

**JHS-183**

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**Automatic Identification System**

**INSTRUCTION  
MANUAL**



# 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.



### RF exposure compliance (MPE\* compliance by IC)

The antenna used for this transmitter must be installed to provide a separation distance of at least 3.0 meters (10 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  $\triangle$  symbol indicates caution (including DANGER and WARNING).

The illustration inside the  $\triangle$  symbol specifies the content of the caution more accurately. (This example warns of possible electrical shock.)



The  $\otimes$  symbol indicates that performing an action is prohibited.

The illustration inside the  $\otimes$  symbol specifies the contents of the prohibited operation. (In this example disassembly is prohibited.)



The  $\bullet$  symbol indicates operations that must be performed.

The illustration inside the  $\bullet$  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.



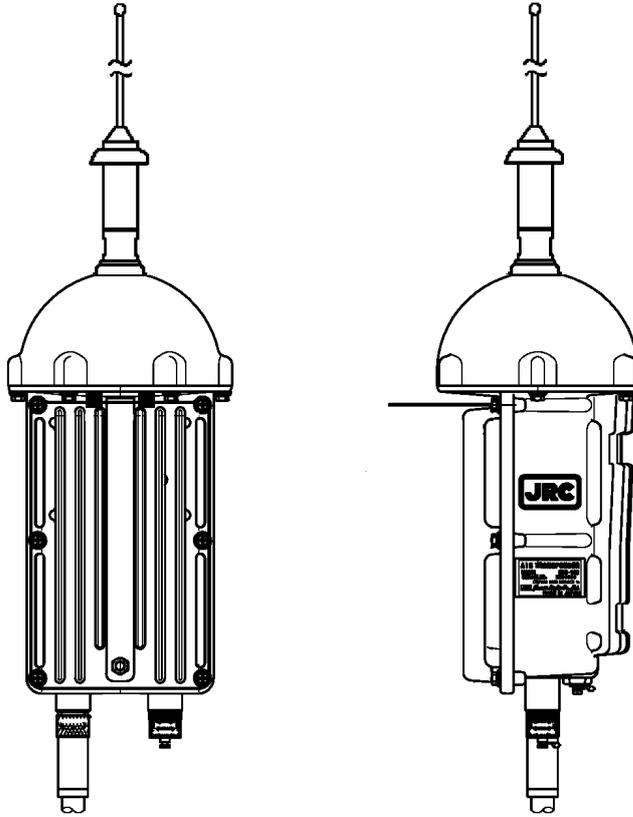
Leave installation of this equipment to our service center or agents.  
Installation by an unauthorized person may happen to malfunction.



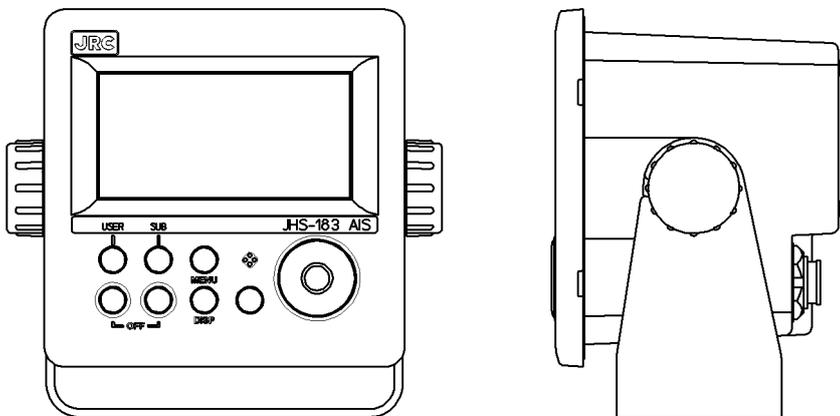
Use this AIS equipment only as assisting device for collision avoidance.  
Also, the officer should make the final decision to maneuver by himself.  
The AIS may not give certainly complete information of shipping traffic in its vicinity.

# External Views

## NTE-183 AIS Transponder

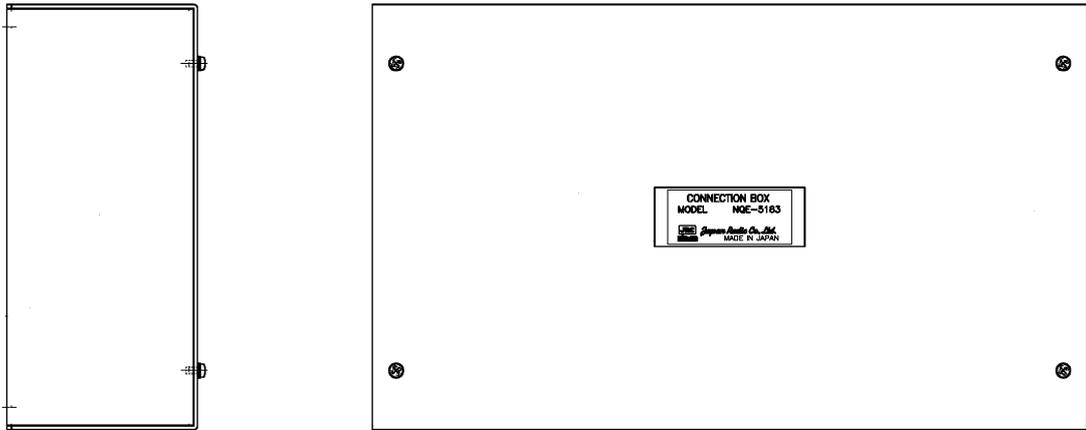


## NCM-983 AIS Controller

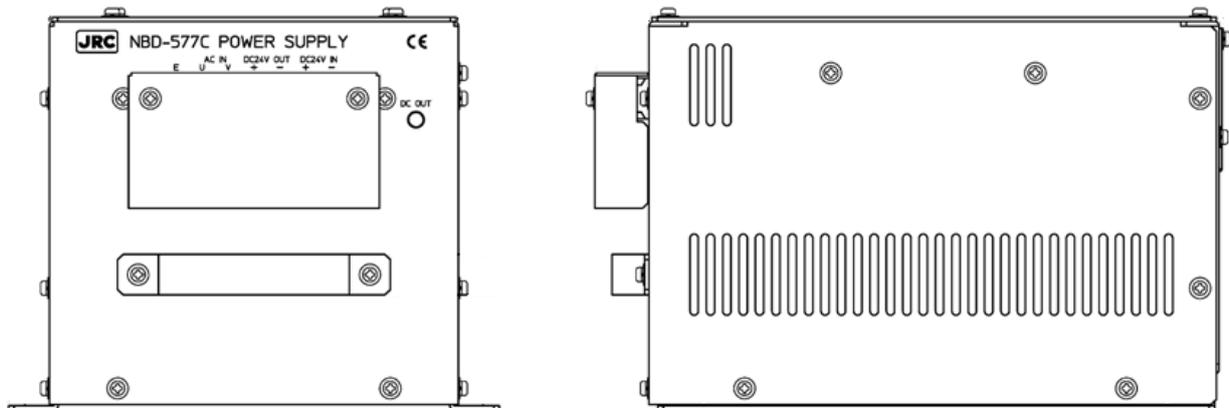


• Optional equipment

**NQE-5183 Connection Box**



**NBD-577C Power Supply Unit**



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Appendix List of standard terms and abbreviations



# 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

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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

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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

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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

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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

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

### ● System Integration Availability

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

## 1.3 Components

### 1.3.1 Standard Components

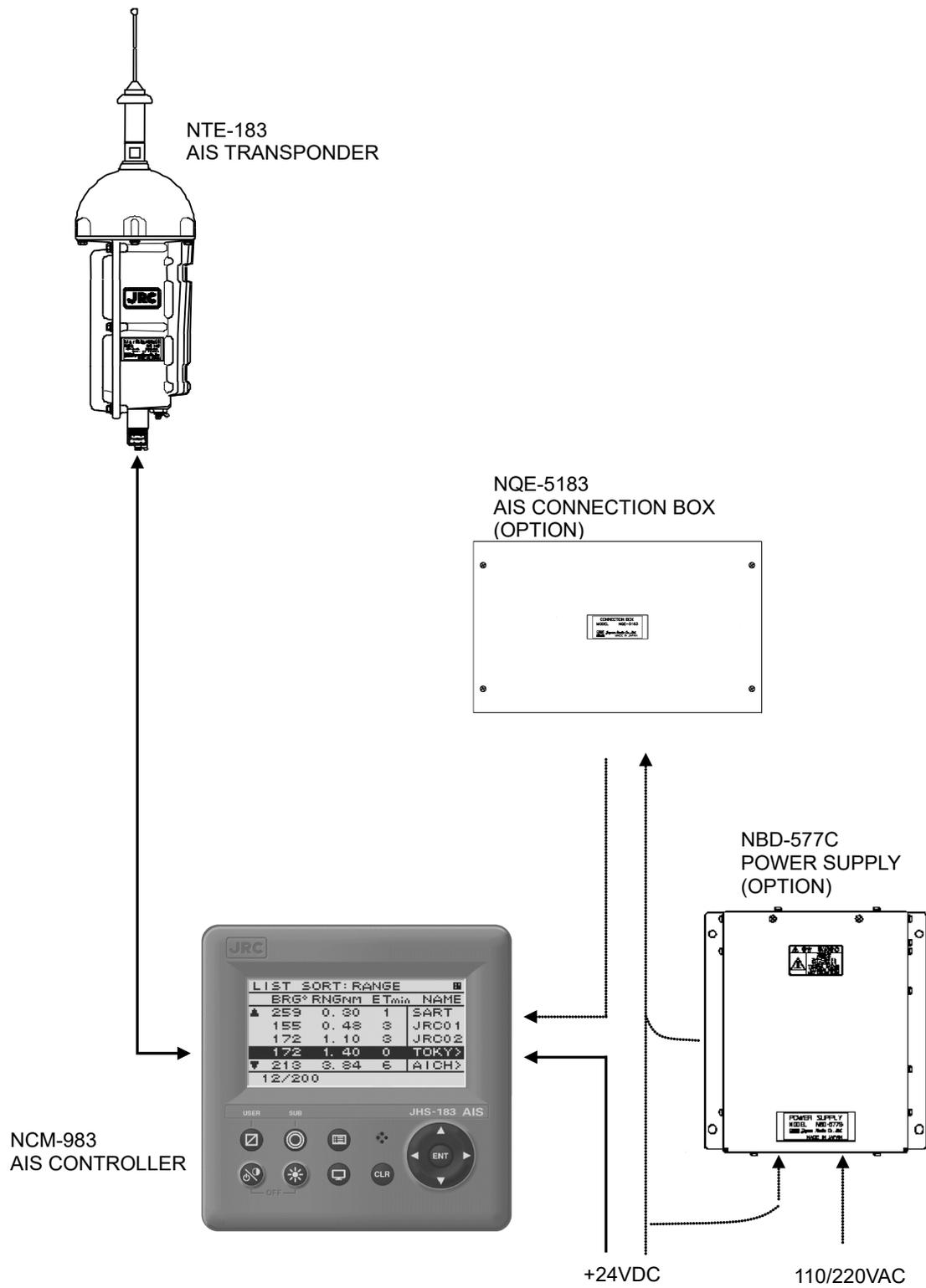
No.	Description	Model	Qty	Notes
1	AIS Transponder	NTE-183	1	With 1 whip antenna, 2 fitting bands 1 connector N-P-10U 2 Rubbers 10 x 10 x 10
2	AIS Controller	NCM-983	1	With 4 tapping screws
3	Spare parts	7ZXJD0136	1	
4	Instruction manual	7ZPJD0553C	1	English

### 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
4		CFQ-9183F	1	Length=20m
5	Connection box	NQE-5183	1	With 4 tapping screws
6	Data cable for NQE-5183	CFQ-9193A	1	Length=2m
7		CFQ-9193D	1	Length=10m
8		CFQ-9193F	1	Length=20m
9	AC power supply unit for Pilot PC	NBG-380	1	120Vac output
10	Pilot plug cable	CFQ-9173A	1	Wall mount cable Length=0.3m
11		CFQ-6961	1	Length=20m
12	Pilot plug box	NQE-3150	1	Wall mount type
13	Console mounting kit for NQE-3150	MPBX40498A	1	
14		MPBX45388	1	
15	L-type adapter	CFQ-9184	1	
16	Junction box	NQD-5182	1	Side NTE-183(Outdoor)
17		NQD-5183	1	Side NCM-983(Indoor)
18	GYRO I/F BOX	NQA-2066A	1	

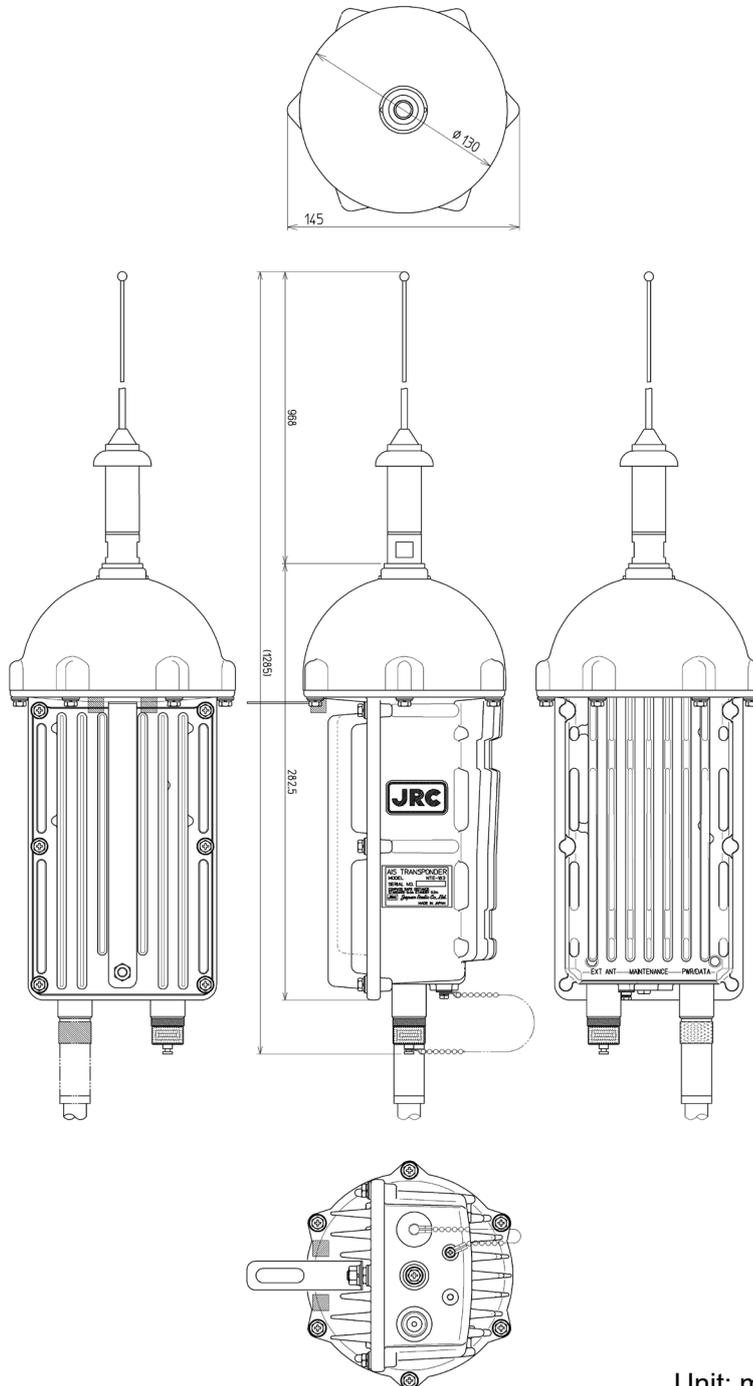
### 1. 3. 3 Configuration

- System Block Diagram



## 1.4 Outline

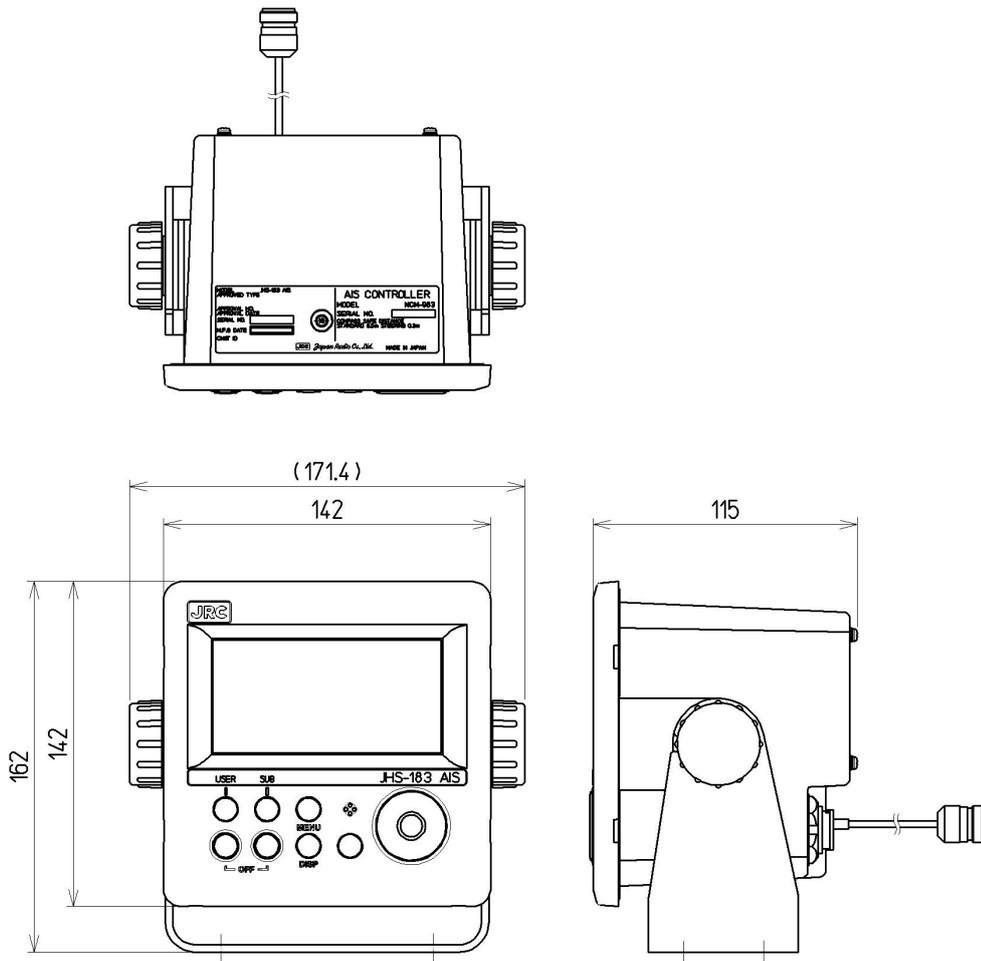
- Outline Drawing of NTE-183 AIS Transponder



Unit: mm  
Mass: approx. 2.6kg

• Outline Drawing of NCM-983 AIS Controller

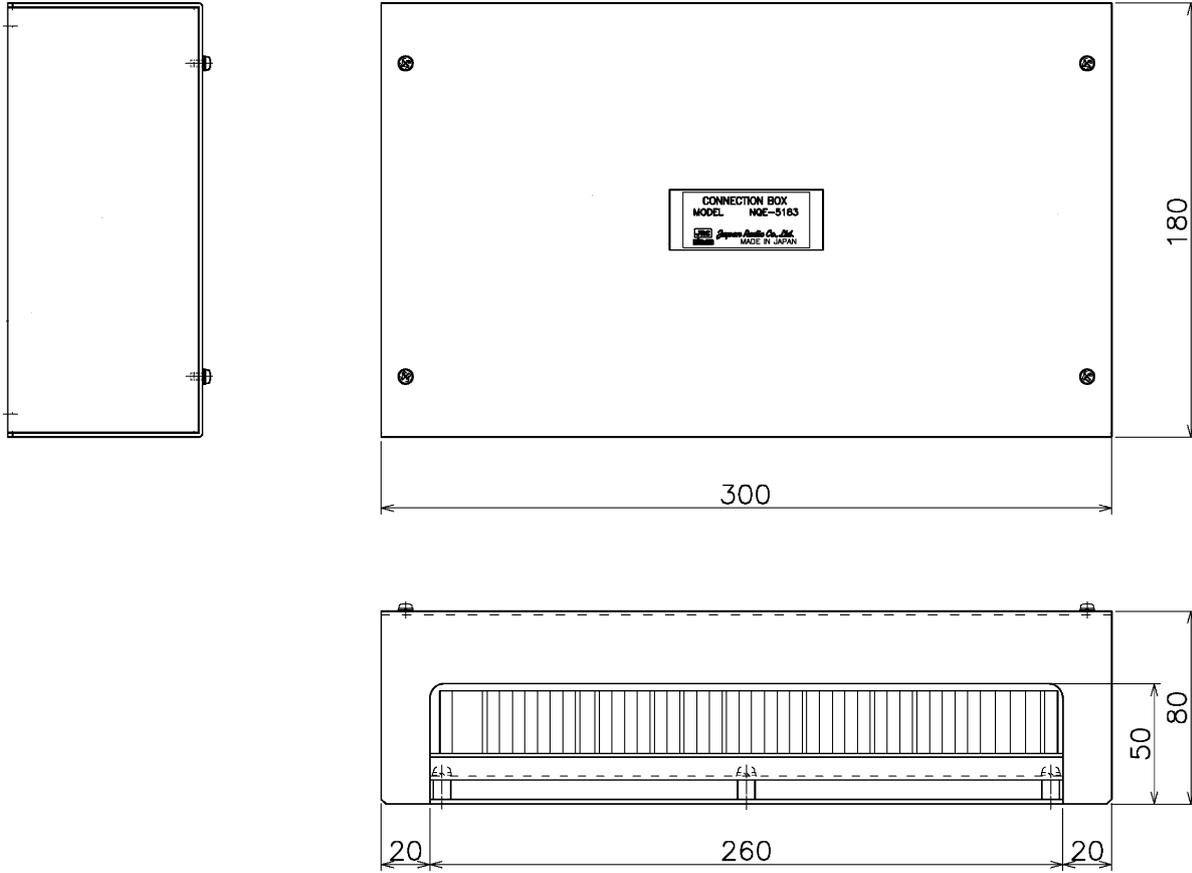
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Unit: mm  
Mass: approx. 2.1 kg

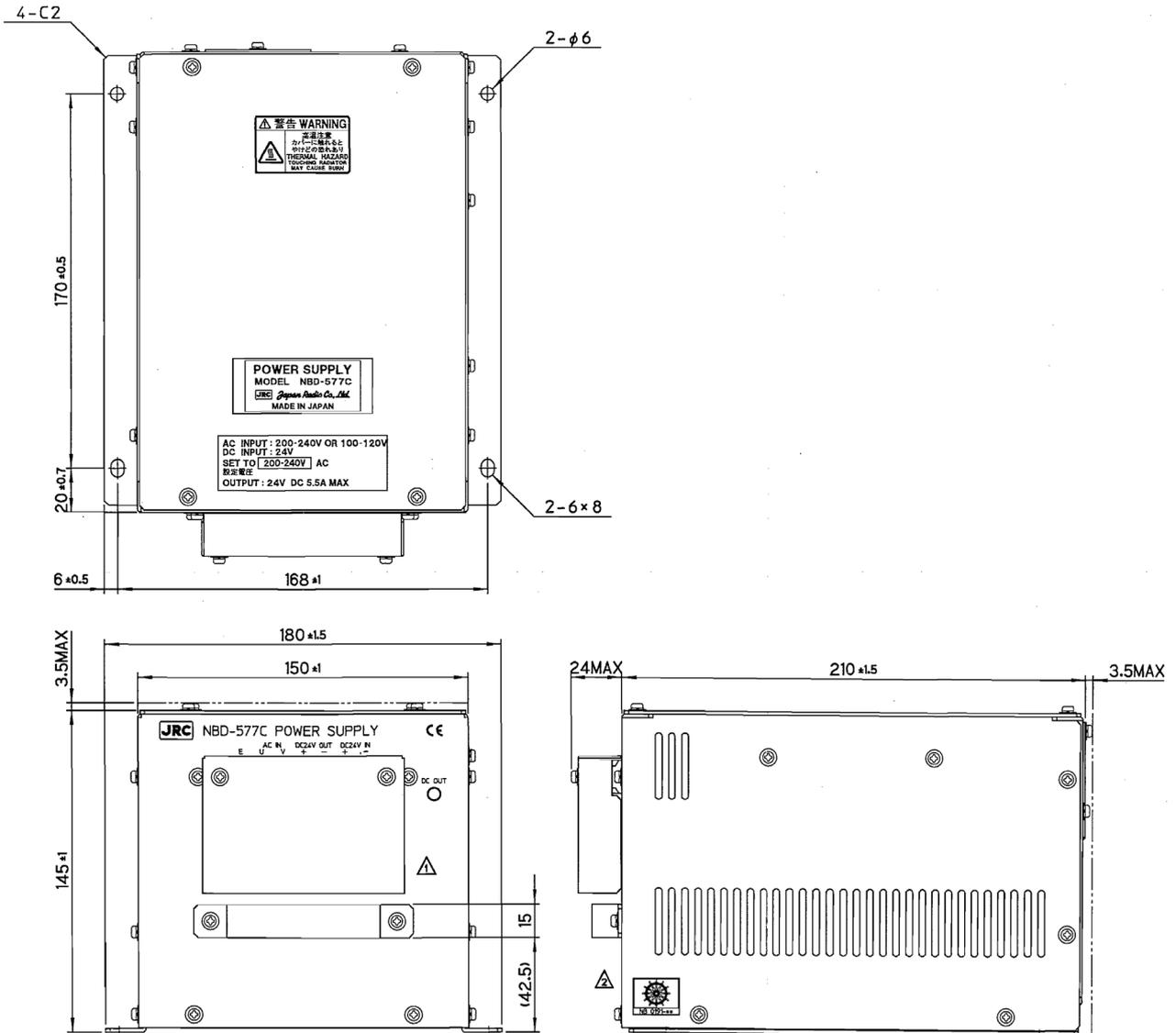
• Outline Drawing of NQE-5183 Connection Box

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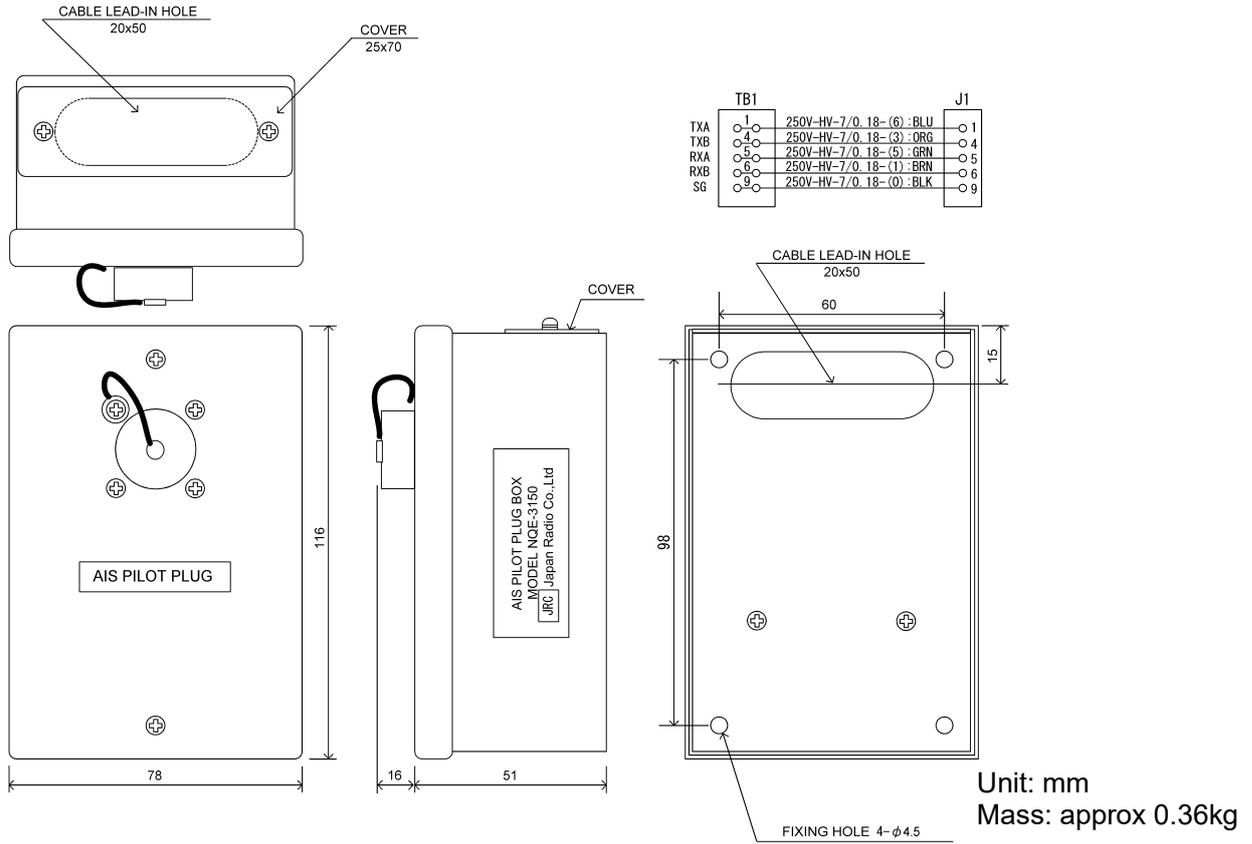
Unit: mm  
Mass: approx. 2.5 kg

