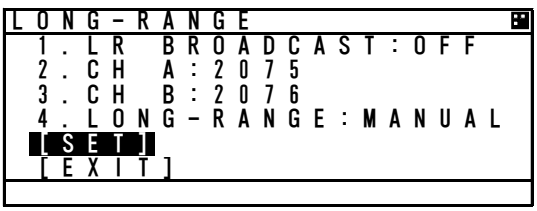
Select 4.LONG-RANGE, Long range response can be set. Long range transmission operates in cases where the AIS is connected to equipment that supports long range transmission.
In this menu the response type shown in paragraph 5.3.2.5 "Confirmation of long range message" refers.



AUTO: Respond automatically
MANUAL: Respond by manual

c) Save the setting

Save the setting of item from 1 to 4.

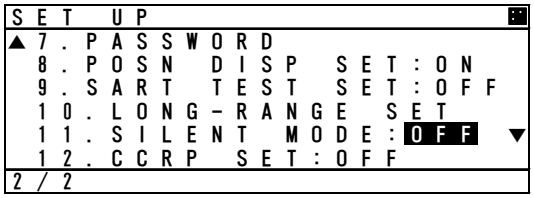


Select [SET], save the setting and switch to SET UP menu.
Select [EXIT], discard the setting and switch to the SET UP menu.

5.3.4.11 Prohibition of Transmission（SILENT MODE）

Select 11.SILENT MODE and enter password. Silent mode is available.
This is used for intentional prohibition of transmission.

> ⚠Caution：Normally, AIS is operated by regulated channels.
> Ship's administrators must be responsible for any change.

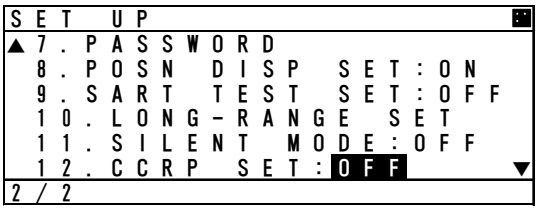


Select from ON or OFF with ▲ key or ▼ key.
OFF ･･･ Continue normal operation
ON ････ Prohibit from transmitting while selected.
Press ENT key to determine.

When the AIS is prohibited from transmitting, there is always "RX" mark on the bottom line of screen.

5.3.4.12 CCRP Set

Select 12.CCRP SET, The use of CCRP (Consistent Common Reference Point) can be selected.
The AIS will display the distance or compass direction on the basis of the CCRP setting.



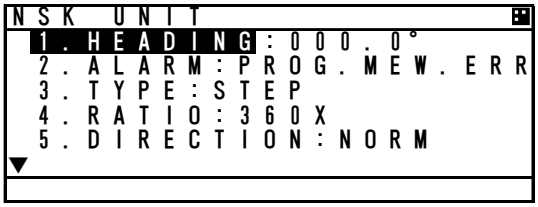
Select from ON or OFF with ▲ key or ▼ key.
OFF ･･･ Set AIS controller's position as the reference point.
ON ････ Set CCRP for as the reference point
Press ENT key to determine.

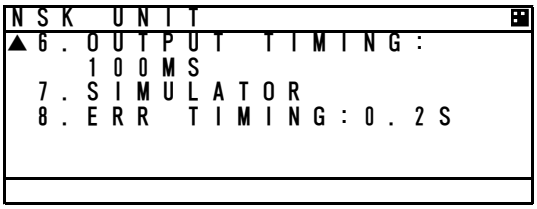
5.3.4.13 Initial Setting of Own Ship's Heading Direction（NSK UNIT）

When the NSK unit (gyro interface option) is installed, then the heading direction needs to be set.
This item is displayed when AIS is connected with NSK unit and its setting is available.

Select 10. NSK UNIT, Own ship's heading and the setting of NSK UNIT are displayed.

If CLR key is selected, the display will switch to the SET UP menu.



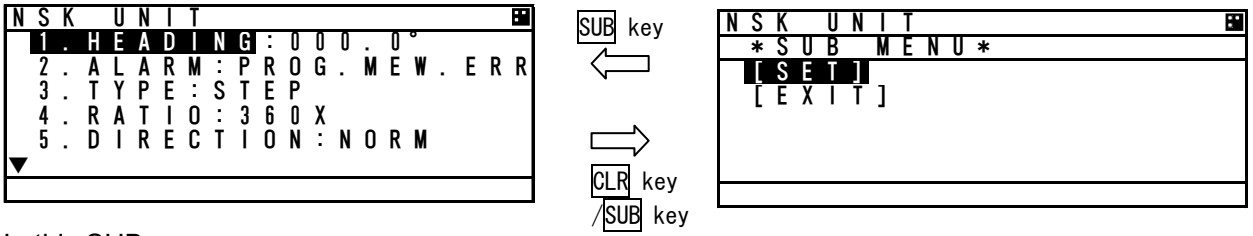


In this menu, Item 1.HEADING value can only be set.

Other items (from 2 to 8) show current NSK unit's setting and alarm information.

a) Initial value input of heading

Select 1.HEADING, Heading value can be set.
The value is between 000.0° to 359.9° and input one digit at a time by using UP/DOWN key.
After all digits input, Press SUB key and then SUB menu is appeared.



In this SUB menu
Select [SET], saves the heading value and switches the display to SET UP menu.
Select [EXIT], discards the input and switches the display to the NSK UNIT menu.

⚠Caution: In case some alarm occurred at NSK unit and NSK is recovered, this screen is displayed and setting the heading value is necessary.
If the display is switched to another screen without the NSK being set, the AIS will request the heading input on a regular basis. Therefore this screen is displayed again.

b) Details of NSK Unit setting

Each item's detail are shown below

2. ALARM

Current alarm of NSK UNIT

Indication	Description
OK	Normal
SYNCIRQ ERR	Connection error in case sync type selected
SYNCWIRE ERR	（e.g. breaking of wire）
STEPIRQ ERR	Connection error in case step type selected
STEPWIRE ERR	（e.g. breaking of wire）
PROG.MEM.ERR	Operation error

3. TYPE

Displays the type of gyrocompass

Indication	Description
STEP	Step signal
SYNC	Sync signal

4. RATIO

Displays the rotation ratio

Indication	Description
36X	Rotation ratio
90X	
180X	
360X	

5. DIRECTION

Displays the direction of rotation

Indication	Description
REV	Reversal（a left-handed rotation）
NORM	Normal（a right-handed rotation）

6. OUTPUT TIMING

Displays the renewal time of heading value

Indication	Description
RESERV	Reserved
1S	Renew the heading every 1 second
100MS	Renew the heading every 0.1 seconds
50MS	Renew the heading every 0.05 seconds

7. SIMULATOR

Displays the operation mode

Indication	Description
TEST	Operation check mode. The heading value shows 0.0 always.
NORM	Normal operation mode（displayed normally）

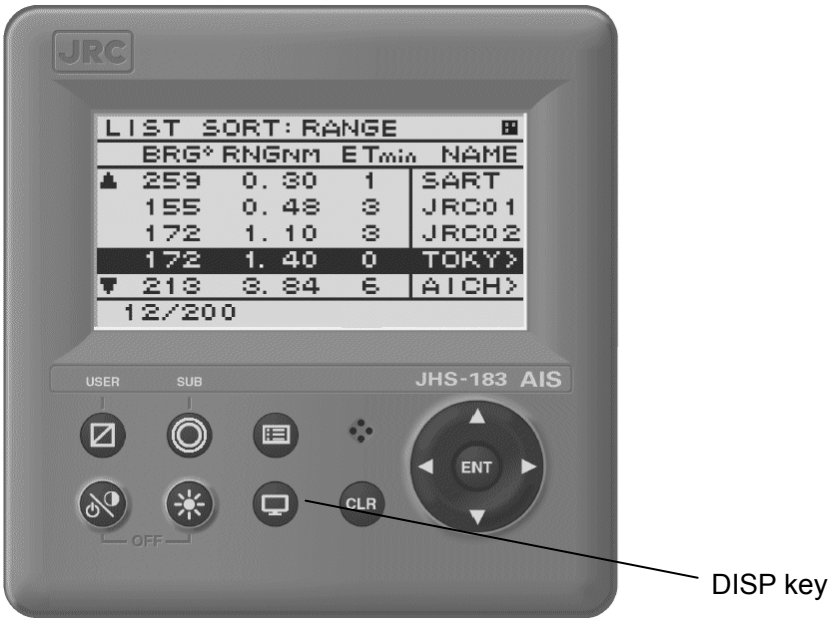
8. ERR TIMING

Displays the alarm detecting time

Indication	Description
5S	Detect the alarm every 5 seconds
0.2S	Detect the alarm every 0.2 seconds

