NSR
marine

Operation Manual
&
Installation Manual

VHF RADIO（GMDSS）

NVR-3000

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iv. Notice

Please read this manual carefully to ensure proper use before installation and operation of the NVR-3000.

MODIFY RECORD

No.	Modify by	Date	Paragraph	Version	Reason
1	Q/A	2020/10/21		01	First edition
2	Q/A	2021/04/12	all	02	General modification

TABLE OF CONTENTS

1. OVERVIEW

1.1 Outline

NVR-3000 is a ship borne radiotelephone equipment on VHF FM and designed for marine mobile service which provides function of VHF radiotelephone and digital selective calling (class A).

NVR-3000 conforms to the regulations of ITU-R M.493-15, IEC 61097-3:2017, IEC 61097-7:2018, IEC 62923-1:2018, IEC 62923-2:2018, IEC 60945.

It contains a VHF radio transceiver and a digital selective calling system and a dedicated digital selective calling receiver to comply with the ITU Radio Regulations. Channel numbers can be 2-digit or 4-digit to meet the latest regulation of IMO and ITU.

1.2 Product Features

NVR-3000 is the new generation of NSR VHF Radio. The main features of the NVR-3000 include:
- Large 7-inch color LCD with touch screen operation.
- Knob & touch screen operation.
- 4-digital channels available.
- DSC watching receiver integrated.
- Channels are scanned to sample any signal to be received.
- Audio interface to VDR.
- Data interface to INS (BAM System).
- Handset to be used.

1.3 System Configuration

No.	Name	Type	Q'ty	Remarks
	Standard			
1	Transceiver Unit	NVR-3000	1	
2	Handset	NHS-200	1	
3	Accessories		1	
4	User Manual		1	
	Optional			
1	Power Supply Unit	PS-10	1	
2	VHF Antenna	NVA100	2	
3	Thermal Printer	NPT-100	1	
4	External Speaker	NSK-100	1	
5	Microphone	MC100	1	
6	Flush Mount Brackets	NFB700	1	

The below figure is for the system diagram.

NVA100
VHF ANTENNA FOR VHF STATION

NVA100
VHF ANTENNA FOR DSC RECEIVER

(*OPTION)

(*OPTION)

PRINTER

GNSS Navigator

INS

(20m)
RG213

(20m)
RG123

2x0.75mm²

2x0.75mm²

4x0.75mm²

NSK-100

External
Speaker

NVR-3000

P1

(1m)
2x0.5mm²

NHS-200
Handset

P2

2x0.75mm²

(2m)
2x0.5mm²

(1m)