• Outline Drawing of NBD-577C Power Supply Unit

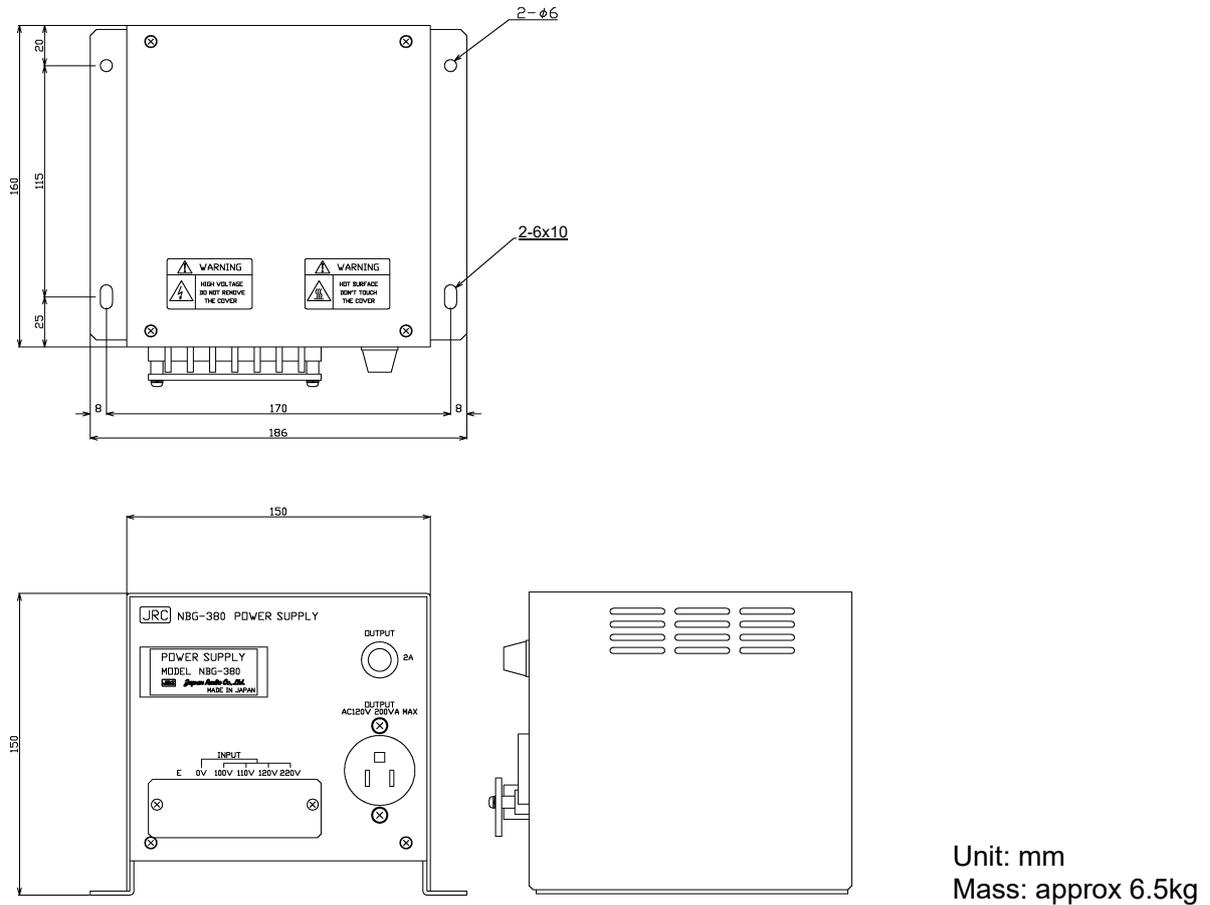


Unit: mm  
 Mass: approx. 5.2 kg

• Outline Drawing of NQE-3150 Pilot Plug Box

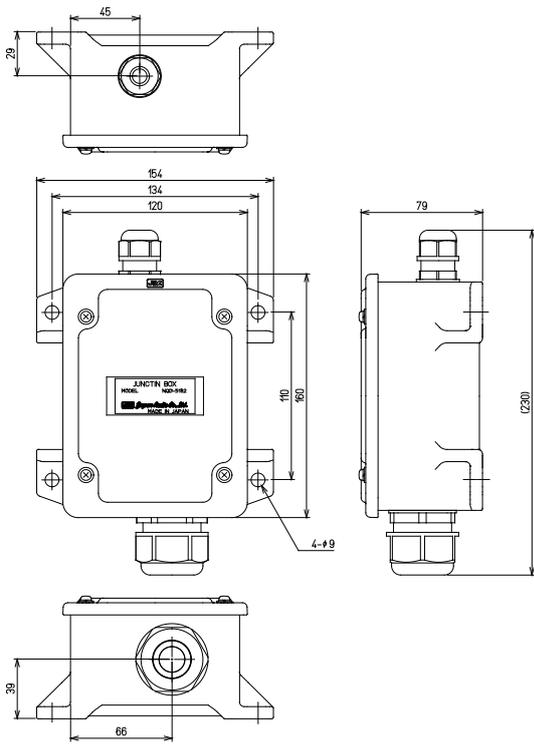


• Outline Drawing of NBG-380 Power Supply Unit for Personal Pilot Unit



• Outline Drawing of NQD-5182 Junction box

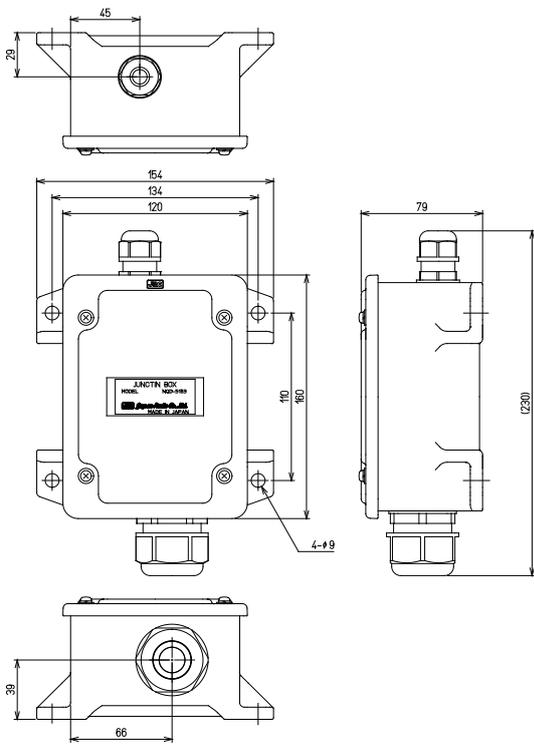
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Unit: mm  
Mass: approx 1.2kg

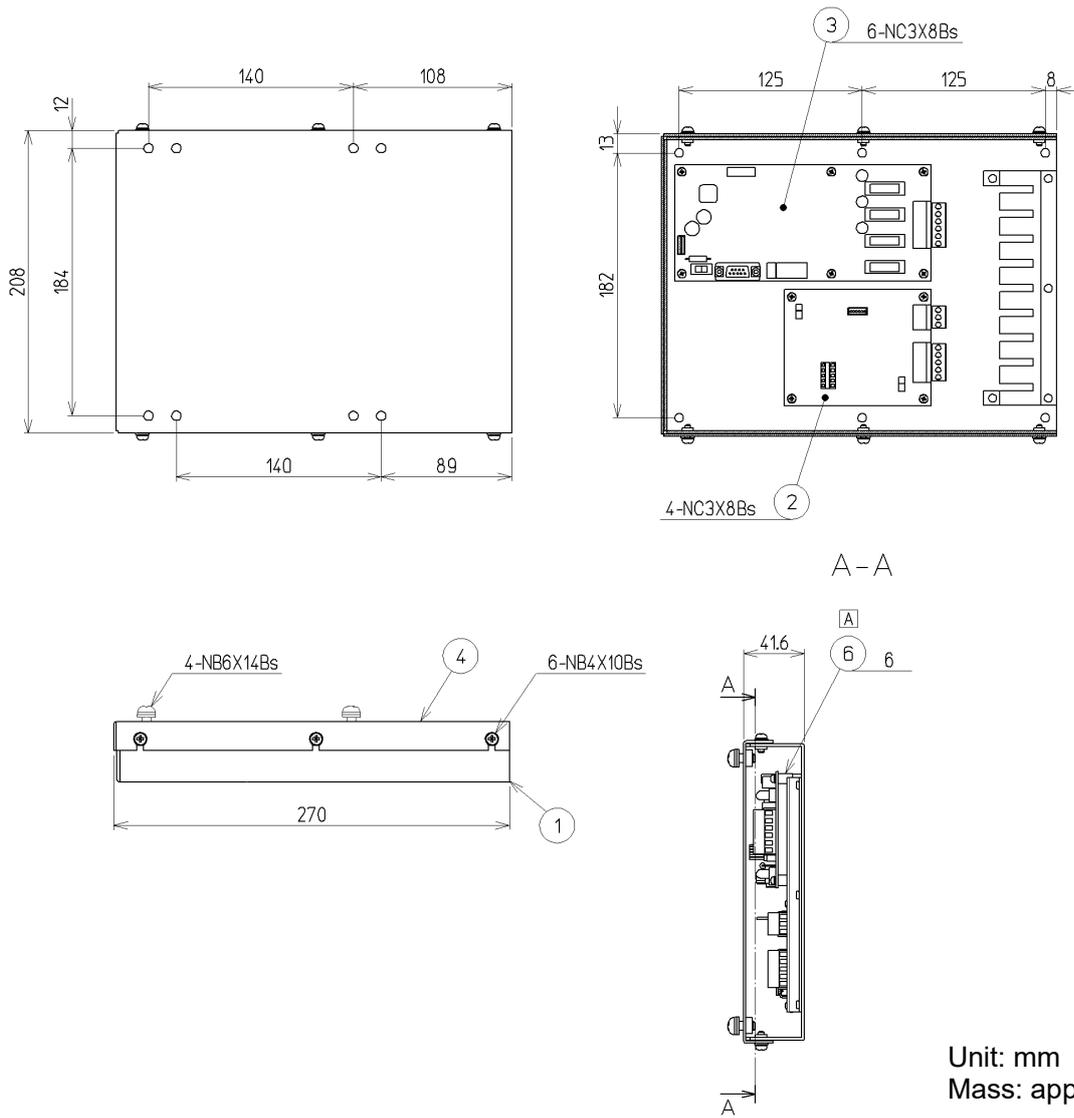
• Outline Drawing of NQD-5183 Junction box

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Unit: mm  
Mass: approx 1.2kg

• Outline Drawing of NQA-2066A GYRO I/F BOX



Unit: mm  
Mass: approx 2.5kg

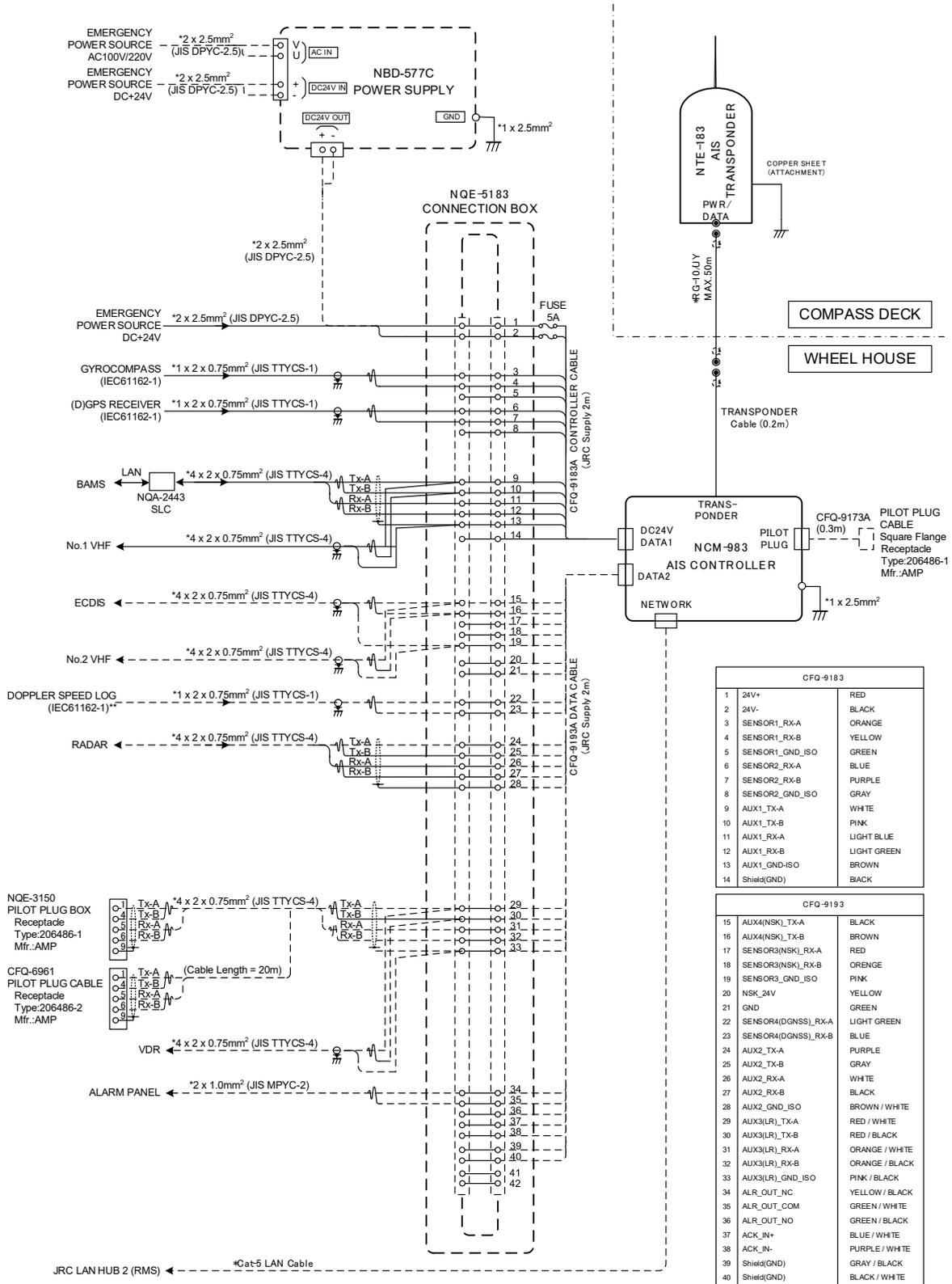
# 2. INSTALLATION DIAGRAM

**Caution**



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

The communication ports using the attached cable (CFQ-9183) are as follows.



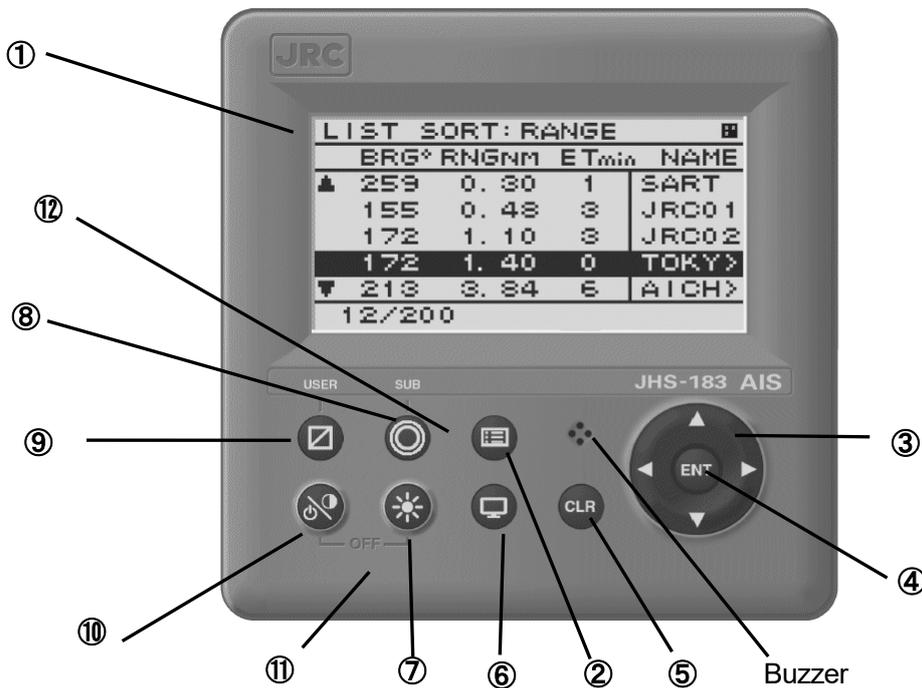
Note: \*marked cables are supplied by dockyard  
\*\*speed log for speed over ground

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.

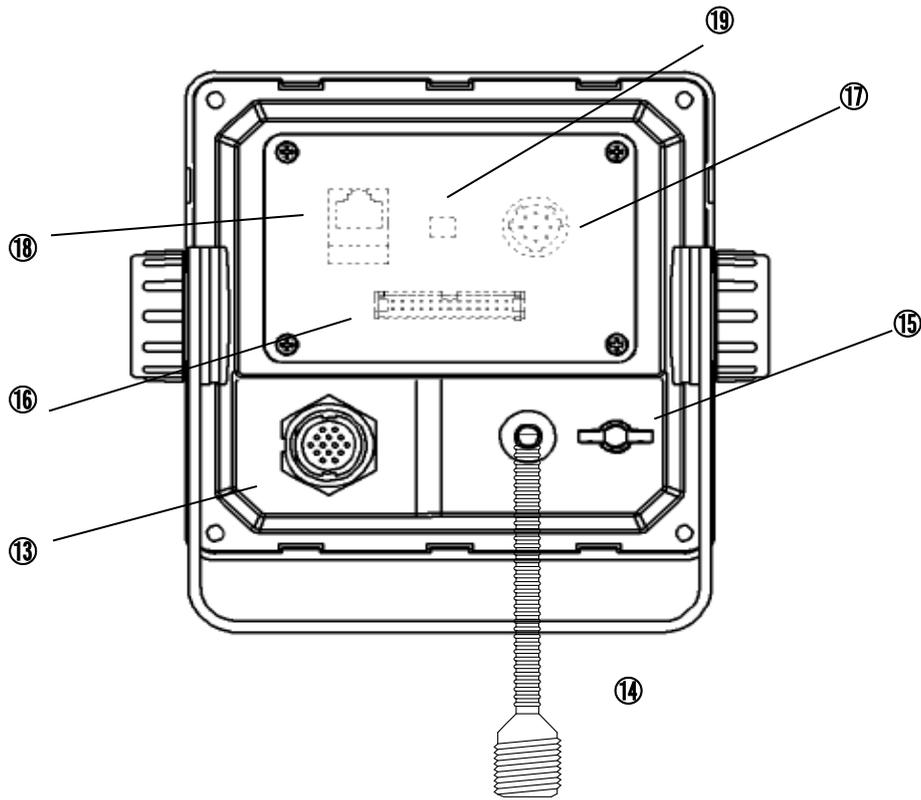
#### ⑪ **PWR/CONT** key and **DIM** key

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

#### ⑫ **MENU** key and **SUB** key

Display the AIS ALERT LIST with pressing both **MENU** key and **SUB** key at the same time.

The alert list can also display from MENU/ 3. Maintenance/ 3. AIS ALERT.



**⑬ POWER/DATA1 connector**

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

**⑭ AIS transponder connector**

Connect to AIS transponder by a coaxial cable.

**⑮ GND terminal**

Connect to Ship ground.

**⑯ DATA2 connector**

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

**⑰ Pilot Plug**

Connect to PC for Pilot by Pilot cable.

**⑱ LAN connector**

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

**⑲ 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

## Guard mark indication

When other ships enter the guard zone, this mark is displayed and alert 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.

## AIS Alert

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

## When BAM enabled

When BAM enabled, An indicator is added to show the priority and acknowledgement status of the top-level alert.  
Refer to the Table "Indicator of top-level alert " on the next page to see what is displayed.

## Received message indication

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

## Long range message

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

## Guard zone Alert

When the guard zone alert occurs, this mark is displayed.

LIST SORT : RANGE							
BRG°	RNG	NM	E	Tmin	NAME		
219	0.20		1		SART		
152	0.44		2		JRCO >		
192	1.30		3		JRCO >		
72	1.46		0		TOKY >		
215	3.64		5		AICH >		
2 / 2	0 0	W/V	TxA	1W	AL	 LG	

**Table Indicator of top-level alert**

Indicator	Status of top-level alert
<b>W / V</b>	Warning / active – unacknowledged
<b>W / A</b>	Warning / active – acknowledged
<b>W / S</b>	Warning / active – silenced
<b>W / O</b>	Warning / active – responsibility transferred
<b>C / A</b>	Caution / active

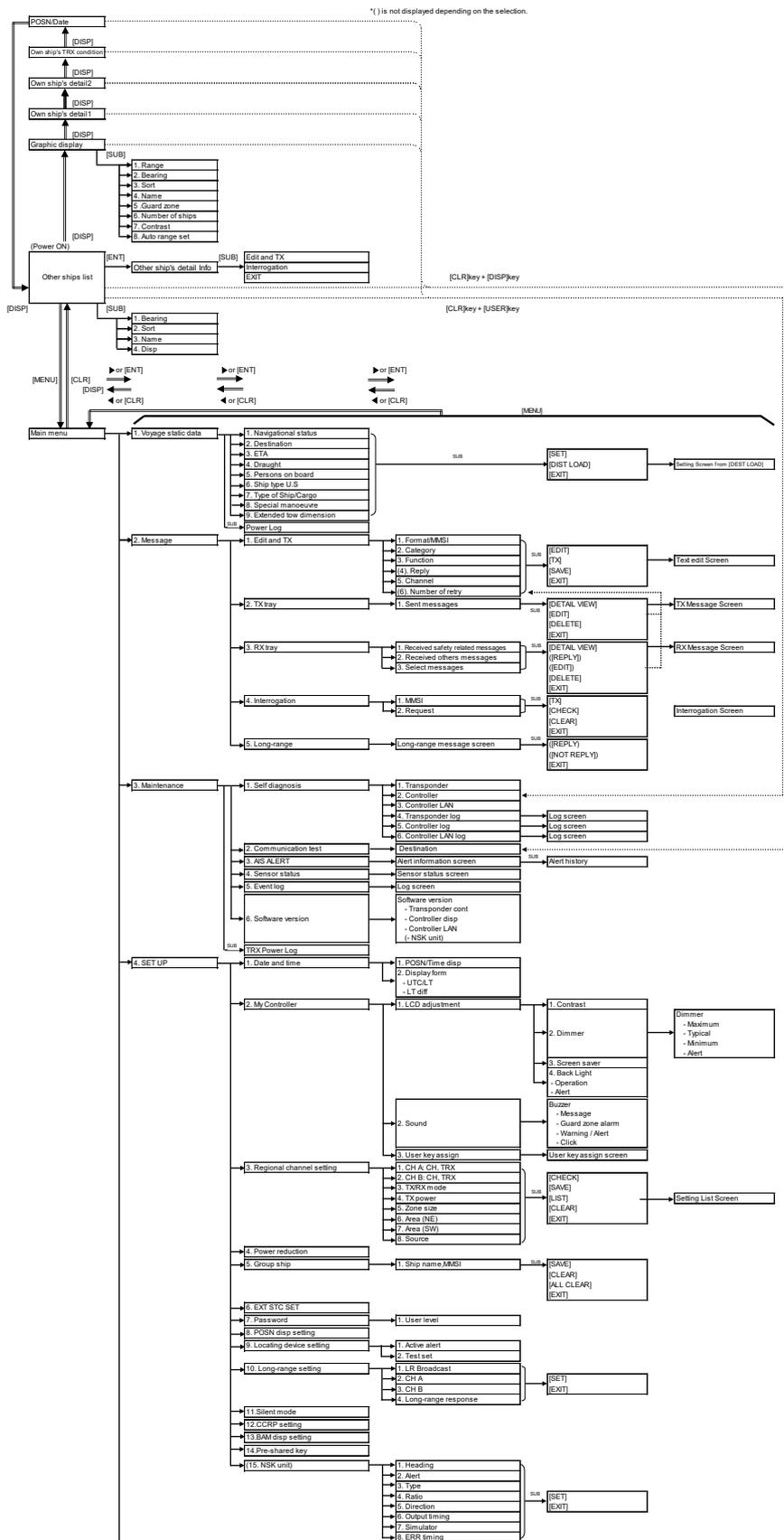
5	2	0	4	4	2	J	R
3	2	1	3	0	3	J	R
7	2	1	4	6	0	T	O
1	5	3	6	4	5	A	I
/	2	0	0	W / V	TxA	1W	AL 

Note) The top-level alert is the alert that appears as number 1 in the alert list. Refer to 5.3.3.3. AIS Alert.

Note) There is no "Rectified Unacknowledged" state in the alerts of JHS-183.  
 When "Active unacknowledged alert" is rectified, the alert is removed from the alert list.

# 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 5 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.

**⚠ Caution** The correct setting of GPS antenna position is required. Although the following popup screen usually does not appear, since it is done at the installation, contact service center or agents if appeared.  
Even if it is the case, the operations has no effect except that the correct antenna position, that is, own ship's dimension is not transmitted.



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 alert buzzer is beeping, press **[CLR]** key to stop the beeping. When alert display is displaying, press **[CLR]** key to close the display. The alert 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.)

LIST SORT: RANGE					
BRG°	RNG	N M	E T	in	M M S I
219	0.20		1		4310 >
152	0.44		2		1234 >
192	1.30		3		6789 >
72	1.46		0		0987 >
▼ 215	3.64		5		3579 >
2 / 2	00				TxA

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

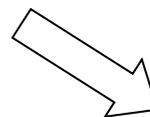
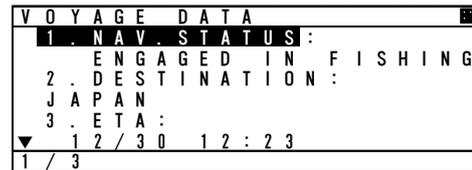
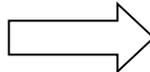
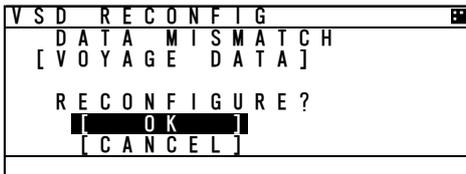
The cases when there can be a data difference is explained on the following page.

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.

LIST SORT: RANGE					
BRG°	RNG	n	ET	min	NAME
219	0.20	1			SART
152	0.44	2			JRCO >
192	1.30	3			JRCO >
72	1.46	0			TOKY >
215	3.64	5			AICH >
2/200					

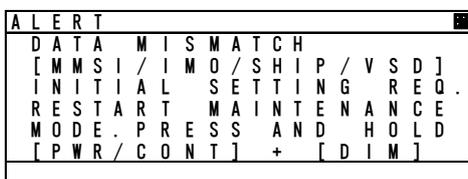
b) Other data mismatching

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 : 00000000

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

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

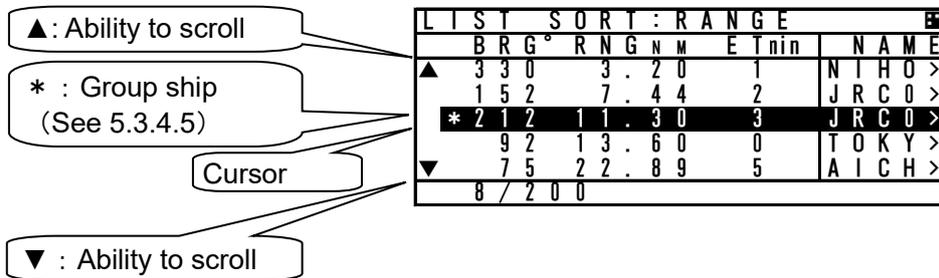


Different contents are displayed.

Press and hold **PWR/CONT** and **DIM** keys together in order to turn off the power.

