

**Automatic Identification System**

**JHS-180**

**Instruction Manual**

**JRC** *Japan Radio Co., Ltd.*

## Preface

Thank you for purchasing JHS-180 Automatic Identification System.

JHS-180 is the Class A shipborne equipment of the universal Automatic Identification System.

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

## Before Operation

### Concerning the symbols

This manual uses the following symbols to explain correct operation and to prevent injury or damage to property.

The symbols and descriptions are as follows. Understand them before proceeding with this manual.



# WARNING

Indicates a warning that, if ignored, may result in serious injury or even death.



# CAUTION

Indicates a caution that, if ignored, may result in injury or damage to property.

### Examples of symbols



The  $\triangle$  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  $\odot$  symbol indicates that performing an action is prohibited. The illustration inside the  $\odot$  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 touch any parts where this warning label is pasted. Doing so may cause electrical shock.

## Handling Precautions

# CAUTION



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



Do not turn the trimmer resistors or the trimmer capacitors on the PCB unit, except when and if they need to be adjusted. Doing so may cause failure or malfunction. 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, or malfunction.



Do not insert anything flammable into the ventilation holes. Doing so may cause fire, electric shock or malfunction.



Do not block the ventilation holes. Doing so will cause heat to accumulate, and may cause fire or malfunction.



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.



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



## **CAUTIONS AGAINST HIGH VOLTAGE**

Radio and radar devices are operated by high voltages of anywhere from a few hundred volts up to many hundreds of thousands of volts. Although there is no danger with normal use, it is very dangerous if contact is made with the internal parts of these devices. (Only specialists should attempt any maintenance, checking or adjusting.)

There is a very high risk of death by even a few thousand volts, in some cases you can be fatally electrocuted by just a few hundred volts. To circumvent accidents, you should avoid contact with the internal parts of these devices at all costs. If contact is inevitable as in the case of emergency, you must switch off the devices and ground a terminal in order to discharge the capacitors. After making certain that all the electricity is discharged, only then can you insert your hand into the device. Wearing cotton gloves and putting your free hand in your pocket, in order not to use both hands simultaneously, are also very good methods of shock prevention. Quite often, an injury occurs by secondary factors, therefore it is necessary to choose a sturdy and level working surface. If someone is electrocuted it is necessary to thoroughly disinfect the affected area and seek medical attention as soon as possible.

## **Cautions concerning treatment of electrocution victims**

When you find an electrocution victim, you must first switch off the machinery and ground all circuits. If you are unable to cut off the machinery, move the victim away from it using a non-conductive material such as dry boards or clothing.

When someone is electrocuted, and the electrical current reaches the breathing synapses of the central nervous system inside the brain, breathing stops. If the victim's condition is stable, he or she can be administered artificial respiration. An electrocution victim becomes very pale, and their pulse can be very weak or even stop, consequently losing consciousness and becoming stiff. Administration of first aid is critical in this situation.

## First aid

### ☆Note points for first aid




Unless there is impending danger leave the victim where he or she is, then begin artificial respiration. Once you begin artificial respiration, you must continue without losing rhythm.

- (1) Make contacts with the victim cautiously, there is a risk that you may get electrocuted.
- (2) Switch off the machinery and then move the victim away slowly if you must.
- (3) Inform someone immediately (a hospital or doctor, dial emergency numbers, etc.).
- (4) Lay the victim on his or her back and loosen any constructive clothing (a tie, or belt).
- (5)
  - (a) Check the victim's pulse.
  - (b) Check for a heartbeat by pressing your ear against the victim's chest.
  - (c) Check if the victim is breathing by putting the back of your hand or face near the victim's face.
  - (d) Check the pupils of the eyes.
- (6) Open the victim's mouth and remove any artificial dentifrice, food or chewing gum. Leave the mouth opened and flatten the tongue with a towel or by putting something into the mouth to prevent the victim's tongue from obstructing the throat (If he or she is clenching their teeth and it is difficult to open the mouth, use a spoon or the like to pry open the mouth).
- (7) Continually wipe the mouth to prevent the accumulation of saliva.

☆ **If the victim has a pulse but is not breathing**  
**(“Mouth to mouth” resuscitation)**  
**Figure 1**

- (1) Place the victim’s head facing backward (place something under the neck like a pillow).
- (2) Point the chin upward to widen the trachea.
- (3) Pinch the victim’s nose, take a deep breath, then put your mouth over the victim’s mouth and exhale completely, making sure that your mouth completely covers the victim’s mouth. Then remove your mouth. Repeat this routine 10 to 15 times per minute (holding the nostrils).
- (4) Pay attention to the victim to notice if he or she starts to breath. If breathing returns, stop resuscitation.
- (5) If it is impossible to open the victim’s mouth, put something like a plastic straw or vinyl tube into one of the nostrils then blow air in while covering the mouth and the other nostril.
- (6) Occasionally, when the victim comes back to consciousness, they immediately try to stand up. Prevent this and keep them in a laying position. Give them something warm to drink and be sure that they rest (do not give them any alcohol).

**Administering artificial respiration by raising the head.**

- |  |   |
|--|---|
| <p>①</p>   | <p>(1) Raise the back of head, then place one hand on the forehead and place the other hand under the neck. →①<br/>Most victims open their mouth when doing this, making “mouth to mouth” resuscitation easier.</p> |
| <p>②</p>  | <p>(2) Cover the victim’s mouth by opening your mouth widely, then push your cheek against the victim’s nose, →②<br/>or pinch the victim’s nose to prevent air from leaking out of it. →③</p>                       |
| <p>③</p>  | <p>(3) Completely exhale into the lungs. .<br/>Exhale into the lungs until the chest is inflates.<br/>You have to blow as rapidly as possible for the first 10 times.</p>   |

“Mouth to mouth” artificial respiration  
 Figure 1

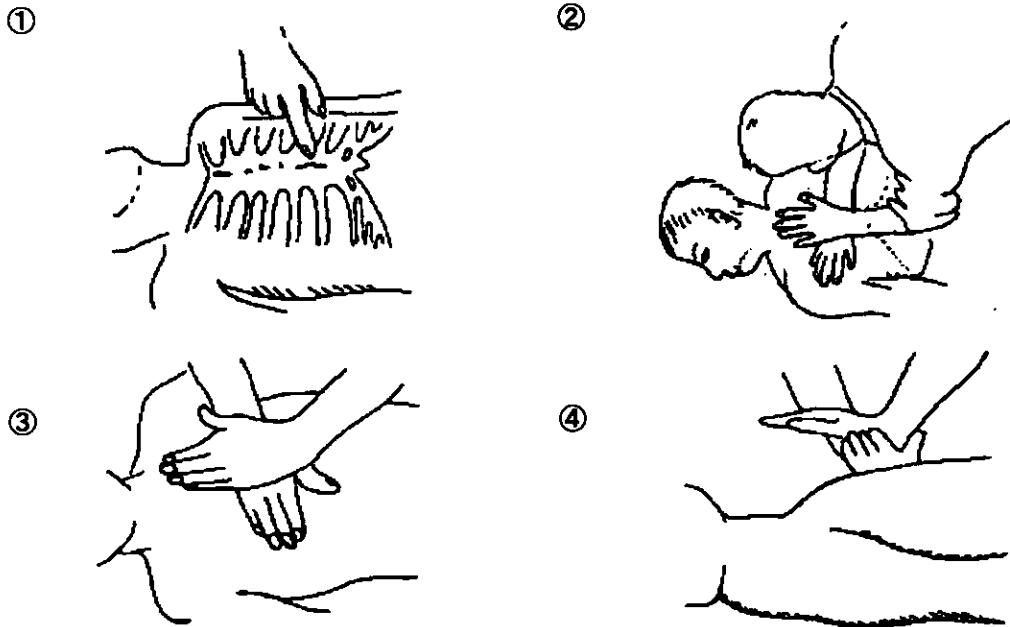


**☆ If the victim has no pulse and is not breathing  
(Heart massage in combination with artificial respiration.)**

**Figure 2**

If the victim has no pulse, his or her pupils are dilated, and if you cannot detect a heartbeat, the heart may have stopped, beginning artificial respiration is critical.

- (1) Put both hands on the diaphragm, with hands on top of each other keeping both arms straight (If your elbows are bent, you cannot push with as much power). Press the diaphragm with your body weight until the chest sinks about 2 cm (about 50 times per minute).
- (2) If administering first aid when alone:  
Perform the heart massage about 15 times then blow in twice. Repeat this routine.  
If administering first aid with two people:  
One person performs the heart massage 5 times, and the other person blows air in once. Repeat this routine (Heart massage and "mouth to mouth" resuscitation used together).
- (3) Constantly check the pupils and the pulse, if the pupils become normal and the pulse steadies, keep them in a laying position and give them something warm to drink, be sure that they rest (do not give them any alcohol). In any case you have to entrust major decision making to a doctor. Having understanding people around is essential to the victim's recovery from the mental shock of electrocution.

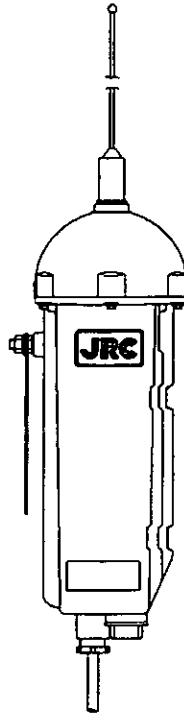


Heart massage in combination with artificial respiration.

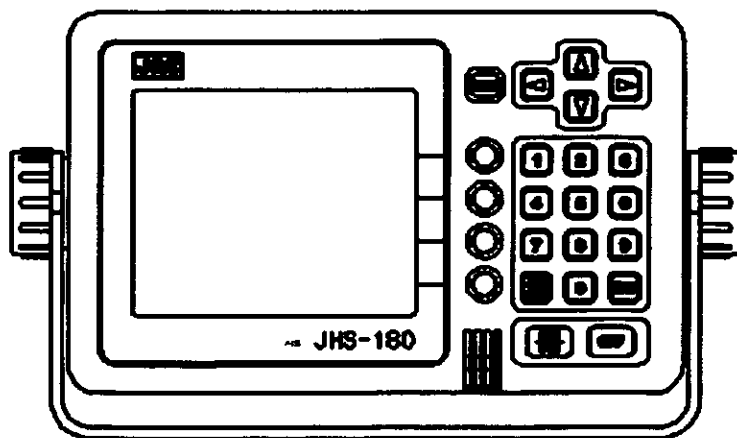
Figure 2

## External Views

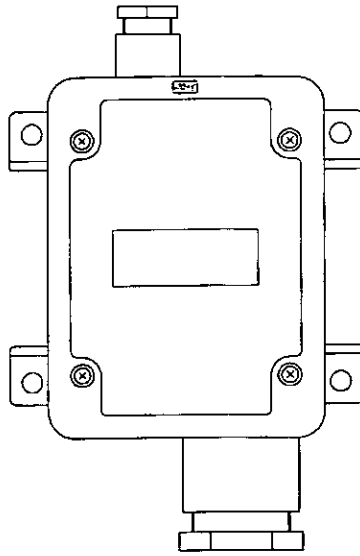
**NTE-180 AIS Transponder**



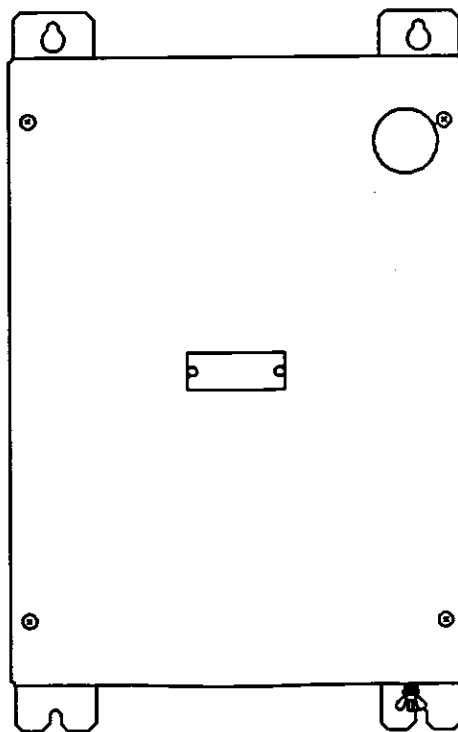
**NCM-722 AIS Controller**



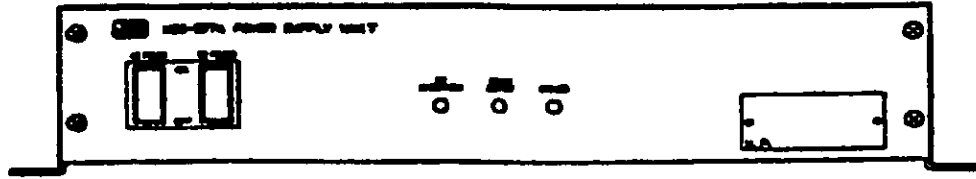
**NQD-4190 Junction Box**



**NQE-3111 Connection Box**



# NBD-577A Power Supply Unit



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# 1. GENERAL

## 1.1 Outlines

Automatic Identification System (AIS) is a maritime navigation and radio communication system. This system intends to enhance the safety of life at sea, the safety and efficiency of navigation and the protection of the marine environment by communicating navigational information automatically on VHF channels between ship and ship, ship and shore.

JHS-180 meets the requirements of the SOLAS Conventions for the Class A shipborne equipment of the universal AIS. JHS-180 mainly consists of AIS Transponder and AIS Controller. The combined antenna and transponder design allows installation at any convenient location on any vessels. The small and simple design controller allows easy installation and operation. JHS-180 employs the latest technologies such as digital signal processing, circuit integration technology, and these technologies ensure high performance and high reliability.

## 1.2 Features

### ● Fully Comply with International Regulations

---

JHS-180 is designed to meet the requirements of the SOLAS Conventions for the Class A shipborne equipment of the universal AIS and fully complies with international regulations: IMO MSC74(69) Annex 3, ITU-R M.1371, IEC61993-2, IEC60945 etc.

### ● Combined Antenna and Transponder for Ease of Installation

---

JHS-180 employs the combined antenna and transponder design. This design allows installation at any convenient location on any vessels. For the connection between above deck component and below deck component, only one cable is needed.