5.4 Explanation of Graphic display

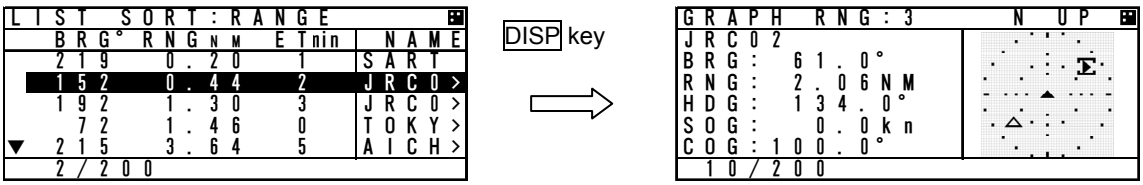
5.4.1 The Outline of Display



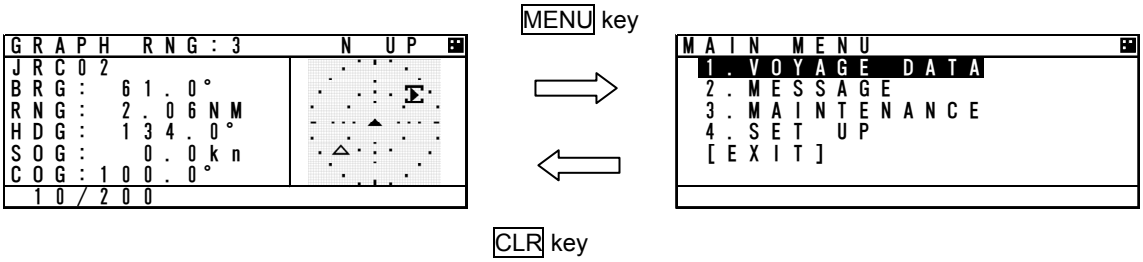
NCM-983 Panel side and Display

5.4.2 Operation for Graphic display

In order to switch the display, press DISP key until Graphic display is appeared.



Also, the display can be switched from Graphic display to MAIN MENU to change the setting of this equipment.
Press CLR key at MAIN MENU, the display is switched to Graphic display.

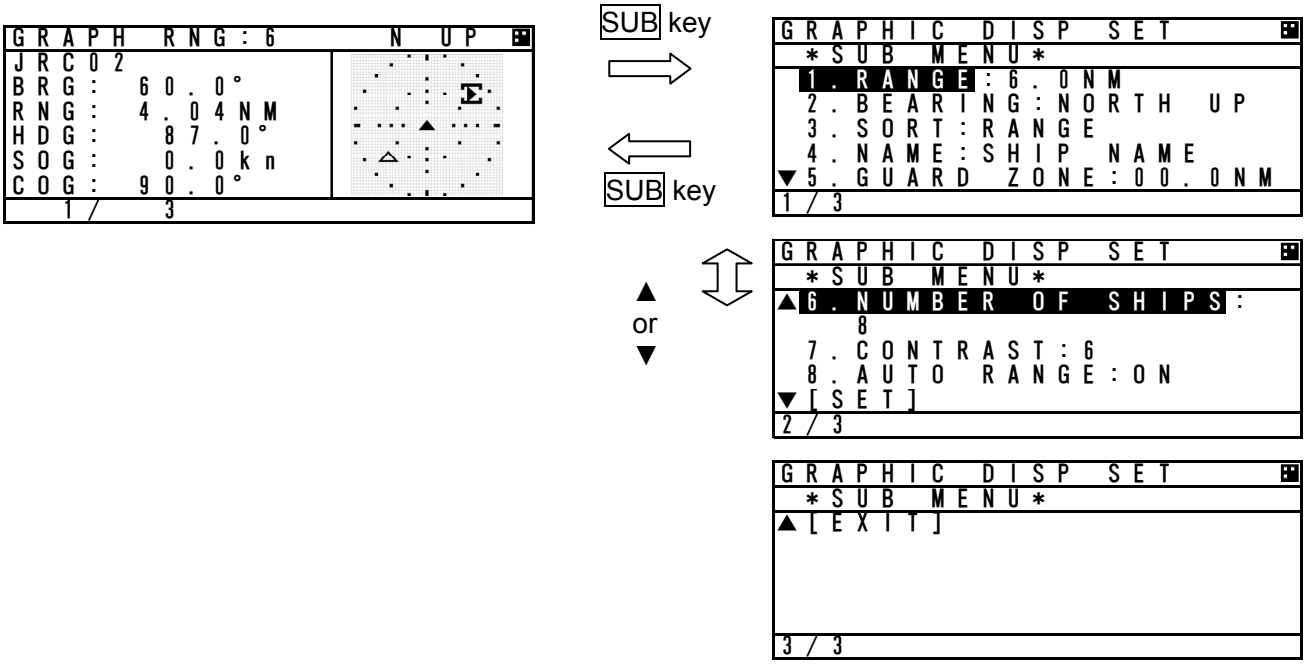


5.4.3 Setting the Contents of Graphic Display

Explain the setting of graphic display (e.g. range changes, setting of guard zone).

5.4.3.1 Display the Setting Screen

Press SUB key at Graphic screen, and then switch to SUB MENU.
In this SUB MENU, Select the desirable item with ▲ key or ▼ key and Press ENT key, then the item can be set.
When [SET] is selected on page 2/3, the setting is saved.
When [EXIT] is selected on page 3/3, the display switched to MAIN MENU.



5.4.3.2 Display Item Explanation

1. RANGE

RANGE means the radius of external circle in the graphic screen.
It is selected from 6 steps (0.75,1.5,3,6,12,24NM） with ▲ key or ▼ key.

2. BEARING

North up of Head up can be select with ▲ key or ▼ key.
- North up : Displays on a north basis
- Head up : Displays on own ship's heading basis.

In case Heading value is not inputted (Not available), Only North up can be selected.

3. SORT

SORT is selected from RANGE, TCPA and GROUP with ▲ key or ▼ key.
- RANGE : In order of the distance from own ships and OTHER SHIPS LIST is arranged.
- TCPA : In order of small TCPA from own ship and the list is arranged.
- GROUP : In order of the distance and gives priority GROUP SHIP, and the list is arranged.

4. SHIP NAME

The SHIP NAME is selected from SHIP NAME and MMSI.

5. GUARD ZONE

The range of GUARD ZONE ALARM can be set. The range is set from 0 to 99.9NM.
If 00.0NM is set, the alarm is cancelled.
（In order to see this operation, refer to 5.2.3.1 GUARD ZONE ALARM）

6. The number of ships displayed in Graphic screen

The number of ships displayed in Graphic screen can be limited.
The number is selected from 8,16,24,32,200 with ▲ key or ▼ key.
This function is set in case it is hard to distinguish others in this screen.

7. CONTRAST

The contrast of display can be adjusted.
The range is selected from 1 to 13 with ▲ key or ▼ key.

8. AUTO RANGE

When a ship (located within 24NM) is selected in the list, Graphic range is set automatically and is adjusted to its distance.
Select from ON (valid) or OFF (invalid) with ▲ key or ▼ key.

5.4.3.3 Display

① **Heading**：In 90-degree segment, 4 types are listed below.

Value [degree]	314.5－45.4	45.5－134.4	134.5－224.4	224.5－314.4
Display				

② **ROT**：3 types are listed below.

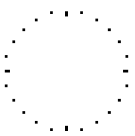
Course	+ (right)	－ (left)	0 (straight)
display			

③ **Other marks**

Classification	Mark
Own ship	
Other ships	
Base station	
Cursor	

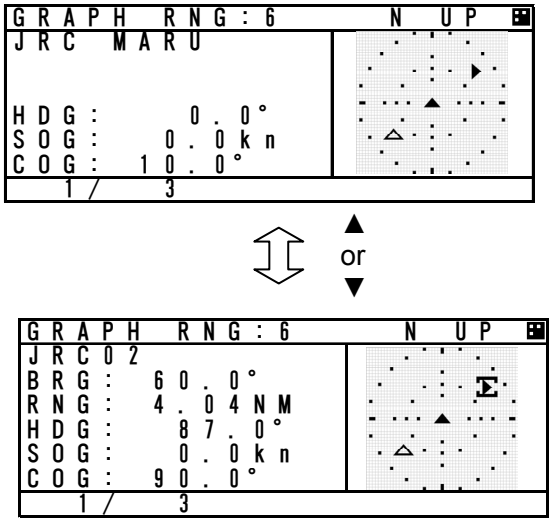
Classification	Mark
AIS SART	
Mark of route(Real) Aids to navigation	
Mark of route (Virtual)	

④ **Display line**

Classification	Mark	Note
Range circle		Setting range Displayed by 15 degree interval circle.
Guard zone alarm circle		Setting range of guard zone Displayed by 30 degree interval circle

5.4.4 Selection of Other Ships

The cursor in Graphic display can move with ▲ key or ▼ key.
When ▲ key is pressed, ships are selected by descending order of the setting SORT.
When ▼ key is pressed, ships are selected by ascending order of the setting SORT.
When CLR key is pressed, own ship is selected.