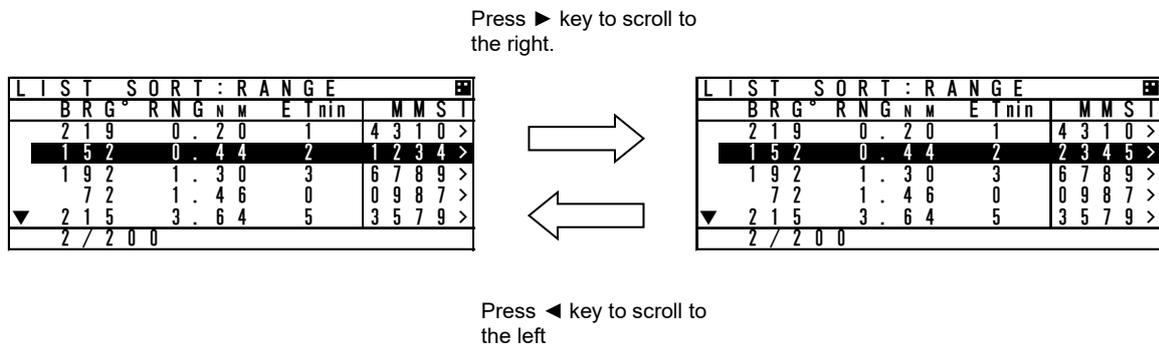
### 5.2.1.1 Other Ships List

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) Locating device is displayed at the top of other ships list.  
(group of devices including AIS-SART, EPIRB-AIS and MOB-AIS)

## 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.

```

OTHER SHIP'S DETAIL
MMSI      : 400012345
NAME      :
JRC2     MARU
IMO NO    : 123456789
CALL SIGN :
1234567
1 / 10
  
```

```

OTHER SHIP'S DETAIL
▲ POSN DEVICE :
GPS
LAT : 35° 41.2776' N
LON : 139° 34.2588' E
SOG : 15.0kn
▼ COG : 25.7°
2 / 10
  
```

```

OTHER SHIP'S DETAIL
▲ HDG : 25.6°
ROT : 10.0° / min
POSN QUALITY :
POSN > 10M
PA : LOW RAIM : NO USE
▼ TIME STAMP : 53
3 / 10
  
```

```

OTHER SHIP'S DETAIL
▲ SYNC STATE :
UTC DIRECT

RCV STATIONS :
123
4 / 10
  
```

```

OTHER SHIP'S DETAIL
▲ NAV STATUS :
UNDERWAY USING ENGINE
DESTINATION :
JAPAN
5 / 10
  
```

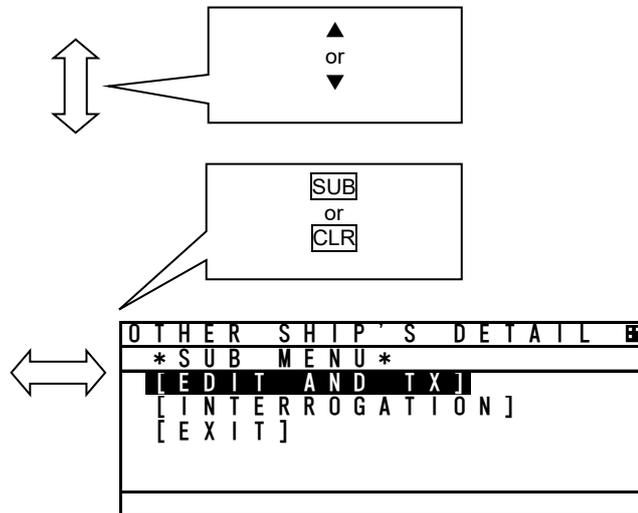
```

OTHER SHIP'S DETAIL
▲ ETA (M/D, H:M) :
DEC / 20, 12 : 34
DRAUGHT :
11.2m
LENGTH :
225M
6 / 10
  
```

```

OTHER SHIP'S DETAIL
▲ BEAM :
32M
TYPE OF SHIP :
CARGO SHIPS
7 / 10
  
```

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.

```

OTHER SHIP'S DETAIL
▲ CARGO / STATUS :
  ALL SHIPS OF THIS T
  YPE
  CLASS : CLASS A
  MF ID :
▼ MODEL CODE :
8 / 10

```

```

OTHER SHIP'S DETAIL
▲ NO : 1 2 3 4 5 6 7
  CPA : 4 . 5 NM
  TCPA : 28 . 0 min
  BEARING : 36 . 9 °
  RANGE : 6 . 3 5 NM
OFF POSN IND : ON POSN
9 / 10

```

```

OTHER SHIP'S DETAIL
▲ DTE : NOT AVAILABLE
  SPECIAL MANOEUVRE :
  NOT ENGAGED
10 / 10

```

The contents of screen 7 – 10/10 are shown below.

TYPE OF SHIP: Ship type  
(numerical value if the received type is unknown)

CARGO/STATUS: 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.

For [EDIT AND TX], if DTE is NOT AVAILABLE, the following popup screen is displayed. This indicates the possibility that the addressed station cannot read the message which will be sent for some reason such that the display is not functioning.

```

OTHER SHIP'S DETAIL
MESSAGE MAY NOT
BE DISPLAYED ON
RECIPIENT DTE. OK?
[OK] [CANCEL]

```

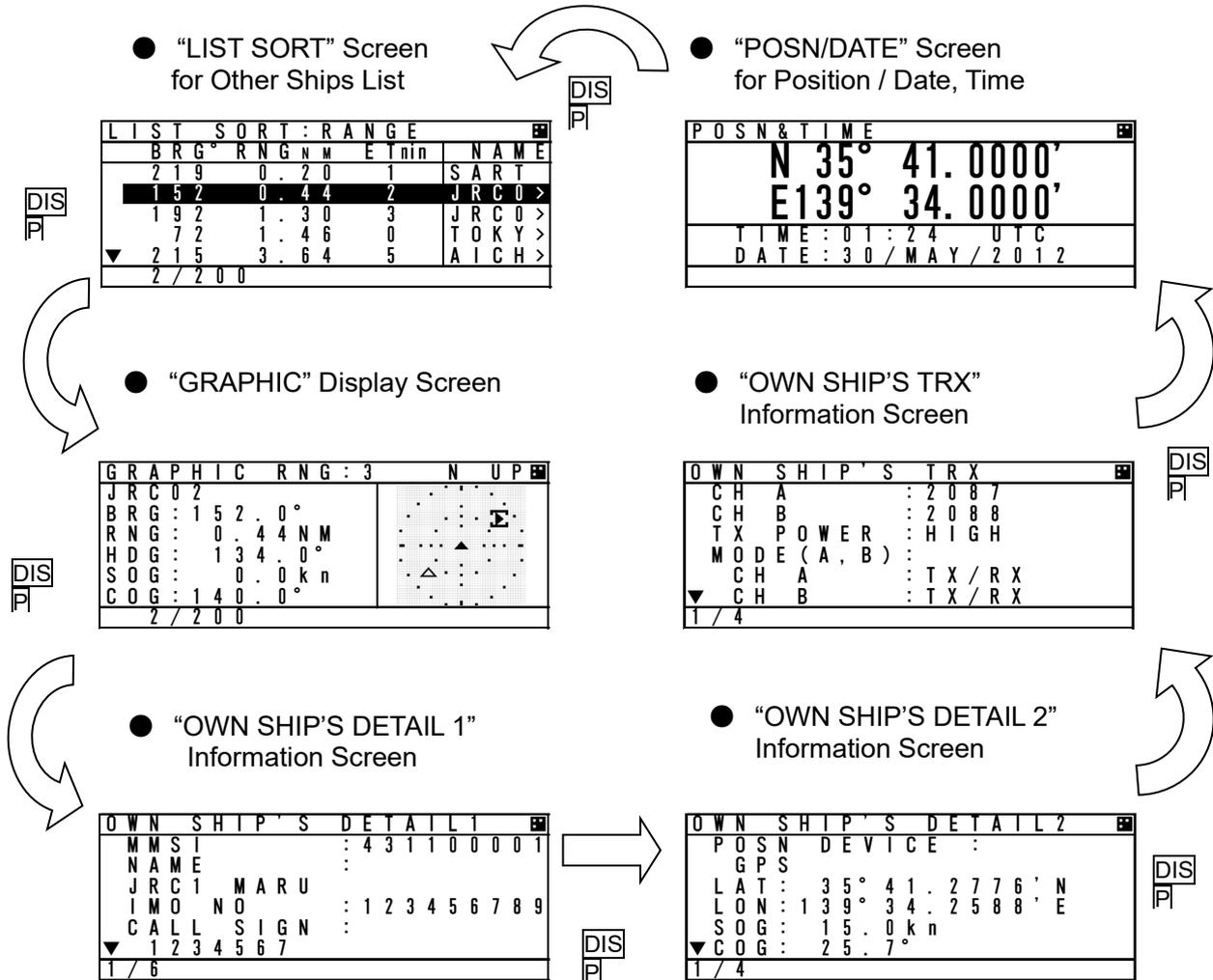
- Select [OK], "EDIT AND TX" screen is displayed.
- Select [CANCEL], previous screen is displayed.

 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	:	4	3	1	1	0	0	0	0	1
NAME	:									
JRC1	MARU									
IMO NO	:	1	2	3	4	5	6	7	8	9
CALL SIGN	:									
▼	1	2	3	4	5	6	7			
1 / 6										

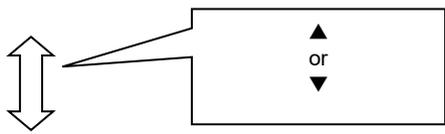
OWN SHIP'S DETAIL 1										
▲	ANT	POSN	EXT	INT						
	BOW	:	2	0	0	m	1	8	0	m
	STR	:	1	0	0	m	1	2	0	m
	POR	:	2	0	m	2	0	m		
	STA	:	1	0	m	1	0	m		
▼	LENG	3	0	0	m	BEAM	3	0	m	
2 / 6										

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	:	2	3						
▼										
4 / 6										

OWN SHIP'S DETAIL 1										
▲	DRAUGHT									
	12.5	m								
	PERSONS	:	8	1	9	1	OR	MORE		
	TYPE OF SHIP									
	PASSENGER	SHIPS								
▼										
5 / 6										

OWN SHIP'S DETAIL 1										
▲	CARGO / STATUS									
	ALL	SHIPS	OF	THIS	T					
	TYPE									
▼										
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 DETAIL 2
-----
POSN DEVICE :
GPS
LAT : 35° 41.0000N
LON : 139° 34.0000E
SOG : 10.0kn
▼COG : 30.0°
1 / 4
  
```

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



```

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

```

OWN SHIP'S DETAIL 2
-----
▲ACC FROM RAIM :
NO RAIM PROCESS AVA
ILABLE
▼
3 / 4
  
```

```

OWN SHIP'S DETAIL 2
-----
▲SYNC STATE :
UTC DIRECT

RCV STATIONS :
10
▼
4 / 4
  
```

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
  
```

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

```

OWN SHIP'S TRX
▲ AREA (NE)
N 36° 00.0000
E 139° 45.0000
AREA (SW)
N 35° 20.0000
E 139° 15.0000
▼
2 / 4
  
```

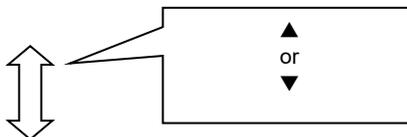
```

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

UTC
▼ 2012 / MAY / 16 02 : 09
3 / 4
  
```

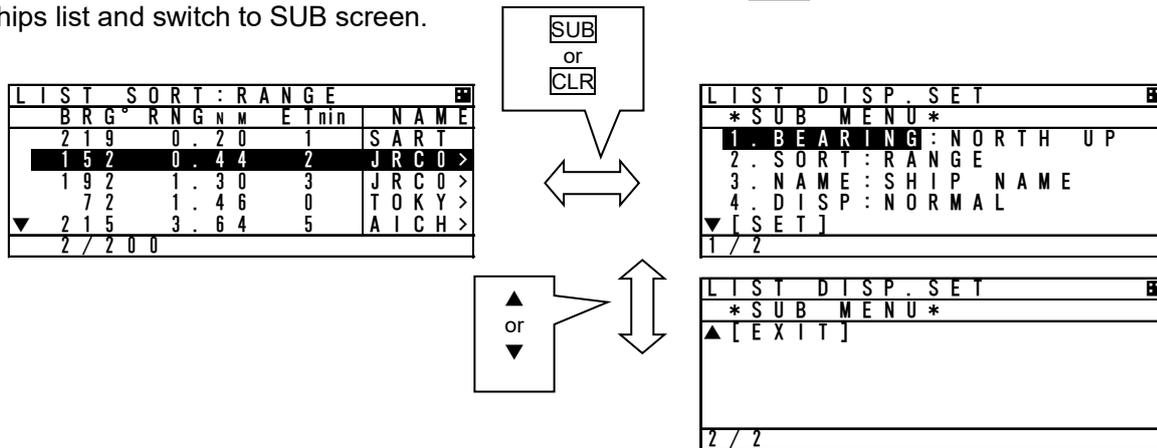
```

OWN SHIP'S TRX
▲ ZONE SIZE : 5NM
MODE : AUTONOMOUS
DATA LINK : FIXED
GROUP : NOT ASSIGNED
4 / 4
  
```



### 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 locating device 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.

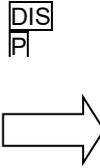
### 5.2.1.5 Graphic Display

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)

LIST SORT: RANGE				
BRG°	RNG nM	ETmin	NAME	
219	0.20	1	SART	
152	0.44	2	JRCO >	
192	1.30	3	JRCO >	
72	1.46	0	TOKY >	
215	3.64	5	AICH >	
2 / 200				



GRAPHIC RNG: 3		N UP
JRCO 2		
BRG: 152.0°		
RNG: 0.44 NM		
HDG: 134.0°		
SOG: 0.0 kn		
COG: 140.0°		
2 / 200		

### 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.

POWER OFF	
PASSWORD :	* * * *
A B C D E F G H I J K L M N O P Q R S T U	
V W X Y Z ; 0 1 2 3 4 5 6 7 8 9 [ \ ]	
! " # \$ % & ' ( ) ? @ + - * / ^ , : ; < = >	
[ ENT ] [ EXIT ]	

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 Alert

### 5.2.3.1 Guard Zone Alert

If a ship enters within the guard zone range, the alert status “G” appears on the bottom of the screen and an alert 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 alert is set “ON” and the alert sound is set “OFF” in the BUZZER setting, the GUARD ZONE alert does not sound.

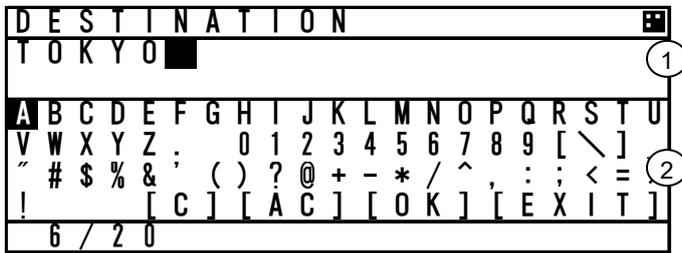
The ship within the guard zone range is displayed “G” in the left side of the line.  
In order to stop the alert buzzer, press **CLR** key.

LIST SORT: RANGE				
	BRG°	RNG NM	ETmin	NAME
G	219	0.20	1	SART
	152	0.44	2	JRCO >
	192	1.30	3	JRCO >
	72	1.46	0	TOKY >
▼	215	3.64	5	AICH >
2 / 200				G

## 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.

① Text Setting Window ② Character 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.
- When decision the input contents, select **[OK]** and then the input contents is reflected.
- Select **[EXIT]** and then return to a setting window

### b) Inserting a character

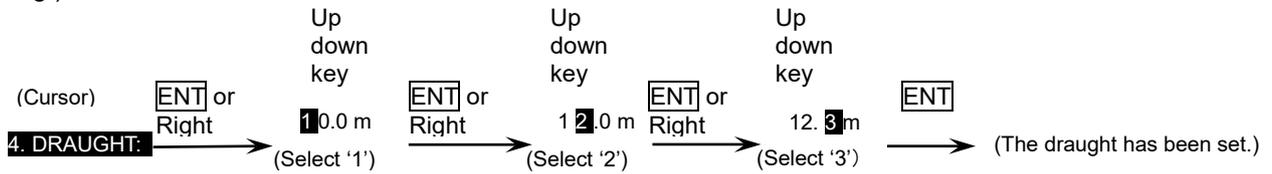
The procedure which inserts a character in the text is followings:

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.

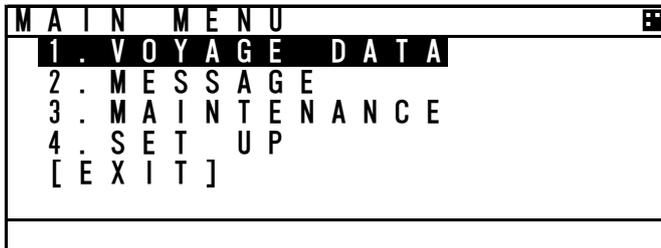
e.g.) DRAUGHT: 12.3 m



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 “ALERT 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:

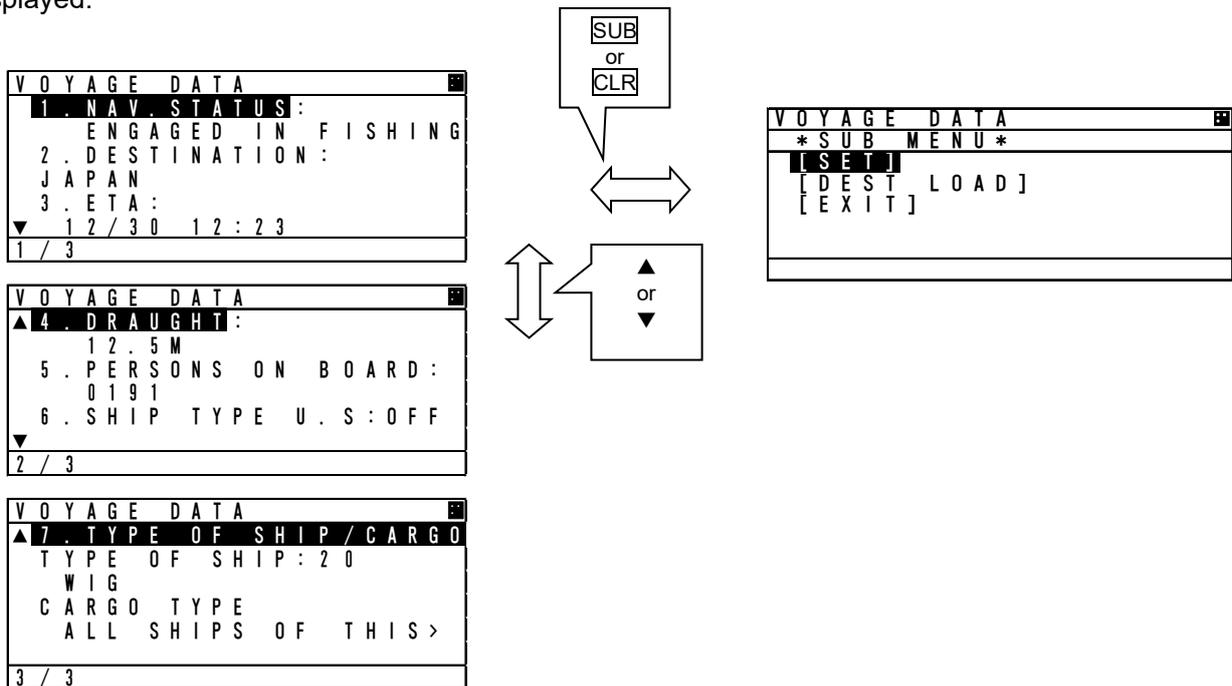
1. VOYAGE DATA ···displays a menu for setting voyage information (Refer to 5.3.1)
2. MESSAGE···displays a menu for sending/receiving messages (Refer to 5.3.2).
3. MAINTENANCE···displays a menu for setting maintenance conditions (See 5.3.3).
4. SET UP···displays a menu for setting the device (See 5.3.4).

**⚠ Caution:**

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.



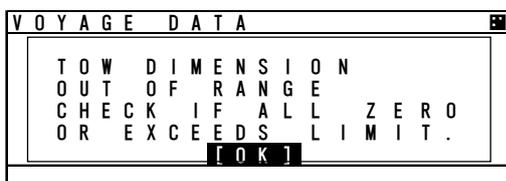
Press **▲** key or **▼** key to select a desirable setting item and press **[ENT]** key, then selecting item and inputting data are available.

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. If the tow dimension setting is incorrect, the following popup screen is displayed. It can be occurred when NAV.STATUS is changed from “AT ANCHOR” to “TOWING ASTERN” while tow dimension is all zero, for example. Otherwise the setting is saved. Refer to 5.3.1.8 Tow dimension.



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”.)

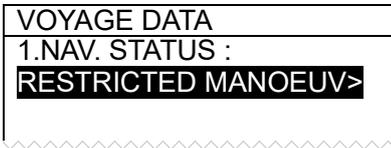
**⚠ Caution:** In order to save the setting, select **[SET]** at the SUB menu. If you switch to any other screen without selecting **[SET]**, the setting is not saved.

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)
8. SPECIAL MANOEUVRE···select special manoeuvre. ( Refer to 5.3.1.8)
9. TOW DIMENSION···input tow dimension. ( Refer to 5.3.1.9)

### 5.3.1.1 Navigational Status

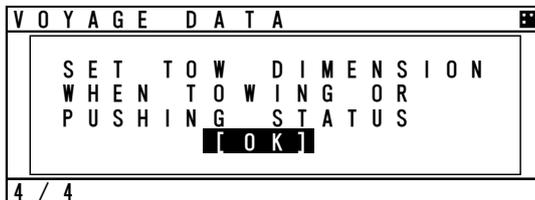
Select **1. NAV. STATUS** at “VOYAGE DATA” menu screen (refer to “5.3.1 VOYAGE DATA SETTING”), the navigational status can be selected. Press ▲ key or ▼ key in order to select a desirable item, and then press **ENT** key.



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)  
TOWING ASTERN  
PUSHING AHEAD OR TOWING ALONGSIDE  
RESERVED FOR FUTURE USE  
NOT DEFINED

Setting of tow dimension is required for "TOWING ASTERN" or "PUSHING AHEAD OR TOWING ALONGSIDE". Whenever these statuses are selected, the following popup screen is displayed as a reminder.

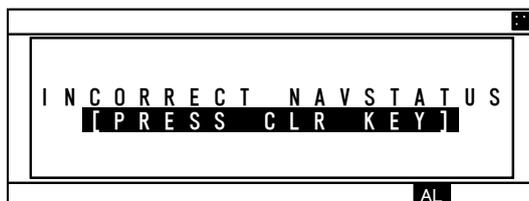


In case of the following condition, the screen of the following figure is displayed.

Reselect the Navigational status.

Nav.Status: UNDER WAY and SOG: 1knot of less and after 2h.

Nav.Status: AT ANCHRED, MOORED, AGROUND, NOT DEFINED and SOG: 3knot over



**⚠ Caution:** Select the right Navigational status.

### 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.

D E S T I N A T I O N																☐				
T O K Y O																█				
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
V	W	X	Y	Z	:		0	1	2	3	4	5	6	7	8	9	[ \ ]	_		
"	#	\$	%	&	;	( )	?	@	+	-	*	/	^	,	:	;	<	=	>	
!																				
																[ C ]	[ A C ]	[ O K ]	[ E X I T ]	
6 / 2 0																				

### 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.)

3.ETA :
12/31 23:31

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”, push "ENT" key and then 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.

4.DRAUGHT :
25.4M

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.

5.PERSONS ON BOARD :  
8191

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".

6. SHIP TYPE U. S.

OFF

OFF : International

ON : US

Ship types for U.S.

### 5.3.1.7 Type of Ship/Cargo Type Selection

When **TYPE OF SHIP/CARGO TYPE** is selected, Ship and Cargo Type are ready to be selected..  
 When **TYPE OF SHIP/CARGO TYPE** 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
CARGO TYPE :
NO ADDITIONAL INFORMATION
    
```

Select **TYPE OF SHIP** and enter password, Type of ship can be changed.  
 Press ▲ key or ▼ key in order to select a desirable item, and then press **ENT** key

```

CHANNEL / POWER
PASSWORD : * * *
A B C D E F G H I J K L M N O P Q R S T U
V W X Y Z . 0 1 2 3 4 5 6 7 8 9 [ \ ]
" $ % & ' ( ) ? @ + - * / ^ _ : ; < = >
! [ ENT ] [ EXIT ]
    
```



```

TYPE OF SHIP : 80
                TANKER
    
```

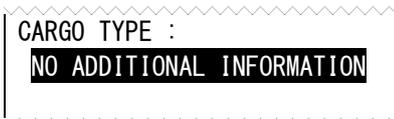
Normally, type of ship is chosen among the defined type but can be input arbitrarily. For this, select "MANUAL" in this list. Then the cursor moves to the number field and arbitrary input is enabled.

The ship type table of international.

No	Type of ship	Note	
00	NOT AVAILABLE	Cargo type: Selection is impossible.	
30	FISHING VESSEL		
31	TOWING VESSEL		
32	TOWING VESSEL L>200M B>25M		
33	DREDGE OR UNDERWTR OPERATION		
34	VESSEL - DIVING OPERATION		
35	VESSEL - MILITARY OPERATION		
36	SAILING VESSEL		
37	PLEASURE CRAFT		
50	PILOT VESSEL		
51	SEARCH AND RESCUE VESSELS		
52	TUGS		
53	PORT TENDERS		
54	WITH ANTI-POLLUTION EQUIP		
55	LAW ENFORCEMENT VESSELS		
58	MEDICAL TRANSPORTS		
59	SHIPS AND AIRCRAFT OF STATES		
2x	WIG		Cargo type: Selection is possible. (Refer to next Page)
4x	HIGH SPEED CRAFT		
6x	PASSENGER SHIPS		
7x	CARGO SHIPS		
8x	TANKER		
9x	OTHER TYPE OF SHIP	Arbitrary input is enabled.	
	MANUAL		

The ship type table of U S.

No	Type of ship	Note	
00	NOT AVAILABLE	Cargo type: Selection is impossible.	
20	WIG IN GROUND		
21	TOWING OTHER THAN BARGE		
22	TOWING BARGES		
23	LIGHT BOATS		
24	MODU/FPS/FPSO/LIFTBOAT		
25	OFFSHORE SUPPLY VESSEL		
26	PROCESSION 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 OPERATION		
34	VESSEL – DIVING OPERATION		
35	VESSEL – MILITARY OPERATION		
36	SAILING VESSEL		
37	PLEASURE CRAFT		
50	PILOT VESSEL		
51	SEARCH AND RESCUE VESSELS		
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	Arbitrary input is enabled.	
	MANUAL		



### CARGO TYPE SELECTION

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

No	CARGO TYPE
x1	CATEGORY X(DG/HS/MP)
x2	CATEGORY Y(DG/HS/MP)
x3	CATEGORY Z(DG/HS/MP)
x4	CATEGORY OS(DG/HS/MP)
x9	NO ADDITIONAL INFORMATION
x0	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 "CARGO TYPE".

Press **[CLR]** key then cursor returns to "TYPE OF SHIP/CARGO TYPE".

**⚠ 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 Special Manoeuvre**

When **SPECIAL MANOEUVRE** is selected, special manoeuvre are ready to be selected..

When **SPECIAL MANOEUVRE** 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.

8. **SPECIAL MANOEUVRE**  
NOT ENGAGED

The Special manoeuvre can be selected from listed below:

- ENGAGED
- NOT ENGAGED
- NOT AVAILABLE

After pressing **[ENT]** key and the special manoeuvre has been set. Then the cursor moves to the next item "9.TOW DIMENSION".

**5.3.1.9 Tow dimension**

Select **9.TOW DIMENSION**, tow dimension setting screen is appeared.

In this menu, items concerned with the tow dimension can be set.

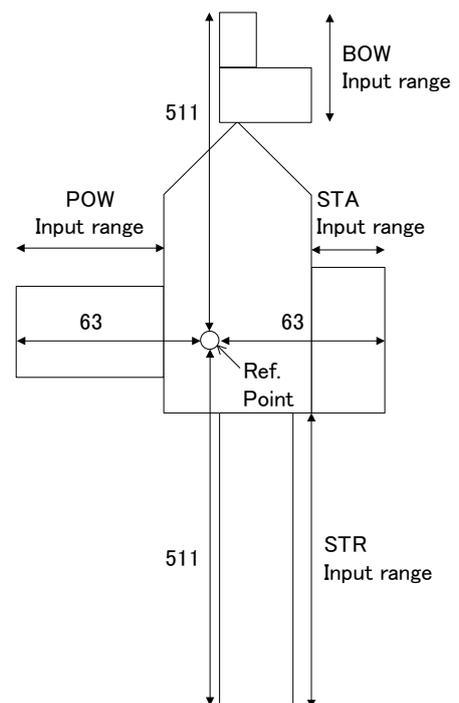
**Note:** This setting has no effect unless NAV.STATUS is "TOWING ASTERN" or "PUSHING AHEAD OR TOWING ALONGSIDE".

T O W   D I M E N S I O N			
1 .	B O W	0 1 0 M	( M A X : 4 0 0 )
2 .	S T R	0 2 0 M	( M A X : 4 0 0 )
3 .	P O R	1 0 M	( M A X : 2 0 )
4 .	S T A	2 0 M	( M A X : 2 0 )

Since allowable input values of the overall length and width are 511 or less and 63 or less respectively, input ranges of tow dimension vary according to the reference point for position (currently used GNSS antenna position, internal or external).