### ● Increased Probability of Vessel Detection

---

JHS-180 is equipped with a guard zone alert function. When preset guard zone range and other vessel enters into the zone, JHS-180 indicates and sounds the alert. This function enhances probability of vessel detection.

### ● Recognition of Own-group Vessels

---

JHS-180 is equipped with a recognition of own-group vessels function. When preset own-group vessels' identification in advance, the display indicates the own-group vessel sign. This sign allows easy recognition of own-group vessels.

### ● Self-diagnosis Function

---

JHS-180 is equipped with a built-in automatic self-diagnosis function. This function allows easy maintenance and high system reliability.

### ● System Integration Availability

---

JHS-180 is equipped with various interfaces. These interfaces allow system integration and future expansions.

## 1.3 Components

### 1.3.1 Standard Components

No.	Name	Type	Quantity	Remarks
1	AIS Transponder	NTE-180	1	With 2m cable
1-1	Accessories			
1-1-1	Fitting belts		2	
2	AIS Controller	NCM-722	1	
2-1	Accessories			
2-1-1	Power Supply Cable	7ZCJD0095	1	L=5m
2-1-2	Control Cable 1	7ZCAF0078	1	L=5m
2-1-3	Control Cable 2	7ZCAF0079	1	L=5m
3	Junction Box	NQD-4190	1	
3-1	Accessories			
3-1-1	Screw driver		1	
4	Connection Box	NQE-3111	1	
4-1	Accessories			
4-1-1	Power Switch Key		1	
5	Spare Parts	7ZXJD0027	1	Fuses
6	Instruction Manual		1	

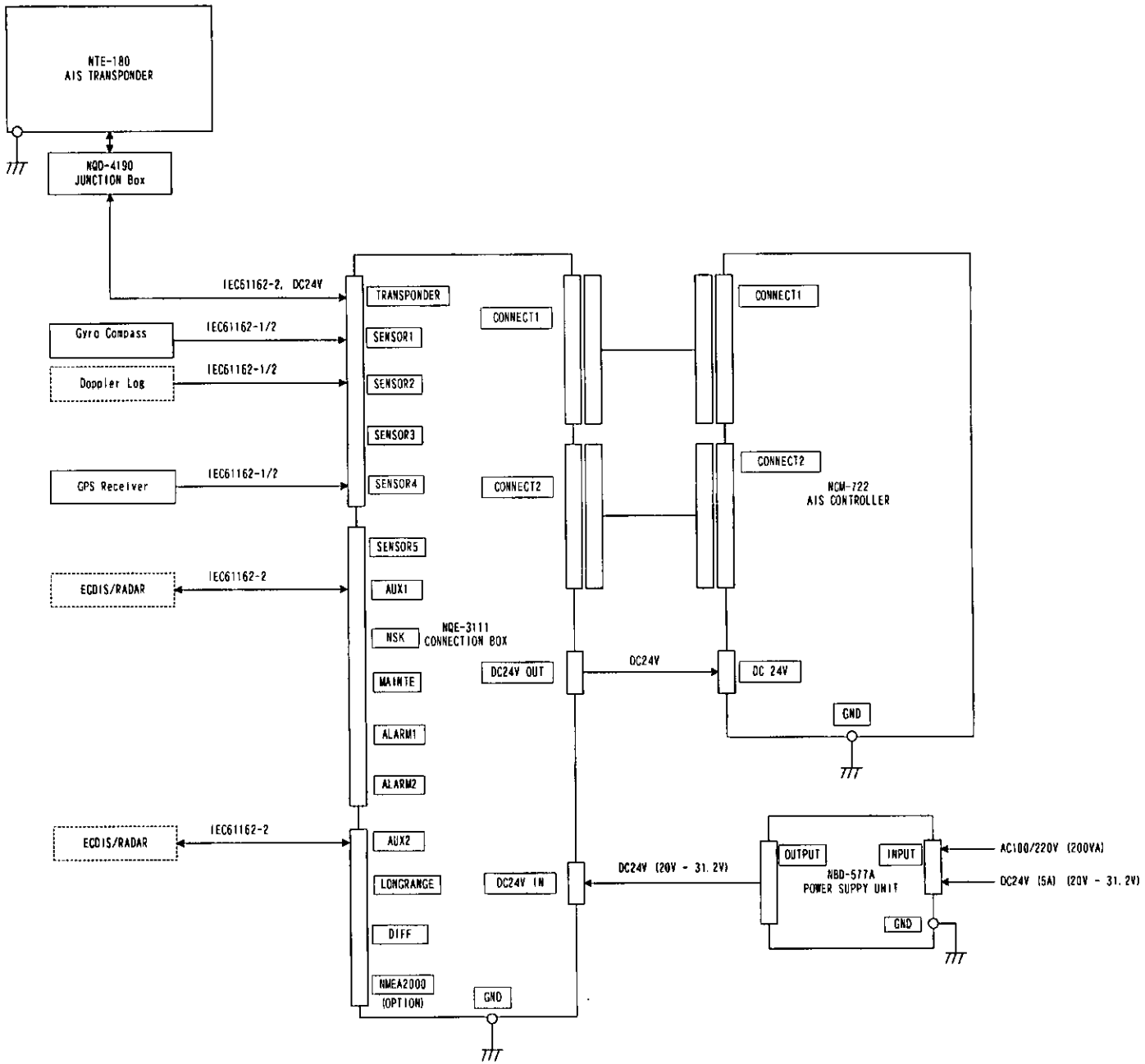
### 1.3.2 Options

No.	Options	Type	Quantity	Remarks
1.	Power Supply Unit	NBD-577A	1	
2.	Flash Mount Kit	MPBP30837	1	Color: 2.5G7/2
3.	Flash Mount Kit	MPBP30838	1	Color: 7.5BG7/2