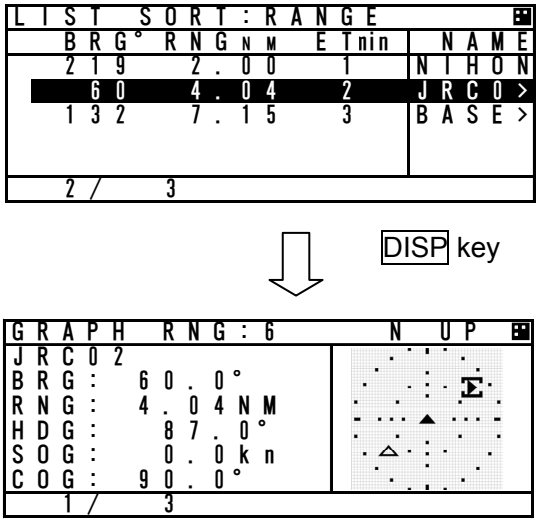


5.4.5 Auto Range Setting

After “AUTO RANGE” is set “ON” (valid), this function works under the condition shown below.

On condition that Graphic range set previously is smaller than the ship’s distance selected in the list (located within 24NM), and then press DISP key and displays the Graphic screen.
The range is set automatically and is adjusted to its distance. Therefore the ship selected can be confirmed in the Graphic display.

e.g.）If the Graphic range is set 0.75NM previously and A ship which is 4.85NM away from own ship is selected in the list, the progress is shown below.
The range is changed 0.75NM into 6.0NM.



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 (19-35Vdc).
(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

Do not attempt to check or repair the interior of this equipment by non-qualified service personnel, as doing so may cause fire, electric shock or malfunction. If any malfunctions are detected, contact our service center or agents.

6. 1 General Maintenance and Inspection

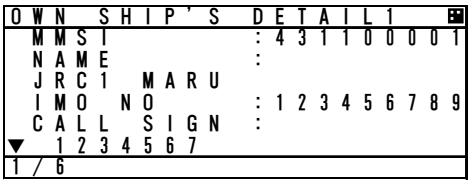
Below are listed general maintaining and inspecting items, which can be done with usual tools and apparatus.

No.	Item	Maintenance and inspection
1	Cleaning	Gently clean the surface of the panel, knobs, switches, and cover with soft cloth or silicon oil. 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 and connectors.
3	Fuse	When checking and replacing the fuse, be sure the power is off. If the power source fuse is blown, be sure to inspect the cause before replacing the blown fuse with a new one.
4	Unit	Check whether there is discoloration of parts mounted to the unit. When exchanging a unit, contact our service center or agents.

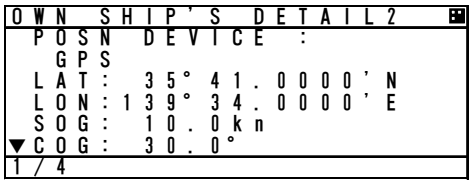
6.2 Periodic Inspection

6.2.1 Confirming the Own Ship's Information

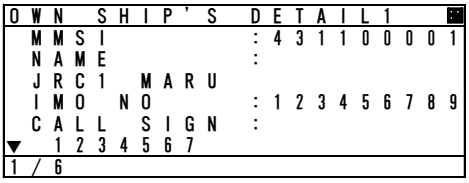
Displays own ship's detail information and confirm that the static (ship name, MMSI etc.) and dynamic (position, heading etc.) information is correct.
In order to display the Own Ship's Detail Information, Press DISP key several times and the screens are changed by each key press. Own Ship's Detail Information is composed of 2 screens.

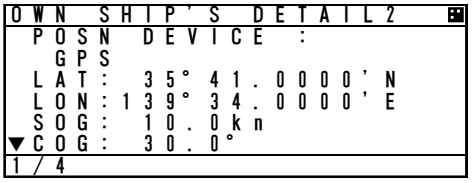


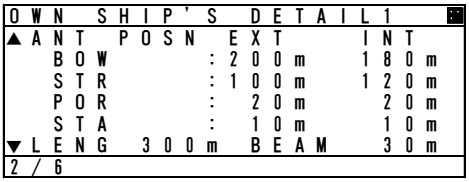
Own ship's detail1 information
(Static information)

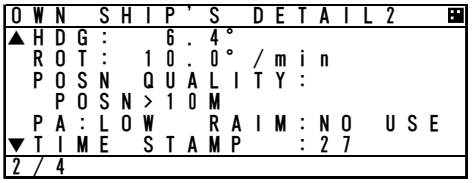


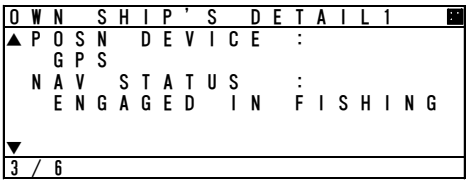
Own ship's detail2 information
(Dynamic information)

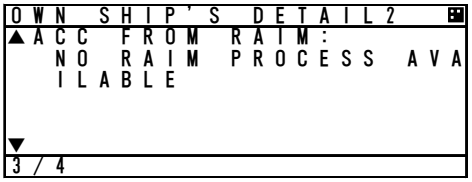


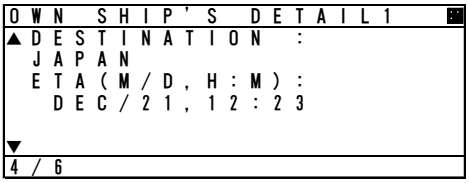


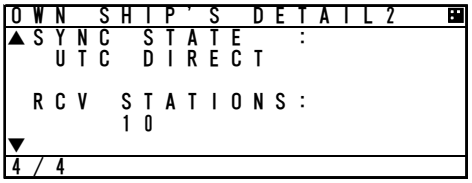


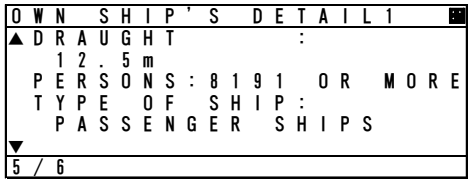


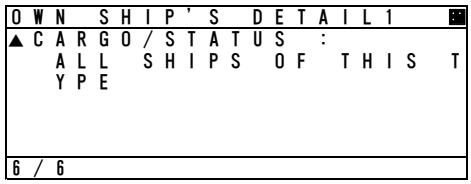








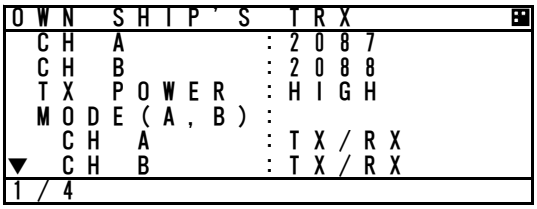


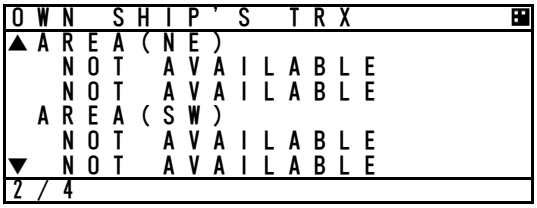


6.2.2 Confirming the TRX Channel

Display the TRX (transponder) condition and confirm that the TRX Channel information is correct.
In order to display “Own ship’s TRX”, Press DISP key at “Own ship’s detail 2” screen.

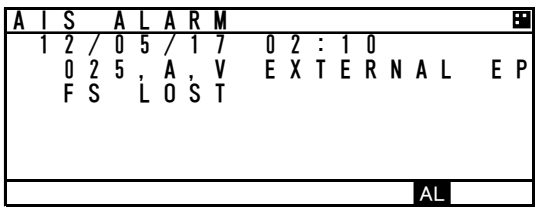
In case international frequencies are used, the information is displayed as below.



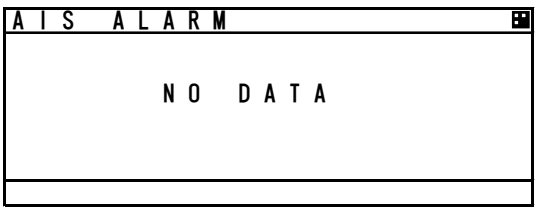


6.2.3 Confirming the Alarm Status

Display the AIS alarm status and confirm there is no alarm. In order to display the AIS alarm status, Select “Main Menu” → “3. MAINTENANCE” → “3. AIS ALARM”.
Built-in integrity test (BIIT) is always working during AIS equipment operation to watch over any alarms and there is a visual and audible signal when it detects any alarms when it detect any alarm. After the automatic displayed alarm screen is closed by pressing CLR key, the current AIS alarm can be confirmed with the AIS alarm status screen.



The present alarm occurrence status



The status when there is no alarm.

If any alarms occur, confirm the alarm occurrence conditions with the alarm table.