(S)VDR

DC24V
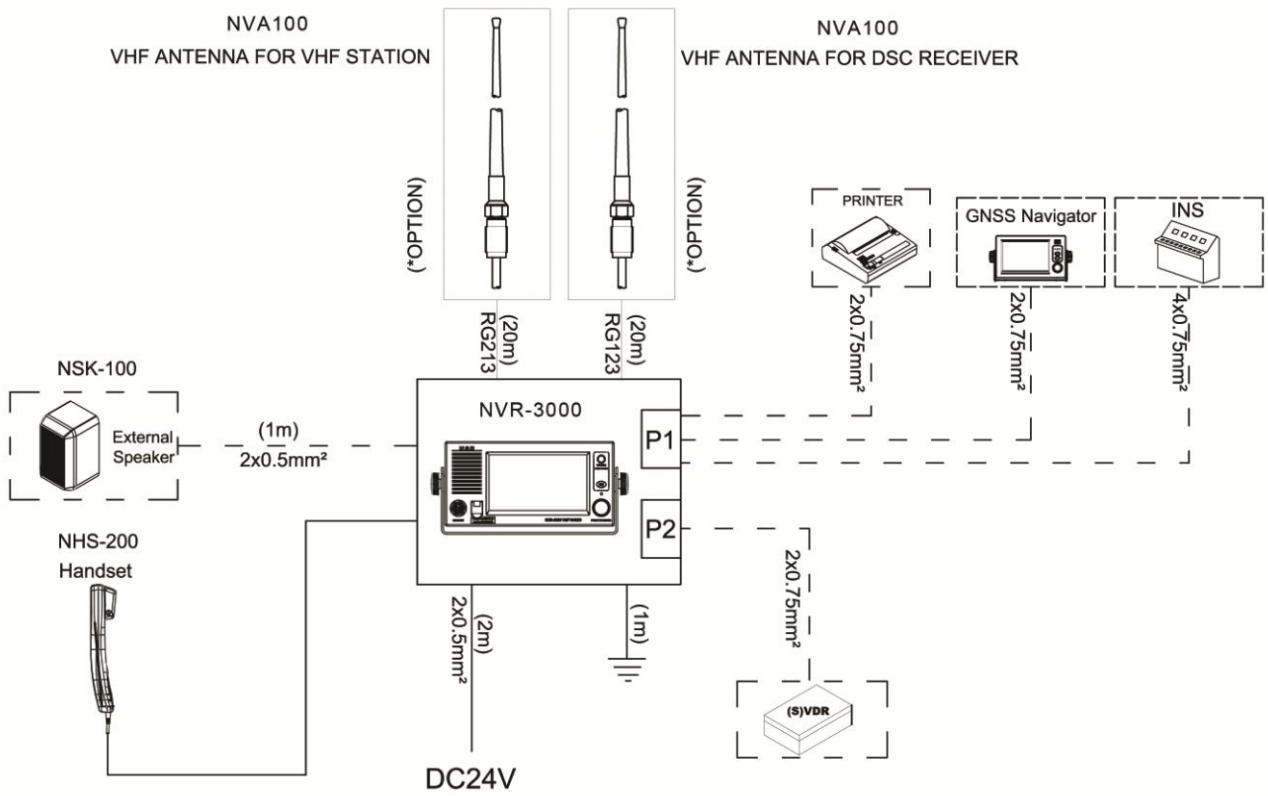
2. BASIC OPERATION

2.1 Panel Button Description

NVR-3000 can be operated by key & knob on panel or touch-screen operation.

When operating with knob, rotate to select an item on screen and press the knob to confirm the selection.

No.	Panel Button	Function
①	**VOLUME PUSH TO PWR**	● Adjust the volume of main speaker and handset (Clockwise: volume up, Anti-clockwise: volume down). Press to mute the audio of main speaker. ● Press to turn the power on or off.
②	DIM	Dimmer key for LCD brightness control.
③	**PUSH TO ENTER**	● Press to switch the volume adjustment object between main speaker and handset in Main screen. ● Rotate to select menu items, select channel or SQL level. Push to confirm a selection.
④	**DISTRESS**	Press and hold down the button 3 seconds to transmit the distress alert. *Note: The DISTRESS button is covered to prevent false alarm.*
⑤		Handset socket
⑥		Main speaker
⑦		LCD

2.2 Power On/Off

● **Power On:**	● **Power Off:**
Press the **PUSH TO PWR** knob to turn on the power.	Press and hold down the **PUSH TO PWR** knob until the screen goes blank, approx. three seconds.

2.3 Main Screen

No.	Indication	Meaning
1	MMSI	Own ship's ID (9 digits) *Note: Request service to set your MMSI.*
2	RX Signal Level	The signal level of receiving
3	Handset Volume	The volume of handset
4	Speaker Volume	The volume of speaker
5	Connection Icon	Connection status of Transceiver. Green: OK.
6	EPFS /EPFS (OFFLINE)/ EPFS (OVER 4H)/ MANUAL/ NO INFO	[EPFS]: The position and time data from EPFS; [EPFS (OFFLINE)]: Indicate no position data from EPFS for 15 minutes; [EPFS (OVER 4H)]: Indicate no position data from EPFS for 4 hours; [MANUAL]: Set the position and time manually; [NO INFO]: No position and time data.
7	DSC MSG	Compose DSC message.
8	CH16	Switch to the Main (radiotelephone) screen and set to CH16. *Note: This function is not available for PRIV (private) channel region.*
9	MENU	Open the Main Menu.
10	WX	Switch to WX (Weather) Channel.
11	MULTI	Set SCAN or DW (Dual Watching).
12	TASK	Back to the DSC task menu.
13	CH	Channel setting
14	REGION	Select channel region.
15	POWER	Power (LOW/HIGH) setting
16	SQL	Squelch (OFF/ON-SQL value) setting

2.4 Channel Watch Scan Screen

2.4.1 Dual Watch Scan

In Dual Watch, CH16 and an additional channel will be scanned for watching.