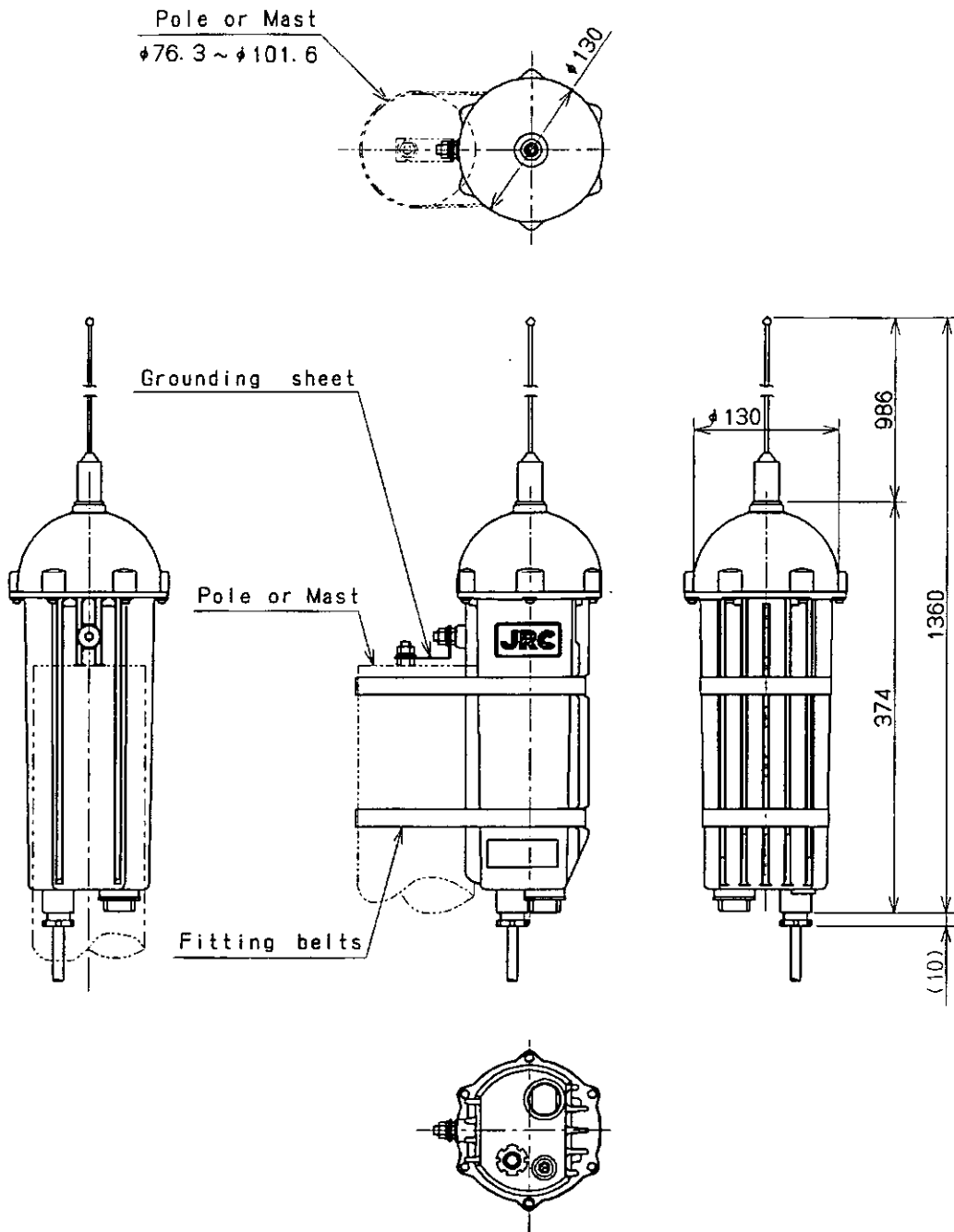


# 1.4 Configuration

## • System Block Diagram

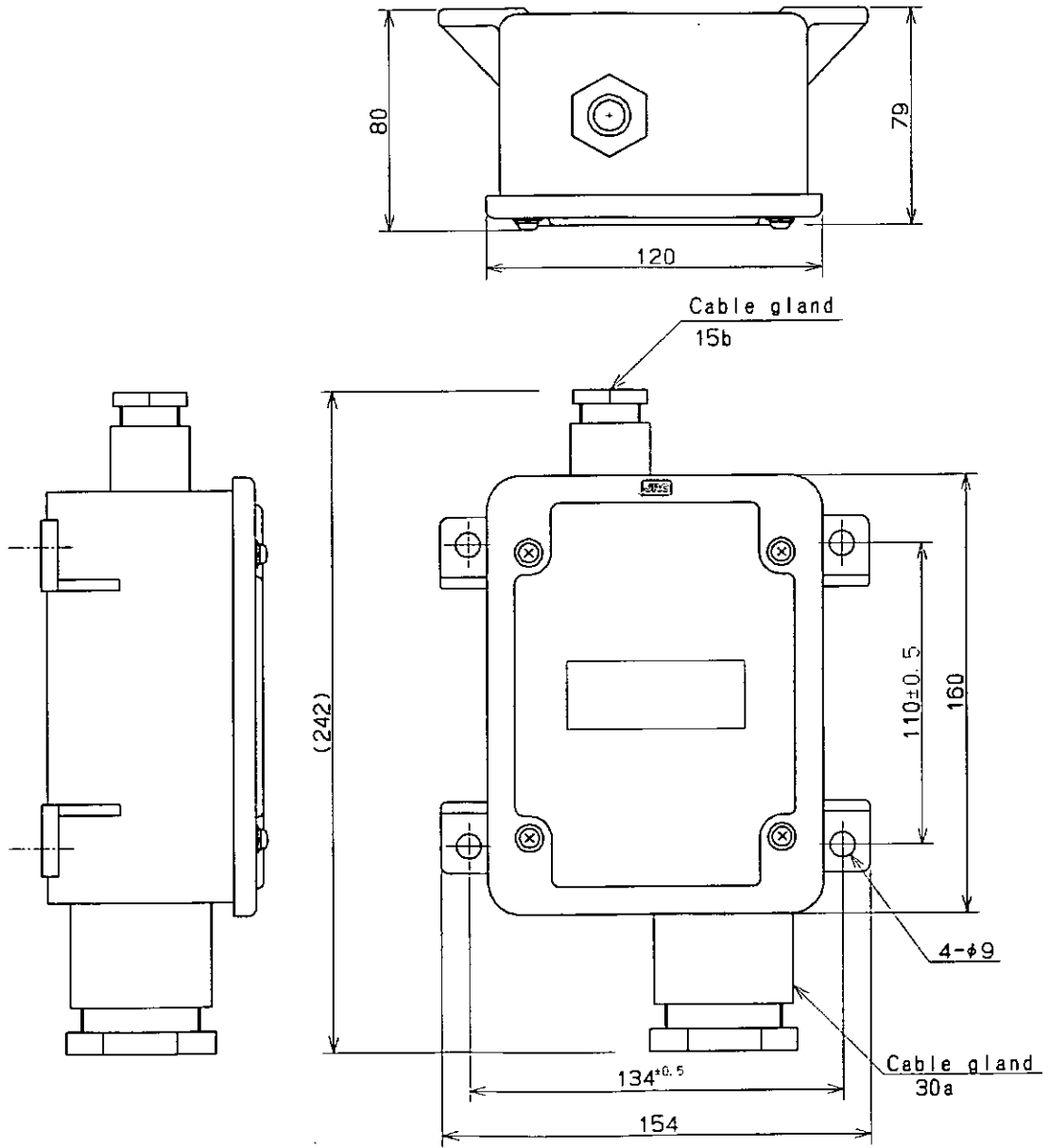


• Outline Drawing of NTE-180 AIS Transponder



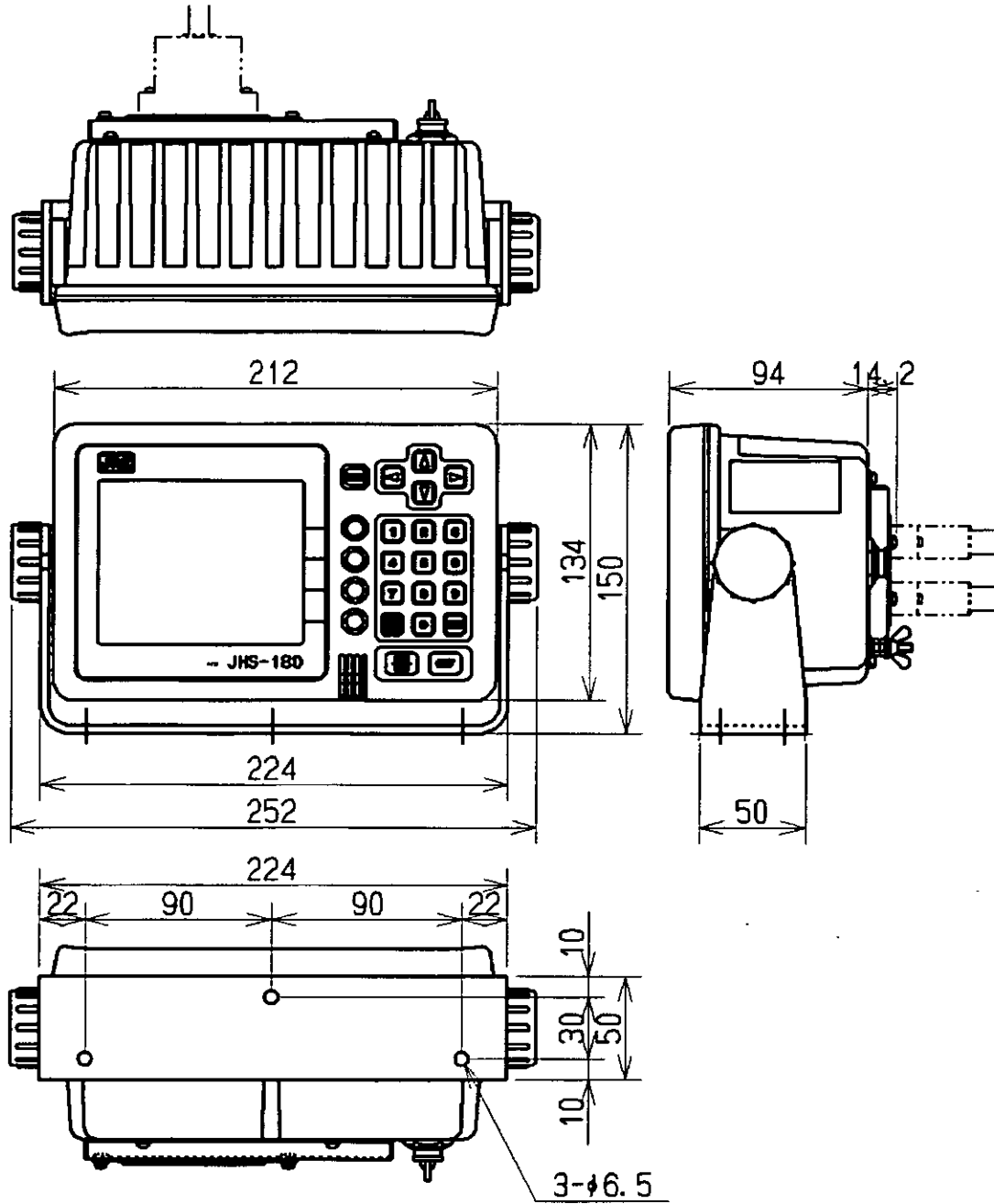
Unit: mm  
Mass: approx. 3.3 kg

• Outline Drawing of NQD-4190 Junction Box



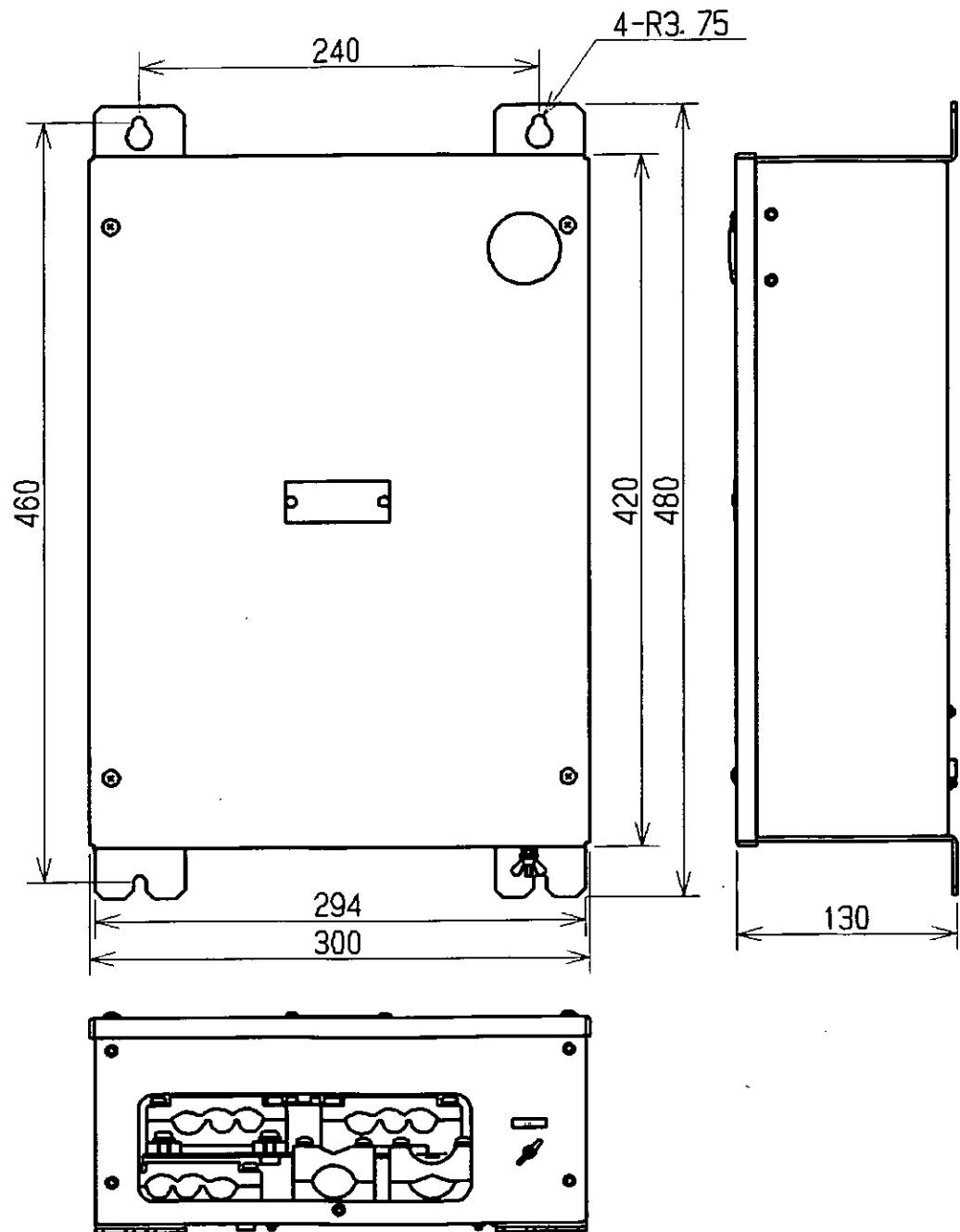
Unit: mm  
Mass: approx. 1.2 kg

• Outline Drawing of NCM-722 AIS Controller



Unit: mm  
 Mass: approx. 2.5 kg

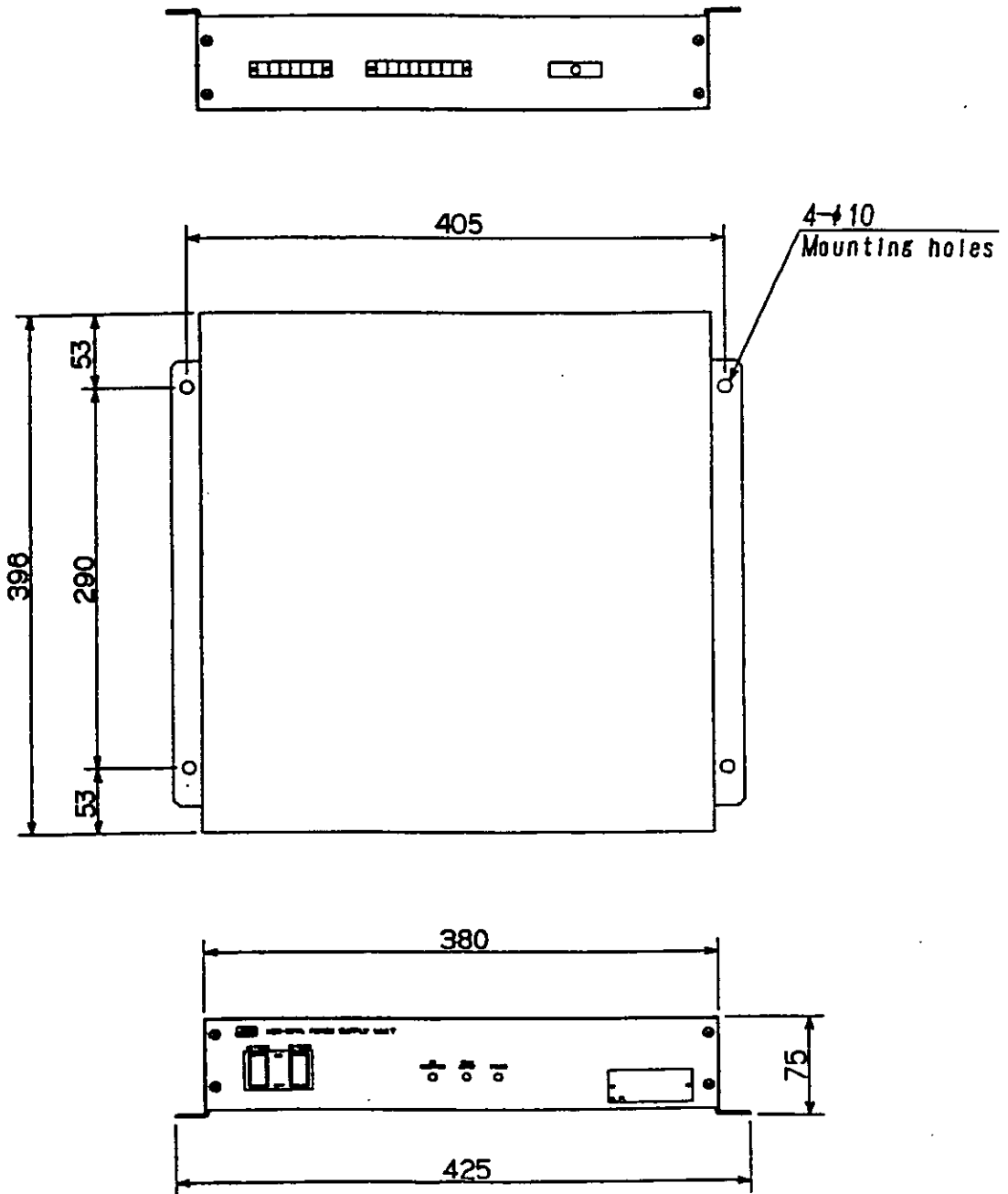
• Outline Drawing of NQE-3111 Connection Box



Unit: mm  
Mass: approx. 5.5 kg

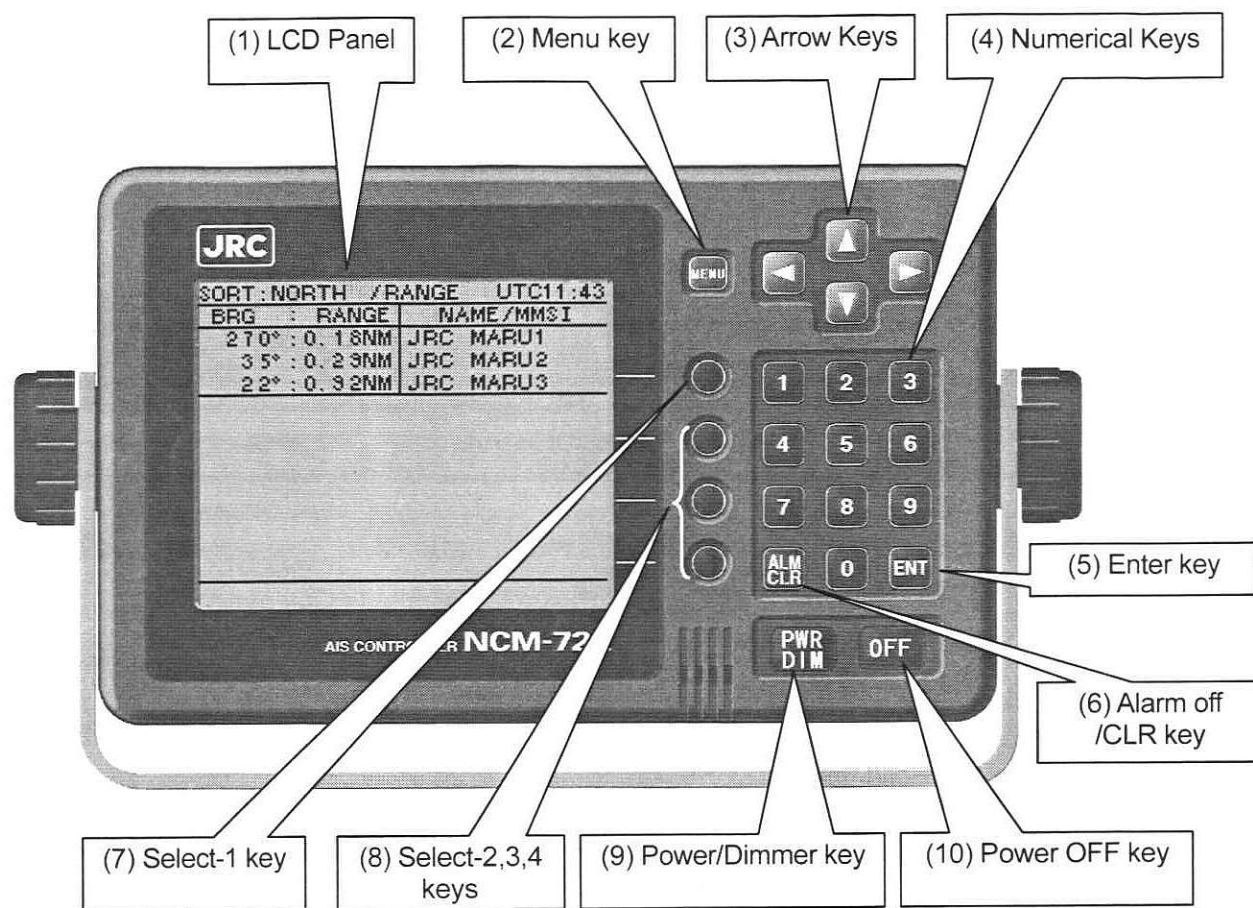
• Outline Drawing of NBD-577A Power Supply

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Unit: mm  
Mass: approx. 10.0 kg

## 2. PART NAMES AND FUNCTIONS



### (1) LCD Panel

For further information, refer to "3. Display".