JHS-183 Alarm Table

Failure alarm (ALR sentence output)

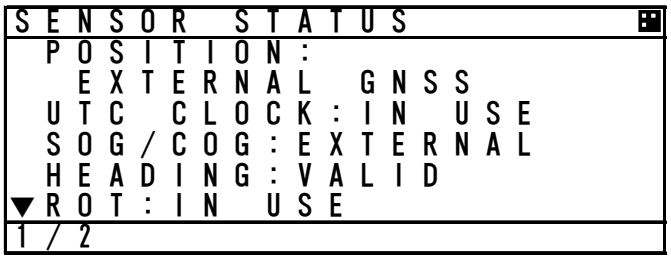
Alarm No.	Indication	Alarm Occurrence Conditions
003	Rx channel 1 malfunction	The RX CH A synthesizer is unlocked.
004	Rx channel 2 malfunction	The RX CH B synthesizer is unlocked.
005	Rx channel 70 malfunction	The RX CH70 synthesizer is unlocked.
008	MKD connection lost	Communication between the transponder and controller is failed. (Transponder generates the alarm.) AIS Transponder setting is initialized.
064	mkd connection lost	Communication between the transponder and controller is failed. (Controller generates the alarm.)
010	Nav Status incorrect	There is a difference between the setting of Nav status and actual Nav status. -Nav status is set from “at anchor”, “moored” and “aground”, and “SOG” is over 3kn. -Nav status is set "UNDER WAY SAILING" or “UNDER WAY USING ENGINE”, and SOG is under 1kn.
014	Active AIS SART	AIS SART SIGNAL is received.
025	external EPFS lost	Any one of the 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 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 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 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, THS
035	no valid ROT information	Any of the following commands has not been entered from the external sensor or data is invalid. HDT, OSD, THS, ROT
056	Tx power too low	Tx power level is too low.
058	Tx stop interrupt	Transmission was stopped forcibly.
059	Tx power too high	Tx power level is too high.
061	Not Tx	No transmission
062	Program flash memory error	The flash memory for programs is abnormal.
063	Data flash memory error	The flash memory data is abnormal.
006 052	general failure 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	Computed result of VSWR is 3 or greater but no greater than 4 during rated transmission output or

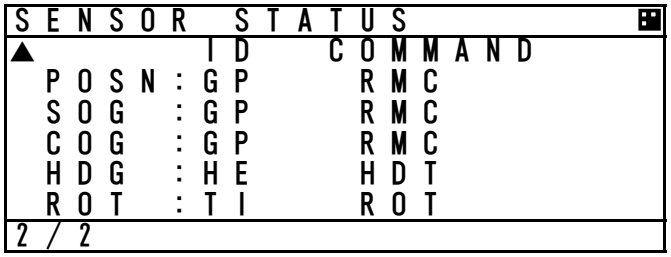
	Tx power down	transmission level is lowered.
001 002	Tx malfunction Antenna VSWR exceeds limit	The computed result of VSWR is 4 or greater.
001 057	Tx malfunction Vr error	The antenna is open or broken.
001 060	Tx malfunction Tx pll unlock	The TX synthesizer is unlocked.

6.2.4 Confirming the Conditions of the Sensors

Display the sensor status and be sure that the sensor is working.
To display the sensor status, please select “Main Menu” → “3. MAINTENANCE” → “4. SENSOR STATUS”.

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.
	INT DGNSS (BEACON)	The internal DGNSS (beacon) is in use.
	INT 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 or not received.
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 or not received.
HEADING	VALID	Heading data are entered.
	INVALID	Heading data are not yet entered or invalid or not received.
ROT	IN USE	The ROT data input from a rate-of-turn indicator.
	OTHER SOURCE	The ROT data input from a source other than a rate-of turn indicator.
	NO SENSOR	The ROT data are not yet entered or invalid or heading data not received.

6.3 Trouble Shootings

6.3.1 Trouble Shootings

⚠WARNING

Do not attempt to check or repair the interior of this equipment by non-qualified service personnel, as doing so may cause fire, electric shock or malfunction. If any malfunctions are detected, contact our service center or agents.

For reference, 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 (NBD-577C).	Check that the wiring of the power unit is correct. Check that the output voltage of the power unit is correct.
	The supply voltage of power supply (NBD-577C) is out of range.	Replace the power unit.
	The fuses in the connection box are blown out.	Check that the wiring is correct and replace the fuses.
	The termination in the connection box is broken.	Replace the NQE-5183 connection box.
	Power is not supplied to the connection box.	Check the wiring and confirm that the connection is correct
	The IC in the AIS controller is broken.	Replace the CQD-2983 circuit board.
	The power supply cable of the transponder is broken.	Replace the power supply cable of the transponder.
	The power module in the controller is broken.	Replace the CBD-2983 circuit board.
	The key switch is broken.	Replace the switch panel (CDJ-2983) .
The transponder software version is -.--.	The transponder power is not turned on.	Check the voltage at the end of transponder cable.
	The transponder is not turned on. The IC which supplies a power in the transponder is broken.	Replace the transponder.
No response after pressing a key on the operation panel.	The panel unit malfunctions.	Replace the CDJ-2983 circuit board.
	The DPU malfunctions.	Replace the CDJ-2983 circuit board.
Some dots are missing on the LCD.	The LCD malfunctions.	Replace the LCD unit.
	The control unit malfunctions.	Replace the CDJ-2983 circuit board.
No alarming sound is generated.	BUZZER has been set “OFF”	Set BUZZER to “ON” (MENU 4.2.2 BUZZER)
	The buzzer malfunctions.	Replace the CDJ-2983 circuit board.
	The control unit malfunctions.	

Symptom of Error	Possible Cause or Cause of Fault	Countermeasures
The illumination does not light.	The control unit malfunctions.	Replace the CDJ-2983 circuit board.
	The LCD malfunctions.	Replace the LCD unit.
No AIS message is received.	The transponder is not turned on.	Confirm whether the transponder is turned on. (MENU 3.1.1 TRANSPONDER)
	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.
	Channel setting is not correct.	Set it by operating channels. (MENU 4.6 CHANNEL/POWER)
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 the setting of antenna selection from external and internal.
	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.
	MMSI has been set “000000000”	Set the MMSI correctly.
Sensor data (external GPS, gyro, and rate-of-turn) cannot be loaded.	The cable is not connected properly.	Check the connection.
	The polarity of the serial cable is incorrect.	Check the polarity and connect it.
	The interface between the sensor and connection box is incorrect.	Check the interface before its connection.
	The sentence that the sensor generates is not supported by the AIS.	Check the output command and the version. (Refer to 8.3.4 Supported Interface Sentence)
	The sentence that the sensor generates does not match the sentence setting of the controller.	Check the output sentence and sensor setting of JHS-183.
	The sensor data flag has been set to “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-2983 circuit board.

Symptom of Error	Possible Cause or Cause of Fault	Countermeasures
Internal GPS data cannot be loaded.	Internal GPS malfunction	Execute TEST2 of self-diagnosis. If the result is “NG”, replace the transponder.
There is a difference between internal GPS data and external GPS data.	External GPS data is abnormal.	Confirm the external GPS setting. If there is any failure, replace the external GPS.
	Internal GPS data is abnormal.	Replace the transponder.
Heading data is mismatched.	External senor data is abnormal.	Confirm the external sensor setting. If there is any failure, replace the external sensor.
	The value of NSK unit is abnormal.	Re-set the initial value of NSK unit. If the setting is not available, check the dip switch setting. In case of another, replace the NSK unit.
There is a difference between Nav status and actual Nav status.	Nav status is set by “at anchor”, “moored” or ”aground”. And SOG is over 3kn. The condition that Nav status is set by “under way sailing”. And SOG is under 1kn is continued for 2 hours or more.	Change the Nav status to another.

6.3.2 Maintenance Units

Maintenance units for repair are followings.

No.	Unit Name	Model	Note
1	AIS Transponder	NTE-183-2	Transponder (CAV-2180 is unattached.)
2	VHF Antenna	CAV-2180	Whip antenna
3	IFU	CQD-2983	Circuit board for NCM-983
4	PSU	CBD-2983	Circuit board for NCM-983
5	DPU	CDJ-2983	Circuit board for NCM-983
6	CONNECTION BOX	NQE-5183	
7	NSK UNIT		NSK UNIT
8	Power Supply unit	NBD-577C	Power supply unit
9	Spare parts	7ZXJD0136	Fuse

6.3.3 Spare parts for periodic maintenance

Spare parts for periodic maintenance are followings.

No.	Unit Name	Code	Decline period	Note
1.	LCD Unit	CCN-423	50,000 hours	6years in continuous operation
2.	VHF Antenna	CAV-2180	About 5 years	Whip antenna

7. AFTER-SALES SERVICE

Warranty

- The warranty period is determined by JRC's warranty regulations, but is normally one year from the date of purchase day.
  Additionally, the warranty except for the body text is submitted to contractual agreements.

Holding period of Service parts

- Keeping period of maintenance parts is ten years from the production halt.

Before returning to 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 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),
  information about the alarm number and software version,
  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.