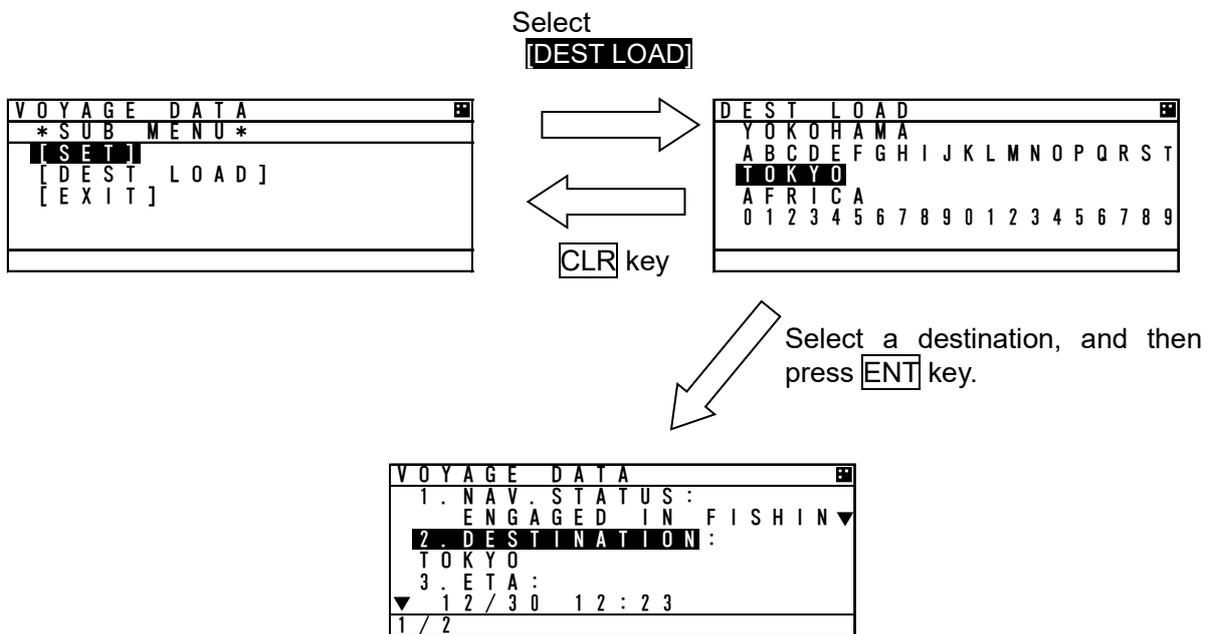
This setting is required and all zero is not permissible when NAV.STATUS is "TOWING ASTERN" or "PUSHING AHEAD OR TOWING ALONGSIDE". If it is the case or whenever the input value exceeds limit, the following popup screen is displayed.

T O W   D I M E N S I O N  
O U T   O F   R A N G E  
C H E C K   I F   A L L   Z E R O  
O R   E X C E E D S   L I M I T .  
**[OK]**



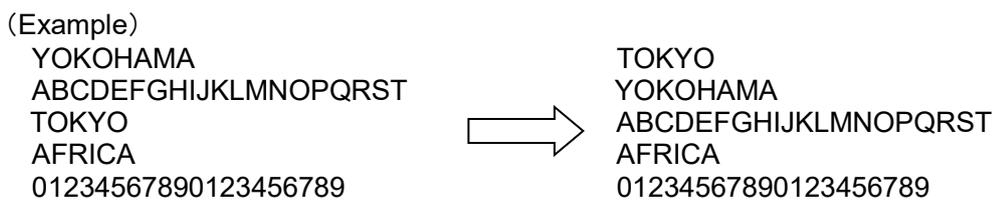
### 5.3.1.10 Re-load Destination from history Data

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.



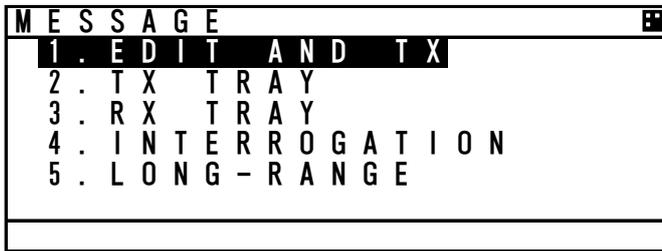
Select the destination from the list and press **[ENT]** key, then the screen is switched to “VOYAGE DATA” menu screen and the selected one is displayed at the **2.DESTINATION**.  
 If **[CLR]** key is pressed at “DEST LOAD” screen, the re-load operation is canceled and switch back to “VOYAGE DATA” screen.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



## 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.

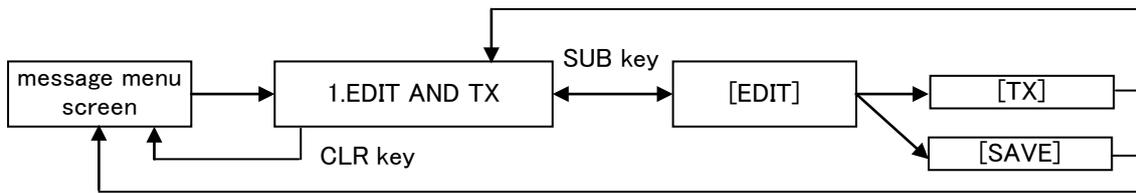
Press **CLR** key at the “MESSAGE” menu screen, then switch back to “MAIN MENU” screen.

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.



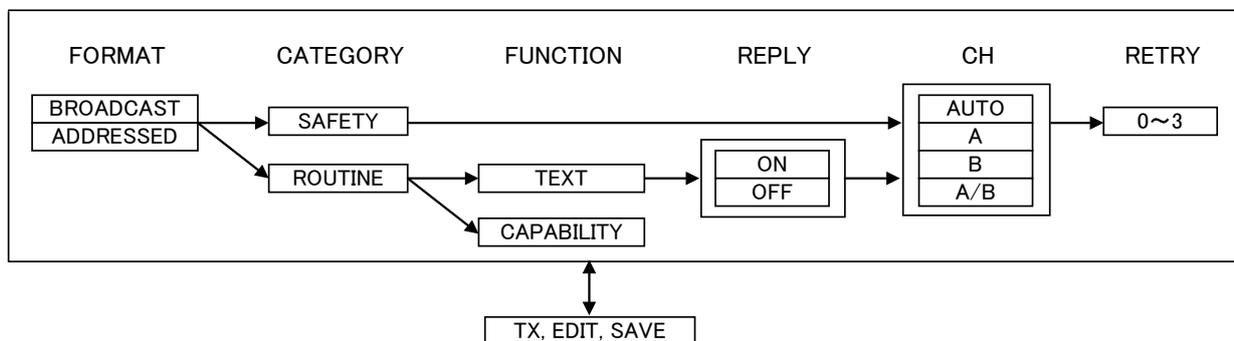
Select **1.EDIT AND TX** at “5.3.2 MESSAGE MENU” and then “MESSAGE TYPE” setting screen is displayed.

#### a) MESSAGE TYPE

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

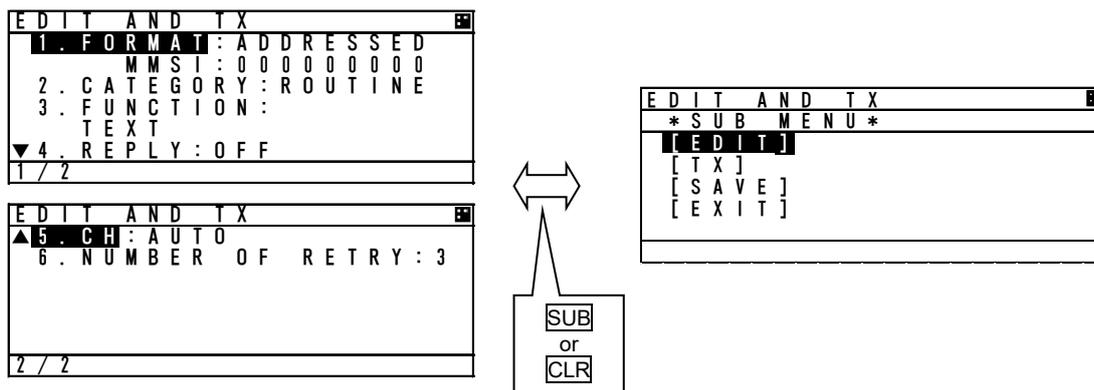
#### Message Type

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 “SAFETY”.  
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  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  key to set the CHANNEL.

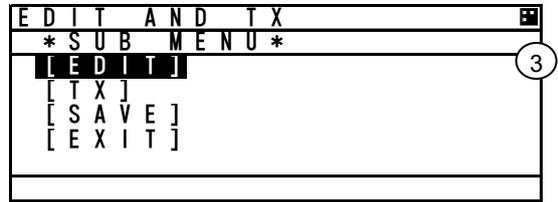
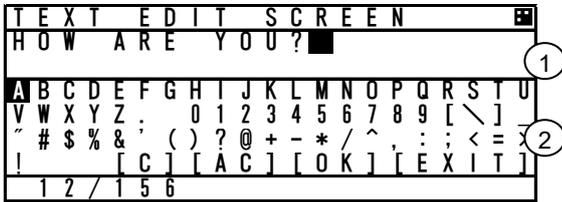
#### (6) NUMBER OF RETRY

Refer to Page 5-28 "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 2 screens.

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.

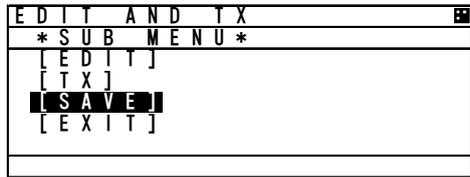
- Maximum number of characters to send a message

FORMAT	CATEGORY	MAXIMUM CHARACTERS
ADDRESSED	SAFETY	85
	ROUTINE	80
BROADCAST	SAFETY	90
	ROUTINE	86

d) Transmitting and Saving

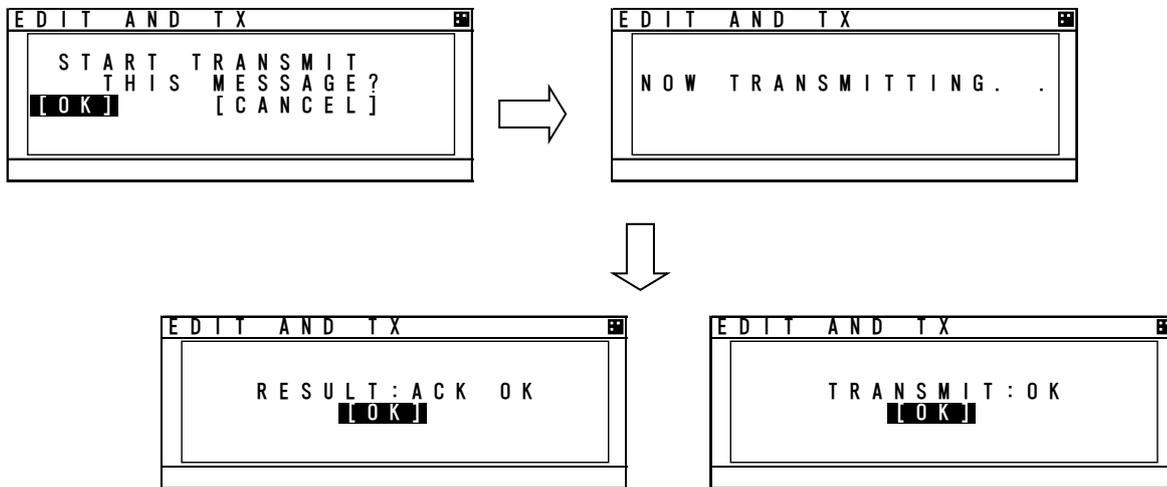
If "FUNCTION" in Message Type (refer to "a) MESSAGE", and "b) MESSAGE TYPE SETTING") is "TEXT", operate transmitting or saving a message according to the following procedure:

- 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.



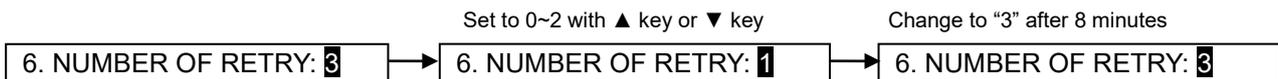
In case of ADDRESSED

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.

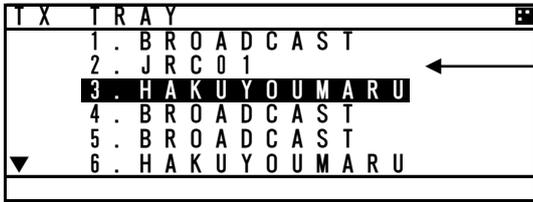


### 5.3.2.2 TX Tray (Viewing Transmitted Messages)

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 messages in the transmitted message list.

The listed messages can be edited and/or can be transmitted again.

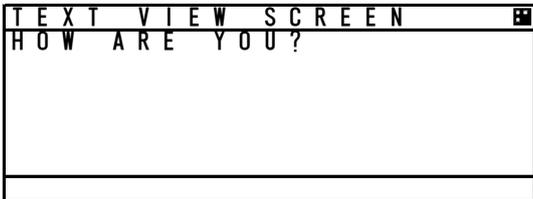
#### Transmitted Message List



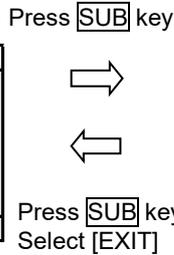
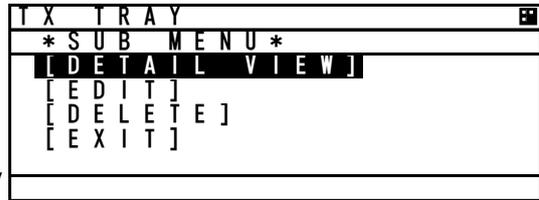
If STATIC DATA is not received at the message transmission, it is saved by “MMSI” in the TRAY  
After received STATIC DATA, it is saved by “NAME” in the TRAY.



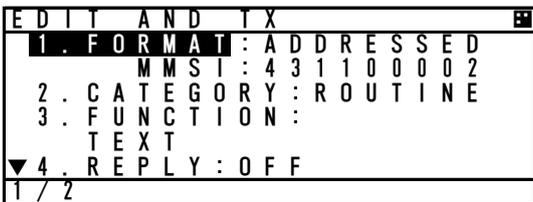
#### TX VIEW screen



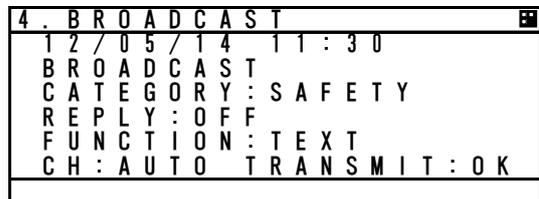
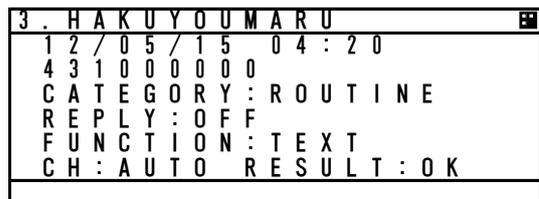
#### Sub Menu Screen



#### EDIT AND TX screen



#### Detail Information Screen



Select [EDIT]

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.

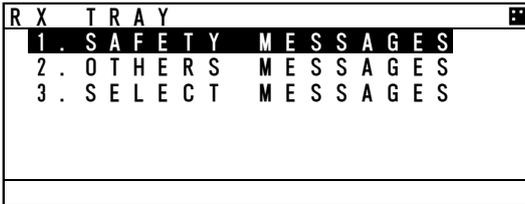
### 5.3.2.3 RX Tray (Viewing Received Messages)

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(addressed, broadcast) can be saved up to 20 respectively. Safety related messages can be selected up to 20. Selected messages are not deleted until power off even when newly received messages exceed 20. Confirmation of contents and reply are performed by selecting a message in the TRAY.

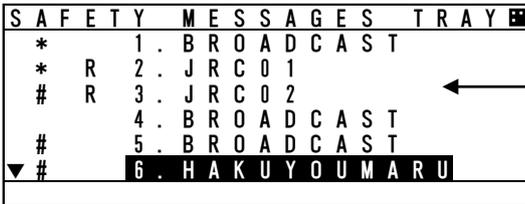
When messages are received, receiving alert sounds normally. If the message buzzer is set "OFF" in the BUZZER setting, receiving alert does not sound. ("Message received popup" is appeared.)

#### RX TRAY Screen



↓ Select [1. SAFETY MESSAGES] ↑ Press **CLR** key

#### SAFETY MESSAGES TRAY Screen



↓ Press **ENT** key ↑ Press **CLR** key

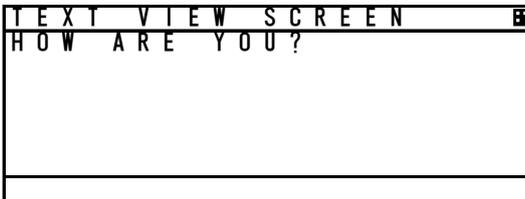
Press **SUB** key

Press **SUB** key  
Select [EXIT]

Press **SUB** key

If STATIC DATA is not received at the message receiving, it is saved by "MMSI" in the TRAY. After received STATIC DATA, it is saved by "NAME" in the TRAY.

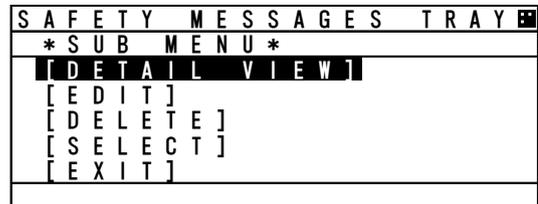
#### TEXT VIEW Screen



Press **SUB** key  
Select [EXIT]

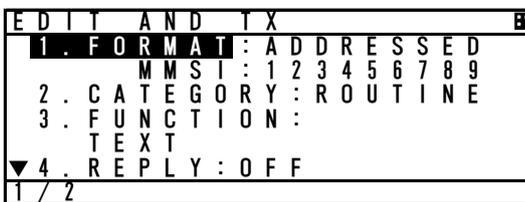
Select [EDIT]

#### Sub Menu Screen

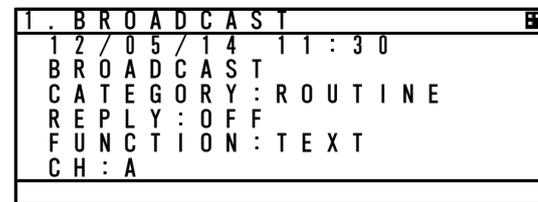


↓ Select [DETAIL VIEW] ↑ Press **CLR** key

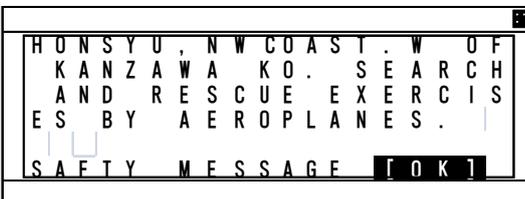
#### EDIT AND TX



#### Detail Information Screen



#### Screen which received an addressed safety related message (Message 12)



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.

“#” mark in the front of a message number indicates a selected 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 order to select a message, choose **[SELECT]** at the message’s sub menu screen and then “#” mark is added. In order to deselect a selected message, choose **[DESELECT]** at the sub menu and then “#” mark is removed. Selected messages are cleared at power off.

Note: If 20 messages are already selected, **[SELECT]** will not appear.

Selected messages are displayed in “SELECT MESSAGES TRAY” screen.

```

SELECT MESSAGES TRAY
R 1. JRC02
  2. BROADCAST
  3. HAKUYOUMARU
    
```

```

SELECT MESSAGES TRAY
*SUB MENU*
[DETAIL VIEW]
[EDIT]
[DESELECT]
[EXIT]
    
```

**⚠ Caution** Since selected messages which became old are already deleted from the storage, deselecting such messages cannot be undone.

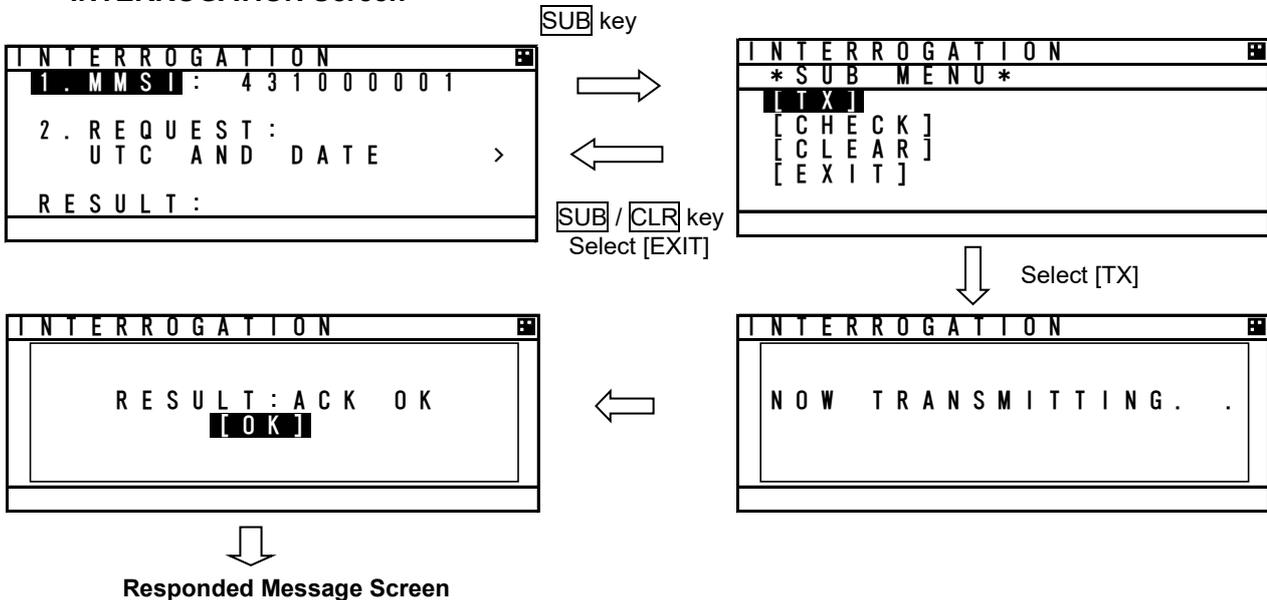
In case of transmitting by CAPABILITY INTERROGATE, the contents of FI number in the received message is shown below.

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

### 5.3.2.4 Interrogation

Select **4. INTERROGATION** at “MESSAGE” menu screen (refer to “5.3.2 MESSAGE MENU”), “INTERROGATION” 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.) (o: selective)

Interrogation Item	Request	Note
POSN REPORT(A)	o	Class A shipborne AIS Position Report
STATIC / VOYAGE(A)	o	Class A shipborne AIS ship static and voyage data
SAR AIRCRAFT POSN REPORT	o	Search and rescue aircraft AIS position report
UTC AND DATE	o	Date and time data with UTC
POSN REPORT(B)	o	Class B shipborne AIS Position Report
STATIC / VOYAGE(B)	o	Class B shipborne AIS ship static and voyage data
AIDS-TO-NAVIGATION REPORT	o	Aids to navigation AIS report
BASE STATION REPORT	o	Base station AIS report
STATIC DATA REPORT	o	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. MSS1".
- [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 : ACK OK
- Not responded ----- RESULT : ACK 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)

```

INTERROGATION
MMSI : 431000001
NAV STATUS : 0
UNDERWAY USING
ENGINE
POSN ACCURACY : LOW
1 / 2
    
```

```

INTERROGATION
▲ POSN : N 35° 32.7155'
          E 139° 40.0502'
COG : 170.0°
SOG : 10.0KN
HDG : 160.0°
ROT : 0.0° / min
2 / 2
    
```

BASE STATION REPORT

```

INTERROGATION
UTC :
2012 / 06 / 07 03 : 40 : 34
POSN ACCURACY :
HIGH
POSN : N 35° 41.0000'
          E 139° 34.0000'
1 / 1
    
```

STATIC/VOYAGE (A)

```

INTERROGATION
NAME :
JRC MARU
CALL SIGN : N / A
IMO NO. : 012345678
POSITION SENSOR :
▼ UNDEFINED
1 / 4
    
```

```

INTERROGATION
▲ DESTINATION :
TOKYO
ETA : NOT AVAILABLE
LENGTH :
80M
2 / 4
    
```

```

INTERROGATION
▲ BEAM :
15M
DRAUGHT :
10.5M
3 / 4
    
```

```

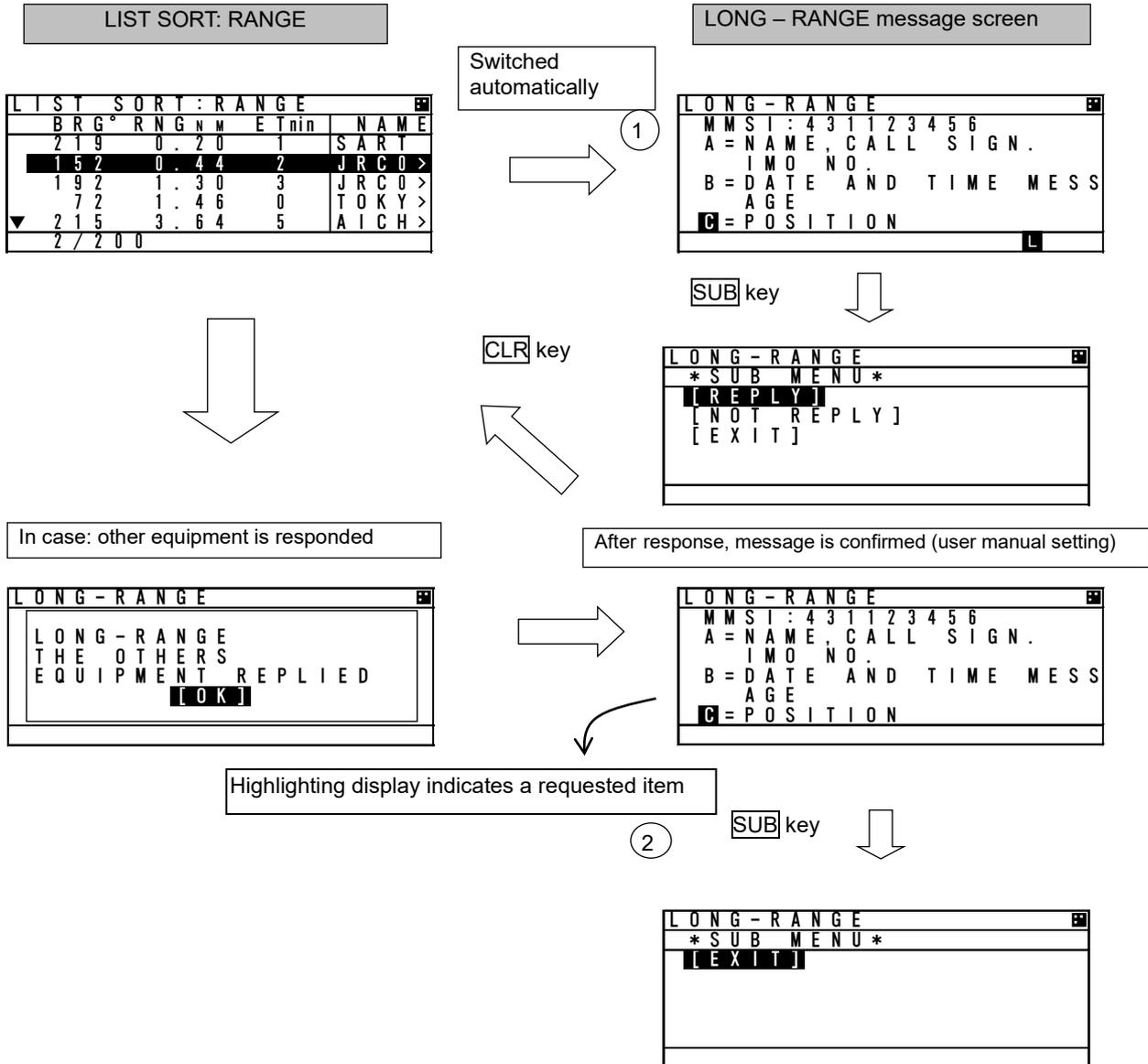
INTERROGATION
▲ SHIP TYPE : 20
WIG
CARGO TYPE :
4 / 4
    
```

### 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.

- o 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.

M A I N T E N A N C E		⏏
1 .	S E L F D I G N O S I S	
2 .	C O M M U N I C A T I O N T E S T	
3 .	A I S A L E R T	
4 .	S E N S E R S T A T U S	
5 .	E V E N T L O G	
6 .	S O F T W A R E V E R S I O N	

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 ALERT ···Displays malfunction alerts. (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

 Caution



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

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.

```
SELF DIAGNOSIS
1. TRANSPONDER :
  TEST ALL
  [ENT]
  RESULT : OK
  CONT : OK
  INT GPS : OK
1 / 3
```

```
SELF DIAGNOSIS
▲ TRX : OK
  PS : OK
  ANTENNA :
  INTERNAL
2. CONTROLLER : [ENT]
▼ RESULT : OK
2 / 3
```

```
SELF DIAGNOSIS
▲ 3. CONTROLLER LAN :
  [ENT]
  RESULT : OK
4. TRANSPONDER LOG
5. CONTROLLER LOG
6. CONTROLLER LAN LOG
3 / 3
```

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.