### (2) Menu key

Displays the Main-menu.

### (3) Arrow Keys

Move the cursor upward, downward, to the left or to the right.

### (4) Numerical Keys

Input the numerical data.

### (5) Enter key

Confirms the input.

### (6) Alarm off/CLR key

Clears input errors.

Off the alarm sound when beeping alarm sound.

### (7) Select-1 key

Displays the Other Ships List.

### (8) Select-2,-3,-4 keys

Operates functions of the each Display. See the Basic Operation and the Main Menu Operation.

### (9) Power/Dimmer key

Turn the power ON.

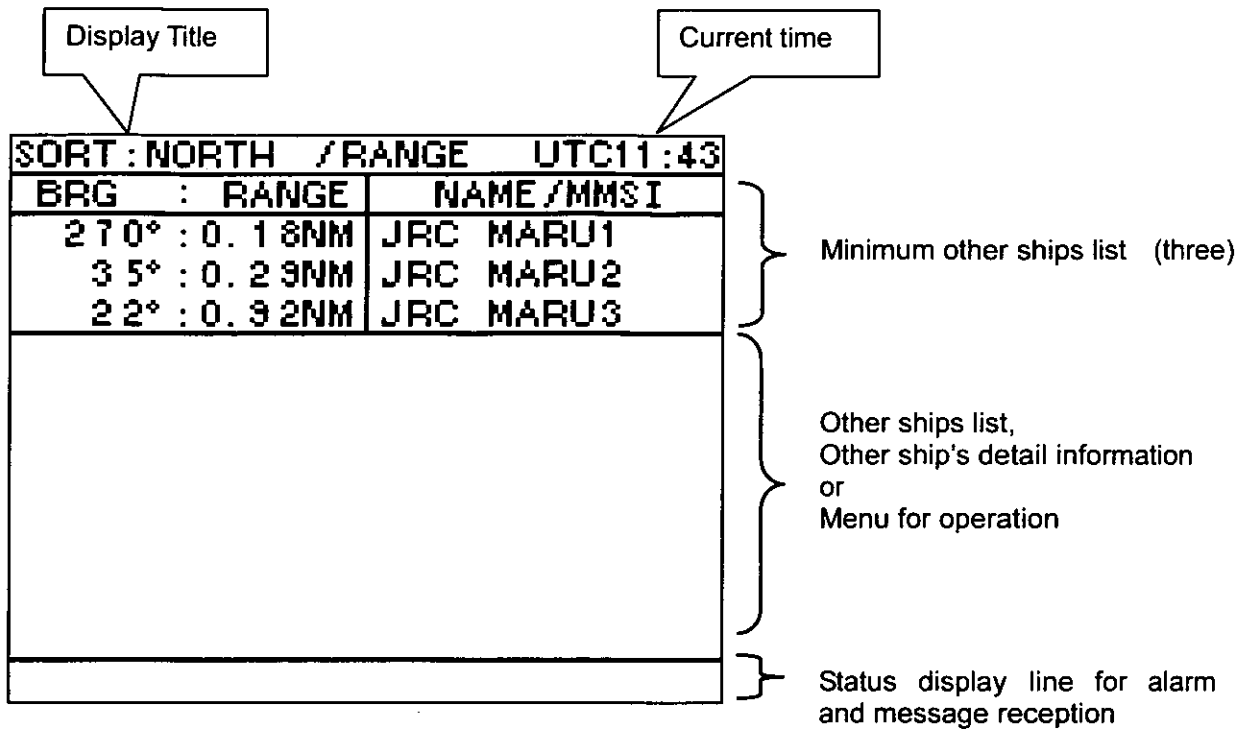
Adjusts the back light brightness of the LCD and key in four stages.

(Each time [PWR/DIM] is pressed, the display dims one stage at a time.)

### (10) Power OFF key

Pressing [PWR/DIM] and [OFF] at the same time turn the power OFF.

### 3. DISPLAYS



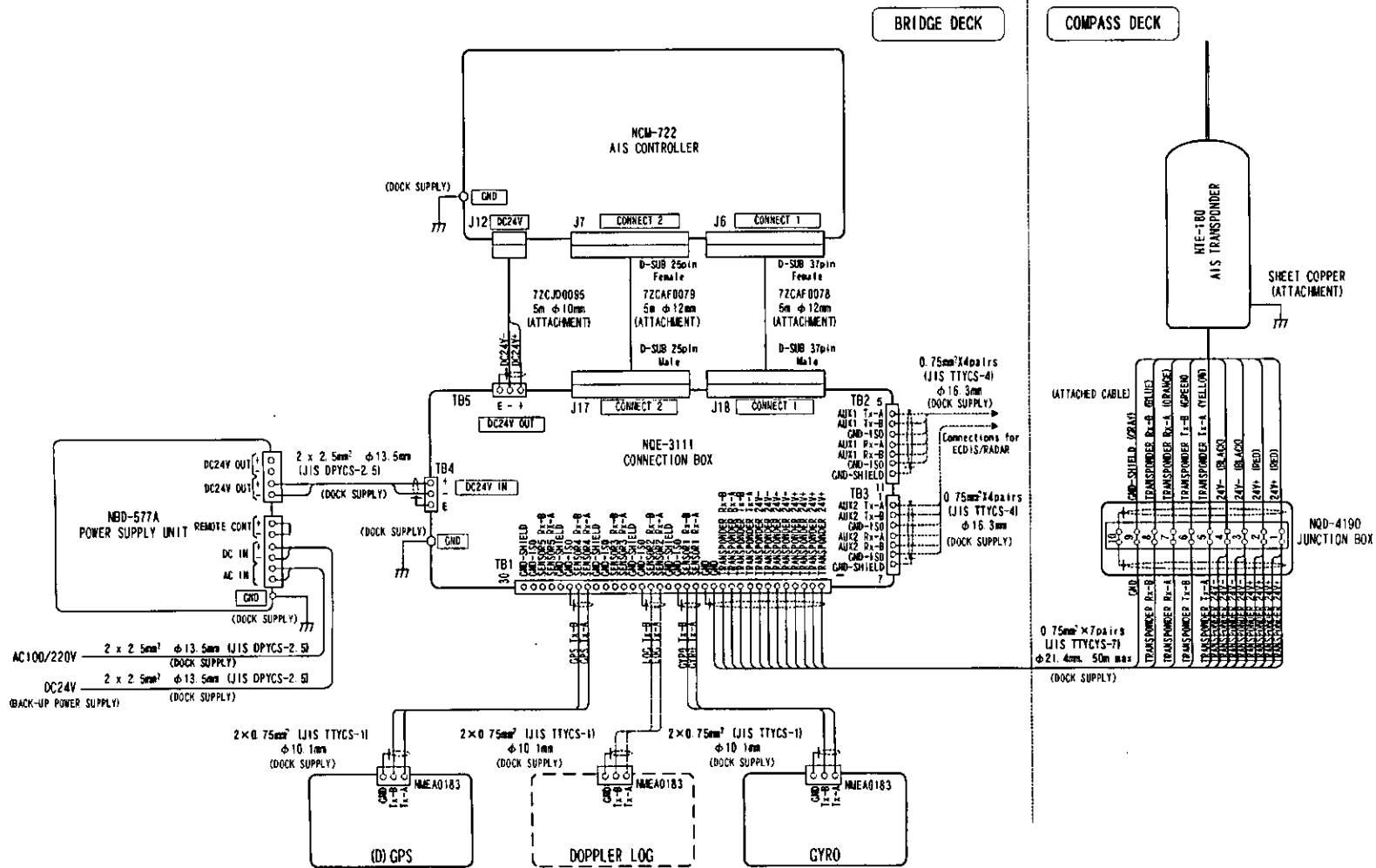


# 4. INSTALLATION DIAGRAM

**CAUTION**



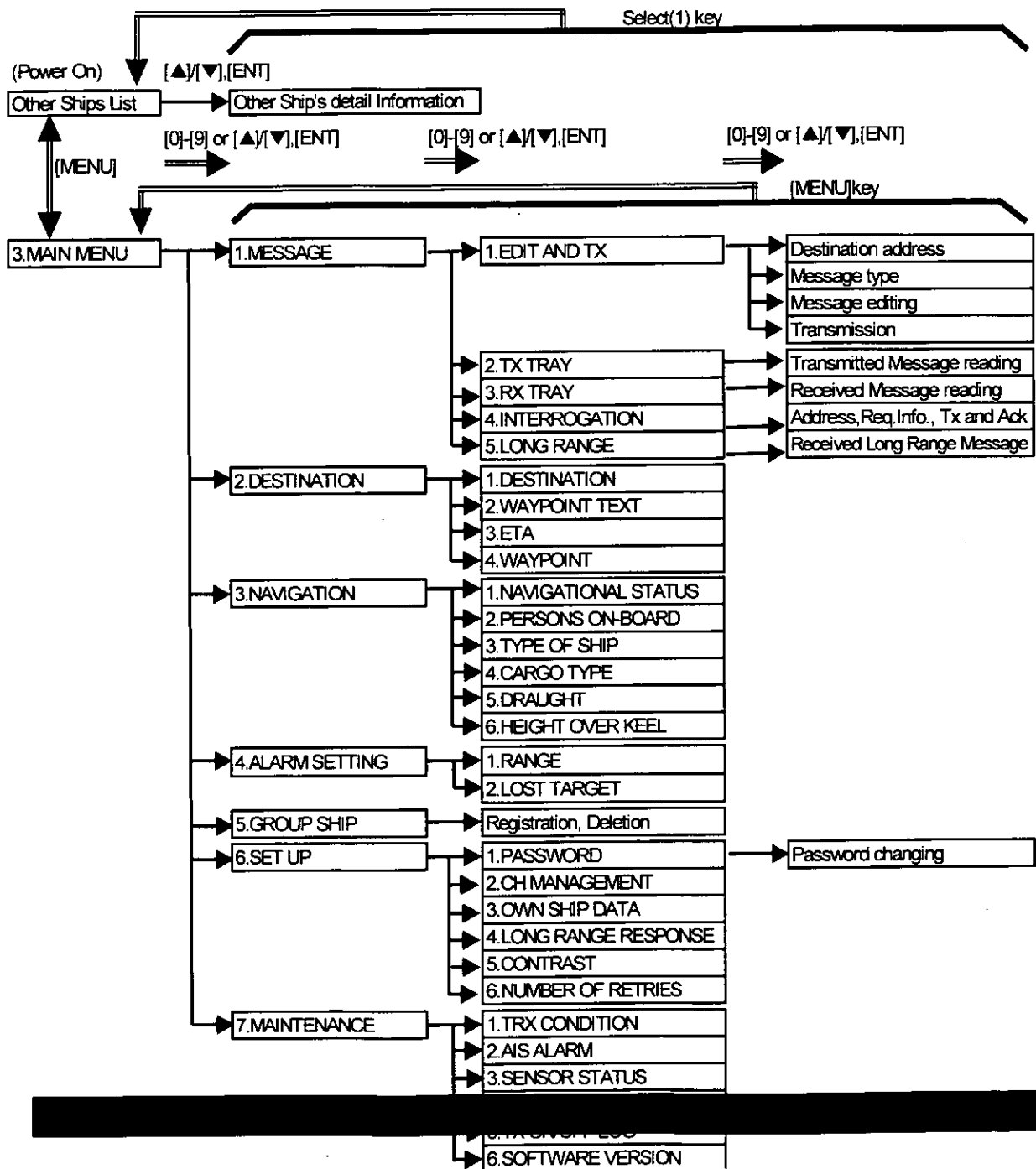
Leave installation of this equipment to our service center or agents. Installation by an unauthorized person may result in malfunction.



NOTE: The connection for (D) GPS, DOPPLER LOG and GYRO shows an example.

# 5. OPERATION

## 5.1 Menu Table



## 5.2 Basic Operation

### 5.2.1 Turning the power ON

Press [PWR/DIM] for 1 second to turn ON the power, then "Other Ships List" appears.

#### 5.2.1.1 Other Ships List

SORT : NORTH / RANGE UTC11:43	
BRG : RANGE	NAME/MMSI
270° : 0.18NM	JRC MARU1
35° : 0.29NM	JRC MARU2
22° : 0.92NM	JRC MARU3
38° : 6.70NM	SUISANMARU
10° * 8.20NM	JAPAN RADIO>
35° 32.865N	SOG 14.5kt
139° 50.874E	COG 45.1°

Other ship's information

- Bearing
- Range
- Ship's name

Selected ship

\* \* Indicates group ships.

Own ship's information

- Latitude
- Longitude
- Speed Over Ground

Pressing up-arrow key or down-arrow key selects the ship.  
Pressing [ENT] displays the ship's detail information.

When the selected ship's name is longer than 11 letters, pressing right-arrow key or left-arrow key scrolls the ship's name to the right or to the left.

Pressing [1] switches the own ship's information display ON/OFF.

Pressing [MENU] displays "Main Menu".

**5.2.1.2 Other Ship's Detail Information**

Ship's detail information is displayed when the ship is selected from the other ships list.