8. SPECIFICATIONS

8.1 General (JHS-183)

(1) Applicable equipment standards

ITU-R .1371-4(2010)	Technical characteristics for an automatic identification system using time-division multiple access in the VHF maritime mobile band.
IEC61993-2(2001)	Class A shipborne equipment of the universal automatic identification system (AIS) –Operational and performance requirements, methods of test and required test results.
IEC60945-2(2002)	Maritime navigation and radio communication equipment and systems –General requirements – Methods of testing and required test results
IEC61162-1(2010)	Maritime navigation and radio communication equipment and systems –Digital interfaces - Single talker and multiple listeners
IEC61162-2(2008)	Maritime navigation and radio communication equipment and systems –Digital interfaces - Single talker and multiple listeners, high speed transmission
IEC61162-450(2011)	Maritime navigation and radio communication equipment and systems –Digital interfaces - Part 450: Multiple talkers and multiple listeners – Ethernet interconnection
IEC62288(2008)	Maritime navigation and radio communication equipment and systems – Presentation of navigation-related information on shipborne navigational displays – General requirements, methods of testing and required test results

(2) Rated power supply voltage : 24VDC (19 - 35VDC)
(3) Current consumption : 3.0A max. when transmitting
: 1.0A max. when receiving

8.2 AIS Transponder (NTE-183)

8.2.1 TRX part

(1) Frequency range : 156.025 MHz to 162.025 MHz,
Default channels: 161.975 MHz(CH 2087), 162.025 MHz(CH2088)
(2) Channel spacing : 25 kHz
(3) Frequency accuracy : Within $\pm 3 \times 10^{-6}$
(4) Type of emission : G1D (F1D)
(5) Type of modulation : GMSK
(6) Output power : 12.5 W/1W

8.2.2 Environmental condition

(1) Operating temperature : -25°C to +55°C (IEC 60945)
(2) Equipment category : Exposure to weather
(3) Protection rank : IP56

8.3 AIS Controller (NCM-983)

8.3.1 Operation panel

(1) Type of display : 4.5-inch FSTN LCD, 128×64 dots
(2) Keyboard : 12 keys
(3) Back-light : For LCD and keyboard
(4) Dimmer control : Bright, medium1, medium2, off (Selectable from keyboard)

8.3.2 Environmental condition

(1) Operating temperature : -15°C to +55°C (IEC 60945)
(2) Equipment category : Protection against weather
(3) Protection rank : IP55 (In case rear panel is attached)

8.3.3 External interfaces

(1) Sensor data input ports SENSOR1 / SENSOR2/ SENSOR3/ SENSOR4
Four input ports meet the requirements of IEC 61162-1.
(2) Gyrocompass data input
Current loop 1 communication port (multiple use as SENSOR3)
(3) GNSS differential correction data input port SENSOR4
One input port meet the requirement of ITU-R M.823-2 on TTL level
(4) External display equipment communication ports AUX1 / AUX2 / AUX3
Three communication ports meet the requirements of IEC 61162-2
(5) Long range communication port AUX3
One communication port meets the requirements of IEC 61162-2
(6) Relay terminals ALR
One port for external alarm device
(7) External display equipment communication ports with Pilot Plug
One communication port meets the requirements of IEC 61162-2
(8) LAN port
One communication port meets the requirements of IEC 61162-450

8.3.4 Transmission intervals

Sentence format	Transmission interval	Note
VDO	1 second intervals	AIS VHF data-link own-vessel report. The AIS channel is null. Not transmitted on the VDL.
VDO	Every transmission	AIS VHF data-link own-vessel report. The AIS channel is A or B. Transmitted on the VDL.
ALR (No alarm)	Every 60 second.	An ALR sentence is output every 60sec when all alarms are none.
ALR (active)	Every 30 second.	An ALR sentence is output every 30sec when the alarm is generated one and more.
ABK,ACA,ACS,DSR,SSD, NAK,TRL,TXT,VER,VSD, VDM	At the time of event generating	

8.3.5 Supported interface sentences

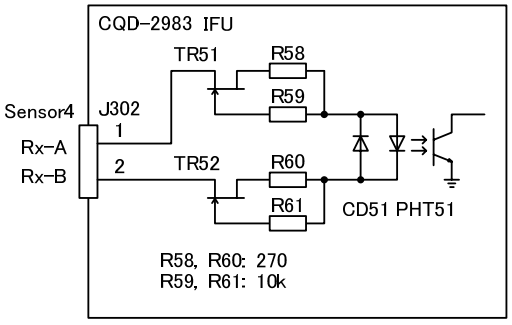
(1)Supported interface sentences

	Indication	Format	Supported Sentence	
			Input data	sentences
1	SENSOR1※) SENSOR2※) SENSOR3	IEC61162-1/2 (NMEA1.5-2.3)	Positioning system: Longitude/Latitude Position Accuracy	GNS, GLL,GGA,RMC
			Datum Reference	DTM
			Speed Over Ground (SOG)	VBW,VTG,RMC
			Course Over Ground (COG)	RMC,VTG
			Heading	HDT,THS
			RAIM indicator	GBS
			Rate Of Turn (ROT)	ROT
2	SENSOR4	IEC61162-1	The above	VHW,POS
3	SENSOR4	ITU-R M.823-2	RTCM SC-104 Ver.2.0 Type 1, 2, 7, 9	Binary data
4	SENSOR3	IEC61162-1	Heading	HDT
5	AUX1※),AUX2	IEC61162-2	Input: ABM, ACA, ACK, AIQ, AIR, BBM, EPV, LRI, LRF, POS, SSD, SPW, VDO, VDM, VSD Output: ABK, ACA, ACK, ACS, ALR, DSC, DSR, EPV, HBT, LRI, LRF, LR1, LR2, LR3, NAK , SSD, SPW, TXT, TRL,VDO, VDM, VSD, VER	
6	AUX3	IEC61162-2	Output: ABK, ACA, ACK, ACS, ALR, DSC, DSR, EPV, HBT, LRI, LRF, LR1, LR2, LR3, NAK , SSD, SPW, TXT, TRL,VDO, VDM, VSD, VER	
7	Long range	IEC61993-2	Input: LRI,LRF, Output: LRF, LR1,LR2,LR3	
8	BIIT ALARM	IEC61993-2		
9	Pilot※)	IEC61162-2	Input: ABM, ACA, ACK, AIQ, AIR, BBM, EPV, LRI, LRF, POS, SSD, SPW, VDO, VDM, VSD Output: ABK, ACA, ACK, ACS, ALR, DSC, DSR, EPV, HBT, LRI, LRF, LR1, LR2, LR3, NAK , SSD, SPW, TXT, TRL,VDO, VDM, VSD, VER	

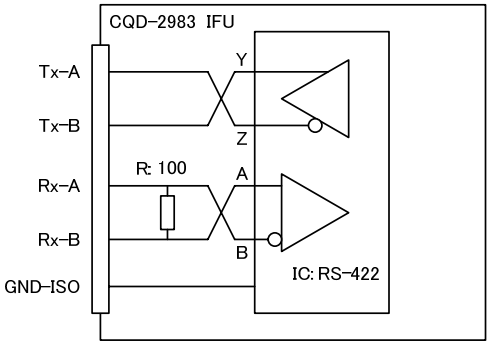
Note) When NQE-5183 connection box is equipped, all sentence are available.
When it is not equipped, 4 terminations which added ※) mark can be available.

(2)Electrical description interface

Sensor4



AUX1-3, Sensor1-3



Sensor1; R51, IC504(CDJ-2983) AUX1; R54, IC506(CDJ-2983)
Sensor2; R52, IC505(CDJ-2983) AUX2; R55, IC55
Sensor3; R53, IC53 AUX3; R56, IC56
AUX4; R57, IC57

Load requirements

Current consumption:	2mA at 2V or less
Maximum input voltage:	±15V or more
Recommended operating current:	2mA or more

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 IEC61162-2 output can drive 1 IEC61162-2 input.
- Electrical isolation of input circuits: Input circuits are electrically isolated from internal circuit with opt-isolator.
- The input impedance for the non terminated Sensor1/2/3: between 333k and 357k ohms.

(2.1) List of sentences and associated data fields

(2.1.1) ABK – Addressed and binary broadcast acknowledgement

$--ABK,xxxxxxxxx,a,x.x,x,x*hh<CR><LF>

- Type of acknowledgement
- Message Sequence Number
- ITU-R M.1371 message ID
- AIS channel of reception
- MMSI of the addressed destination AIS unit

(2.1.2) ABM – Addressed Binary and safety related Message

!--ABM,x,x,x,xxxxxxxxx,x,x.x,s--s,x*hh<CR><LF>

- Number of fill-bits, 0 to 5
- Encapsulated data
- ITU-R M.1371 message ID (6 or 12)
- AIS channel for broadcast of the radio message
- The MMSI of destination AIS unit for the ITU-R M.1371 message
- Sequential Message identifier, 0 to 3
- Sentence number, 1 to 9
- Total number of sentences needed to transfer the message, 1 to 9

(2.1.3) ACA – AIS Regional Channel Assignment Message

- Time of "in-use" change
- In-Use Flag
- Information source
- Power level control
- Tx/Rx mode control
- Channel B bandwidth
- Channel B

$--ACA,x,llll.ll,a,yyyyy.yy,a,llll.ll,a,yyyyy.yy,a,x,xxxx,x,xxxx,x,x,x,a,x,hhmmss.ss*hh<CR><LF>