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	Check the NTE-183 installation conditions. (*1)
	NG SAT.RCV.	CDJ-2483	Internal GPS unit receives signal from only less than four satellites.	
	NG	CDJ-2483	Multiple errors	
TRX	NG RX1 UNLK	CMN-2183	GMSK receiver CH A synthesizer unlock	CMN-2183 is Defective. Replace NTE-183.
	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		CBD-2183	Output voltage (9.8 V) for analog is error	CBD-2183 is Defective. Replace NTE-183.
	NG PS LOW			
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.

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 20<sup>th</sup> 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.

TRANSPONDER LOG	
1. TRANSPONDER :	NG
CONT :	NG
	( 2 5 7 )
INT GPS :	
OK ( 0 )	
▼	

CONTROLLER LOG	
1. CONTROLLER :	OK
	( 0 0 )
DATE :	1 1 / 2 4 2 0 : 4 5
2. CONTROLLER :	NG SRAM
	( 0 4 )
DATE :	1 1 / 2 4 2 0 : 4 5
▼	

CONTROLLER LAN LOG	
1. CONTROLLER LAN :	
	OK ( 0 0 )
DATE :	1 1 / 2 4 2 0 : 4 5
2. CONTROLLER LAN :	
	NG SRAM ( 0 4 )
DATE :	1 1 / 2 4 2 0 : 4 5
▼	

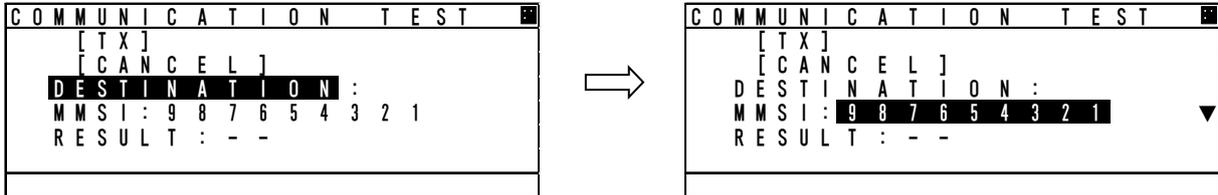
### 5.3.3.2. Communication Test

Select **2.COMMUNICATION TEST** at "MAINTENANCE" menu screen (refer to "5.3.3 MAINTENANCE"), "COMMUNICATION TEST" screen is displayed.

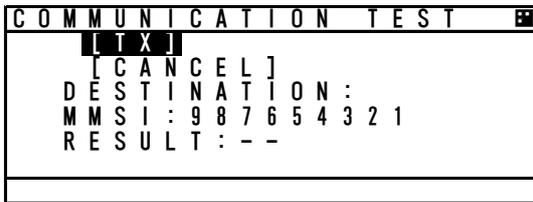
The address MMSI can be set automatically from nearby ships (classA only), and then perform the communication test with others by response request.

If the communication test is failed, the alternative address MMSI is set automatically.

If there are no class A targets, the MMSI display "-----". Set to input MMSI number.

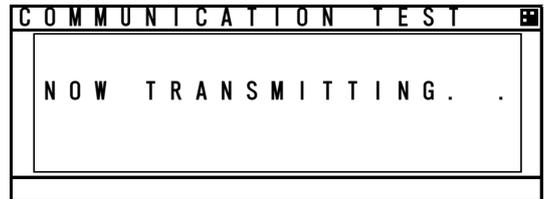


To switch to "MAINTENANCE" menu screen, press **CLR** key.



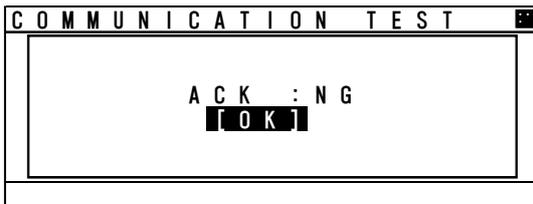
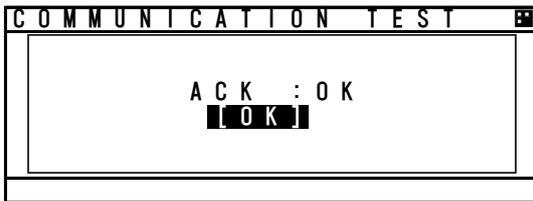
Communication test screen

Select [TX]

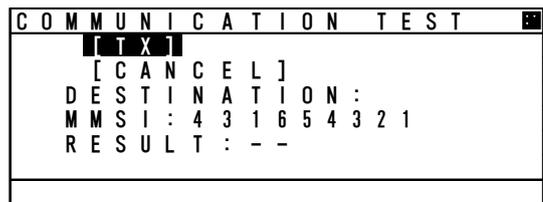


OK

NG



Set the alternative address MMSI



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

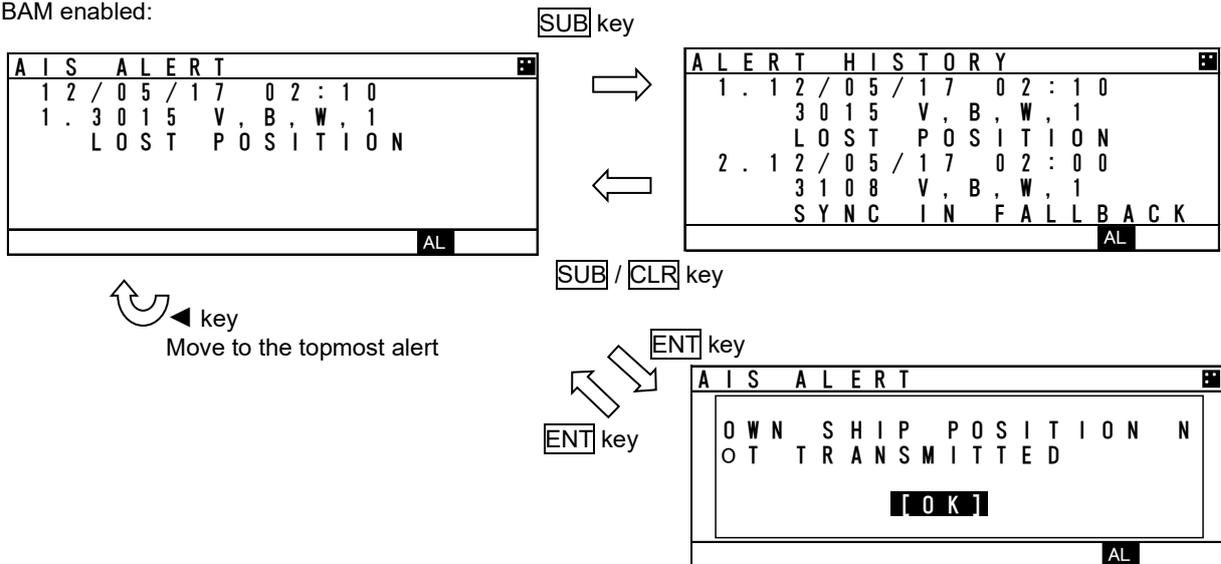
### 5.3.3.3. AIS Alert

Select **3.AIS ALERT** at “MAINTENANCE” menu screen (refer to “5.3.3 MAINTENANCE”), “AIS ALERT” confirmation screen is displayed. This screen is one of the following according to whether BAM function is enabled(default) or not.

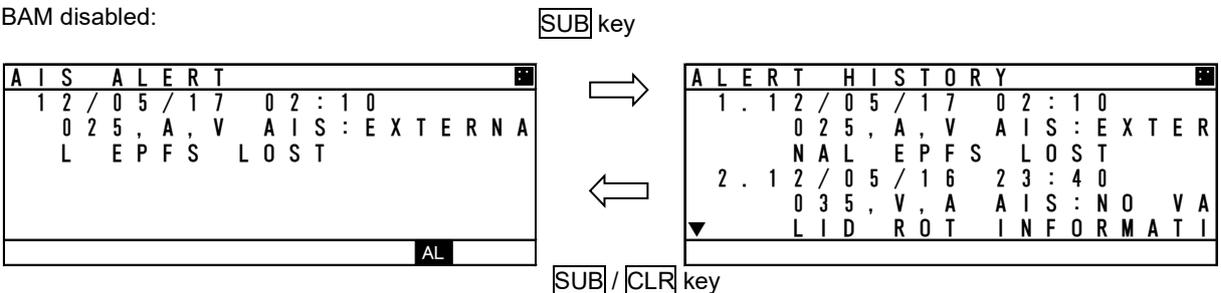
Note: When switching BAM function, contact our service center or agents.

“ALERT HISTORY” screen can be displayed up to 30 from last defective alerts during the operation. When the display is switched to “MAINTENANCE” menu screen, press **CLR** key.

BAM enabled:



BAM disabled:



#### 1. Current Alert status

A current occurring alert list is displayed in “AIS ALERT” screen.

- When the AIS alert doesn't occur, “NO DATA” is displayed.
- When alerts 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.

If BAM enabled,

- Alerts are listed in order of the following display priority.

Priority	State
1	"active – unacknowledged" and "active silenced" warnings
2	"active – acknowledged" warnings
3	"active – responsibility transferred" warnings
4	"active" cautions

- Warning is displayed on AIS ALERT screen 3 seconds after the alert condition is exceeded.
- If the responsibility transfer command has come within 3 seconds, AIS ALERT screen is not displayed.
- The buzzer beeps short signal at the escalation.
- When pressing **ENT** key, popup is displayed whose message is the alert description text of the top alert in the page.
- When pressing **◀** key, move to the topmost(highest priority) alert.

Note: Escalation is a term representing that the unacknowledged warning is repeated until acknowledged or rectified. Escalation occurs for each alert at a definite period, 3 minutes by default. When changing the escalation period, contact our service center or agents.

## 2. Alert history

When **SUB** key is pressed at "AIS ALERT" screen, the screen is switched to "ALERT HISTORY" screen.

Up to 50 occurred and restored alerts can be confirmed.

When the display is switched to "AIS ALERT" 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 alert and all their restorations is displayed with UTC.  
If the time cannot to be acquired, "--/-- --:--" is displayed there.
- A description of alert display is shown below.

BAM enabled:

Alert contents: 3108, V, B, W, 1, LOCATING DEVICE  
(1) (2) (3) (4) (5) (6)

(1): The alert number (refer to the following table)

(2): The alert condition -> "V": active – unacknowledged (warning)

"A": active – acknowledged (warning) / active (caution)

"S": active – silenced (warning)

"O": active – responsibility transferred (warning)

"N": normal (warning / caution)

(3): Alert category -> "B" (always B in this equipment)

(4): Alert priority -> "W": Warning

"C": Caution

(5): Instance (refer to the following table)

(6): Alert title (refer to the following table)

Note: Responsibility transfer is a mechanism which reduces the number of high priority alerts and used to control the number of audible alerts for one situation.

This equipment allows responsibility transfer request for all active unacknowledged warnings to result in the state as if it were rectified.

Responsibility transferred alerts are not displayed in AIS ALERT screen by default. See 5.3.4.13 BAM Display Setting.

BAM disabled:

Alert contents: 035, V, A, AIS: no valid ROT information  
(1) (2) (3) (4)

(1): The alert number (refer to the next page)

(2): The alert condition -> "V": Alert is restored

"A": Alert is occurring

(3): The alert correspond -> "V": Alert is invalid

"A": Alert is valid

(4): Alert's description text (refer to the following table)

Lists of failure alerts when BAM enabled(default):

Alert No.	priority	Alert title	Alert description text
3108,1	W	LOCATING DEVICE	CHECK AIS TARGETS
3062,1	W	GENERAL FAULT	CHECK AIS EQUIPMENT
3008,1	W	TRANCEIVER FAIL	NOT TRANSMITTING, CHECK AIS
3008,2	W	TRANCEIVER FAIL	NOT RECEIVING, CHECK AIS
3015,1	W	LOST POSITION	OWN SHIP POSITION NOT TRANSMITTED
3116,1	C	IMPAIRED RADIO	REDUCED COVERAGE (ANTENNA VSWR)
3116,2	C	IMPAIRED RADIO	CH1 INOPERATIVE, CHECK AIS
3116,3	C	IMPAIRED RADIO	CH2 INOPERATIVE, CHECK AIS
3116,4	C	IMPAIRED RADIO	DSC INOPERATIVE
3113,1	C	SYNC IN FALLBACK	CHECK AIS FOR UTC TIME SYNCHRONISATION
3003,1	C	LOST EXT EPFS	CHECK EXTERNAL POSITION SENSOR
3119,1	C	MISSING COG	NOT TRANSMITTING COG
3119,2	C	MISSING SOG	NOT TRANSMITTING SOG
3119,3	C	MISSING HEADING	NOT TRANSMITTING HEADING
3119,4	C	MISSING ROT	NOT TRANSMITTING RATE OF TURN
3013,1	C	DOUBTFUL GNSS	INT/EXT GNSS POSITION MISMATCH
3013,2	C	DOUBTFUL HEADING	DIFFERENCE WITH COG EXCEEDS LIMIT
3019,1	C	WRONG NAVSTATUS	CHECK NAVSTATUS SETTING
3009,1	C	LOST MKD	CANNOT DISPLAY SAFETY RELATED MESSAGES

NOTE: Alert No. = Alert identifier and Alert instance

NOTE: All alert category "B" (always B in this equipment)

NOTE: Audio signals for alerts are sounded when warning occurs, but not when caution occurs.  
The Audio signal when a warning occurs is set in 5.3.4.2 My Controller, b) Sound.

NOTE: All warnings support "responsibility transferred".

For example, popup message for "3116,2,IMPAIRED RADIO" is "CH1 INOPERATIVE, CHECK AIS".

Lists of failure alerts when BAM disabled:

Alert No.	Alert'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
007	UTC sync invalid	The internal GPS is not synchronized with PPS.
008	MKD CONNECTION LOST	Detected the connection between CONTROLLER and TRANSPONDER is lost.
009	Internal/external GNSS position mismatch	Internal/external GNSS position mismatch
010	NAVSTATUS INCORRECT	Mismatch information of navigation status.
011	Heading sensor offset	When SOG is greater than 5 kn and the difference between COG and HDT is greater than 45° for 5 min.
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 DOWN	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.
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)

### 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	
POSITION :	
EXTERNAL GNSS	
UTC	CLOCK : IN USE
SOG / COG : EXTERNAL	
HEADING : VALID	
▼	ROT : IN USE
1 / 2	

SENSOR STATUS		
▲	ID	COMMAND
POS N	: GP	RM C
SOG	: GP	RM C
COG	: GP	RM C
HDG	: HE	HDT
ROT	: TI	ROT
2 / 2		

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	Talker device	ID
Heading/track controller (autopilot) general	AG	Heading sensors: gyro, non-north seeking	HN
magnetic	AP	Hull door controller/monitoring system	HD
Automatic identification system	AI	Hull stress monitoring	HS
Bilge system	BI	Integrated instrumentation	II
Bridge navigational watch alert system	BN	Integrated navigation	IN
Communications: digital selective calling (DSC)	CD	LORAN: LORAN-C	LC
Communications: data receiver	CR	Navigation light controller	NL
Communications: satellite	CS	Proprietary code	P
Communications: radio-telephone (MF/HF)	CT	Radar and/or radar plotting	RA
Communications: radio-telephone (VHF)	CV	Propulsion machinery including remote control	RC
Communications: scanning receiver	CX	Sounder, depth	SD
Direction finder	DF	Steering gear/steering engine	SG
Duplex repeater station	DU	Electronic positioning system, other/general	SN
Electronic chart system (ECS)	EC	Sounder, scanning	SS
Electronic chart display and information system (ECDIS)	EI	Turn rate indicator	TI
Emergency position indicating radio beacon (EPIRB)	EP	Microprocessor controller	UP
Engine room monitoring system	ER	Velocity sensors: Doppler, other/general	VD
Fire door controller/monitoring system	FD	Velocity sensors: speed log, water, magnetic	VM
Fire extinguisher system	FE	Velocity sensors: speed log, water, mechanical	VW
Fire detection system	FR	Voyage data recorder	VR
Fire sprinkler system	FS	Watertight door controller/monitoring system	WD
Galileo positioning system	GA	Water level detection system	WL
Global positioning system (GPS)	GP	Transducer	YX
GLONASS positioning system	GL	Timekeeper, time/date: atomic clock	ZA
Global navigation satellite system (GNSS)	GN	Timekeeper, time/date: chronometer	ZC
Heading sensors: compass, magnetic	HC	Timekeeper, time/date: quartz	ZQ
Heading sensors: gyro, north seeking	HE	Timekeeper, time/date: radio update	ZV
Heading sensors: fluxgate	HF	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 of UTC times.

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.

EVENT LOG			
POWER ON			
2 0 1 2 / 0 5 / 1 6	2 3 : 4 0 : 1 0		
POWER OFF			
2 0 1 2 / 0 5 / 1 5	0 8 : 1 1 : 3 9		
POWER ON			
▼ 2 0 1 2 / 0 5 / 1 5	0 0 : 0 1 : 2 9		

When “▼” or “▲” mark is displayed at the left side, Press ▲ key or ▼ key to see next.  
All the time when each event is stored in a history is 15 minutes later.

### 5.3.3.6. Software Version

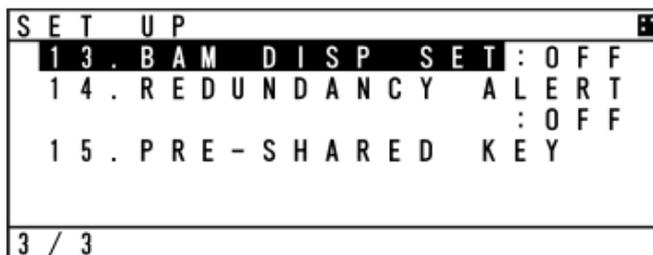
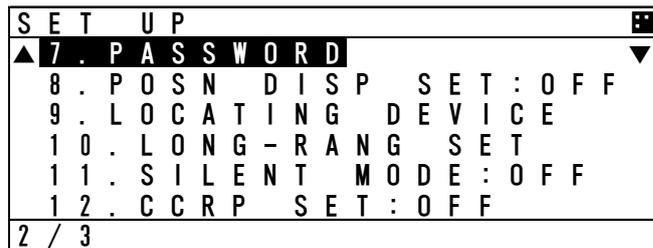
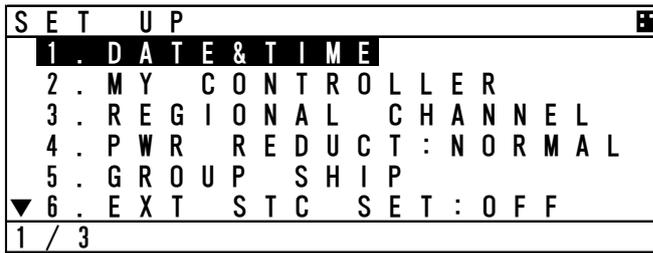
Select **6.SOFTWARE VERSION** at “MAINTENANCE” menu screen (refer to “5.3.3 MAINTENANCE”), display “SOFTWARE VERSION” of each unit.

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

SOFTWARE VERSION	
TRANSPONDER	
CONT :	2 . 0 0
CONTROLLER	
DISP :	2 . 0 1
LAN :	2 . 0 0

### 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.EXT STC SET       | .....Set external static data  | (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.LOCATING DEVICE   | .....Select locating device's setting                                | (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) |
| 13.BAM DISP SET     | .....Select display setting of BAM                                   | (refer to 5.3.4.13) |
| 14.REDUNDANCY ALERT | .....Select display setting of ALERT for equipment users             | (refer to 5.3.4.13) |
| 15.PRE-SHARED KEY   | .....Change pre-shared key   | (refer to 5.3.4.14) |
| <br>(OPTION:)       |  |                     |
| 16.NSK UNIT         | .....GYRO I/F BOX initial setting and confirmation of unit condition | (refer to 5.3.4.16) |

### 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.

DATE & TIME	
1 . POSN & TIME DISP :	
POSN & TIME	
2 . DISPLAY FORM : UTC	
LT DIFF : + 0 0 : 0 0	

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.

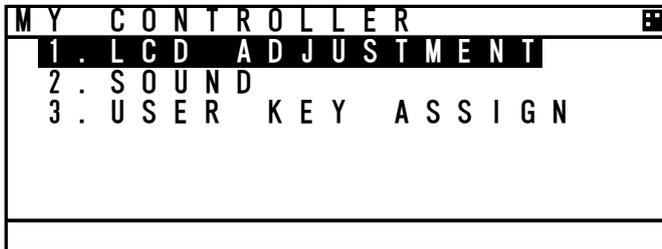
When **UTC** is selected, the screen displays "UTC" and the time is standard time.

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**.

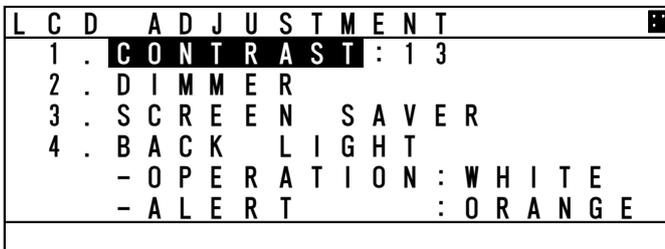
### 5.3.4.2 My Controller

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

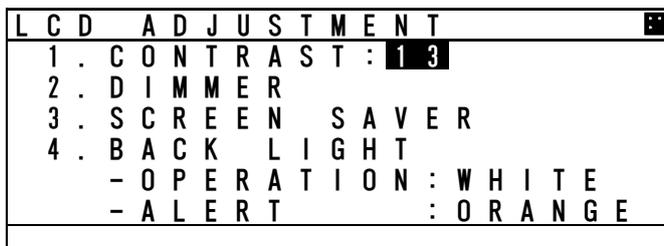
##### 1. CONTRAST

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.

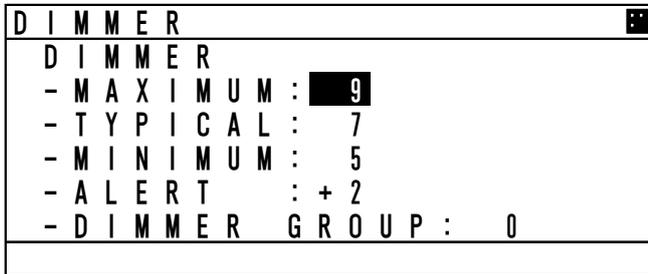


## 2. DIMMER

Select **2.DIMMER**, DIMMER adjustment screen is displayed.

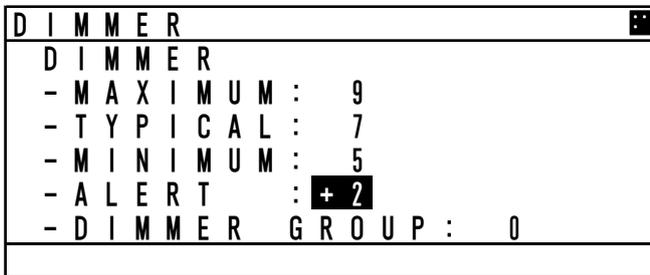
(The cursor move to the right of "MAXIMUM".)

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 alert.



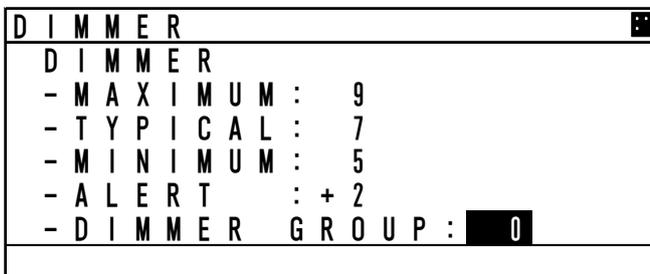
When the cursor is on the right of "MAXIMUM", the value can be adjusted. Press **▲** key or **▼** key to adjust it and press **ENT** key and then the cursor moves to the right of "TYPICAL". The value of MAXIMUM, TYPICAL and MINIMUM can be set between 1 to 13.

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 ALERT value can be set between +1 to +9. In the case of an alert, 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 alert condition.

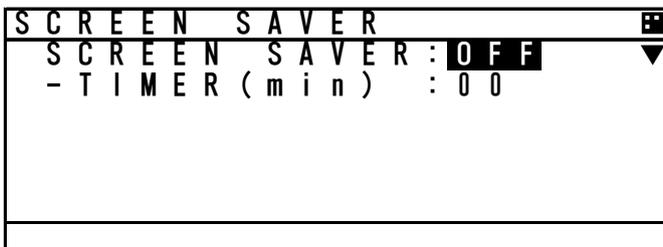


When the AIS JHS-183 connect the JRC display equipment, set a group within which dimmer control for this display unit is linked. The DIMMER GROUP value can be set between 0 to 10. Available dimmer group numbers are from 1 to 10. Unavailable dimmer group number is 0. Select the same dimmer unit within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

## 3. SCREEN SAVER

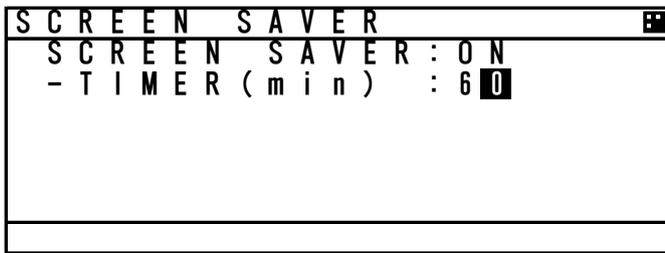
Select **3.SCREEN SAVER**, SCREEN SAVER setting menu is displayed.

In this menu, the time to turn off the LCD light after no operation condition can be set.



Select from OFF or ON.

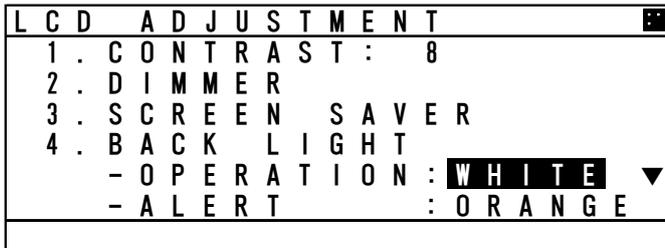
If there is no need for this function, Select "OFF" with **▲** key or **▼** key and press **ENT** key, and then TIMER value is changed into "00" automatically.



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.



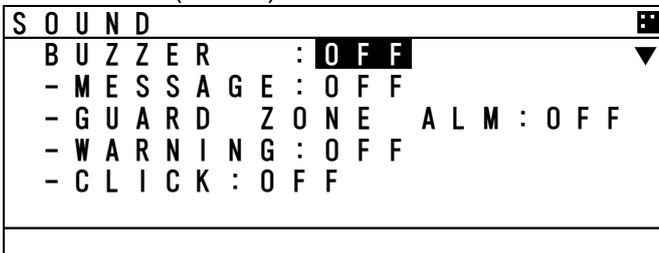
Select WHITE or ORANGE at "OPERATION" with ▲ key or ▼ key. After setting, press **ENT** key, and then the cursor move to the right side of "ALERT". Take the same procedure.

### 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.

BAM enabled(default):

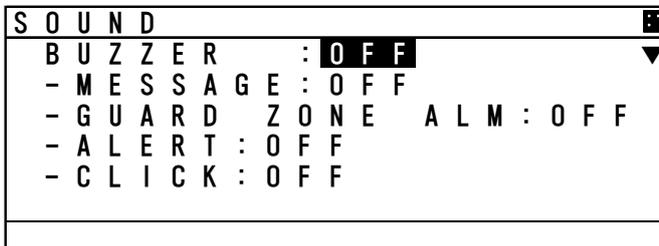


If "OFF" is selected at "BUZZER", all 4 settings are changed into OFF.

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

Note) Sound of Caution is always OFF, since audible signal for Caution is not allowed.