SHIPS'S DETAIL		UTC11:43
BRG	RANGE	NAME/MMSI
270°	0.18NM	JRC MARU1
35°	0.29NM	JRC MARU2
22°	0.92NM	JRC MARU3
NAME: SUISANMARU MMSI: 22222222 <span style="float: right;">[EXIT&gt;]</span> CALLSIGN: 568761 IMO NUMBER: 22222222 CPA: 0.3NM <span style="float: right;">[MSG&gt;]</span> TCPA: 26.1MN BEARING: 22° RANGE: 6.70NM ↓ NAV STATUS:		
↑ POSITION (POS) SENSOR: INTEGRATED POS ACCURACY: HIGH POS: N: 35° 33.387' E: 139° 54.578' COG: 22.0° SOG: 5.8kn HDG: 22.1° ↓ ROT: 0.1°/min		
↑ DESTINATION: AAAAAAAAAAAAA> ETA: 10/31 20:30 LENGTH: 35m BREADTH: 12m DRAUGHT: 10.0m SHIP TYPE: TANKER CARGO TYPE: ALL SHIPS OF THIS TYPE		

Pressing upward arrow key displays previous page of the ship's detail information.

- Pressing this select key returns to "Other ships list".
- Pressing this select key displays "Edit and TX".

Pressing down-arrow key displays next page of the ship's detail information.

Pressing [MENU] displays "Main Menu".



## 5.2.2 Turning the power OFF

Turning the power OFF needs inputting the password.  
Pressing [OFF] displays "Shut-down" to input the password.

SORT:NORTH /RANGE UTC11:43	
BRG : RANGE	NAME/MMSI
270° : 0.18NM	JRC MARU1
35° : 0.29NM	JRC MARU2
22° : 0.92NM	JRC MARU3

PASSWORD	XXXXXX
----------	--------

After inputting the password, pressing and holding [PWR/DIM] and [OFF] for one second turns the power OFF.

## 5.2.3 Alarm

### 5.2.3.1 Guard zone alarm

When other ship comes in own guard zone ring, the alarm status display "GD ZONE" appears and alarm tone sounds.

SORT : ----		UTC11:43	
BRG	RANGE	NAME/MMSI	
270°	0.18NM	JRC MARU1	
35°	0.29NM	JRC MARU2	
22°	0.32NM	JRC MARU3	
35°32.865N		SOG 14.5kt	
139°50.874E		COG 45.1°	
GD ZONE			

The display of the alarm ship's line is reversal.

Pressing [ALM/CLR] turns off the alarm tone.

### 5.2.3.2 Lost target alarm

When other ship loses in lost target ring, the alarm status display "LOST" appears and alarm tone sounds.

SORT : ----		UTC11:43	
BRG	RANGE	NAME/MMSI	
270°	0.18NM	JRC MARU1	
35°	0.29NM	JRC MARU2	
22°	0.32NM	JRC MARU3	
35°32.865N		SOG 14.5kt	
139°50.874E		COG 45.1°	
LOST			

The display of the alarm ship's line is reversal.

Pressing [ALM/CLR] turns off the alarm tone.

## 5.3 Main Menu

"Main Menu" can display by pressing [MENU] in any operation.

MAIN MENU		UTC11:43
BRG	RANGE	NAME/MMSI
270°	0.18NM	JRC MARU1
35°	0.29NM	JRC MARU2
22°	0.92NM	JRC MARU1
1. MESSAGE		
2. DESTINATION		
3. NAVIGATION		
4. ALARM SETTING		
5. GROUP SHIP		
6. SET UP		
7. MAINTENANCE		

○ Pressing this select key returns "Other ships list".

○

○

○

Pressing up-arrow key or down-arrow key selects the menu.

Pressing [ENT] displays the selected menu display.

Pressing numerical keys [1] – [7] selects the menu and displays the selected menu display.



### 5.3.1 Message Menu

"Message Menu" can be displayed by pressing the [1] in the "Main Menu".

("Message Menu")

MESSAGE MENU		UTC 11:43
BRG	RANGE	NAME/MMSI
270°	0.18NM	JRC MARU1
35°	0.29NM	JRC MARU2
22°	0.92NM	JRC MARU1

<b>1. EDIT AND TX</b>
2. TX TRAY
3. RX TRAY
4. INTERROGATION
5. LONG RANGE

○ Pressing this select key returns "Other ships list".

○

○

○

Pressing up-arrow key or down-arrow key selects the sub menu.

Pressing [ENT] displays the selected sub menu display.

Pressing numerical keys [1] – [5] selects the sub menu and displays the selected sub menu display.

Pressing [ALM/CLR] returns to "Main Menu".



**5.3.1.1 Edit and TX**

“Edit and TX” (MMSI, Type and Form) can be displayed by pressing the [1] in the “Message Menu”.

The cursor appears in the “MMSI” field when “Edit and TX” display is opened.

(MMSI, Type and Form)

EDIT AND TX		UTC 11:43
BRG : RANGE	NAME/MMSI	
270° : 0.18NM	JRC MARU1	
35° : 0.29NM	JRC MARU2	
22° : 0.92NM	JRC MARU1	
		EXIT>
MMSI : 000569872	REPLY : ON	
CATEGORY : ROUTINE	CH : NONE	>
FI : TEXT	FIXED FORM : 0	

- Pressing this select key returns “Other ships list”.
- 
- Pressing this select key returns to previous menu.  
 (“Message Menu”, “TX Tray”, “RX Tray” or “Other Ship’s detail information”)
- Pressing this select key selects the setting item from  
 “MMSI”, “CATEGORY”, “FI”, “REPLAY”, “CH”, “FIXED FORM”, and message editing.

**(1) MMSI**

Pressing up-arrow key or down-arrow key selects between “MMSI” and “BROADCAST”.

Pressing numerical keys inputs the MMSI.

Pressing the fourth select key [(TAB)>] moves the cursor to next field (“CATEGORY”).

**(2) Category**

Pressing up-arrow key or down-arrow key selects between “SAFETY” and “ROUTINE”. When “ROUTINE” is selected, “FI” item appears.

Pressing the fourth select key [(TAB)>] moves the cursor to next field (“FI” or “CH”).

**(3) FI (Function Identifier)**

Pressing up-arrow key or down-arrow key selects between “TEXT” and “CAPABILITY INTEROGATE”. When “TEXT” is selected, “REPLY” item and “FIXED FORM” item appear.

Pressing the fourth select key [(TAB)>] moves the cursor to next field (“REPLY” or “CH”).

**(4) Reply**

Pressing up-arrow key or down-arrow key selects between replay “ON” and replay “OFF” for individual (not broadcast) text message.

Pressing the fourth select key [(TAB)>] moves the cursor to next field (“CH”).

**(5) Channel**

Pressing up-arrow key or down-arrow key selects the transmission channel from “AUTO”, “A”, “B” and “A/B”.

Pressing the fourth select key [(TAB)>] moves the cursor to next field (“FIXED FORM”).

**(6) Fixed Form**

Pressing numerical keys inputs the “Fixed Form” number.

(“0” to “9” : Fixed form , “0” : Editable message)

Pressing the fourth select key [(TAB)>] moves the cursor to next field (message editor).

(Message editor)

EDIT AND TX		UTC11:43
BRG : RANGE	NAME/MMSI	
270° : 0.18NM	JRC MARU1	
35° : 0.29NM	JRC MARU2	
22° : 0.92NM	JRC MARU1	
MAYDAY! MAYDAY! <b>A</b>		<b>EXIT</b> >
↑ <b>A</b> BCDEFGHIJKLM↑ ↓ NOPQRSTUVWXYZ ← → ↓ 0123456789* ←		<b>TAB</b> >

- Pressing this select key returns "Other ships list".
- Pressing this select key returns to previous menu. ("Message Menu", "TX Tray", "RX Tray" or "Other Ship's detail information")
- Pressing this select key closes the keypad and returns to transmittable display.

Pressing arrow keys move the cursor on the keypad in the display.

Pressing [ENT] input one letter from the keypad to the editing message except following cursor position.

Pressing [ENT] at the next cursor position of "9" on the keypad close the keypad.

Pressing [ENT] at the arrow position on the keypad moves the cursor on the editing message.

Pressing [ALM/CLR] deletes one letter on the cursor in the editing message.

(Transmission Display)

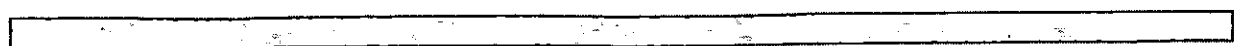
EDIT AND TX		UTC11:43
BRG : RANGE	NAME/MMSI	
270° : 0.18NM	JRC MARU1	
35° : 0.29NM	JRC MARU2	
22° : 0.92NM	JRC MARU1	
MAYDAY! MAYDAY!		<b>TX</b> > ACK <b>EXIT</b> >
MMSI:000569872    REPLY:ON CATEGORY:ROUTIONE    CH:NONE > FI:TEXT    FIXED FORM:0		

- Pressing this select key returns "Other ships list".
- Pressing this select key transmits the message.
- Pressing this select key returns to previous menu. ("Message Menu", "TX Tray", "RX Tray" or "Other Ship's detail information")
- Pressing this select key selects the setting item from "MMSI", "CATEGORY", "FI", "REPLAY", "CH", "FIXED FORM", and message editing.

Acknowledgement status ("ACK"/"NAC")

Pressing [ALM/CLR] returns to previous menu.

("Message Menu", "TX Tray", "RX Tray" or "Other Ship's detail information")



### 5.3.1.2 TX Tray

"TX Tray"(Message List) can be displayed by pressing [2] in "Message Menu".

#### (Message List)

TX TRAY		UTC11:43
BRG : RANGE	NAME/MMSI	
270° : 0.18NM	JRC MARU1	
35° : 0.29NM	JRC MARU2	
22° : 0.92NM	JRC MARU1	
CATEGORY TO		
ROUT OK BROADCAST	EDIT>	
SAFE AK NIHONMARU >	&TX	
ROUT NG BROADCAST	DEL>	
*SAFE 111111111		
TX = 2000/02/02 10:00		

○ Pressing this select key returns "Other ships list".

○ Pressing this select key displays "Edit and TX".

○ Pressing this select key deletes the selected message.

Transmitted time of the selected message.

Pressing up-arrow key or down-arrow key selects the message.

Pressing [ENT] displays "Message Read".

Pressing [ALM/CLR] returns to "Message Menu".

#### (Transmitted Message Read)

TX MESSAGE READ		UTC11:43
BRG : RANGE	NAME/MMSI	
270° : 0.18NM	JRC MARU1	
35° : 0.29NM	JRC MARU2	
22° : 0.92NM	JRC MARU1	
		EDIT>
		EXIT>
MMSI:000569872 REPLY:NAK		
CATEGORY:ROUTIONE CH:A/B		
FI:CAPABILITY INTERROGATE		

○ Pressing this select key returns "Other ships list".

○ Pressing this select key displays message editor of "Edit and TX".

○ Pressing this select key returns "TX Tray" (Message List).

Message type and setting

Pressing [ALM/CLR] returns "TX Tray" (Message List).

(Not Transmitted Message Read)

TX MESSAGE READ		UTC11:43
BRG : RANGE	NAME/MMSI	
270° : 0.18NM	JRC MARU1	
35° : 0.29NM	JRC MARU2	
22° : 0.92NM	JRC MARU1	
MAYDAY! MAYDAY!		<input type="button" value="TX &gt;"/>
		<input type="button" value="EXIT &gt;"/>
MMSI:000569872 REPLY:ACK		
CATEGORY:ROU TIONE CH:NONE		
FI:TEXT FIXED FORM:0		

○

○

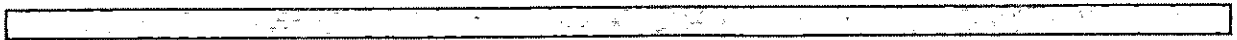
○

○

Pressing this select key transmits the message.

Pressing this select key returns "TX Tray"  
(Message List).

Pressing [ALM/CLR] returns "TX Tray" (Message List).



### 5.3.1.3 RX Tray

"RX Tray"(Message List) can be displayed by pressing [3] in "Message Menu".

#### (Message List)

RX TRAY		UTC11:43
BRG : RANGE	NAME/MMSI	
270° : 0.18NM	JRC MARU1	
35° : 0.29NM	JRC MARU2	
22° : 0.92NM	JRC MARU1	
CATEGORY FROM		
*ROUT 77777777	EDIT>	<input type="checkbox"/> Pressing this select key returns "Other ships list". <input type="checkbox"/> Pressing this select key displays "Edit and TX". <input type="checkbox"/> Pressing this select key deletes the selected message. <input type="checkbox"/> Received time of the selected message.
*SAFE AK 999999999	&TX	
ROUT BROADCAST	DEL>	
SAFE NIHONMARU		
RX = 2000/02/02 10:00		

Pressing up-arrow key and down-arrow key selects the message.  
Pressing [ENT] displays "Message Read"

#### (Message Read)

RX MESSAGE READ		UTC11:43
BRG : RANGE	NAME/MMSI	
270° : 0.18NM	JRC MARU1	
35° : 0.29NM	JRC MARU2	
22° : 0.92NM	JRC MARU1	
BIN FROM 77777777		
MAYDAI!MAYDAY!		
メッセージの内容を表示する	EXIT>	<input type="checkbox"/> Pressing this select key returns "Other ships list". <input type="checkbox"/> Message type and sender of the reading message. <input type="checkbox"/> Pressing this select key returns "RX Tray" (Message List). <input type="checkbox"/> Received time of the reading message.
RX = 2000/02/02 10:00		

Pressing [ALM/CLR] returns "RX Tray" (Message List).

### 5.3.1.4 Interrogation

"Interrogation" can be displayed by pressing [4] in "Message Menu".

INTERROGATION		UTC11:43
BRG : RANGE	NAME/MMSI	
270° : 0.18NM	JRC MARU1	
35° : 0.29NM	JRC MARU2	
22° : 0.92NM	JRC MARU1	
1. DEST1 MMSI: 77777777		
REQ1-1: POSITION REPORT (A)		
REQ1-2: STATIC & VOYAGE (A)		
2. DEST2 MMSI: 88888888		
REQ2-1: NAVIGATION TO AIDS		
3. INTERROGATE		

○ Pressing this select key returns "Other ships list".

No.1 Destination

No.1 Interrogation detail

No.2 Destination

When "INTERROGATION" display opens, the cursor appear at the menu number "1".

Pressing up-arrow key or down-arrow key selects the menu number.

Pressing [ENT] enters the menu number.

Pressing numerical keys [1] - [3] select and entry menu number.

Pressing [ALM/CLR] returns to "Message Menu".