- Generally, CH16 will be sampled for 0.15s while the additional channel is sampled for 1.85s.
- When a signal is detected on CH16 during sampling, the scanning will stop and the receiver will stay on CH16

for receiving. As soon as the signal disappears on CH16, the scanning between two channels will restore.

● If a signal is detected on the additional channel during sampling, the transceiver will continue the sampling of 0.15s on CH16 every 2s when receiving on the additional channel. Whenever a signal is detected on CH16 during sampling, the transceiver will stay on CH16 for receiving, by ignoring the signal on the additional channel.

Procedures:

① Set the additional channel to be watched (for example CH18). Refer to Section 3.2 **Channel Setting**.
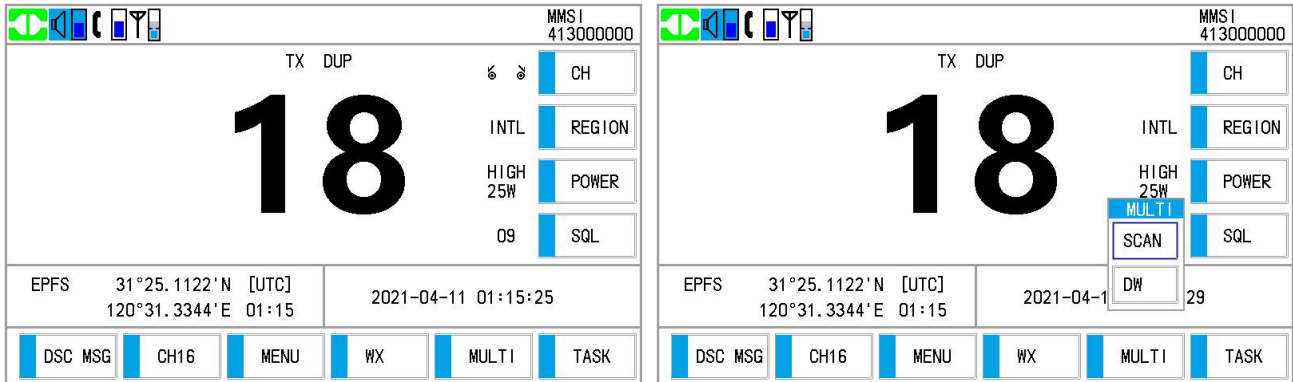
② Click **[MULIT]** - **[DW]** to start the scanning. The screen alternately switches between CH 16 and CH 18.
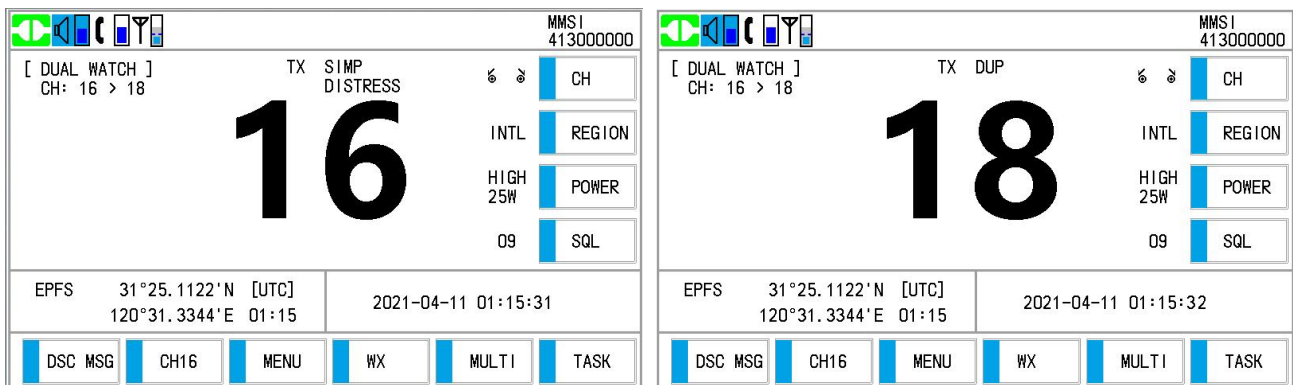
③ To stop scanning, click **[MULIT]** - **[DW]** again or click any other button on the screen.