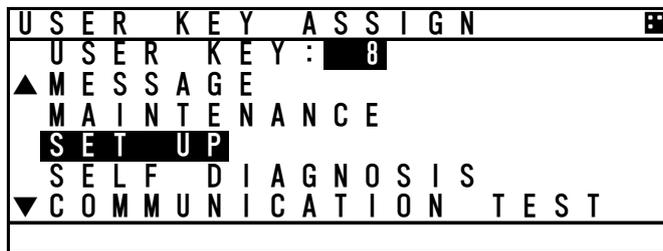
BAM disabled:



BUZZER NAME	When the sound is generated	Audible signal
MESSAGE	In case of receiving message	A long audible signal
GUARD ZONE ALM	In case some ships enter in the guard zone range	2 long audible signals
WARNING/ALERT	In case some failure alert occur	2 short audible signals
CLICK	In case AIS is operated with keys	A single audible signal

### c) User Key Assign

Select **3.USER KEY ASSIGN**, User key assignment screen is displayed.  
In this menu, Assignment to USER key(  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 ALERT	Displays ALERT INFORMATION screen
12	SENSOR STATUS	Displays SENSOR STATUS menu
13	MY CONTROLLER	Displays MY CONTROLLER menu
14	REGIONAL CHANNEL	Displays REGIONAL CH SETTING
15	PASSWORD	Displays PASSWORD screen
16	LOCATING DEVICE	Displays LOCATING DEVICE 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.

```
REGIONAL CHANNEL
1. CH A : 2087
2. CH B : 2088
3. TX / RX MODE CH A , B
   : TX / RX , TX / RX
4. TX POWER : HIGH
▼ 5. ZONE SIZE : 5NM
1 / 3
```

```
REGIONAL CHANNEL
▲ 6. AREA : . /
   ( NE ) : . /
7. AREA : . /
   ( SW ) : . /
▼
2 / 3
```

```
REGIONAL CHANNEL
▲ 8. SOURCE :
   MMSI :
3 / 3
```

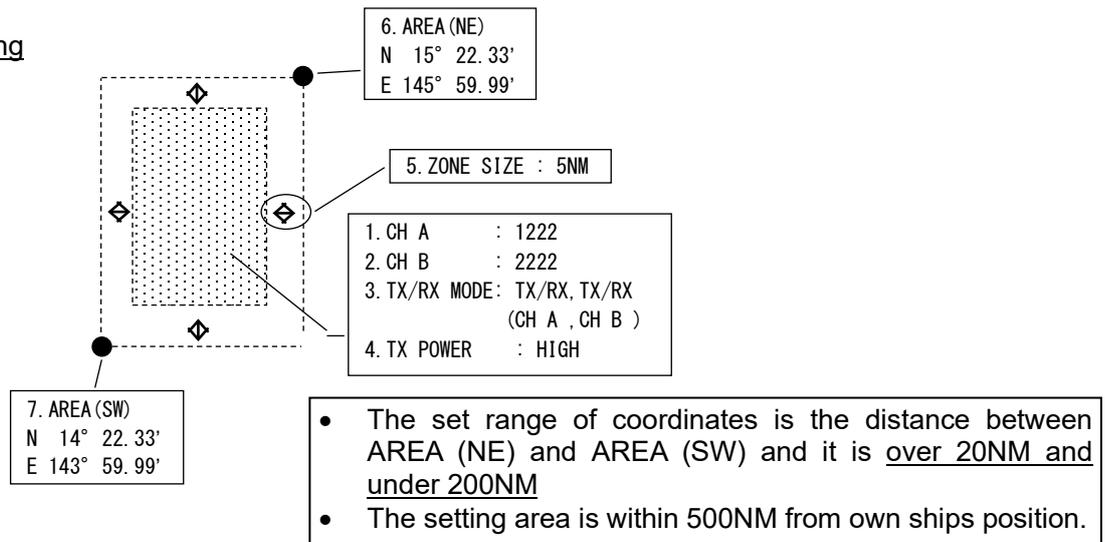
In addition to the channel management information by this AIS

- 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



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 next 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

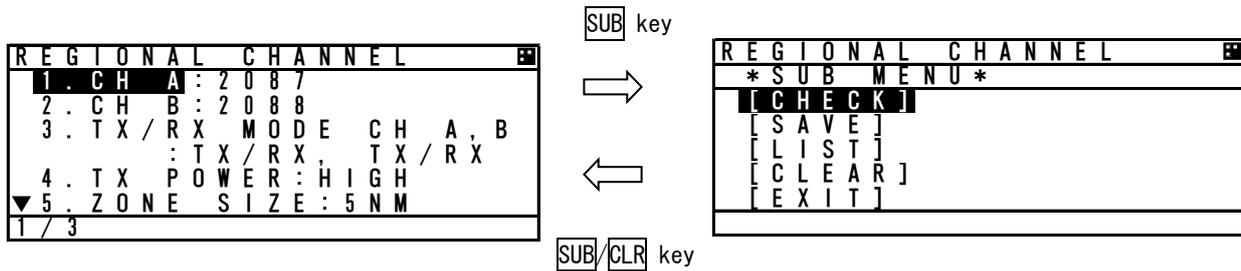
MMSI..... MMSI number of the station which operates the setting indication.

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

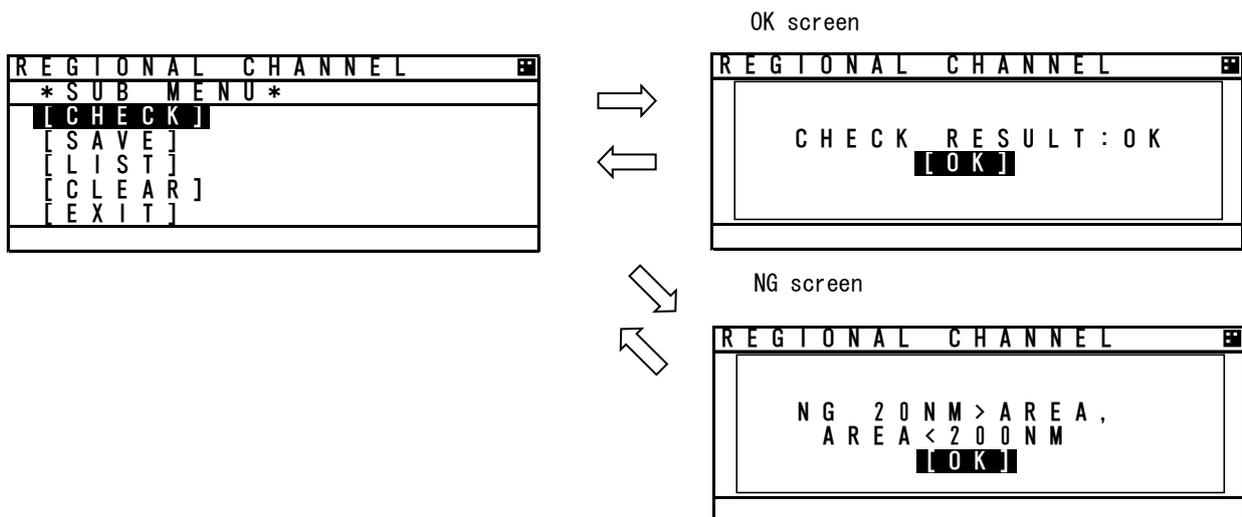
Check the regional management setting whether it is based on the restriction or not.  
If there are no errors, the setting can be saved



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

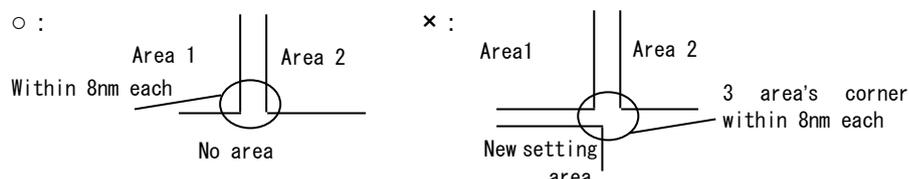
Select **[CHECK]** and push ENT key, the popup screen which shows the result is appeared.



### 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 <sup>(*)</sup>	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

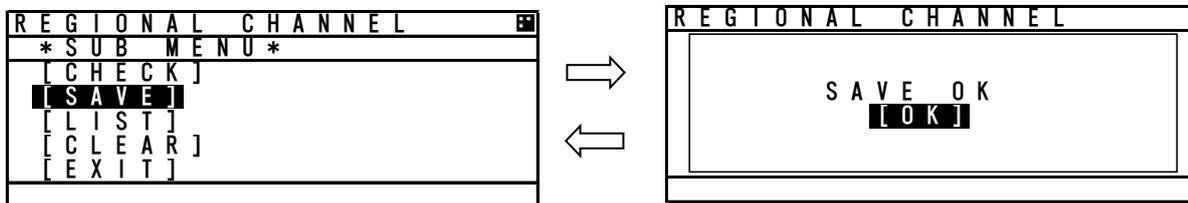
(\*) : In case of the condition below, AREA CORNER ERR is appeared.



**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.

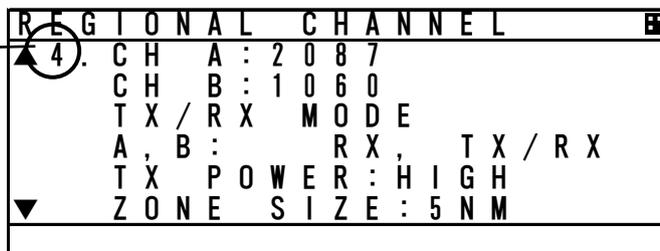


**d) Confirmation of saved data**

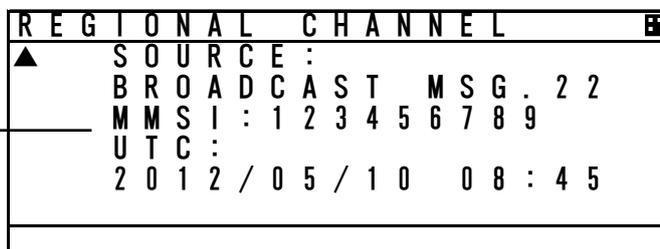
Select [LIST] in the SUB menu, Channel management information lists are displayed.  
The list can be scrolled by ▲ key or ▼ key.  
If [CLR] key is selected, the display is switched to SUB menu screen.  
If there are no saved data, "NO DATA" is appeared.

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** and enter password, the transmission power can be set.

SET UP	
1.	DATE & TIME
2.	MY CONTROLLER
3.	REGIONAL CHANNEL
4.	PWR REDUCT : <b>NORMAL</b> ▼
5.	GROUP SHIP
6.	EXT STC SET : OFF

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

CH MANAGEMENT CHANGE	
<b>[OK]</b>	

If the power setting is changed, Popup is appeared as shown left.

**⚠ Caution :** In the case of the following conditions, Popup is displayed.  
Nav Status : moored, and Type of ship : Tanker, and SOG<3knot

LIST SORT : RANGE				
BRG°	RNG NM	ETmin	NAME	
219	0.20	1	SART	
<b>152</b>	<b>0.44</b>	<b>2</b>	<b>JRCO &gt;</b>	
192	1.30	3	JRCO >	
72	1.46	0	TOKY >	
▼ 215	3.64	5	AICH >	
2 / 200		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.

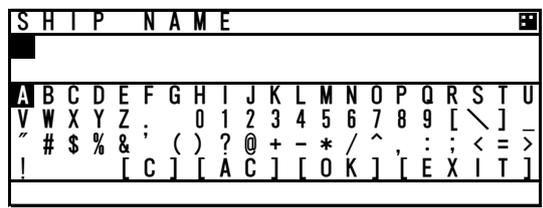
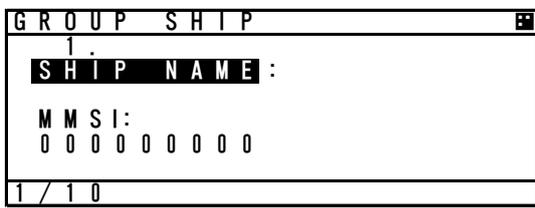
The number of registration is up to 10.

These registrations can be confirmed with ▲ key or ▼ key.

GROUP SHIP	
<b>1</b>	SHIP NAME :
	MMSI:
	000000000
1 / 10	

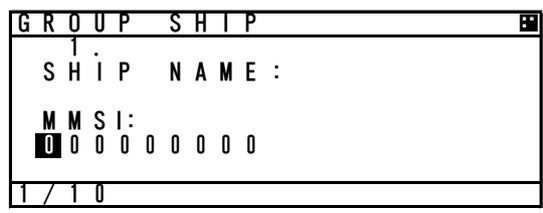
**a) Input name**

- 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**

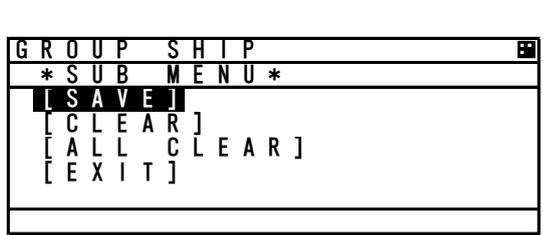
- After the inputting the name, select **MMSI** and press **ENT** key, and then MMSI can be inputted.
- MMSI can be inputted one digit at a time. (refer to 5.2.5 Numerical Input)
- After inputting the last digit, press **ENT** key and MMSI setting is finished. The screen move to the GROUP SHIP screen.



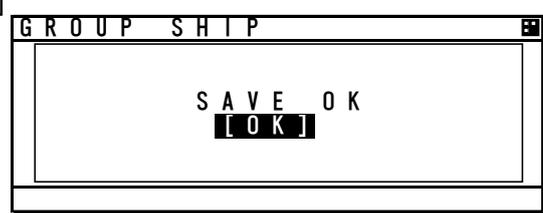
**c) Save and Clear**

This item is as follows

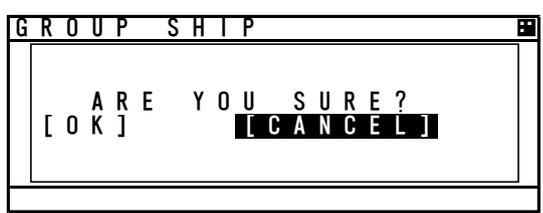
- SAVE ..... Save the input after editing
- CLEAR ..... Erase the register which is selected or edited and switch to GROUP SHIP screen
- ALL CLEAR ..... Erase all registrations and switch to GROUP SHIP screen
- EXIT ..... Return to SET UP menu



Select [SAVE]

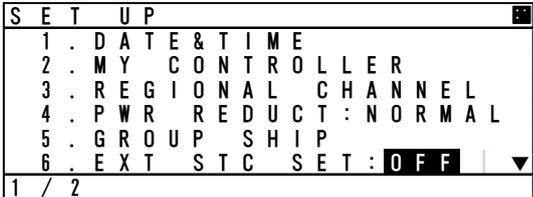


- If [CLEAR] or [ALL CLEAR] are selected, Popup screen is appeared. (as shown below)
- If [OK] is selected, the registration is deleted.
- If [CANCEL] is selected, switch to previous screen.



### 5.3.4.6 EXT STC Set

Select **6.EXT STC SET**, the setting of AIS static data from external equipments can be set.

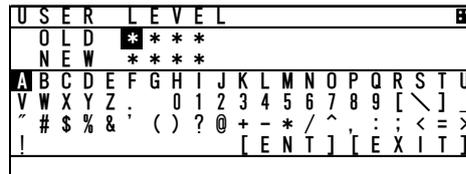
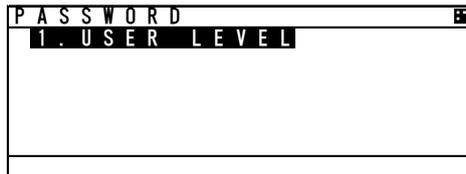


- Select from ON or OFF with ▲ key or ▼ key.
- OFF ... Set the AIS static data setting from AIS controller.
- ON .... Set the AIS static data setting from AIS controller and external equipments.

### 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.

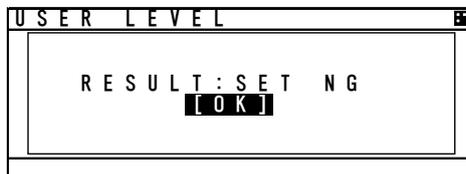
Select **1.USER LEVEL** and press **[ENT]** key.  
 If **[CLR]** is selected, the display is switched to SET UP menu screen.



1. The cursor is on the left 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.

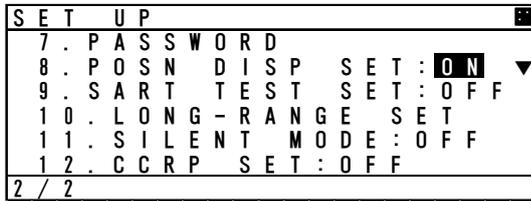


If password setting is not completed, Popup screen (as shown left) appears.  
 In this case, Select **[SAVE]** again or change to another password.

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

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

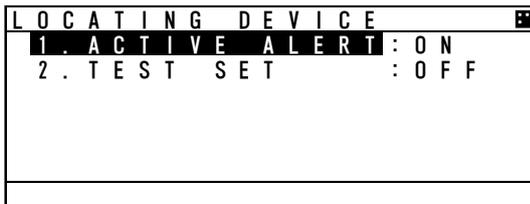
Select **8. POSN DISP SET**, the display style (display position of N/S, E/W) can be changed.



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 Locating Device Set

Select **9.LOCATING DEVICE**, Locating device setting screen is displayed.  
In this menu, each item concerned with the locating device can be set.



Select the operation

#### ACTIVE ALERT

OFF ... Active alert does not occur even when the locating device signal is received.

ON ... Active alert occurs when the locating device signal is received.

In either case, received signals are displayed at LIST SORT screen or GRAPHIC screen.

#### TEST SET

OFF ... Displays only main signal of locating devices.

When the main signal is received, AIS displays one of "AIS-SART", "MOB-AIS", "EPIRB-AIS".

ON ... Displays both test signal and main signal.

When the test signal is received, AIS displays one of "SART TEST", "MOB TEST", "EPIRB TEST" according to the device.

Note: Locating device is a group of devices including AIS-SART, EPIRB-AIS and MOB-AIS

### 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

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

```
LONG-RANGE
1. LR BROADCAST : OFF
2. CH A ( 2 0 7 5 ) : 0 0 0 0
3. CH B ( 2 0 7 6 ) : 0 0 0 0
4. LONG-RANGE : AUTO
[ SET ]
[ EXIT ]
```

1. LR BROADCAST···Select the use of long range broadcast
2. CH A (2075) ······display the channel for CH A transmission
3. CH B (2076) ······display 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.

```
LONG-RANGE
1. LR BROADCAST : ON
2. CH A ( 2 0 7 5 ) : 0 0 0 0
3. CH B ( 2 0 7 6 ) : 0 0 0 0
4. LONG-RANGE : AUTO
[ SET ]
[ EXIT ]
```

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.

Press **ENT** key to decide after selection

The channel for LR Broadcast is automatically set to CH A:2075 CH B:2076 when the above ON is selected. LR Broadcast is fixed to CH A:2075 CH B: 2076, and other channels cannot be set.

## 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.

```
LONG - RANGE
1 . LR  BROADCAST : ON
2 . CH  A ( 2 0 7 5 ) : 2 0 7 5
3 . CH  B ( 2 0 7 6 ) : 2 0 7 6
4 . LONG - RANGE : MANUAL
[ SET ]
[ EXIT ]
```

AUTO: Respond automatically  
MANUAL: Respond by manual

## c) Save the setting

Save the setting of item from 1 to 4.

```
LONG - RANGE
1 . LR  BROADCAST : ON
2 . CH  A ( 2 0 7 5 ) : 2 0 7 5
3 . CH  B ( 2 0 7 6 ) : 2 0 7 6
4 . LONG - RANGE : MANUAL
[ SET ]
[ EXIT ]
```

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.

```
SET UP
▲ 7 . PASSWORD
8 . POSN DISP SET : ON
9 . SART TEST SET : OFF
10 . LONG - RANGE SET
11 . SILENT MODE : OFF
12 . CCRP SET : OFF
2 / 2
```

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.

```
SET UP
▲ 7 . P A S S W O R D
8 . P O S N   D I S P   S E T : O N
9 . S A R T   T E S T   S E T : O F F
10 . L O N G - R A N G E   S E T
11 . S I L E N T   M O D E : O F F
12 . C C R P   S E T : O F F
2 / 2
```

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 BAM Display Setting (BAM DISP SET)

Select **13. BAM DISP SET**, it can be selected whether to display alerts with a state "active – responsibility transferred" in the AIS ALERT screen.

```
SET UP
13 . B A M   D I S P   S E T : O F F
14 . R E D U N D A N C Y   A L E R T
      : O F F
15 . P R E - S H A R E D   K E Y
3 / 3
```

Select from ON or OFF with ▲ key or ▼ key.  
OFF .. Responsibility transferred alert is not displayed.  
ON ... Responsibility transferred alert is displayed.  
Press **ENT** key to determine.

### 5.3.4.14 Alert setting for equipment users (REDUNDANCY ALERT)

Select **14. REDUNDANCAY ALERT**, and enter password, configure the display of alerts for equipment users.

For the alerts that will be displayed, refer to the service manual "3.2.2 System alert list and Countermeasures".

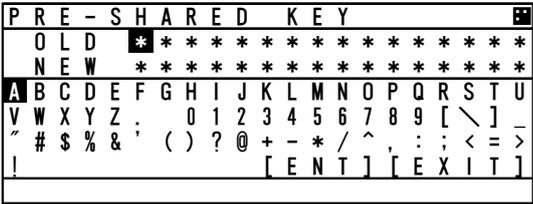
```
SET UP
13 . B A M   D I S P   S E T : O F F
14 . R E D U N D A N C Y   A L E R T
      : O F F
15 . P R E - S H A R E D   K E Y
3 / 3
```

Select from ON or OFF with ▲ key or ▼ key.  
OFF .. Alerts for equipment users does not display  
In alert list.  
ON ... Alerts for equipment users display in alert list.

Note: Even if set it to OFF, it is saved in the alert history.

### 5.3.4.15 Change Pre-shared key (PRE-SHARED KEY)

Select **13. PRE-SHARED KEY**, pre-shared key screen is displayed.  
 In this menu, set the pre-shared key that is used in case of changing the protected setting from the external equipment.  
 The pre-shared key is managed by ship's administrator.



The length of the key is 16 digits. Factory default key is "0000000000000000". All the rest is the same as PASSWORD screen. For more details, refer to 5.3.4.7 Change Password.

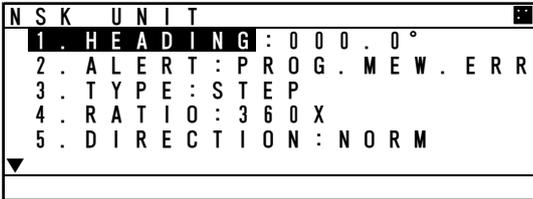
Note) The set password is used in the SSA sentence. In JHS-183, Type of method to calculate signature supports MD5, so this password is used to calculate hexacodes for MD5.

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

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

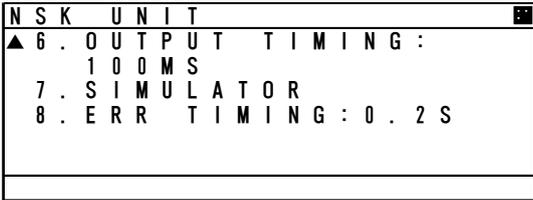
Select **16. NSK UNIT**, Own ship's heading and the setting of GYRO I/F BOX are displayed.

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



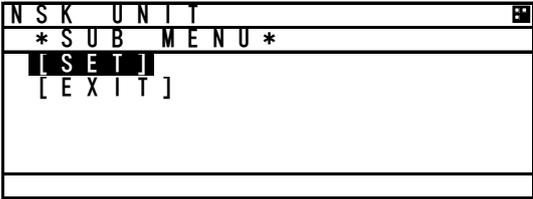
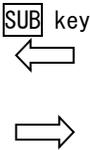
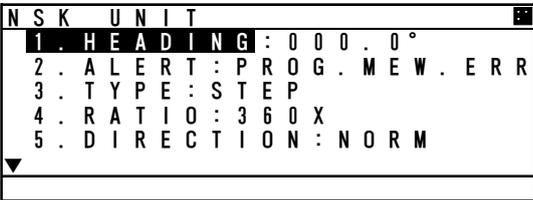
In this menu, Item 1.HEADING value can only be set.

Other items (from 2 to 8) show current GYRO I/F BOX setting and alert 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.



CLR key

/SUB key

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 alert 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. ALERT

Current alert of GYRO I/F BOX

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

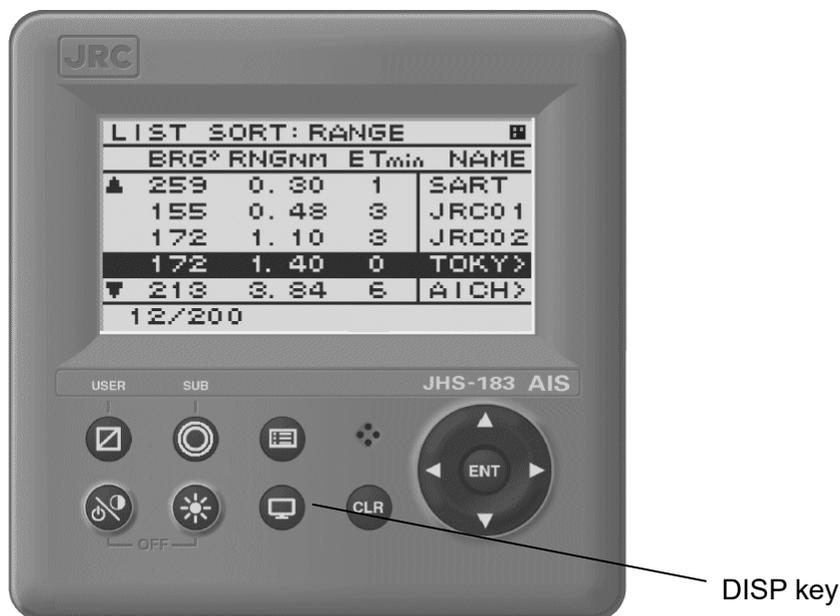
#### 8. ERR TIMING

Displays the alert detecting time

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

## 5.4 Explanation of Graphic Display

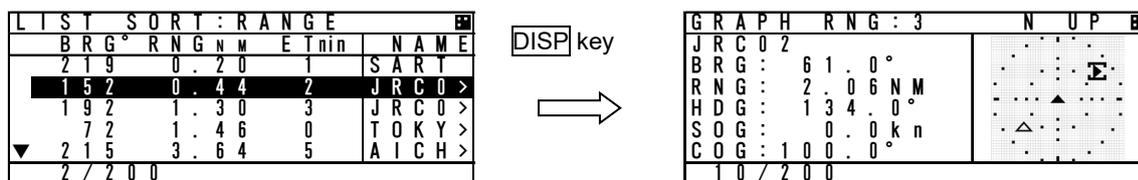
### 5.4.1 The Outline of Display



NCM-983 Panel side and Display

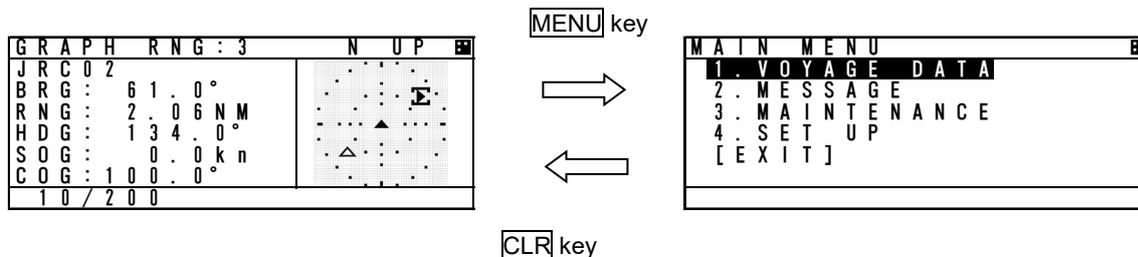
### 5.4.2 Operation for Graphic Display

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).

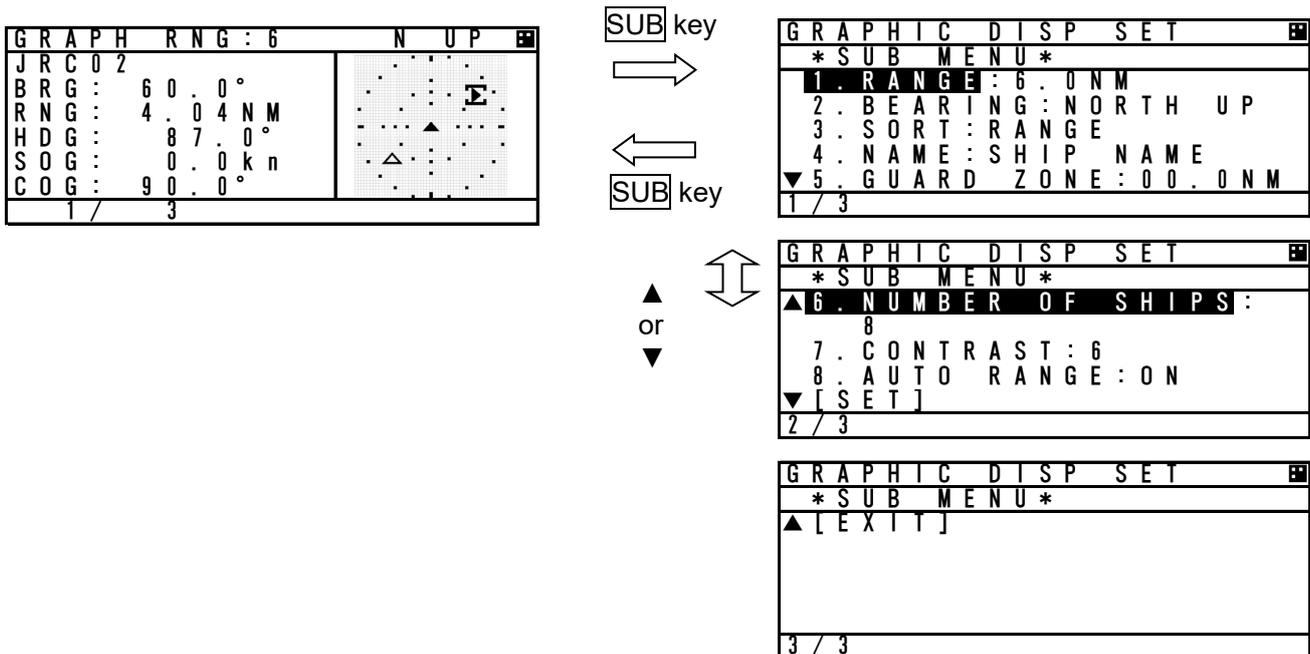
#### 5.4.3.1 Display the Setting Screen

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 contents return to MAIN MENU without changing.