(1) Inputting for No.1 destination ("DEST1")

Pressing numerical keys inputs the MMSI of No.1 destination.

Pressing [ENT] confirms the inputted MMSI and moves the cursor to the "REQ1-1".

Pressing the up-arrow key or down-arrow key selects No.1 request detail.

Pressing [ENT] confirms the selected detail and moves the cursor to "REQ1-2".

Pressing the up-arrow key or down-arrow key selects No.2 request detail.

Pressing [ENT] confirms the selected detail and moves the cursor to the menu number.

(2) Inputting for No.2 destination ("DEST2")

Pressing numerical keys inputs the MMSI of No.2 destination.

Pressing [ENT] confirms the inputted MMSI and moves the cursor to the "REQ2-1".

Pressing the up-arrow key or down-arrow key selects request detail.

Pressing [ENT] confirms the selected detail and moves the cursor to the menu number.

(3) Interrogating

When menu number 3 "INTERROGATE" is confirmed, "INTERROGATE ACK" display appears.

(Interrogation and Acknowledgment)

INTERROGATE ACK		UTC11:43
BRG : RANGE	NAME/MMSI	
270° : 0.18NM	JRC MARU1	
35° : 0.29NM	JRC MARU2	
22° : 0.92NM	JRC MARU1	
WAITING		
1. ACK1 OK	[CHECK>]	
2. ACK2 NONE		
[EXIT>]		

- Pressing this select key returns "Other ships list".
- Pressing this select key displays the acknowledgment detail.
- 
- Pressing this select key returns "INTERROGATION".

Pressing [ALM/CLR] returns "INTERROGATION".

(Example as Acknowledgment Detail)

POSITION REPORT_A		UTC11:43
BRG : RANGE	NAME/MMSI	
270° : 0.18NM	JRC MARU1	
35° : 0.29NM	JRC MARU2	
22° : 0.92NM	JRC MARU1	
MMSI : 123456789		
NAV STATUS : UNDER WAY USI>		
POSITION ACCURACY : HIGH		
N : 35° 33.387 '		
E : 139° 54.578 '		
SOG : 5.8 kn		
COG : 216.3°		
HEADING : 0.1°	[REQ-2>]	
RATE OF TURN : 0.1° / min		

- 
- 
- 
- Pressing this select key display No.2 acknowledgment.

\_\_\_\_\_

### 5.3.1.5 Long Range Message

"Long Range Message" can be displayed by pressing [5] in "Message Menu".

LONG RANGE		UTC11:43
BRG	RANGE	NAME/MMSI
270°	0.18NM	JRC MARU1
35°	0.29NM	JRC MARU2
22°	0.92NM	JRC MARU1
FROM 999999999		ACK>
OFFICE		

Last received message from the Long range  
or  
Last transmitted message to the Long range

Pressing this select key starts the message transmit.

Destination MMSI and ship's name

- A = Ship's name, Call sign, IMO number
- B = Date and time of message composition
- C = Position
- E = Course over ground
- F = Speed over ground
- I = Destination and ETA
- ↓ O = Draught
- P = Ship / Cargo
- U = Ship's length, breadth, and type
- W = Number of persons on board

Reversal letter indicates requested item.  
Right side of the not requested item is blank.

Pressing down-arrow key displays next page of the "Long range".  
Pressing up-arrow key displays previous page of the "Long range".



**5.3.2 Destination Setting**

“Destination” Setting menu can be displayed by pressing [2] in the “Main Menu”.

(“Destination” Setting menu)

DESTINATION		UTC 11:43
BRG : RANGE	NAME/MMSI	
270° : 0.18NM	JRC MARU1	
35° : 0.29NM	JRC MARU2	
22° : 0.92NM	JRC MARU1	
1. DESTINATION		
TOKYO		
2. WAYPOINT TEXT		
ABCDEFGHIJKLMNQRST		
3. ETA 2010/02/08 07:07		
(UTC YYYY/MM/DD HH:MM)		
4. WAYPOINT SET		

○ Pressing this select key returns “Other ships list”.

○

○

○

Pressing up-arrow key or down-arrow key selects the sub menu.

Pressing [ENT] displays the selected sub menu display.

Pressing numerical key [1] – [4] selects the sub menu and displays the selected sub menu display.

Pressing [ALM/CLR] returns to “Main Menu”.



### 5.3.2.1 Destination

"Destination" name can be inputted by pressing [1] in the "Destination" Setting menu.

(Selecting "Destination" name)

DESTINATION		UTC 11:43
BRG : RANGE	NAME/MMSI	
270° : 0.18NM	JRC MARU1	
35° : 0.29NM	JRC MARU2	
22° : 0.92NM	JRC MARU1	

1. DESTINATION	KEYPAD>
TOKYO	
2. WAYPOINT TEXT	
ABCDEFGHIJKLMNOPQRST	
3. ETA 2010/02/08 07:07	
(UTC YYYY/MM/DD HH:MM)	
4. WAYPOINT SET	

- Pressing this select key returns "Other ships list".
- Pressing this select key opens the keypad to input "Destination" name.

Pressing [ALM/CLR] returns to the "Destination" Setting menu.  
 Pressing down-arrow key selects "Destination" name from inputted name log.

(Inputting "Destination" name)

DESTINATION		UTC 11:43
BRG : RANGE	NAME/MMSI	
270° : 0.18NM	JRC MARU1	
35° : 0.29NM	JRC MARU2	
22° : 0.92NM	JRC MARU1	

1. DESTINATION	SELECT>
TOKYO	
2. WAYPOINT TEXT	
ABCDEFGHIJKLMNOPQRST	
3. ETA 2010/02/08 07:07	
↑ ABCDEFGHIJKLMI ↓ HH:MM	
NOPQRS TUWXYZ ← →	CLOSE
↓ . 0123456789* ←	

- Pressing this select key returns "Other ships list".
- Pressing this select key closes the keypad to select "Destination" name from inputted name log.
- Pressing this select key closes the keypad and return to "Destination" Setting menu.

Pressing arrow keys move the cursor on the keypad in the display.

Pressing [ENT] input one letter from the keypad to "Destination" name except following cursor position.

Pressing [ENT] at the next cursor position of "9" on the keypad close the keypad.

Pressing [ENT] at the arrow position on the keypad moves the cursor on the "Destination" name.

Pressing [ALM/CLR] deletes one letter on the cursor in the editing message.

### 5.3.2.2 Waypoint Text

"Waypoint Text" can be inputted by pressing [2] in the "Destination" Setting menu.

DESTINATION		UTC11:43
BRG	RANGE	NAME/MMSI
270°	0.18NM	JRC MARU1
35°	0.29NM	JRC MARU2
22°	0.92NM	JRC MARU1

1. DESTINATION	TOKYO
2. WAYPOINT TEXT	BCDEFGHIJKLMNOPQRST
3. ETA	2001/02/08 07:07
↑	ABCDEFGHIJKLM↑↓
	NOPQRSTUVWXYZ←→
↓	. 0123456789*←

- 
- 
- 
- 

Pressing this select key closes the keypad and return to the "Destination" Setting menu.

The keypad is opened, and the cursor appears in the "Waypoint Text".

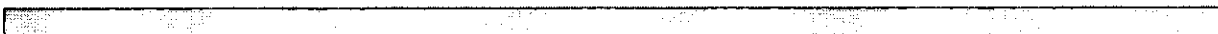
Pressing arrow keys move the cursor on the keypad in the display.

Pressing [ENT] input one letter from the keypad to "wappoint Text" except following cursor position.

Pressing [ENT] at the next cursor position of "9" on the keypad close the keypad.

Pressing [ENT] at the arrow position on the keypad moves the cursor in the "Waypoint Text".

Pressing [ALM/CLR] deletes one letter on the cursor in the "Waypoint Text".



### 5.3.2.3 Estimated Time of Arrival (ETA)

Estimated Time of Arrival (ETA) can be inputted by pressing [3] in the "Destination" Setting menu.

DESTINATION		UTC 11:43		
BRG	RANGE	NAME/MMSI		
270°	0.18NM	JRC	MARU1	<input type="radio"/>
35°	0.29NM	JRC	MARU2	<input type="radio"/>
22°	0.92NM	JRC	MARU1	<input type="radio"/>

1. DESTINATION	<input type="radio"/>
TOKYO	
3. WAYPOINT TEXT	<input type="radio"/>
ABCDEFGHIJKLMNQRST	
3. ETA	<input type="radio"/>
2010/02/08 07:07	
(UTC YYYY/MM/DD HH:MM)	
4. WAYPOINTS SET	<input type="radio"/>

The cursor appears in the "ETA".

Pressing numerical keys inputs the Estimated Time of Arrival.

Pressing right-arrow key or left-arrow key move the cursor in the "ETA".

Pressing [ALM/CLR] quits the inputting and returns to the "Destination" Setting menu.

Pressing [ENT] entries the inputted data and returns to the "Destination" Setting menu.

### 5.3.2.4 Waypoints

“Waypoint” can be displayed by pressing [4] in the “Destination” Setting menu.  
 Fourteen waypoints can be set as maximum.  
 Twenty letters can be set as waypoint name.

#### Waypoint List

WAYPOINTS		UTC11:43	
BRG	RANGE	NAME/MMSI	
270°	0.18NM	JRC	MARU1
35°	0.29NM	JRC	MARU2
22°	0.92NM	JRC	MARU1
1.	N 36° 50 110		
	E 135° 30 210	DEL>	
	NAME: EAST POINT1		
2.	N 36° 50 110		
	E 136° 40 110	INS>	
	NAME: EAST POINT2		
3.	N 36° 10 110		
	E 120° 10 111	REVERSE>	
↓	NAME: EAST POINT3		

- Pressing this select key deletes the selected waypoint.
- Pressing this select key inserts a new waypoint before the selected waypoint to edit.
- Pressing this select key switches order of display in order to lower number or higher number.

Pressing up-arrow key or down-arrow key selects the waypoint.  
 Pressing [ALM/CLR] returns to the “Destination” Setting menu.  
 Pressing [ENT] confirms the selected waypoint to edit.

#### Editing of Waypoint

The cursor appears in the latitude field.

##### (1) Latitude field and longitude

Pressing up-arrow key or down-arrow key selects “N” or “S” and “E” or “W”.  
 Pressing numerical keys inputs the value.  
 Pressing right-arrow key or left-arrow key moves the cursor.  
 Pressing [ALM/CLR] quits the inputting data and returns to “Waypoint List”.  
 Pressing [ENT] entries the inputted data and moves the cursor to next field.

##### (2) Waypoint name

Keypad appears in the display.  
 Pressing arrow keys move the cursor on the keypad in the display.  
 Pressing [ENT] input one letter from the keypad to the “Waypoint Name” except following cursor position.  
 Pressing [ENT] at the next cursor position of “9” on the keypad close the keypad.  
 Pressing [ENT] at the arrow position on the keypad moves the cursor in the “Waypoint Name”.  
 Pressing [ALM/CLR] deletes one letter on the cursor in the “Waypoint Text”.

### 5.3.3 Navigation Information Setting

"Navigation Information Setting" menu can be displayed by pressing [3] in the "Main Menu".

("Navigation Information Setting" menu)

NAVIGATION		UTC11:43
BRG	RANGE	NAME/MMSI
270°	0.18NM	JRC MARU1
35°	0.29NM	JRC MARU2
22°	0.92NM	JRC MARU1
1. NAVIGATIONAL STATUS		
UNDER WAY USING ENGIN		
2. NUMBER ON-BOARD		8191
3. TYPE OF SHIP		
PASSENGER SHIP		
4. CARGO TYPE		
ALL SHIPS OF THIS TYP		
5. DRAUGHT		10.0m
6. HEIGHT OVER KEEL		204.7m

Pressing up-arrow key or down-arrow key selects the sub menu.

Pressing [ENT] moves the cursor to the selected sub menu field.

Pressing numerical key [1] – [6] selects the sub menu and moves the cursor to the selected sub menu field.

Pressing [ALM/CLR] returns to "Main Menu".

#### 5.3.3.1 Navigational Status Information

The cursor appears in the "Navigational Status".

Pressing up-arrow key or down-arrow key selects the setting of "Navigational Status".

Pressing [ALM/CLR] quits the selecting and returns to "Navigation Information Setting" menu.

Pressing [ENT] entries the selected detail and returns to "Navigation Information Setting" menu.

The setting of "Navigational Status" can be select from following detail.

- 0: UNDER WAY USING ENGINE
- 1: AT ANCHOR
- 2: NOT UNDER COMMAND
- 3: RESTRICTED MANOEUVRABILITY
- 4: CONSTRAINED BY HER DRAUGHT
- 5: MOORED
- 6: AGROUND
- 7: ENGAGED IN FISHING
- 8: UNDER WAY SAILING
- 15: NOT DEFINED

#### 5.3.3.2 Persons On-Board

The cursor appears in the "Persons On-Board" field.

Pressing numerical key inputs the number of "Persons On-Board".

The number can be set "8191" as maximum.

Pressing [ALM/CLR] quits the inputting and returns to "Navigation Information Setting" menu.

Pressing [ENT] entries the inputted number and returns to "Navigation Information Setting" menu.

### 5.3.3.3 Type of Ship and Cargo Type

The cursor appears in the "Type of Ship"/"Cargo Type".

Pressing up-arrow key or down-arrow key selects the setting of "Type of Ship"/ "Cargo Type".

Pressing [ALM/CLR] quits the selecting and returns to "Navigation Information Setting" menu.

Pressing [ENT] entries the selected detail and returns to "Navigation Information Setting" menu.

The setting of "Type of Ship " can be select from following detail.