2.4.2 All Channel Scan

In All Channel Scan, CH16 and all other channels will be scanned alternatively in a cycle of 0.15/1.8 seconds.

Click **[MULIT]** - **[SCAN]** to start the scanning of all channels cyclically, click again to stop the scanning.
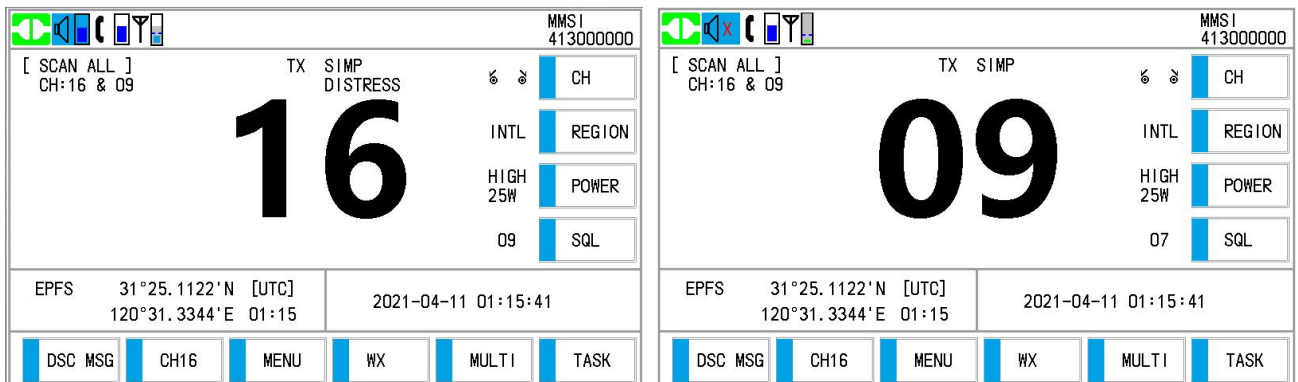
Note: Transmitting is disabled during scanning.

2.5 Brightness adjustment

There are two ways to adjust the brightness of screen.

① Press the **DIM** button on panel to adjust the brightness by ten steps, or

② Click **[MENU]** and adjust the brightness in the **[MAIN MENU]**: **[SYSTEM]-[DISPLAY]-[LCD DIMMER]**. Click **[LCD DIMMER]** knob by 1 ~ 10 steps.

Note: When the power is turned off, the last status of brightness is stored. Therefore, when the power is turned on, the screen will display with the last brightness before powered off.

```
              [ DISPLAY ]

  LCD DIMMER                    1

  DISPLAY MODE                 DAY

  CHANNEL SIZE                 ooOO

  BACK
```
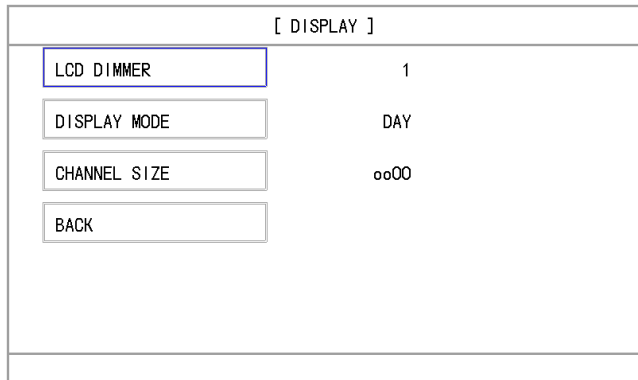
2.6 Main Speaker On/Off

There are three ways to turn on/off the main speaker (except in DSC communication, alarming and key buzzing).