- Channel A bandwidth
- Channel A
- Transition Zone Size
- Region Southwest corner longitude – E/W
- Region Southwest corner latitude – N/S
- Region Northeast corner longitude – E/W
- Region Northeast corner latitude – N/S
- Sequence Number, 0 to 9

(2.1.4) ACS – Channel management information Source

$--ACS,x,xxxxxxxxx,hhmmss.ss,xx,xx,xxxx*hh<CR><LF>

- UTC year
- UTC month, 01 to 12
- UTC day, 01 to 31
- UTC at receipt of regional operating settings
- MMSI of originator
- Sequence number 1, 0 to 9

(2.1.5) ACK – Acknowledge alarm

```
$--ACK, xxx*hh<CR><LF>
          |
          Unique alarm number at  alarm source
```

(2.1.6) ALR – Set alarm state

```
$--ALR,hhmmss.ss,xxx,A,A,c--c*hh<CR><LF>
       |         |   | | |  |
       |         |   | | |  Alarm's description text
       |         |   | | Alarm's acknowledge state, A = acknowledged
       |         |   |                            V = unacknowledged
       |         |   | Alarm condition (A = threshold exceeded, V = not exceeded)
       |         |  Unique alarm number (identifier) at alarm source
       |       Time of alarm condition change, UTC
```

(2.1.7) AIR – AIS Interrogation Request

```
Message sub-section (Reserved for future use) ---+
Number of message requested from station-2        |
MMSI of interrogated station-2                   |
                                  |              |
$--AIR,xxxxxxxxx,x.x,x,x.x,x,xxxxxxxxx,x.x,x*hh<CR><LF>
       |         | | | |  |
       |         | | | |  Message sub-section (Reserved for future use)
       |         | | |  Number of second message from station-1
       |         |  Message sub-section (Reserved for future use)
       |       ITU-R M.1371 message requested from station-1
     MMSI of interrogated station-1
```

(2.1.8) BBM – Broadcast Binary Message

```
!--BBM,x,x,x,x,x.x,s--s,x*hh<CR><LF>
       | | | | | | |  |
       | | | | | | |  Number of fill-bits, 0 to 5
       | | | | |  Encapsulated data
       | | | |  ITU-R M.1371 message ID, 8 or 14
       | | |  AIS channel for broadcast of the radio message
       | |  Sequential message identifier, 0 to 9
       |  Sentence number, 1 to 9
     Total number of sentences needed to transfer the message, 1 to 9
```

(2.1.9) DSC – Digital selective calling information

```
$ --DSC,xx,xxxxxxxxxx,xx,xx,xx,x.x,x.x,xxxxxxxxxx,xx,a,a*hh<CR><LF>
       |  |          | | | | | |          | | |  |
       |  |          | | | | | |          | | |  Expansion indicator
       |  |          | | | | | |          | |  Acknowledgement
       |  |          | | | | | |          |  Nature of distress
       |  |          | | | | |  MMSI of ship in distress
       |  |          | | | |  Time or Tel. No.
       |  |          | | |  Position or Channel/frequency
       |  |          | |  Type of communication or second telecommand
       |  |          |  Nature of distress or first telecommand
       |  |         Category
       |  Address
     Format specifier
```

(2.1.10) DSR – DSC transponder response

```
$--DSR,x,x,xxxxxxxxxx,xx,c--c,......,xx,c--c,a*hh<CR><LF>
        | |  |          |           |   |       |
        | |  |          |           |   |       Expansion indicator
        | |  |          |           |   Data Set 'n'
        | |  |          |           Additional data sets
        | |  |          Data set '1'
        | |  Vessel MMSI
        | Message number
        Total number of messages
```

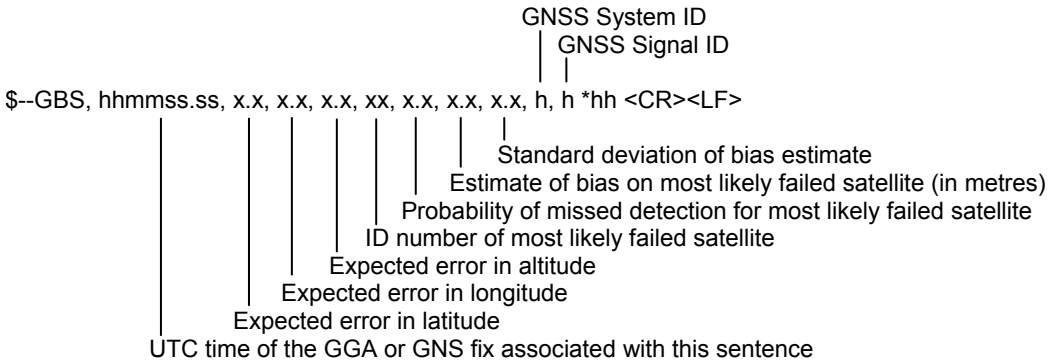
(2.1.11) DTM – Datum reference

```
$--DTM,ccc,a,x.x,a,x.x,a,x.x,ccc*hh<CR><LF>
        |   |  | |  | |  |   |
        |   |  | |  | |  |   Reference datum WGS84 = W84
        |   |  | |  | |  Altitude offset, m WGS72 = W72
        |   |  | |  Lon offset, min, E/W SGS85 = S85
        |   |  Lat offset, min, N/S PE90 = P90
        |   Local datum subdivision code
        Local datum: WGS84 = W84
                     WGS72 = W72
                     SGS85 = S85
                     PE90 = P90
                     User defined = 999
                     IHO datum code
```

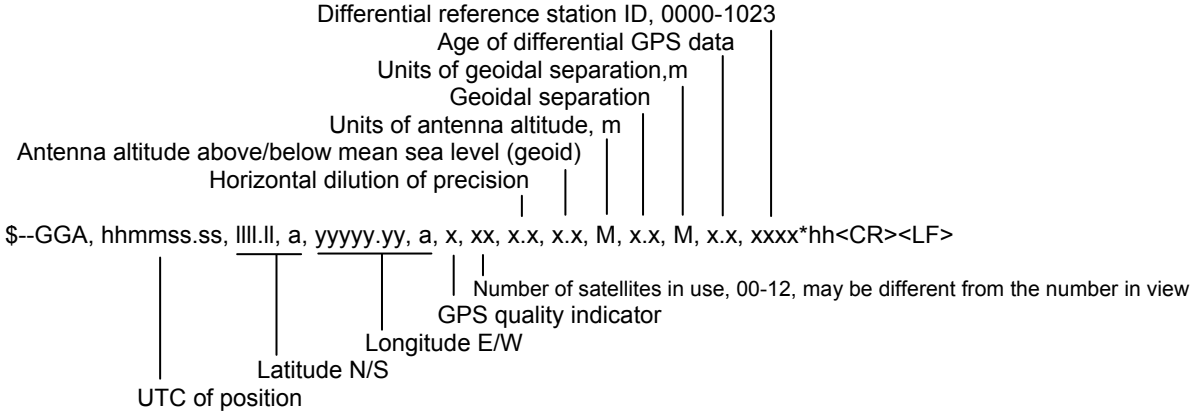
(2.1.12) EPV – Command or report equipment property value

```
$--EPV,a,c--c,c--c,x.x,c--c,*hh<CR><LF>
       |  |    |    |   |
       |  |    |    |   Value of property to be set
       |  |    |    Property identifier for the property to be set
       |  |    Unique identifier
       |  Destination equipment type
       Sentence status flag
```

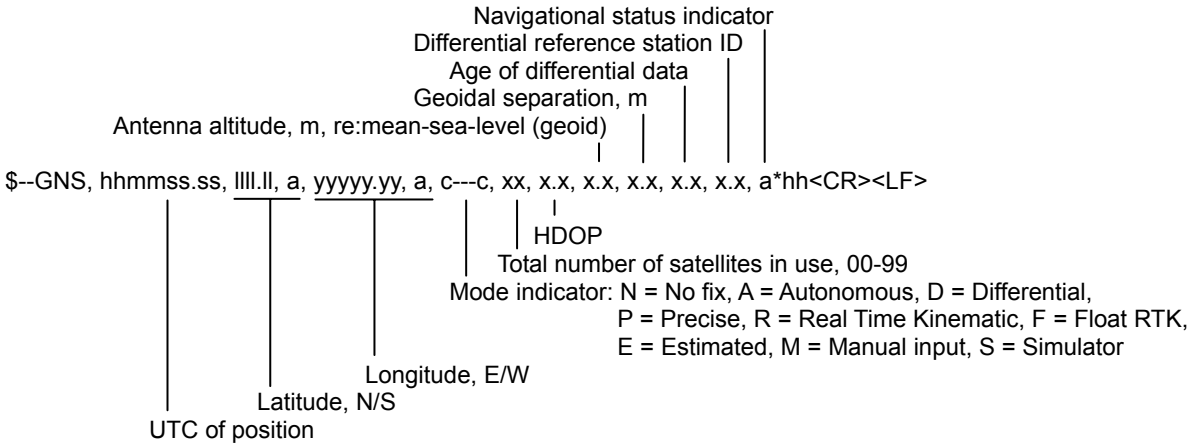
(2.1.13) GBS – GNSS satellite fault detection