2x:WIG

30:FISHING VESSEL

31:TOWING VESSEL

32:TOWING VESSEL-L>200M B>25M

(Towing and length of the tow exceeds 200m or breadth exceeds 25m)

33:DREDGE OR UNDERWATER OPE (Engaged in dredging or underwater operation)

34:VESSEL-DIVING OPE (Engaged in diving operation)

35:VESSEL-MILITARY OPE (Engaged in military operation)

36:SAILING VESSEL

37:PLEASURE CRAFT

4x:HSC (High Speed Craft)

50:PILOT VESSEL

51:SERCH AND RESCUE VESSELS

52:TUGS

53:PORT TENDERS

54:WITH ANTI-POLLUTION EQUIP (Vessels with anti-pollution facilities or equipent)

55:LAW ENFORCEMENT VESSELS

58:MEDICAL TRANSPORTS

59:RESOLUTION NO18:MOB-83 (Ships according to Resolution No 18 (Mob-83))

6x:PASSENGER SHIP

7x:CARGO SHIPS

8x:TANKER

9x:OTHER TYPE OF SHIP

The setting of "Cargo Type" can be select from following detail except when the "Type of Ship " sets the above "30-37" and "50-59".

x0:ALL SHIP OF THIS TYPE

x1:CATEGORY A (DG/HP/MP)

(Carrying Dangerous Goods, Harmful Substances, or Marine Pollutants. IMO hazard or pollutant category A)

x2:CATEGORY B (DG/HP/MP)

(Carrying Dangerous Goods, Harmful Substances, or Marine Pollutants. IMO hazard or pollutant category B)

x3:CATEGORY C (DG/HP/MP)

(Carrying Dangerous Goods, Harmful Substances, or Marine Pollutants. IMO hazard or pollutant category C)

x4:CATEGORY D (DG/HP/MP)

(Carrying Dangerous Goods, Harmful Substances, or Marine Pollutants. IMO hazard or pollutant category D)

x9:NO ADDITIONAL INFORMATION

Additionally, the setting of "Cargo Type" can be select from following detail except when the "Type of Ship " sets the above "2x", "30-37", "4x" and "50-59".

x5:NOT UNDER COMMAND

x6:RESTRICTED BY (her ability) MANOEUVRE

x7:CONSTRAINED BY (her) DRAUGHT

#### **5.3.3.4 Draught**

The cursor appears in the "Draught".

Pressing numerical key inputs the value of "Draught".

The value can be set "25.5m" as maximum.

Pressing [ALM/CLR] quits the inputting and returns to "Navigation Information Setting" menu.

Pressing [ENT] entries the inputted value and returns to "Navigation Information Setting" menu.

#### **5.3.3.5 Height Over Keel**

The cursor appears in the "Height Over Keel".

Pressing numerical key inputs the value of "Height Over Keel".

Pressing [ALM/CLR] quits the inputting and returns to "Navigation Information Setting" menu.

Pressing [ENT] entries the inputted value and returns to "Navigation Information Setting" menu.



### 5.3.4 Alarm Setting

"Alarm Setting" menu can be displayed by pressing [4] in the "Main Menu".

("Alarm Setting" menu)

ALARM SETTING		UTC 11:43	
BRG	RANGE	NAME/MMSI	
270°	0.18NM	JRC MARU1	
35°	0.29NM	JRC MARU2	
22°	0.92NM	JRC MARU1	
1.	RANGE	10.0NM	>
2.	LOST TARGET	10.0NM	>

○

○ Pressing this select key moves the cursor to the "Range" field for Guard Zone alarm.

○ Pressing this select key moves the cursor in the "Lost Target" field for Lost Target alarm.

○

Pressing up-arrow key or down-arrow key selects the sub menu.

Pressing [ENT] moves the cursor to the selected sub menu field.

Pressing numerical key [1] – [2] selects the sub menu and moves the cursor to the selected sub menu field.

Pressing [ALM/CLR] returns to "Main Menu".

#### 5.3.4.1 Range

The cursor appears in the "Range" field.

Pressing numerical key inputs the value of "Range" for Guard Zone alarm.

The value can be set "99.9 nautical mile" as maximum.

Pressing [ALM/CLR] quits the inputting and returns to "Alarm Setting" menu.

Pressing [ENT] entries the inputted value and returns to "Alarm Setting" menu.

#### 5.3.4.2 Lost Target

The cursor appears in the "Lost Target" field.

Pressing numerical key inputs the value of "Lost Target" for Lost Target alarm.

The value can be set "99.9 nautical mile" as maximum.

Pressing [ALM/CLR] quits the inputting and returns to "Alarm Setting" menu.

Pressing [ENT] entries the inputted value and returns to "Alarm Setting" menu.

### 5.3.5 Group Ship Setting

"Group Ship List" can be displayed by pressing [5] in the "Main Menu".  
Ten MMSI can be registered for own group as maximum.

("Group Ship List")

GROUP SHIP LIST		UTC11:43
BRG	RANGE	NAME/MMSI
270°	0.18NM	JRC MARU1
35°	0.29NM	JRC MARU2
22°	0.92NM	JRC MARU1
NAME		MMSI
NIHONMARU1		431000001
NIHONMARU5		431000005
NIHONMARU3		431000003
NIHONMARU2		431000002
SYOWANIHO>		431000004
		DEL ALL>

○

○ Pressing this select key inserts a new ship's registry before the selected ship.

○ Pressing this select key deletes the selected ship's registry.

○ Pressing this select key deletes all registries as group.

Pressing up-arrow key or down-arrow key selects ship.  
Pressing [ENT] confirms the selected ship to edit the registry.

#### 5.3.5.1 Ship Name

GROUP SHIP LIST		UTC11:43
BRG	RANGE	NAME/MMSI
270°	0.18NM	JRC MARU1
35°	0.29NM	JRC MARU2
22°	0.92NM	JRC MARU1
NAME		MMSI
NIHONMARU5		431000005
NIHONMARU3		431000003
NIHONMARU2		431000002
SYOWANIHO>		431000004
↑ A B C D E F G H I J K L M ↑ ↓		CLOSE>
↓ . 0 1 2 3 4 5 6 7 8 9 * ←		

○

○

○

○ Pressing this select key closes the keypad and moves the cursor to the "MMSI" field.

The cursor appears in the "Ship Name" field and keypad appears in the display.  
Pressing arrow keys move the cursor on the keypad in the display.  
Pressing [ENT] input one letter from the keypad to the "Ship Name" except following cursor position.  
Pressing [ENT] at the next cursor position of "9" on the keypad closes the keypad.  
Pressing [ENT] at the arrow position on the keypad moves the cursor in the "Ship Name".  
Pressing [ALM/CLR] deletes one letter on the cursor in the "Ship Name".

#### 5.3.5.2 MMSI

The cursor appears in the "MMSI" field.  
Pressing numerical key inputs the number of "MMSI".  
Pressing [ALM/CLR] quits the inputting and returns to "Group Ship List".  
Pressing [ENT] entries the inputted number and returns to "Group Ship List".

### 5.3.6 Setup menu

"Setup" menu can be displayed by pressing [6] in the "Main Menu".

("Set up" menu)

SETUP		UTC 11:43		
BRG	RANGE	NAME/MMSI		
270°	0.18NM	JRC	MARU1	<input type="radio"/>
35°	0.29NM	JRC	MARU2	<input type="radio"/>
22°	0.92NM	JRC	MARU1	<input type="radio"/>
<b>1.</b>	PASSWORD			<input type="radio"/>
2.	CH MANAGEMENT			<input type="radio"/>
2.	OWN SHIP DATA			<input type="radio"/>
4.	MESSAGE RESPONSE			<input type="radio"/>
5.	CONTRAST			<input type="radio"/>
6.	NUMBER OF RETRIES:		3	<input type="radio"/>

Pressing up-arrow key or down-arrow key selects the sub menu.

Pressing [ENT] opens the selected sub menu display.

Pressing numerical key [1] – [6] selects the sub menu and opens the selected sub menu display.

Pressing [ALM/CLR] returns to "Main Menu".

### 5.3.6.1 Password Setting

"Password" setting menu can be displayed by pressing [1] in the "Setup" menu.

("Password" setting menu)

PASSWORD		UTC 11:43	
BRG	RANGE	NAME/MMSI	
270°	0.18NM	JRC	MARU1
35°	0.29NM	JRC	MARU2
22°	0.92NM	JRC	MARU1

1. PASSWORD	****	<input type="radio"/>
2. PASSWORD SET/CHANGE		<input type="radio"/>
OLD: ****		<input type="radio"/>
NEW: ****		<input type="radio"/>
NEW: ****		<input type="radio"/>

Pressing up-arrow key or down-arrow key selects the sub menu.

Pressing [ENT] moves the cursor to the selected sub menu field.

Pressing numerical key [1] – [2] selects the sub menu and moves the cursor to the selected sub menu field.

Pressing [ALM/CLR] returns to "Setup" menu.

#### (1) "Password" conforming

The cursor appears in the "Password".

Pressing numerical key inputs the password.

Pressing [ALM/CLR] quits the inputting and returns to the "Password" setting menu.

Pressing [ENT] conforms the inputted password and displays "OK" or "NG" as the result.

#### (2) "Password Set/Change"

The cursor appears in the "Password Set/Change".

Pressing numerical key inputs the password.

Pressing [ALM/CLR] quits the inputting and returns to the "Password" setting menu.

Pressing [ENT] entries the inputted password and moves the cursor to the next field.

### 5.3.6.2 Channel Management Setting

"Channel Management" setting menu can be displayed by pressing [2] in the "Set Up" menu. Eight channel management settings can be memorized in the transponder as maximum.

("Channel Management" setting menu)

CH MANAGEMENT		UTC 11:43	
BRG	RANGE	NAME/MMSI	
270°	0.18NM	JRC MARU1	
35°	0.29NM	JRC MARU2	
22°	0.92NM	JRC MARU1	
1. CH A: 2087 WIDE TX/RX			
2. CH B: 2088 NARROW RX			
3. TX POWER: HIGH			
4. ZONE SIZE: 5nm			
5. AREA N 35° 33.3870		[CHECK>	
(NE) E 139° 54.5780			
6. AREA N 35° 33.3870			
(SW) E 139° 54.5780		[LIST>	

○

○

○

○

Pressing this select key checks whether or not the inputted detail can be set to the transponder.

Pressing this select key displays the channel management setting of the transponder.

Pressing up-arrow key or down-arrow key selects the sub menu.

Pressing [ENT] moves the cursor to the selected sub menu field.

Pressing numerical key [1] – [6] selects the sub menu and moves the cursor to the selected sub menu field.

Pressing [ALM/CLR] returns to "Set Up" menu.

#### (1) Inputting of the Channel Management

##### "Channel A" and "Channel B"

The cursor appears in the "Channel" number field.

Pressing numerical keys inputs the channel number.

Pressing up-arrow key or down-arrow key selects the detail.

("WIDE" or "NALLOW", "TX/RX" or "RX")

Pressing [ALM/CLR] quits the inputting and returns to the "Channel Management" setting menu.

Pressing [ENT] entries the inputted number or detail and moves the cursor to the next field.

##### "TX Power"

The cursor appears in the "TX Power" field.

Pressing up-arrow key or down-arrow key inputs the "TX power" detail from "High" or "Low"

Pressing [ALM/CLR] quits the inputting and returns to the "Channel Management" setting menu.

Pressing [ENT] entries the inputted detail and returns to the "Channel Management" setting menu.

##### "Zone Size"

The cursor appears in the "Zone Size" field.

Pressing numerical keys inputs value of the "Zone Size".

The value can be input "1" as minimum and "8" as maximum.

Pressing [ALM/CLR] quits the inputting and returns to the "Channel Management" setting menu.

Pressing [ENT] entries the inputted value and moves the cursor to the next field.

##### "Northeast" corner and "Southwest" corner of the Area

The cursor appears in the "Area(NE)"/"Area(SW)".

Pressing up-arrow key or down-arrow key inputs "N" or "S" and "E" or "W".

Pressing numerical keys inputs the value of the latitude / longitude.

Pressing [ALM/CLR] quits the inputting and returns to the "Channel Management" setting menu.

Pressing [ENT] entries the inputted value and moves the cursor to the next field.

(2) Check and Set the Channel Management

The inputted Channel Management detail has to be registered to the transponder for channel management operation.

Pressing the "[Check]" select key checks whether or not the inputted detail can be set to the transponder, and display "OK" or "NG" as the result.

When the check result was "OK", then select key function "[Set]" is appears on the "[List]" position.

(Checked Channel Management detail : "OK")

CH MANAGEMENT		UTC11:43
BRG : RANGE	NAME/MMSI	
270° : 0.18NM	JRC MARU1	
35° : 0.29NM	JRC MARU2	
22° : 0.92NM	JRC MARU1	
1. CH A : 2087 WIDE TX/RX		
2. CH B : 2088 NARROW RX		
3. TX POWER : HIGH		
4. ZONE SIZE : 5nm		
5. AREA N 35° 33.3870	[CHECK>	
(NE) E139° 54.5780	'OK	
6. AREA N 35° 33.3870		
(SW) E139° 54.5780	[SET>	

Pressing this select key checks whether or not the inputted detail can be registered to the transponder.

Check result "OK"

Pressing this select key registers the inputted channel management detail to the transponder.

(Checked Channel Management detail : "NG")

CH MANAGEMENT		UTC11:43
BRG : RANGE	NAME/MMSI	
270° : 0.18NM	JRC MARU1	
35° : 0.29NM	JRC MARU2	
22° : 0.92NM	JRC MARU1	
1. CH A : 2087 WIDE TX/RX		
2. CH B : 2088 NARROW RX		
3. TX POWER : HIGH		
4. ZONE SIZE : 5nm		
5. AREA N 35° 33.3870	[CHECK>	
(NE) E139° 54.5780	'NG	
6. AREA N 35° 33.3870		
(SW) E139° 54.5780	[SET>	
NG : AREA CONRNER ER NG		

Pressing this select key checks whether or not the inputted detail can be registered to the transponder.

Pressing this select key registers the inputted channel management detail to the transponder.

Reason about check result "NG"

(3) Channel Management list

Display and Confirm the registered Channel Management detail list from the transponder to input manually the channel management detail.

Pressing the "[List]" select key displays the channel management setting of the transponder.

(Channel Management List)

CH MANAGE LIST		UTC11:43
BRG	RANGE	NAME/MMSI
270°	0.18NM	JRC MARU1
35°	0.29NM	JRC MARU2
22°	0.92NM	JRC MARU1

1.	CH A:2087	DEFAULT	TX/RX
	CH B:2088	NARROW	RX
	TX POWER	:HIGH	
	ZONE SIZE	:5nm	
	AREA N	35° 33.387	
	(NE) E	139° 54.578	
	AREA N	35° 33.387	<input type="button" value="EXIT&gt;"/>
↓	(SW) E	139° 54.578	

Pressing this select key closes the "Cannel Management List" and returns to the "Channel Management" setting menu.