① Rotate the **VOLUME** knob anti-clockwise to mute the main speaker;

② At any screen, shortly press the **VOLUME** knob to mute the main speaker, and press again to resume;

③ While **[AUDIO]** - **[OFF HOOK SPK]** in **[SYSTEM SETTING]** is set as **ON**, the main speaker keeps on no matter the handset is on/off the hook. While **[OFF HOOK SPK]** is set as **OFF**, the main speaker will be muted if the handset is off the hook. Refer to Section 2.8.3.3.

```
                                    MMSI
                                    413000000
         TX  SIMP
         DISTRESS                   CH

    16                      INTL     REGION

                           HIGH      POWER
                           25W
                            OFF      SQL

  EPFS    31°25.1122'N [UTC]
          120°31.3344'E  01:14    2021-04-11 01:14:47

  DSC MSG   CH16   MENU    WX    MULTI   TASK
```
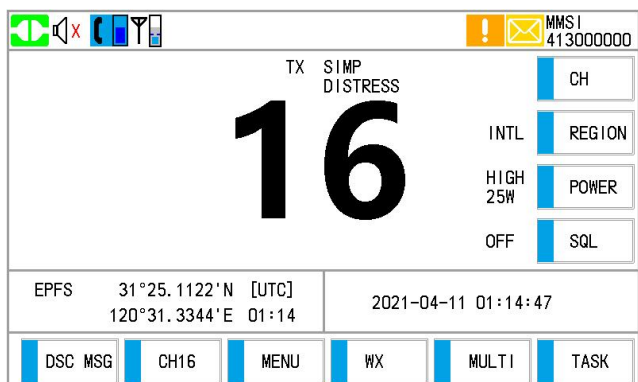
2.7 Auto Acknowledgement Setting

Individual, position, polling and test calls can be acknowledged automatically. This is to set on **[ACK SETTING]** in the **[MAIN MENU]-[DSC]** menu.

```
              [ DSC ]

  MESSAGE

  ADDRESS

  SCAN SETTING

  ACK  SETTING

  MMSI SETTING

  BACK
```

```
              [ AUTO ACK ]

  REASON              NO REASON

  INDIVIDUAL          AUTO-UNABLE

  POSITION            MANUAL

  POLLING             AUTO

  TEST                AUTO

  BACK
```
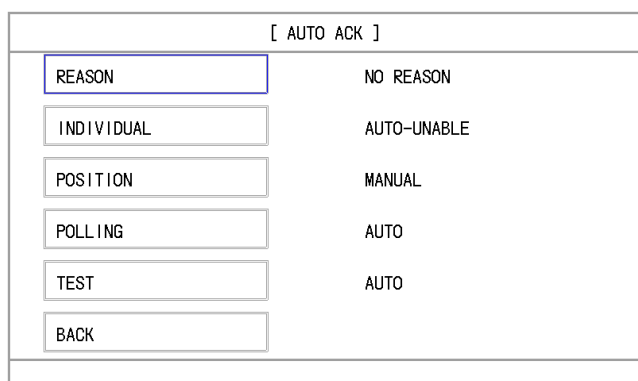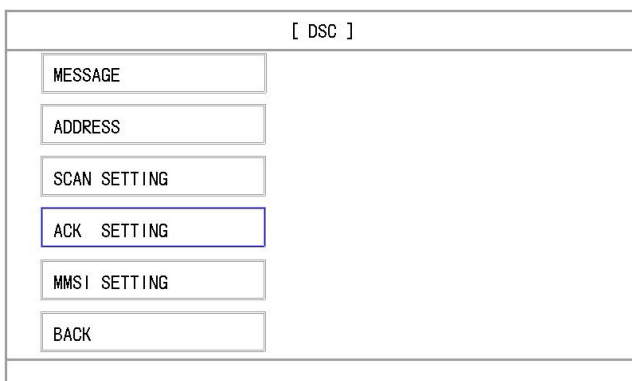
Note: When own ship's communication is in high priority, set to manual acknowledgement.

The auto acknowledgement is not sent in the following cases:

· There are DSC communications (for individual call).

· Channel is in use.

Note: The auto acknowledgement for the individual call is sent only when the proposed channel or communication mode is available. "REASON" area gives the reason of AUTO-UNABLE correspondingly.