#### 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 or MMSI.

#### **5. GUARD ZONE**

The range of GUARD ZONE ALERT can be set. The range is set from 0 to 99.9NM.  
If 00.0NM is set, the alert is cancelled.

(In order to see this operation, refer to 5.2.3.1 GUARD ZONE ALERT)

#### **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
Locating device	
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 alert circle		Setting range of guard zone Displayed by 30 degree interval circle

### 5.4.4 Selection of Other Ships

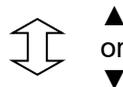
The cursor in Graphic display can move with ▲ key or ▼ key.

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.

GRAPH RNG : 6		N UP
JRC MARU		
HDG :	0 . 0 °	
SOG :	0 . 0 k n	
COG :	1 0 . 0 °	
1 /	3	



GRAPH RNG : 6		N UP
JRC 0 2		
BRG :	6 0 . 0 °	
RNG :	4 . 0 4 N M	
HDG :	8 7 . 0 °	
SOG :	0 . 0 k n	
COG :	9 0 . 0 °	
1 /	3	

### 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.

LIST SORT : RANGE				
BRG °	RNG N M	ET min	NAME	
2 1 9	2 . 0 0	1	N I H O N	
6 0	4 . 0 4	2	J R C 0 >	
1 3 2	7 . 1 5	3	B A S E >	
2 /	3			



GRAPH RNG : 6		N UP
JRC 0 2		
BRG :	6 0 . 0 °	
RNG :	4 . 0 4 N M	
HDG :	8 7 . 0 °	
SOG :	0 . 0 k n	
COG :	9 0 . 0 °	
1 /	3	



## 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. The set inside removes garbage and dust with a brush or a vacuum cleaner. No oil is needed because this unit has no moving mechanisms inside.
2	Looseness of parts	Inspect for looseness and correctly tighten the following: Screws, nuts, knobs, switches 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	
MMSI	: 431100001
NAME	:
JRC1	MARU
IMO NO	: 123456789
CALL SIGN	:
▼	1234567
1 / 6	

Own ship's detail1 information  
(Static information)

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

Own ship's detail2 information  
(Dynamic information)

OWN SHIP'S DETAIL1	
MMSI	: 431100001
NAME	:
JRC1	MARU
IMO NO	: 123456789
CALL SIGN	:
▼	1234567
1 / 6	

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

OWN SHIP'S DETAIL1	
▲ 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 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 DETAIL1	
▲ POSN DEVICE	:
GPS	:
NAV STATUS	:
ENGAGED IN FISHING	
▼	
3 / 6	

OWN SHIP'S DETAIL2	
▲ ACC FROM RAIM	:
NO RAIM PROCESS AVAILABLE	
▼	
3 / 4	

OWN SHIP'S DETAIL1	
▲ DESTINATION	:
JAPAN	
ETA (M/D, H:M)	:
DEC / 21, 12:23	
▼	
4 / 6	

OWN SHIP'S DETAIL2	
▲ SYNC STATE	:
UTC DIRECT	
RCV STATIONS	:
10	
▼	
4 / 4	

OWN SHIP'S DETAIL1	
▲ DRAUGHT	:
12.5m	
PERSONS	: 8191 OR MORE
TYPE OF SHIP	:
PASSENGER SHIPS	
▼	
5 / 6	

OWN SHIP'S DETAIL1	
▲ CARGO / STATUS	:
ALL SHIPS OF THIS TYPE	
▼	
6 / 6	

## 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.

```

OWN SHIP'S TRX
CH A      : 2 0 8 7
CH B      : 2 0 8 8
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 . 0 0 0 0
E 139° 45 . 0 0 0 0
AREA (SW)
N 35° 20 . 0 0 0 0
E 139° 15 . 0 0 0 0
▼
2 / 4
  
```

```

OWN SHIP'S TRX
▲ SOURCE :
MANUAL INPUT :
BASE STN MMSI :
UTC
▼ 2 0 1 2 / MAY / 1 6 0 2 : 0 9
3 / 4
  
```

```

OWN SHIP'S TRX
▲ ZONE SIZE : 5 NM
MODE : AUTONOMOUS
DATA LINK : FIXED
GROUP : NOT ASSIGNED
4 / 4
  
```

## 6.2.3 Confirming the Alert Status

Display the AIS alert status and confirm there is no alert. In order to display the AIS alert status, Select "Main Menu" → "3. MAINTENANCE" → "3. AIS ALERT".

Built-in integrity test (BIIT) is always working during AIS equipment operation to watch over any alerts and there is a visual and audible signal when it detects any alerts when it detect any alert. After the automatic displayed alert screen is closed by pressing **[CLR]** key, the current AIS alert can be confirmed with the AIS alert status screen.

If any alerts occur, confirm the alert occurrence conditions with the alert table.

```

AIS ALERT
1 2 / 0 5 / 1 7 0 2 : 1 0
3 1 0 8 V, B, W, 1 LOCATI
NG DEVICE
W / V AL
  
```

The present alert occurrence status when BAM enabled

```

AIS ALERT
NO DATA
  
```

The status when there is no alert

```

AIS ALERT
1 2 / 0 5 / 1 7 0 2 : 1 0
0 2 5 . A, V AIS : EXTERNA
L EPFS LOST
AL
  
```

The present alert occurrence status when BAM disabled

## JHS-183 Alert Table

Failure alert when BAM disabled

Alert No.	Indication	Alert 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.
007	UTC sync invalid	The internal GPS is not synchronized with PPS.
008	MKD connection lost	Communication between the transponder and controller is failed. (Transponder generates the alert.) AIS Transponder setting is initialized.
064	mkd connection lost	Communication between the transponder and controller is failed. (Controller generates the alert.)
009	Internal/external GNSS position mismatch	Internal/external GNSS position mismatch
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", "aground" and "not defined", and "SOG" is over 3kn. -Nav status is set "UNDER WAY SAILING" or "UNDER WAY USING ENGINE", and SOG is under 1kn.
011	Heading sensor offset	When SOG is greater than 5 kn and the difference between COG and HDT is greater than 45° for 5 min.
014	Active locating device	Locating device 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.
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.

Alert No.	Indication	Alert Occurrence Conditions
001 054	Tx malfunction Pa current error	The PA collector current became abnormal during transmission.
001 055	Tx malfunction Pa temp error	The PA temperature became abnormal during transmission.
002 051	Antenna VSWR exceeds limit Tx power down	Computed result of VSWR is 3 or greater but no greater than 4 during rated transmission output or transmission level is lowered.
001 002	Tx malfunction Antenna VSWR exceeds limit	The calculation results of VSWR became more than 4 and transmission stopped.
001 057	Tx malfunction Vr error	The antenna is open or broken.
001 060	Tx malfunction Tx pll unlock	The TX synthesizer is unlocked.

Failure alert when BAM enabled

Alert No.	priority	Alert title	Alert Occurrence Conditions
3108,1	W	LOCATING DEVICE	Locating device signal is received.
3062,1	W	GENERAL FAULT	Unusual detection of antenna output.
3008,1	W	TRANCEIVER FAIL	Unusual detection at the transmission.
3008,2	W	TRANCEIVER FAIL	Unusual detection of Rx channel 1 or 2
3015,1	W	LOST POSITION	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
3116,1	C	IMPAIRED RADIO	The calculation results of VSWR became more than 4 and transmission stopped.
3116,2	C	IMPAIRED RADIO	The RX CH A synthesizer is unlocked.
3116,3	C	IMPAIRED RADIO	The RX CH B synthesizer is unlocked.
3116,4	C	IMPAIRED RADIO	The RX CH70 synthesizer is unlocked.
3113,1	C	SYNC IN FALLBACK	The internal GPS is not synchronized with PPS.
3003,1	C	LOST EXT EPFS	No information of sensor position from external.
3119,1	C	MISSING COG	The internal GPS is invalid and the following commands has not been entered from the external sensor or data is invalid. RMC, VTG, OSD
3119,2	C	MISSING SOG	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
3119,3	C	MISSING HEADING	Any of the following commands has not been entered from the external sensor or data is invalid. HDT, OSD, THS
3119,4	C	MISSING ROT	Any of the following commands has not been entered from the external sensor or data is invalid. HDT, OSD, THS, ROT
3013,1	C	DOUBTFUL GNSS	Internal/external GNSS position mismatch
3013,2	C	DOUBTFUL HEADING	When SOG is greater than 5 kn and the difference between COG and HDT is greater than 45° for 5 min.
3019,1	C	WRONG NAVSTATUS	There is a difference between the setting of Nav status and actual Nav status. -Nav status is set from "at anchor", "moored", "aground" and "not defined", and "SOG" is over 3kn. -Nav status is set "UNDER WAY SAILING" or "UNDER WAY USING ENGINE", and SOG is under 1kn.
3009,1	C	LOST MKD	Communication between the transponder and controller is failed. (Transponder generates the alert.) AIS Transponder setting is initialized.

NOTE: Alert No. = Alert identifier and Alert instance

## 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.

SENSOR STATUS	
POSITION:	EXTERNAL GNSS
UTC CLOCK:	IN USE
SOG/COG:	EXTERNAL
HEADING:	VALID
▼ ROT:	IN USE
1 / 2	

SENSOR STATUS	
▲ POS N:	GP RMC
SOG:	GP RMC
COG:	GP RMC
HDG:	HE HDT
ROT:	TI ROT
2 / 2	

The variation of the sensors' conditions is tabulated below.

Sensor	Indication	Sensor's Condition
POSITION	EXTERNAL DGNSS	The external DGNSS is in use.(High accuracy)
	EXTERNAL GNSS	The external GNSS is in use.(Low accuracy)
	INT DGNSS (BEACON)	The internal DGNSS (beacon) is in use. (High accuracy)
	INT DGNSS (MSG.17)	The internal DGNSS (message 17) is in use. (High accuracy)
	INTERNAL GNSS	The internal GNSS is in use. (Low accuracy)
	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.(DC19V to DC35V)	Replace the power unit.
	DC input is not supplied to the connection box (option).	Check that the wiring is correct
	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 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. Replace the 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 alerting 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 alert number appears: 3116(2),3116(3),3116(4)/003,004,005. The synthesizer in the receiving circuit is unlocked.	Replace the transponder.
No AIS message is transmitted.	The following alert number appears. 3008(1),10001,10002/001, 052, 053: Power circuit fault	Replace the transponder.
	3008(1) /001, 054: PA collector current abnormal	
	3008(1),10003/001, 055: PA temperature abnormal	
	3008(1) /001, 058: PA protection circuit operated	
	3008(1),10007/001, 060: TX synthesizer unlock operated	
	3116(2),3116(3),3116(4)/003, 004, 005: RX synthesizer unlock operated	
	3008(1),10005/001, 057: Antenna not connected	
	3008(1),3116(1)/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.
External 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 sensor 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", "aground" or "not defined". 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.

Notation of alert number is as follows.

alert number(alert instance) of BAM/alert number of legacy ALR

For example, 3116(2),3116(3),3116(4)/003,004,005 means alert number 3116 with alert instance 2,3,4 or alert number 003,004,005 according to whether BAM function is enabled or not.

If the alert number has no alert instance other than 1, (1) is omitted.

### 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	(Option)
7	NSK UNIT	NQA-2066A	GYRO I/F BOX (Option)
8	Power Supply unit	NBD-577C	(Option)
9	Spare parts	7ZXJD0136	Fuse

### 6.3.3 Spare parts for periodic maintenance

Spare parts for periodic maintenance are followings.

About the exchange, contact our service center or agents.

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, if a malfunction occurs with the equipment while in standard usage in accordance with this instruction manual, we or our agencies will repair the malfunction at no charge at the store where the equipment was purchased or another location specified by JRC. If the malfunction occurs due to improper usage, fault, or any external abnormal condition such as fire, pollution, abnormal voltage, natural disaster (ex. thunder storms, earthquake) etc., JRC will repair the equipment for a fee.  
Furthermore, regardless of the warranty period, orders of consumables will be charged.
- 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 alert 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.

Refer to the inside of the back cover for contact numbers and locations.



# 8. SPECIFICATIONS

## 8.1 General (JHS-183)

### (1) Applicable equipment standards

ITU-R .1371-5(2014)	Technical characteristics for an automatic identification system using time-division multiple access in the VHF maritime mobile band.
IEC61993-2(2018)	Class A shipborne equipment of the 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(2016)	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(2018)	Maritime navigation and radio communication equipment and systems –Digital interfaces - Part 450: Multiple talkers and multiple listeners – Ethernet interconnection
IEC62288(2014)	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
IEC 62923-1:2018,	Maritime navigation and radiocommunication equipment and systems – Bridge alert management – Part 1: Operational and performance requirements, methods of testing and required test results
IEC 62923-2:2018	Maritime navigation and radiocommunication equipment and systems – Bridge alert management – Part 2: Alert and cluster identifiers and other additional features

- (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 alert 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.
ALF,ARC	At the time of event generating	(Only when BAM function is enabled)
ALC,HBT	Every 30 second.	(Only when BAM function is enabled)
ALR (No alert)	Every 60 second.	An ALR sentence is output every 60sec when all alerts are none. (Only when BAM function is disabled)
ALR (active)	Every 30 second.	An ALR sentence is output every 30sec when the alert is generated one and more. (Only when BAM function is disabled)
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

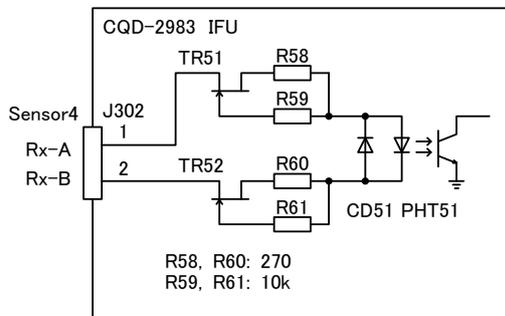
	Indication	Format	Supported Sentence	
			Input data	sentences
1	SENSOR1 <sup>※</sup> SENSOR2 <sup>※</sup> SENSOR3	IEC61162-1/2 (NMEA1.5-2.3)	Positioning system: Longitude/Latitude Position Accuracy	GNS, GLL, GGA, RMC
			Datum Reference	DTM
			Speed Over Ground (SOG)	VBW, VTG, RMC
			Course Over Ground (COG)	RMC, VTG
			Heading	HDT, THS
			RAIM indicator	GBS
			Rate Of Turn (ROT)	ROT
2	SENSOR4	IEC61162-1	The above	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 <sup>※</sup> AUX2 AUX3	IEC61162-2	Input: ABM, ACA, ACK, ACN, AIQ, AIR, BBM, EPV, HBT, LRI, LRF, POS, SSD, SPW, SSA, VDO, VDM, VSD Output: ABK, ACA, ACK, ACS, ALC, ALF, ALR, ARC, DSC, DSR, EPV, HBT, LRI, LRF, LR1, LR2, LR3, NAK, SSD, SPW, TXT, TRL, VDO, VDM, VSD, VER	
6	BIIT ALERT	IEC61993-2		
7	Pilot <sup>※</sup>	IEC61162-2	Input: ABM, ACA, ACK, ACN, AIQ, AIR, BBM, EPV, HBT, LRI, LRF, POS, SSD, SPW, SSA, VDO, VDM, VSD Output: ABK, ACA, ACK, ACS, ALR, DSC, DSR, EPV, HBT, HDT, LRI, LRF, LR1, LR2, LR3, NAK, ROT, SSD, SPW, THS, TXT, TRL, VDO, VDM, VSD, VER	

Note) When NQE-5183 connection box is equipped, all sentence are available.

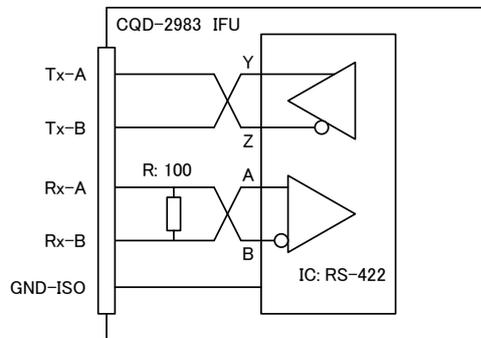
When it is not equipped, 4 terminations which added <sup>※</sup> mark can be available.

#### (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.

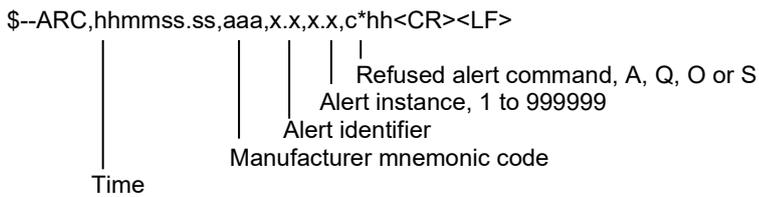
- Output drive capacity: Differential driver output voltage is 2.0V or more (RL=100 ohms), Driver output current 50mA
- Load on the line of inputs: 100 ohms. 1 IEC61162-2 output can drive 1 IEC61162-2 input.
- Electrical isolation of input circuits: Input circuits are electrically isolated from internal circuit with opt-isolator.
- The input impedance for the non terminated Sensor1/2/3: between 333k and 357k ohms.





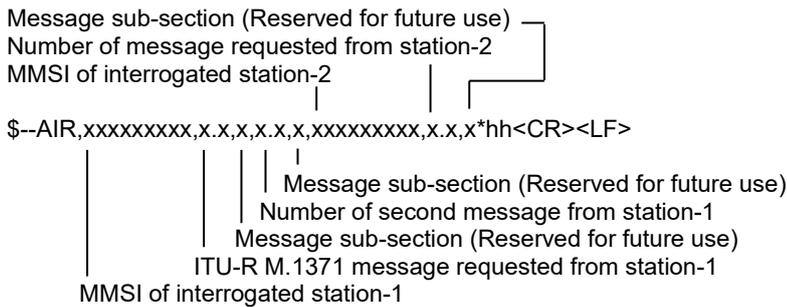
(2.1.10) ARC – Alert command refused

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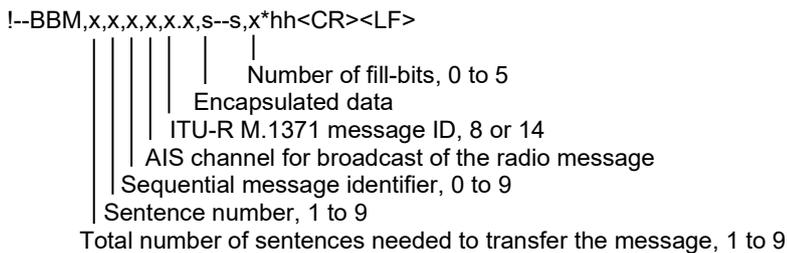
(2.1.11) AIR – AIS Interrogation Request

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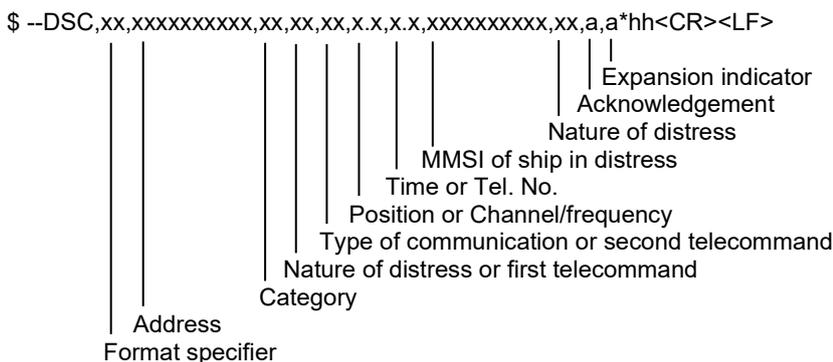
(2.1.12) BBM – Broadcast Binary Message

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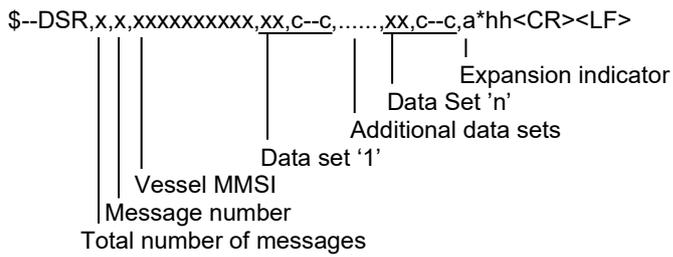
(2.1.13) DSC – Digital selective calling information

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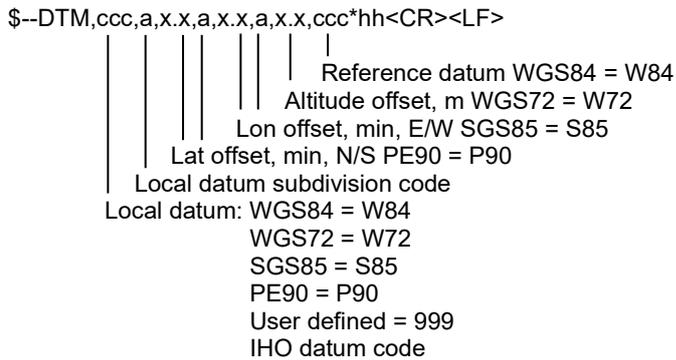
(2.1.14) DSR – DSC transponder response

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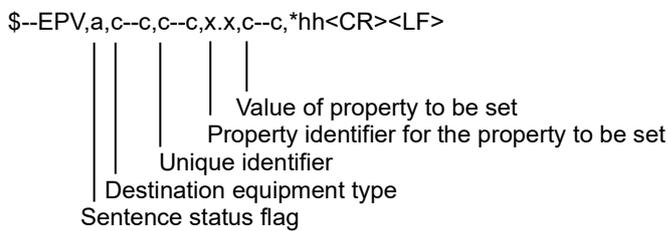
(2.1.15) DTM – Datum reference

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(2.1.16) EPV – Command or report equipment property value

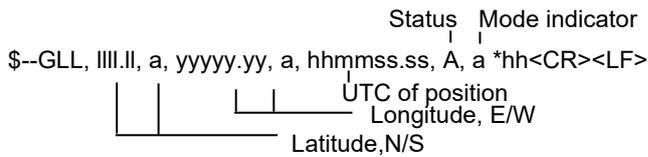
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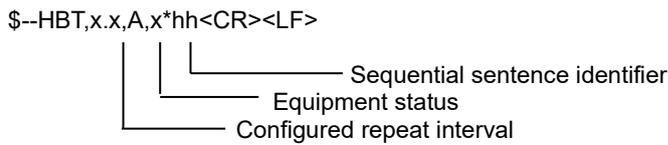
(2.1.20) GLL – Geographic position – Latitude/longitude

---



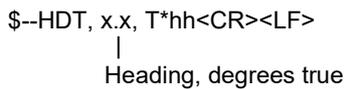
(2.1.21) HBT – Heartbeat supervision sentence

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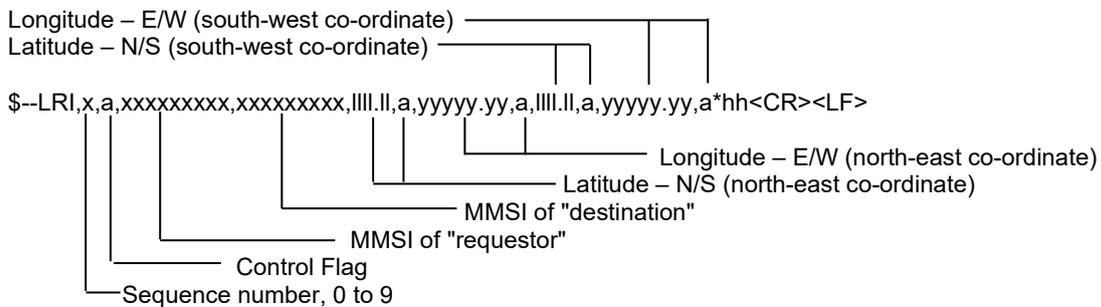
(2.1.22) HDT – Heading true

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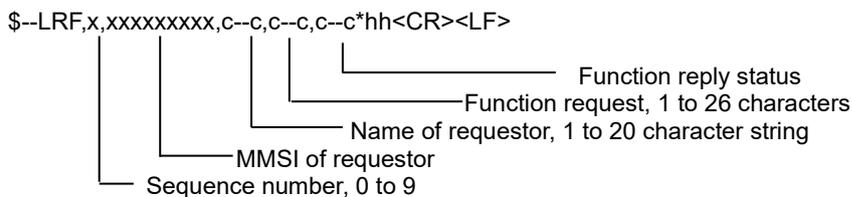
(2.1.23) LRI – Long-Range Interrogation

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(2.1.24) LRF – Long Range Function

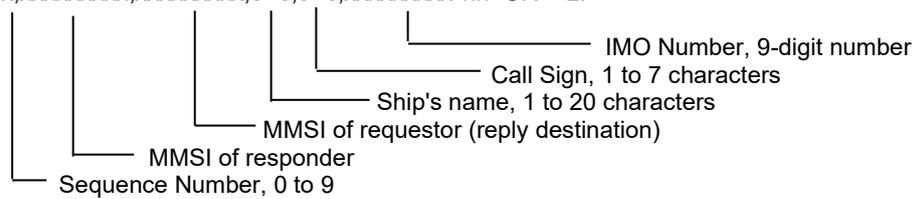
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(2.1.25) LR1 – Long-range Reply with destination for function request "A"

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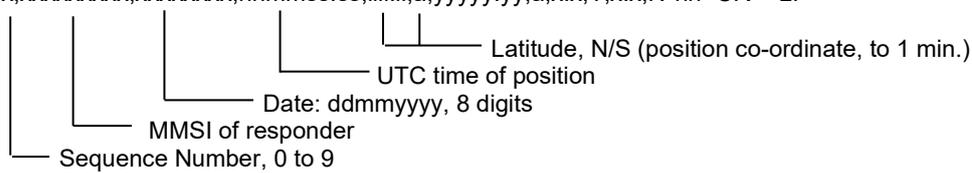
\$--LR1,x,xxxxxxxx,xxxxxxxx,c--c,c--c,xxxxxxxx\*hh<CR><LF>



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

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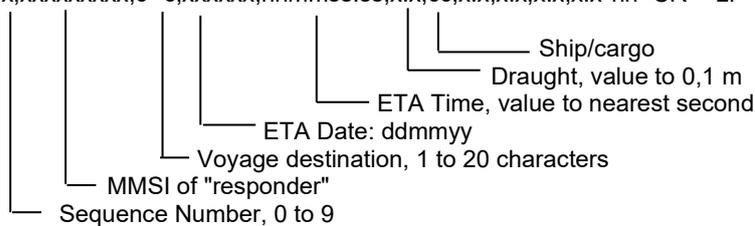
Speed over ground, value to 0,1 knot  
Course over ground True, value to nearest degree  
Longitude, E/W (position co-ordinate, to 1 min.)  
\$--LR2,x,xxxxxxxx,xxxxxxxx,hhmmss.ss,llll.ll,a,yyyy.yy,a,x,x,T,x,x,N\*hh<CR><LF>



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

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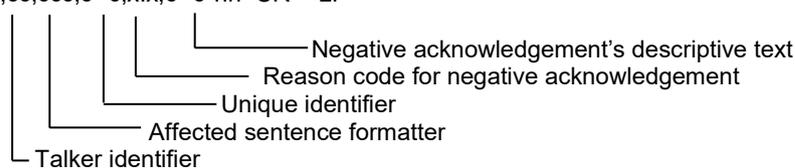
Persons, 0 to 8191  
Ship type  
Ship breadth, value to nearest m  
Ship length, value to nearest m  
\$--LR3,x,xxxxxxxx,c--c,xxxxxx,hhmmss.ss,x.x,cc,x.x,x.x,x.x,x.x\*hh<CR><LF>



(2.1.28) NAK – Negative acknowledgement

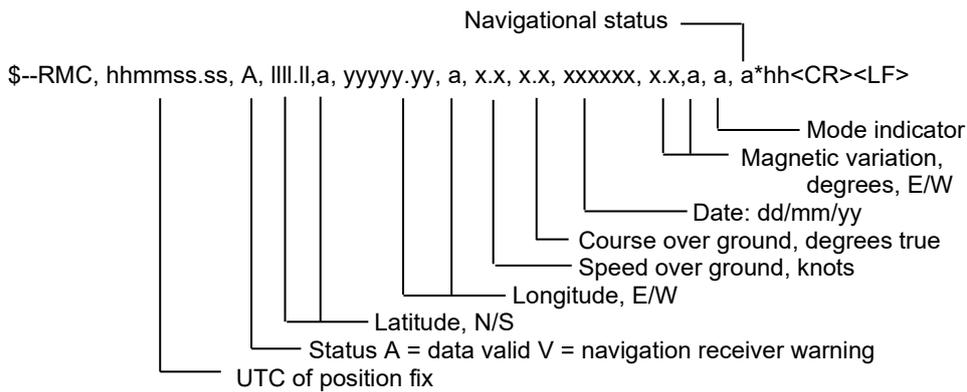
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\$--NAK,cc,ccc,c--c,x.x,c--c\*hh<CR><LF>