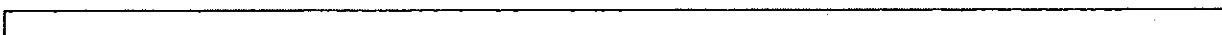
↑	2.	CH A:2087	DEFAULT	TX/RX
		CH B:2088	NARROW	RX
		TX POWER	:HIGH	
		ZONE SIZE	:5nm	
		AREA N:	35° 33.387	
		(NE) E:	139° 54.578	
		AREA N:	35° 33.387	<input type="button" value="EXIT&gt;"/>
↓		(SW) E:	139° 54.578	

Pressing this select key closes the "Cannel Management List" and returns to the "Channel Management" setting menu.

Pressing down-arrow key displays next page of the "Channel Management List".

Pressing up-arrow key displays previous page of the "Channel Management List".

Pressing [ALM/CLR] closes the "Cannel Management List" and returns to the "Channel Management" setting menu.



### 5.3.6.3 Own Ship Data display setting

“Own Ship Data” display setting menu can be displayed by pressing [3] in the “Set Up” menu.

(“Own Ship Data” display setting menu)

OWN SHIP DATA		UTC11:43
BRG	RANGE	NAME/MMSI
270°	0.18NM	JRC MARU1
35°	0.29NM	JRC MARU2
22°	0.92NM	JRC MARU1

OWN SHIP DATA	<b>ON</b>	[CHANGE>]
---------------	-----------	-----------

Pressing this select key switches the setting of “Own Ship Data” display between “ON” / “OFF”.

Pressing [ALM/CLR] returns to “Set Up” menu.

### 5.3.6.4 Long Range Response setting

“Long Range Response” setting menu can be displayed by pressing [4] in the “Set Up” menu.

(“Long Range Response” setting menu)

LR RESPONSE		UTC11:43
BRG	RANGE	NAME/MMSI
270°	0.18NM	JRC MARU1
35°	0.29NM	JRC MARU2
22°	0.92NM	JRC MARU1

LONG RANGE RESPONSE	<b>AUTOMATIC</b>
---------------------	------------------

Pressing up-arrow key or down arrow-key switches the setting of “Long Range Response” between “Automatic” and “Manual”.

Pressing [ALM/CLR] returns to “Set Up” menu.



### 5.3.6.5 Contrast setting

"Contrast" setting menu can be displayed by pressing [5] in the "Set Up" menu.

("Contrast" setting menu)

CONTRAST		UTC 11:43	
BRG	RANGE	NAME/MMSI	
270°	0.18NM	JRC MARU1	
35°	0.29NM	JRC MARU2	
22°	0.92NM	JRC MARU1	
CONTRAST :		19	

Pressing up-arrow key or down arrow-key selects and sets "Contrast" Setting from "0" – "64".

Pressing [ALM/CLR] returns to "Set Up" menu.

### 5.3.6.6 Number of Retries Setting

The cursor moves to the "Number of Retries" setting field by pressing [6] in the "Set Up" menu.

("Number of Retries" setting)

SETUP		UTC 11:43	
BRG	RANGE	NAME/MMSI	
270°	0.18NM	JRC MARU1	
35°	0.29NM	JRC MARU2	
22°	0.92NM	JRC MARU1	
1. PASSWORD			
2. CH MANAGEMENT			
2. OWN SHIP DATA			
4. MESSAGE RESPONSE			
5. CONTRAST			
6. NUMBER OF RETRIES :		3	

The cursor appears in the "Number of Retries".

Pressing numerical key inputs the "Number of Retries".

The number can be set "3" as maximum.

Pressing [ALM/CLR] quits the inputting and returns to "Set Up" menu.

Pressing [ENT] entries the inputted number and returns to "Set Up" menu.

### 5.3.7 Maintenance menu

"Maintenance" menu can be displayed by pressing [7] in the "Main Menu".

("Maintenance" menu)

MAINTENANCE		UTC11:43
BRG	RANGE	NAME/MMSI
270°	0.18NM	JRC MARU1
35°	0.29NM	JRC MARU2
22°	0.92NM	JRC MARU1

1. TRX CONDITION	○
2. AIS ALARM	○
3. SENSOR STATUS	○
4. POWER ON/OFF LOG	○
5. TX ON/OFF LOG	○
6. SOFTWARE VERSION	○

Pressing up-arrow key or down-arrow key selects the sub menu.

Pressing [ENT] opens the selected sub menu display.

Pressing numerical key [1] – [6] selects the sub menu and opens the selected sub menu display.

Pressing [ALM/CLR] returns to "Main Menu".

### 5.3.7.1 TRX Condition log display

"TRX Condition" log display can be displayed by pressing [1] in the "Maintenance" menu. Latest condition is displayed as "1" (Operating condition).

("TRX Condition" log display)

TRX CONDITION		UTC11:43
BRG	RANGE	NAME/MMSI
270°	0.18NM	JRC MARU1
35°	0.29NM	JRC MARU2
22°	0.92NM	JRC MARU1

1.	CH A: 2087	DEFAULT	TX/RX
	CH B: 2088	NARROW	RX
	TX POWER : HIGH		
	ZONE SIZE : 5nm		
	AREA N: 35° 33.387'		
	(NE) E: 139° 54.578'		
	AREA N: 35° 33.387'		
↓	(SW) E: 139° 54.578'		

○

○

○

○

"Channel A and B" number

Bandwidth ("Wide" / "Narrow")

TRX mode ("TX/RX" / "RX")

"TX Power" ("HIGH" / "LOW")

"Zone Size"

"Northeast Corner of the Area"

"Southwest Corner of the Area".

(When channel management operation)

↑

2.	CH A: 2087	DEFAULT	TX/RX
	CH B: 2088	NARROW	RX
	TX POWER : HIGH		
	ZONE SIZE : 5nm		
	AREA N: 35° 33.387'		
	(NE) E: 139° 54.578'		
	AREA N: 35° 33.387'		
↓	(SW) E: 139° 54.578'		

Pressing up-arrow key or down-arrow key scrolls the display.

Pressing [ALM/CLR] returns to "Maintenance" menu.

### 5.3.7.2 AIS Alarm display

"AIS Alarm" display can be displayed by pressing [2] in the "Maintenance" menu.  
Latest alarm status is displayed.

("AIS Alarm " display)

AIS ALARM		UTC11:43
BRG	RANGE	NAME/MMSI
270°	0.18NM	JRC MARU1
35°	0.29NM	JRC MARU2
22°	0.92NM	JRC MARU1
A 2001/11/09 10:20		
059:Duc error		
A 2001/11/09 10:20		
059:Tx malufuncion		

Pressing up-arrow key or down-arrow key scrolls the display.  
Pressing [ALM/CLR] returns to "Maintenance" menu.

### 5.3.7.3 Sensor Status display

"Sensor Status" display can be displayed by pressing [3] in the "Maintenance" menu.  
Latest sensor status is displayed.

("Sensor Status " display)

SENSOR STATUS		UTC11:43
BRG	RANGE	NAME/MMSI
270°	0.18NM	JRC MARU1
35°	0.29NM	JRC MARU2
22°	0.92NM	JRC MARU1
1. POSITION : INTERNAL		
DGNSS (MSG. 17)		
2. UTC CLOCK: LOST		
3. SOG/COG : EXTERNAL		
4. HEADING : VALID		
5. ROT : OHTER SENSOR		

Pressing [ALM/CLR] returns to "Maintenance" menu.

### 5.3.7.4 Power On/Off Log display

"Power On/Off Log" display can be displayed by pressing [4] in the "Maintenance" menu.

("Power On/Off Log" display)

POWER ON/OFF LOG		UTC11:43
BRG	RANGE	NAME/MMSI
270°	0.18NM	JRC MARU1
35°	0.29NM	JRC MARU2
22°	0.92NM	JRC MARU1
ON	2010/02/02	10:00:59
OFF	2010/02/02	09:00:59
ON	2010/02/02	08:00:59
OFF	2010/02/02	07:00:59

- 
- 
- 
- 

Pressing up-arrow key or down-arrow key scrolls the display.  
Pressing [ALM/CLR] returns to "Maintenance" menu.

### 5.3.7.5 TX Off Log display

"TX Off Log" display can be displayed by pressing [5] in the "Maintenance" menu.

("TX Off Log" display)

TX OFF LOG		UTC11:43
BRG	RANGE	NAME/MMSI
270°	0.18NM	JRC MARU1
35°	0.29NM	JRC MARU2
22°	0.92NM	JRC MARU1
ON	2010/02/02	10:00:59
OFF	2010/02/02	09:00:59
ON	2010/02/02	08:00:59
OFF	2010/02/02	07:00:59

- 
- 
- 
- 

Pressing up-arrow key or down-arrow key scrolls the display.  
Pressing [ALM/CLR] returns to "Maintenance" menu.

**5.3.7.6 Software Version display**

“Software Version” display can be displayed by pressing [6] in the “Maintenance” menu.

(“Software Version” display)

SOFTWARE VERSION		UTC11:43
BRG	RANGE	NAME/MMSI
270°	0.18NM	JRC MARU1
35°	0.29NM	JRC MARU2
22°	0.92NM	JRC MARU1
TRANSPONDER:1.00		
CONTROLLER :1.00		

Pressing [ALM/CLR] returns to “Maintenance” menu.

## 6. MAINTENANCE AND INSPECTION

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

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

### WARNING



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

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

### 6.1 General Maintenance and Inspection

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

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

#### Note

If you remove the PCB unit, be sure to store it in a non-conductive bag.  
If you wrap it up with materials such as aluminum, the buck-up power supply may short

circuit and the IC may be damaged

### 6.2 Maintenance Menu

About self-diagnostics and monitoring system status, please refer to "5.3.7 Maintenance Menu"

## 7. AFTER-SALES SERVICE

### Before returning repair

If what appears to be a defect is detected, refer to "6.3 Troubleshooting" to check if the equipment is actually defective before requesting repair.

If the defect persists, immediately stop operation and call our service center or agents.

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

### Periodical maintenance recommended

Performance of this equipment may degrade over time because parts wear out, although degradation depends on how this unit has been maintained.

We recommend periodic professional maintenance checks in addition to daily maintenance.

Call our service center or agents for periodic professional maintenance (This maintenance requires a service charge).

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

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



## 8. SPECIFICATIONS

### 8.1 AIS TRANSPONDER (NTE-180)

- |                                |  |
|--------------------------------|--|
| (1) Frequency range            | : 156.025MHz to 162.025MHz,<br>: Default channels:161.975MHz, 162.025MHz |
| (2) Channel spacing            | : 25kHz/12.5kHz  |
| (3) Frequency accuracy         | : Within $\pm 3 \times 10^{-6}$  |
| (4) Type of emission           | : G1D (F1D), G2B (F2B)   |
| (5) Type of modulation         | : GMSK, FSK  |
| (6) Output power               | : 12.5W/2W   |
| (7) Rated power supply voltage | : 24Vdc (-10%, +30%)   |
| (8) Current consumption        | : 4.5A max: when transmitting<br>: 1.5A max: when receiving              |
| (9) Operating temperature      | : -25°C to +55°C (IEC 60945)   |

### 8.2 AIS CONTROLLER (NCM-722)

#### 8.2.1 Operation panel

- |                     |  |
|---------------------|--|
| (1) Type of display | : 5-inch STN LCD, 160×128 dots                   |
| (2) Keyboard        | : 23 keys  |
| (3) Back-light      | : For LCD and keyboard                           |
| (4) Dimmer control  | : Bright, medium, off (Selectable from keyboard) |

#### 8.2.2 Environmental condition

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

#### 8.2.3 External interfaces

- (1) Sensor data input ports  
Three input ports meet the requirements of IEC 61162-2 and are capable of being configured to IEC61162-1.
- (2) NSK for Gyro communication port  
One communication port for current loop
- (3) External display equipment communication ports  
Two communication ports meet the requirements of IEC 61162-2
- (4) Long range communication port  
One communication port meets the requirements of IEC 61162-2
- (5) GNSS differential correction data communication port  
One communication port meets the requirement of ITU-R M.823-2
- (6) Relay terminals  
Two ports for external alarm device
- (7) On-line maintenance output port  
One output port for future usage
- (8) External equipment communication port (Optional)  
One communication port meets the requirement of IEC 61162-3

Note: IEC61162-2 interfaces comply with the following specifications.

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

### 8.2.4 Supported interface sentences

1.	Indication	Sentence format	Supported sentence formatters		
			Input data	Recommend	Optional
	SENSOR1 SENSOR2 SENSOR3 SENSOR4 SENSORS5	IEC61162-1/2	Longitude/Latitude Position Accuracy Time of Position Datum Reference RAIM Indicator Speed Over Ground (SOG) Course Over Ground (COG) Heading Rate of Turn (*1)	GNS GLL DTM GBS VBW RMC HDT ROT	GGA RMC  VTG OSD RMC VTG OSD OSD
2.	NSK	IEC61162-1	Input: VHW		
3.	AUX1 AUX2	IEC61162-2 IEC61993-2	Input: ABM, ACA, ACK, AIR, BBM, LRI, LRF, VSD, SSD Output: ABK, ACA, ALR, DSC, DSI, LRF, LR1, LR2, LR3, TXT, VDO, VDM		
4.	LONGRANGE	IEC61993-2	Input: LRI, LRF Output: LRF, LR1, LR2, LR3		
5.	DIFF	ITU-R M.823-2	Input: RTCM SC-104 Ver.2.0 Type 1, 2, 7, 9 Output: RTCM SC-104 Ver. 2.0 Type: depends on received message		
6.	MAINTE		Prepared for future use		
7.	NMEA2000 (Optional)	IEC61162-3	Prepared for future use		

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

## 8.3 POWER SUPPLY UNIT (NBD-577A)

- |                    |  |
|--------------------|--|
| (1) Input voltage  | :100 or 220 Vac ±10% 50/60Hz Single phase<br>:24Vdc (Back up power supply) |
| (2) Output voltage | :24Vdc   |

*For further information contact:*



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