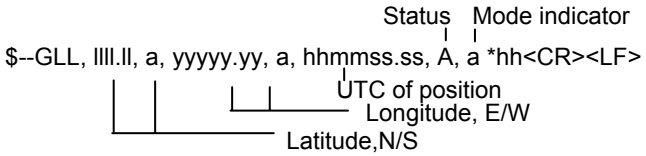
(2.1.14) GGA – Global positioning system (GPS) fix data



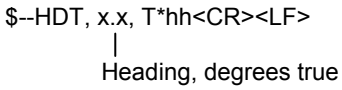
(2.1.15) GNS – GNSS fix data



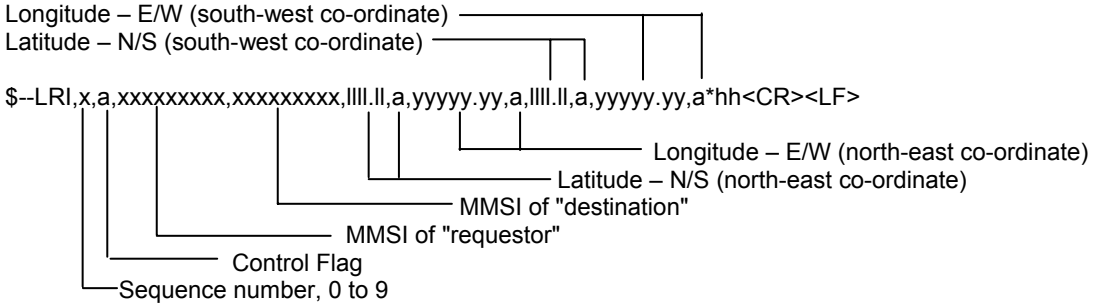
(2.1.16) GLL – Geographic position – Latitude/longitude



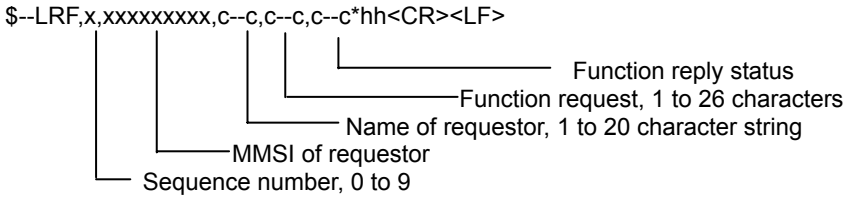
(2.1.17) HDT – Heading true



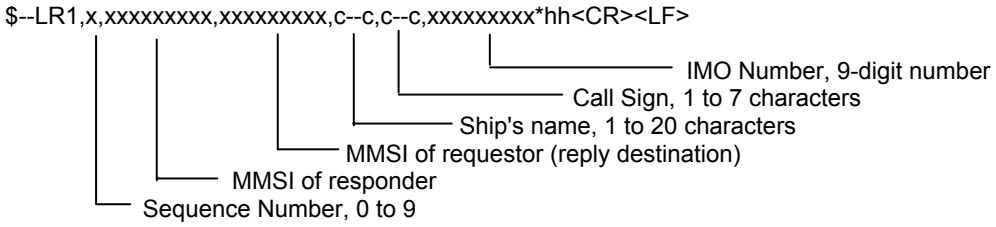
(2.1.18) LRI – Long-Range Interrogation



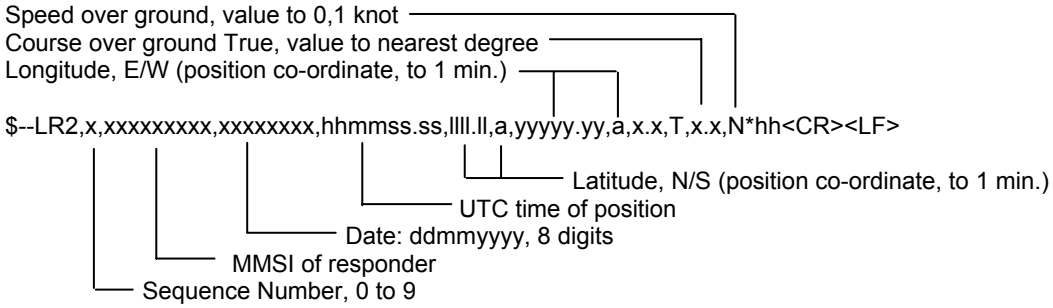
(2.1.19) LRF – Long Range Function



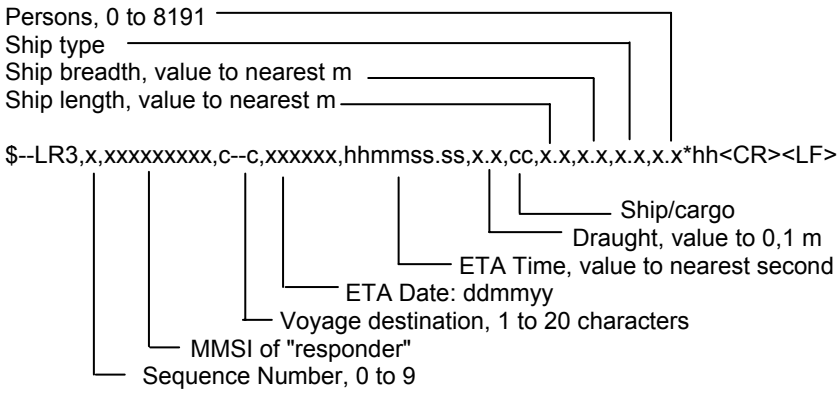
(2.1.20) LR1 – Long-range Reply with destination for function request "A"



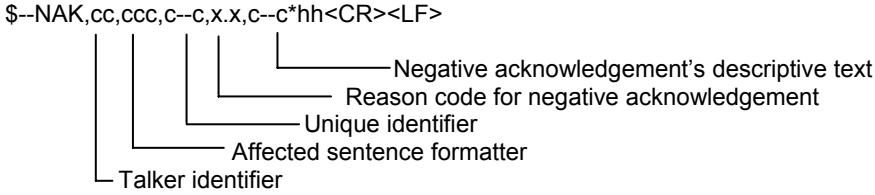
(2.1.21) LR2 – Long-range Reply for function requests "B, C, E, and F"



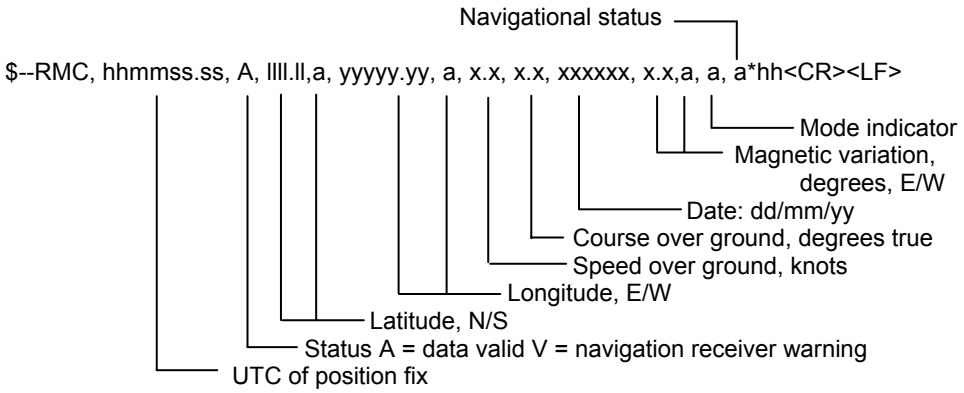
(2.1.22) LR3 – Long-range Reply for function requests "I, O, P, U and W"



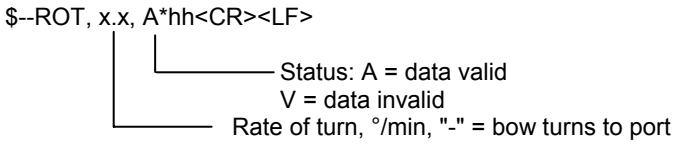
(2.1.23) NAK – Negative acknowledgement



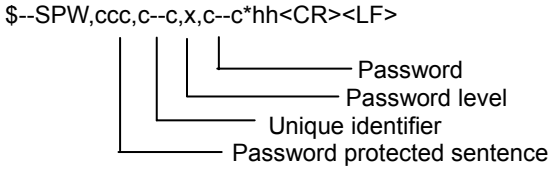
(2.1.24) RMC – Recommended minimum specific GNSS data