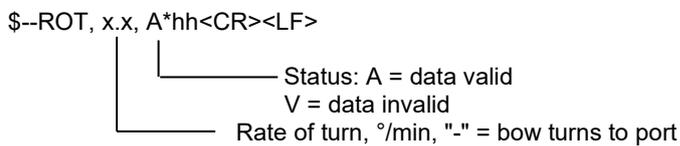
(2.1.29) RMC – Recommended minimum specific GNSS data

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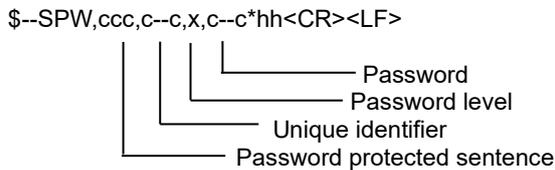
(2.1.30) ROT – Rate of turn

---



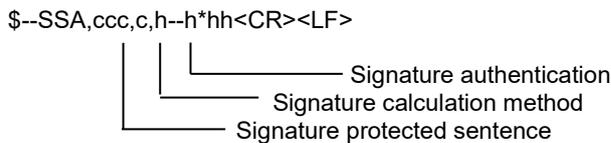
(2.1.31) SPW – Security password sentence

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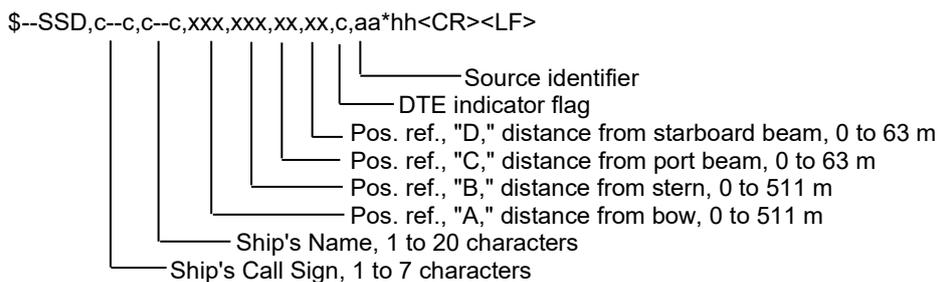
(2.1.32) SSA – Sender signature authentication

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(2.1.33) SSD – Ship Static Data

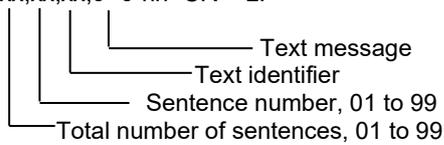
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(2.1.34) TXT – Text transmission

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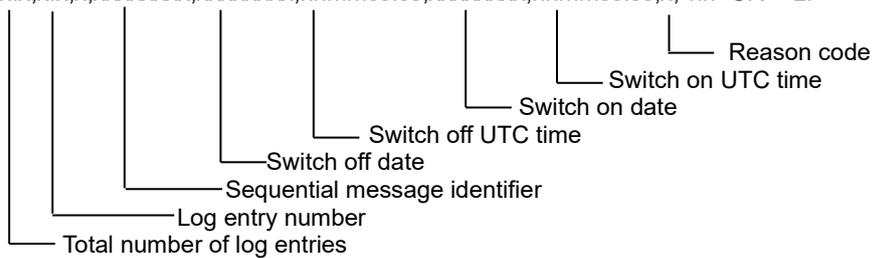
\$--TXT,xx,xx,xx,c--c\*hh<CR><LF>



(2.1.35) TRL – AIS transmitter non functioning log

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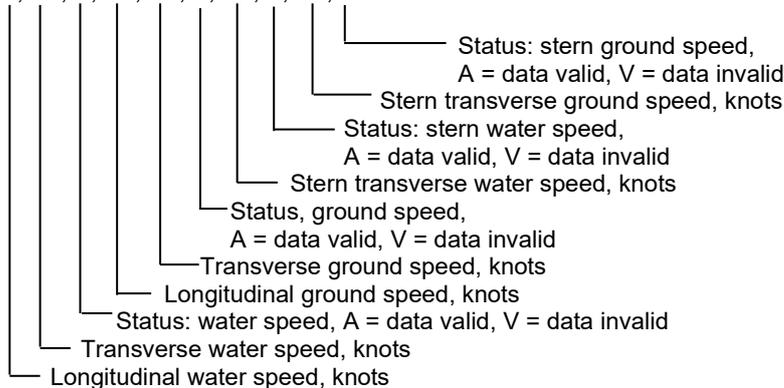
\$--TRL,x,x,x,x,x,xxxxxxxx,xxxxxxxx,hhmmss.ss,xxxxxxxx,hhmmss.ss,x,\*hh<CR><LF>



(2.1.36) VBW – Dual ground/water speed

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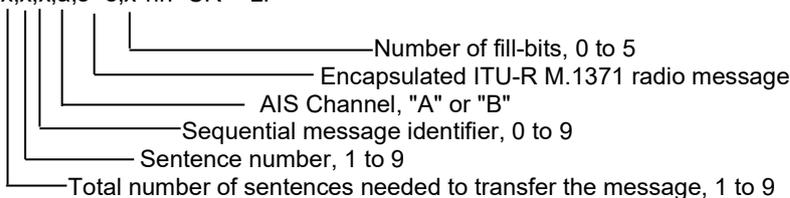
\$--VBW, x.x, x.x, A, x.x, x.x, A, x.x, A, x.x, A\*hh<CR><LF>



(2.1.37) VDM – VHF Data-link Message

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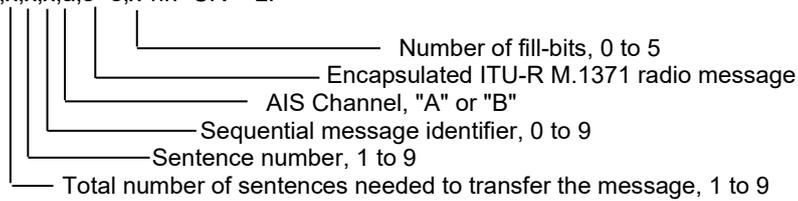
!--VDM,x,x,x,a,s--s,x\*hh<CR><LF>



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

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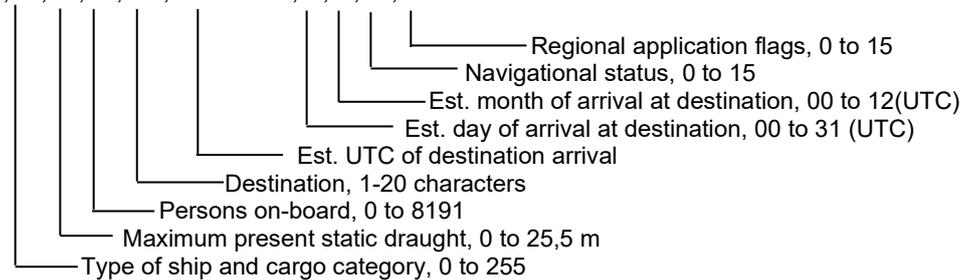
!-VDO,x,x,x,a,s--s,x\*hh<CR><LF>



(2.1.39) VSD – Voyage Static Data

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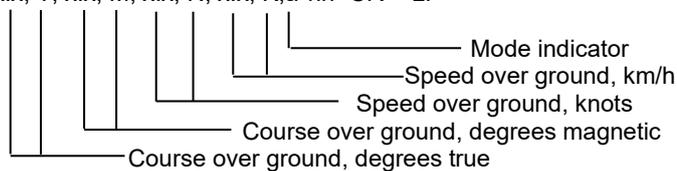
\$--VSD,x.x,x.x,x.x,c--c,hhmmss.ss,xx,xx,x.x,x.x\*hh<CR><LF>



(2.1.40) VTG – Course over ground and ground speed

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\$--VTG, x.x, T, x.x, M, x.x, N, x.x, K,a\*hh<CR><LF>



### 8.3.6 Alert output

ALF sentence when BAM enabled.

Alert No.	Alert text (1st ALF)	Additional information (2nd ALF)	Priority	Category
3108,1	Locating device	Check AIS targets	Warning	B
3062,1	General fault	Check AIS equipment	Warning	B
3008,1	Transceiver fail	Not transmitting, check AIS	Warning	B
3008,2	Transceiver fail	Not receiving, check AIS	Warning	B
3015,1	Lost position	Own ship position not transmitted	Warning	B
3116,1	Impaired radio	Reduced coverage (antenna VSWR)	Caution	B
3116,2	Impaired radio	Ch1 inoperative, check AIS	Caution	B
3116,3	Impaired radio	Ch2 inoperative, check AIS	Caution	B
3116,4	Impaired radio	DSC inoperative	Caution	B
3113,1	Sync in fallback	Check AIS for UTC time synchronisation	Caution	B
3003,1	Lost ext EPFS	Check external position sensor	Caution	B
3119,1	Missing COG	Not transmitting COG	Caution	B
3119,2	Missing SOG	Not transmitting SOG	Caution	B
3119,3	Missing Heading	Not transmitting Heading	Caution	B
3119,4	Missing ROT	Not transmitting Rate of Turn	Caution	B
3013,1	Doubtful GNSS	Int/Ext GNSS position mismatch	Caution	B
3013,2	Doubtful heading	Difference with COG exceeds limit	Caution	B
3019,1	Wrong NavStatus	Check NavStatus setting	Caution	B
3009,1	Lost MKD	Cannot display safety related messages	Caution	B

NOTE: Alert No. = Alert identifier and Alert instance

ALR sentence when BAM disabled.

Alert No.	Alert'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
007	UTC sync invalid	The internal GPS is not synchronized with PPS.
008	MKD CONNECTION LOST	Detected the connection between CONTROLLER and TRANSPONDER is lost.
009	Internal/external GNSS position mismatch	Internal/external GNSS position mismatch
010	NAVSTATUS INCORRECT	Mismatch information of navigation status.
011	Heading sensor offset	When SOG is greater than 5 kn and the difference between COG and HDT is greater than 45° for 5 min.
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 DOWN	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.
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)

## 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 alert 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

# Appendix

## List of standard terms and abbreviations

Term	Abbreviation
<i>Acknowledge</i>	ACK
<i>Acquire, Acquisition</i>	ACQ
<i>Acquisition Zone</i>	AZ
<i>Adjust, Adjustment</i>	ADJ
<i>Aft</i>	AFT
<i>Alarm</i>	ALARM
<i>Altitude</i>	ALT
<i>Amplitude Modulation</i>	AM
<i>Anchor Watch</i>	ANCH
<i>Antenna</i>	ANT
<i>Anti Clutter Rain</i>	RAIN
<i>Anti Clutter Sea</i>	SEA
<i>April</i>	APR
<i>Audible</i>	AUD
<i>August</i>	AUG
<i>Automatic</i>	AUTO
<i>Automatic Frequency Control</i>	AFC
<i>Automatic Gain Control</i>	AGC
<i>Automatic Identification System</i>	AIS
<i>Automatic Identification System – Search and Rescue Transmitter</i>	AIS-SART
<i>Automatic Radar Plotting Aid</i>	ARPA
<i>Autopilot</i>	AP
<i>Auxiliary System/Function</i>	AUX
<i>Available</i>	AVAIL
<i>Azimuth Indicator</i>	AZI
<i>Bridge Alert Management</i>	BAM
<i>Bridge Alert Management System</i>	BAMS
<i>Background</i>	BKGND
<i>Bearing</i>	BRG
<i>Bearing Waypoint To Waypoint</i>	BWW
<i>Bow Crossing Range</i>	BCR
<i>Bow Crossing Time</i>	BCT
<i>Brilliance</i>	BRILL

Term	Abbreviation
<i>Built in Test Equipment</i>	BITE
<i>Calibrate</i>	CAL
<i>Cancel</i>	CNCL
<i>Carried (for example, carried EBL origin)</i>	C
<i>Central Processing Unit</i>	CPU
<i>Centre</i>	CENT
<i>Change</i>	CHG
<i>Circularly Polarised</i>	CP
<i>Clear</i>	CLR
<i>Closest Point of Approach</i>	CPA
<i>Compact Disk Read Only Memory</i>	CDROM
<i>Consistent Common Reference Point</i>	CCRP
<i>Consistent Common Reference System</i>	CCRS
<i>Contrast</i>	CONT
<i>Coordinated Universal Time</i>	UTC
<i>Correction</i>	CORR
<i>Course</i>	CRS
<i>Course Over the Ground</i>	COG
<i>Course Through the Water</i>	CTW
<i>Course To Steer</i>	CTS
<i>Course Up</i>	C UP
<i>Cross Track Distance</i>	XTD
<i>Cursor</i>	CURS
<i>Dangerous Goods</i>	DG
<i>Date</i>	DATE
<i>Day</i>	DAY
<i>Dead Reckoning, Dead Reckoned Position</i>	DR
<i>December</i>	DEC
<i>Decrease</i>	DECR
<i>Delay</i>	DELAY
<i>Delete</i>	DEL
<i>Departure</i>	DEP
<i>Depth</i>	DPTH

Term	Abbreviation
<i>Destination</i>	<i>DEST</i>
<i>Deviation</i>	<i>DEV</i>
<i>Differential GLONASS</i>	<i>DGLONASS</i>
<i>Differential GNSS</i>	<i>DGNSS</i>
<i>Differential GPS</i>	<i>DGPS</i>
<i>Digital Selective Calling</i>	<i>DSC</i>
<i>Display</i>	<i>DISP</i>
<i>Distance</i>	<i>DIST</i>
<i>Distance Root Mean Square</i>	<i>DRMS</i>
<i>Distance To Go</i>	<i>DTG</i>
<i>Drift</i>	<i>DRIFT</i>
<i>Dropped (for example, dropped EBL origin)</i>	<i>D</i>
<i>East</i>	<i>E</i>
<i>Echo Reference</i>	<i>REF</i>
<i>Electronic Bearing Line</i>	<i>EBL</i>
<i>Electronic Chart Display and Information System</i>	<i>ECDIS</i>
<i>Electronic Chart System</i>	<i>ECS</i>
<i>Electronic Navigational Chart</i>	<i>ENC</i>
<i>Electronic Position Fixing System</i>	<i>EPFS</i>
<i>Electronic Range and Bearing Line</i>	<i>ERBL</i>
<i>Emergency Position Indicating Radio Beacon</i>	<i>EPIRB</i>
<i>Emergency Position Indicating Radio Beacon – AIS</i>	<i>EPIRB-AIS</i>
<i>Enhance</i>	<i>ENH</i>
<i>Enter</i>	<i>ENT</i>
<i>Equipment</i>	<i>EQUIP</i>
<i>Error</i>	<i>ERR</i>
<i>Estimated Position</i>	<i>EP</i>
<i>Estimated Time of Arrival</i>	<i>ETA</i>
<i>Estimated Time of Departure</i>	<i>ETD</i>
<i>European Geo-Stationary Navigational Overlay System</i>	<i>EGNOS</i>
<i>Event</i>	<i>EVENT</i>
<i>Exclusion Zone</i>	<i>EZ</i>
<i>External</i>	<i>EXT</i>
<i>F-Band (applies to radar)</i>	<i>F-Band</i>
<i>February</i>	<i>FEB</i>
<i>Foreword</i>	<i>FWD</i>
<i>Fishing Vessel</i>	<i>FISH</i>

Term	Abbreviation
<i>Fix</i>	<i>FIX</i>
<i>Forward</i>	<i>FWD</i>
<i>Frequency</i>	<i>FREQ</i>
<i>Frequency Modulation</i>	<i>FM</i>
<i>Full</i>	<i>FULL</i>
<i>Gain</i>	<i>GAIN</i>
<i>Geographics</i>	<i>GEOG</i>
<i>Geometric Dilution Of Precision</i>	<i>GDOP</i>
<i>Global Maritime Distress and Safety System</i>	<i>GMDSS</i>
<i>Global Navigation Satellite System</i>	<i>GNSS</i>
<i>Global Orbiting Navigation Satellite System</i>	<i>GLONASS</i>
<i>Global Positioning System</i>	<i>GPS</i>
<i>Great Circle</i>	<i>GC</i>
<i>Grid</i>	<i>GRID</i>
<i>Ground</i>	<i>GND</i>
<i>Grounding Avoidance System</i>	<i>GAS</i>
<i>Group Repetition Interval</i>	<i>GRI</i>
<i>Guard Zone</i>	<i>GZ</i>
<i>Gyro</i>	<i>GYRO</i>
<i>Harmful Substances (applies to AIS)</i>	<i>HS</i>
<i>Head Up</i>	<i>H UP</i>
<i>Heading</i>	<i>HDG</i>
<i>Heading Control System</i>	<i>HCS</i>
<i>Heading Line</i>	<i>HL</i>
<i>High Frequency</i>	<i>HF</i>
<i>High Speed Craft</i>	<i>HSC</i>
<i>Horizontal Dilution Of Precision</i>	<i>HDOP</i>
<i>Identification</i>	<i>ID</i>
<i>In</i>	<i>IN</i>
<i>Increase</i>	<i>INCR</i>
<i>Indication</i>	<i>IND</i>
<i>Information</i>	<i>INFO</i>
<i>Infrared</i>	<i>INF RED</i>
<i>Initialisation</i>	<i>INIT</i>
<i>Input</i>	<i>INP</i>
<i>Input/Output</i>	<i>I/O</i>
<i>Integrated Navigation System</i>	<i>INS</i>
<i>Integrated Radio Communication System</i>	<i>IRCS</i>
<i>Interference Rejection</i>	<i>IR</i>

<b>Term</b>	<b>Abbreviation</b>
<i>Interswitch</i>	<i>ISW</i>
<i>Interval</i>	<i>INT</i>
<i>January</i>	<i>JAN</i>
<i>July</i>	<i>JUL</i>
<i>June</i>	<i>JUN</i>
<i>Label</i>	<i>LBL</i>
<i>Latitude</i>	<i>LAT</i>
<i>Latitude/Longitude</i>	<i>L/L</i>
<i>Leeway</i>	<i>LWY</i>
<i>Limit</i>	<i>LIM</i>
<i>Line Of Position</i>	<i>LOP</i>
<i>Log</i>	<i>LOG</i>
<i>Long Pulse</i>	<i>LP</i>
<i>Long Range</i>	<i>LR</i>
<i>Longitude</i>	<i>LON</i>
<i>Loran</i>	<i>LORAN</i>
<i>Lost Target</i>	<i>LOST TGT</i>
<i>Low Frequency</i>	<i>LF</i>
<i>Magnetic</i>	<i>MAG</i>
<i>Man Overboard</i>	<i>MOB</i>
<i>Manoeuvre</i>	<i>MVR</i>
<i>Manual</i>	<i>MAN</i>
<i>Map(s)</i>	<i>MAP</i>
<i>March</i>	<i>MAR</i>
<i>Maritime Mobile Services Identity number</i>	<i>MMSI</i>
<i>Maritime Pollutant (applies to AIS)</i>	<i>MP</i>
<i>Maritime Safety Information</i>	<i>MSI</i>
<i>Marker</i>	<i>MKR</i>
<i>Master</i>	<i>MSTR</i>
<i>Maximum</i>	<i>MAX</i>
<i>May</i>	<i>MAY</i>
<i>Medium Frequency</i>	<i>MF</i>
<i>Medium Pulse</i>	<i>MP</i>
<i>Menu</i>	<i>MENU</i>
<i>Minimum</i>	<i>MIN</i>
<i>Missing</i>	<i>MISSING</i>
<i>Mute</i>	<i>MUTE</i>
<i>Navigation</i>	<i>NAV</i>
<i>Night</i>	<i>NT</i>
<i>Normal</i>	<i>NORM</i>
<i>North</i>	<i>N</i>
<i>North Up</i>	<i>N UP</i>

<b>Term</b>	<b>Abbreviation</b>
<i>Not Less Than</i>	<i>NLT</i>
<i>Not More Than</i>	<i>NMT</i>
<i>Not Under Command</i>	<i>NUC</i>
<i>November</i>	<i>NOV</i>
<i>October</i>	<i>OCT</i>
<i>Off</i>	<i>OFF</i>
<i>Officer On Watch</i>	<i>OOW</i>
<i>Offset</i>	<i>OFFSET</i>
<i>On</i>	<i>ON</i>
<i>Out/Output</i>	<i>OUT</i>
<i>Own Ship</i>	<i>OS</i>
<i>Panel Illumination</i>	<i>PANEL</i>
<i>Parallel Index Line</i>	<i>PI</i>
<i>Past Positions</i>	<i>PAST POSN</i>
<i>Passenger Vessel</i>	<i>PASSV</i>
<i>Performance Monitor</i>	<i>MON</i>
<i>Permanent</i>	<i>PERM</i>
<i>Person Overboard</i>	<i>POB</i>
<i>Personal Identification Number</i>	<i>PIN</i>
<i>Pilot Vessel</i>	<i>PILOT</i>
<i>Port/Portside</i>	<i>PORT</i>
<i>Position</i>	<i>POSN</i>
<i>Positional Dilution Of Precision</i>	<i>PDOP</i>
<i>Power</i>	<i>PWR</i>
<i>Predicted</i>	<i>PRED</i>
<i>Predicted Area of Danger</i>	<i>PAD</i>
<i>Predicted Point of Collision</i>	<i>PPC</i>
<i>Pulse Length</i>	<i>PL</i>
<i>Pulse Modulation</i>	<i>PM</i>
<i>Pulse Repetition Frequency</i>	<i>PRF</i>
<i>Pulse Repetition Rate</i>	<i>PRR</i>
<i>Pulses Per Revolution</i>	<i>PPR</i>
<i>Racon</i>	<i>RACON</i>
<i>Radar</i>	<i>RADAR</i>
<i>Radar Plotting</i>	<i>RP</i>
<i>Radar Transponder</i>	<i>TPR</i>
<i>Radius</i>	<i>RAD</i>
<i>Rain</i>	<i>RAIN</i>
<i>Range</i>	<i>RNG</i>
<i>Range Rings</i>	<i>RR</i>
<i>Raster Chart Display System</i>	<i>RCDS</i>

<b>Term</b>	<b>Abbreviation</b>
<i>Raster Navigational Chart</i>	<i>RNC</i>
<i>Rate Of Turn</i>	<i>ROT</i>
<i>Real-time Kinematic</i>	<i>RTK</i>
<i>Receive</i>	<i>RX</i>
<i>Receiver</i>	<i>RCDR</i>
<i>Receiver Autonomous Integrity Monitoring</i>	<i>RAIM</i>
<i>Reference</i>	<i>REF</i>
<i>Relative</i>	<i>REL</i>
<i>Relative Motion</i>	<i>RM</i>
<i>Revolutions per Minute</i>	<i>RPM</i>
<i>Rhumb Line</i>	<i>RL</i>
<i>Roll On/Roll Off Vessel</i>	<i>RoRo</i>
<i>Root Mean Square</i>	<i>RMS</i>
<i>Route</i>	<i>ROUTE</i>
<i>Safety Contour</i>	<i>SF CNT</i>
<i>Sailing Vessel</i>	<i>SAIL</i>
<i>Satellite</i>	<i>SAT</i>
<i>S-Band</i>	<i>S-BAND</i>
<i>Scan to Scan</i>	<i>SC/SC</i>
<i>Search And Rescue</i>	<i>SAR</i>
<i>Search And Rescue Transponder</i>	<i>SART</i>
<i>Search And Rescue Vessel</i>	<i>SARV</i>
<i>Select</i>	<i>SEL</i>
<i>September</i>	<i>SEP</i>
<i>Sequence</i>	<i>SEQ</i>
<i>Set (i.e., set and drift, or setting a value)</i>	<i>SET</i>
<i>Ship's Time</i>	<i>TIME</i>
<i>Short Pulse</i>	<i>SP</i>
<i>Signal to Noise Ratio</i>	<i>SNR</i>
<i>Simulation</i>	<i>SIM</i>
<i>Slave</i>	<i>SLAVE</i>
<i>South</i>	<i>S</i>
<i>Speed</i>	<i>SPD</i>
<i>Speed and Distance Measuring Equipment</i>	<i>SDME</i>
<i>Speed Over the Ground</i>	<i>SOG</i>
<i>Speed Through the Water</i>	<i>STW</i>
<i>Stabilized</i>	<i>STAB</i>
<i>Standby</i>	<i>STBY</i>
<i>Starboard/Starboard Side</i>	<i>STBD</i>
<i>Station</i>	<i>STN</i>
<i>Symbol(s)</i>	<i>SYM</i>

<b>Term</b>	<b>Abbreviation</b>
<i>Synchronised/ Synchronous</i>	<i>SYNC</i>
<i>System Electronic Navigational Chart</i>	<i>SENC</i>
<i>Target</i>	<i>TGT</i>
<i>Target Tracking</i>	<i>TT</i>
<i>Test</i>	<i>TEST</i>
<i>Time</i>	<i>TIME</i>
<i>Time Difference</i>	<i>TD</i>
<i>Time Dilution Of Precision</i>	<i>TDOP</i>
<i>Time Of Arrival</i>	<i>TOA</i>
<i>Time Of Departure</i>	<i>TOD</i>
<i>Time to CPA</i>	<i>TCPA</i>
<i>Time To Go</i>	<i>TTG</i>
<i>Time to Wheel Over Line</i>	<i>TWOL</i>
<i>Track</i>	<i>TRK</i>
<i>Track Control System</i>	<i>TCS</i>
<i>Tracking</i>	<i>TRKG</i>
<i>Trail(s)</i>	<i>TRAIL</i>
<i>Transmit and Receive</i>	<i>TXRX</i>
<i>Transceiver</i>	<i>TCVR</i>
<i>Transferred Line Of Position</i>	<i>TPL</i>
<i>Transmit</i>	<i>TX</i>
<i>Transmitter</i>	<i>TMTR</i>
<i>Transmitting Heading Device</i>	<i>THD</i>
<i>Trial</i>	<i>TRIAL</i>
<i>Trigger Pulse</i>	<i>TRIG</i>
<i>True</i>	<i>T</i>
<i>True Motion</i>	<i>TM</i>
<i>Tune</i>	<i>TUNE</i>
<i>Ultrahigh Frequency</i>	<i>UHF</i>
<i>Uninterruptible Power Supply</i>	<i>UPS</i>
<i>Universal Time, Coordinated</i>	<i>UTC</i>
<i>Universal Transverse Mercator</i>	<i>UTM</i>
<i>Unstabilised</i>	<i>UNSTAB</i>
<i>Variable Range Marker</i>	<i>VRM</i>
<i>Variation</i>	<i>VAR</i>
<i>Vector</i>	<i>VECT</i>
<i>Very High Frequency</i>	<i>VHF</i>
<i>Very Low Frequency</i>	<i>VLF</i>
<i>Vessel Aground</i>	<i>GRND</i>
<i>Vessel at Anchor</i>	<i>ANCH</i>

<b>Term</b>	<b>Abbreviation</b>
<i>Vessel Constrained by Draught</i>	VCD
<i>Vessel Engaged in Diving Operations</i>	DIVE
<i>Vessel Engaged in Dredging or Underwater Operations</i>	DRG
<i>Vessel Engaged in Towing Operations</i>	TOW
<i>Vessel Not Under Command</i>	NUC
<i>Vessel Restricted in Manoeuvrability</i>	RIM
<i>Vessel Traffic Service</i>	VTS
<i>Vessel Underway Using Engine</i>	UWE
<i>Video</i>	VID

<b>Term</b>	<b>Abbreviation</b>
Visual Display Unit	VDU
Voyage	VOY
<i>Voyage Data Recorder</i>	VDR
<i>Warning</i>	WARNING
<i>Water</i>	WAT
<i>Waypoint</i>	WPT
Waypoint Closure Velocity	WCV
<i>West</i>	W
<i>Wheel Over Line</i>	WOL
Wheel Over Point	WOP
<i>Wheel Over Time</i>	WOT
<i>World Geodetic System</i>	WGS
<i>X-Band</i>	X-BAND

<b>Unit</b>	<b>Abbreviation</b>
<i>cable</i>	<i>length cbl</i>
<i>centimetre</i>	<i>cm</i>
<i>cycles</i>	<i>per second cps</i>
<i>degree(s)</i>	<i>deg or °</i>
<i>fathom(s)</i>	<i>fm</i>
<i>feet/foot</i>	<i>ft</i>
<i>gigahertz</i>	<i>GHz</i>
<i>hectopascal</i>	<i>hPa</i>
<i>hertz</i>	<i>Hz</i>
<i>hour(s)</i>	<i>hr(s)</i>
<i>inch</i>	<i>in</i>
<i>kilohertz</i>	<i>kHz</i>
<i>kilometre</i>	<i>km</i>
<i>kilopascal</i>	<i>kPa</i>
<i>knot(s)</i>	<i>kn</i>
<i>megahertz</i>	<i>MHz</i>
<i>metre</i>	<i>m</i>
<i>minute(s)</i>	<i>min or ′</i>
<i>Nautical</i>	<i>Mile(s) NM</i>
<i>second(s)</i>	<i>s or ″</i>





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