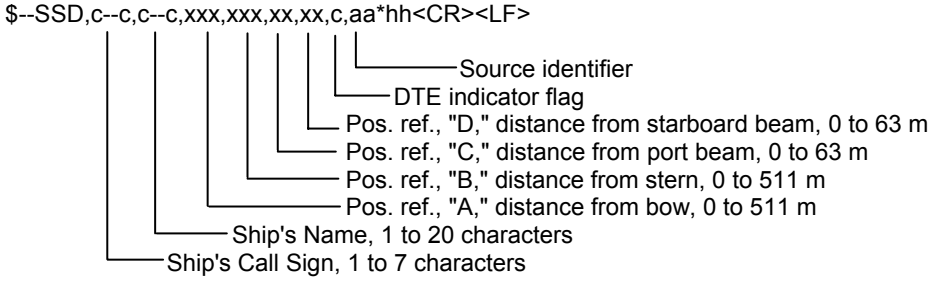
(2.1.25) ROT – Rate of turn



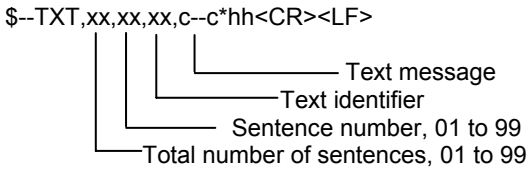
(2.1.26) SPW – Security password sentence



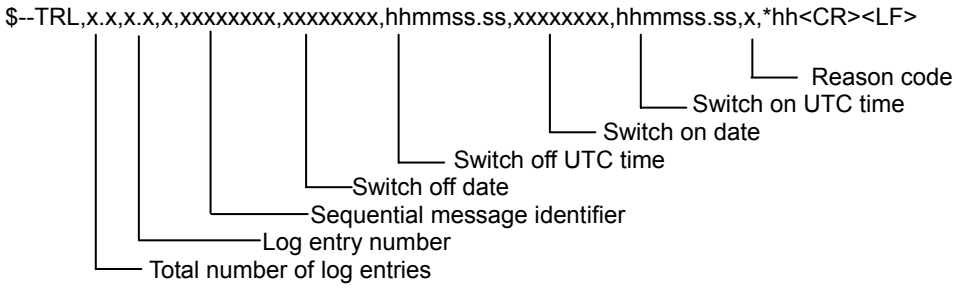
(2.1.27) SSD – Ship Static Data



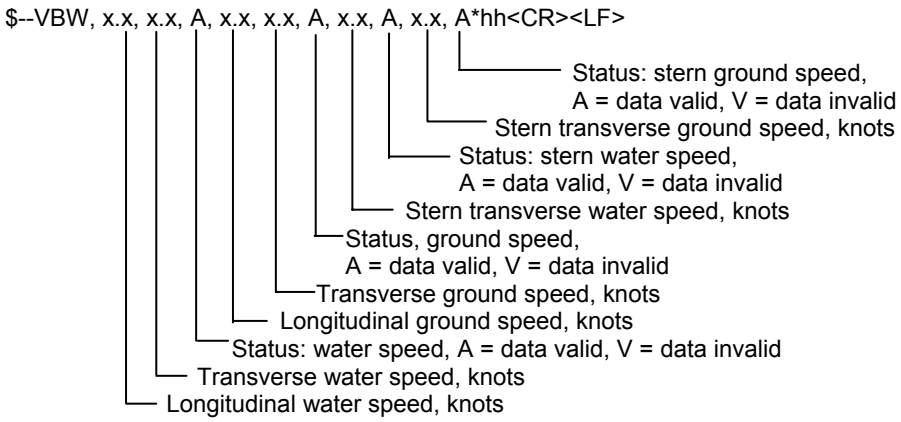
(2.1.28) TXT – Text transmission



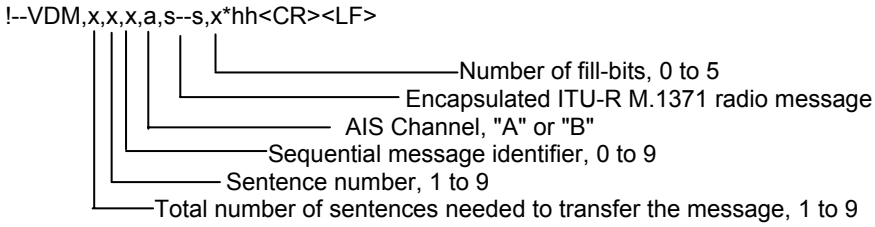
(2.1.29) TRL – AIS transmitter non functioning log



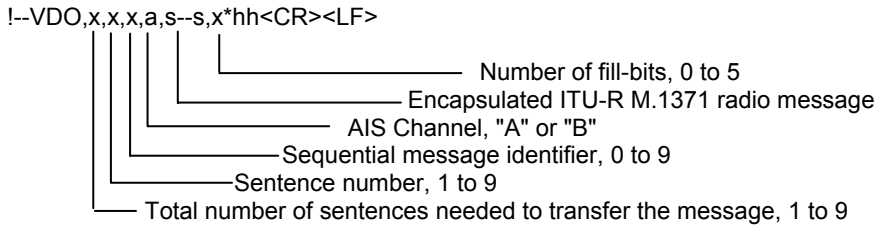
(2.1.30) VBW – Dual ground/water speed



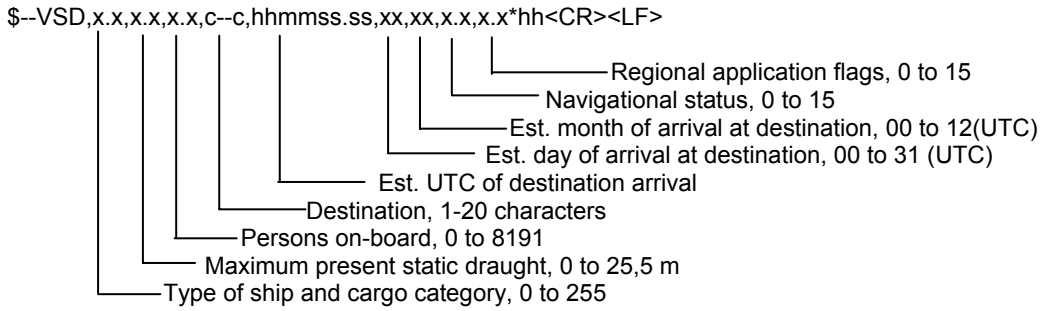
(2.1.31) VDM – VHF Data-link Message



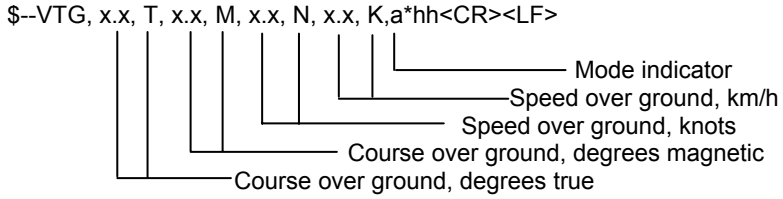
(2.1.32) VDO – VHF Data-link Own-vessel message



(2.1.33) VSD – Voyage Static Data



(2.1.34) VTG – Course over ground and ground speed



8.4 Connection Box (NQE-5183 option)

8.4.1 Environmental condition

(1) Operating temperature : -15°C to +55°C (IEC 60945)

8.4.2 External interfaces (connected with NCM-983)

(1) Sensor data input ports SENSOR1 / SENSOR2/ SENSOR3
Four input ports meet the requirements of IEC 61162-1.
(2) Gyrocompass data input
Current loop 1 communication port (multiple use as SENSOR3)
(3) GNSS differential correction data input port SENSOR4
One input port meet the requirement of ITU-R M.823-2 on TTL level
(4) External display equipment communication ports AUX1 / AUX2 / AUX3
Three communication ports meet the requirements of IEC 61162-2
(5) Long range communication port AUX3
One communication port meets the requirements of IEC 61162-2
(6) Relay terminals ALR
One port for external alarm device

8.5 AC Power Supply Unit (NBD-577C option)

(1) Input voltage : 100 - 120 / 200 - 240 VAC ±10%, 50/60Hz Single phase
: 24VDC (backup power supply)
(2) Output voltage : Nominal 24VDC, 19 - 35VDC

JRC Japan Radio Co., Ltd.

电子信息产品有害物资申明
日本无线株式会社

Declaration on toxic & hazardous substances or elements
of Electronic Information Products
Japan Radio Company Limited

有毒有害物质或元素的名称及含量
(Names & Content of toxic and hazardous substances or elements)

形式名(Type): JHS-183　　名称(Name): AIS

部件名称 (Part name)	有毒有害物质或元素 (Toxic and Hazardous Substances and Elements)					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr^{6+})	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
天线 (Antenna)	×	○	×	×	×	×
船内装置 (Inboard Unit)	×	○	×	×	×	×
外部设备(Peripherals) ・选择(Options) ・打印机(Printer) ・电线类(Cables) ・手册(Documennts)	×	○	×	×	×	×

○:表示该有毒有害物质在该部件所有均质材料中的含量均在SJ/T11306-2006 标准规定的限量要求以下。
(Indicates that this toxic, or hazardous substance contained in all of the homogeneous materials for this part is below the requirement in SJ/T11363-2006.)

×:表示该有毒有害物质至少在该部件的某一均质材料中的含量超出SJ/T11363-2006 标准规定的限量要求。
(Indicates that this toxic or hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement in SJ/T 11363-2006.)

JRC Code No. : 7ZPJD0553A

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Management Methods on Control of Pollution from Electronics Information Products of the People's Republic of China

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