2.8 System Setting

Click **[SYSTEM]** on the **[MAIN MENU]** screen. The following **[SYSTEM SETTING]** screen appears：

```
[ MAIN MENU ]                      [ SYSTEM SETTING ]

   USER                      LANGUAGE    ENG      SPECIAL DSC    OFF

   DSC                       PRINT                AUDIO

   SYSTEM                    DISPLAY              DATE/TIME

   DIAGNOSTICS               POSITION             TIMEOUT

   SERVICE                   PORT                 BACK

   EXIT MENU
```
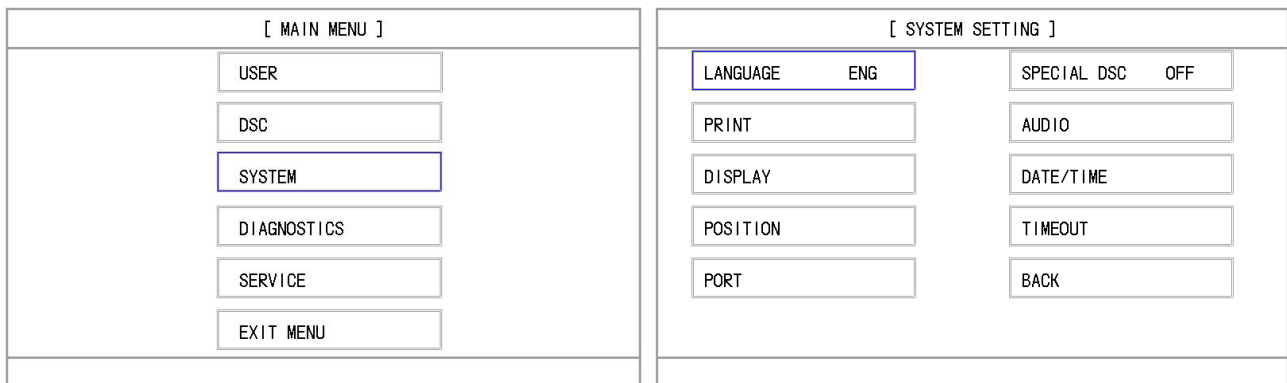
2.8.1 Language

The default menu language is English.
Click **[LANGUAGE]** to change the menu language.

2.8.2 Print

The **[PRINT]** menu enables/disables automatic printing of all transmitted and received calls and the results of the self-test.

① Click **[PRINT]** in **[SYSTEM SETTING]**.

② Click **[TX MESSAGE]** to select **MANUAL** or **AUTO**.

③ Set [**RX MESSAGE**] and [**SELFTEST INFO**] similarly.

④ You can also set the printer type and port baud rate here.

```
[ PRINT ]

TX MESSAGE          MANUAL

RX MESSAGE          MANUAL

SELFTEST INFO       MANUAL

PRINTER TYPE        NPT-100

PRINTER PORT        4800

BACK
```
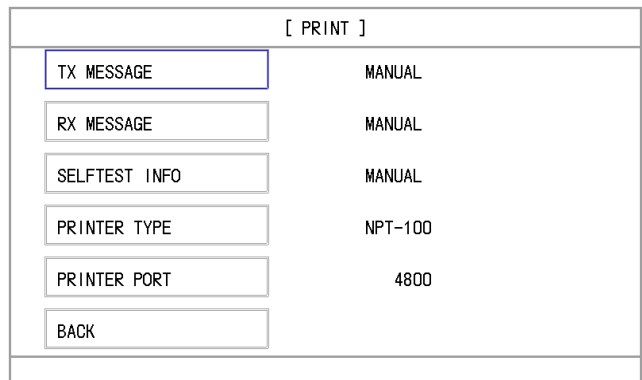
2.8.3 Audio

Click **[AUDIO]** in **[SYSTEM SETTING]** to set the key buzzer and alarm buzzer etc.

2.8.3.1 KEY BUZZER

Click **[KEY]** to switch the buzzer on or off.

```
                    [ AUDIO ]
    ┌─────────────────────────┐
    │ KEY                     │        ON
    └─────────────────────────┘
    ┌─────────────────────────┐
    │ SYSTEM ALARM            │        OFF
    └─────────────────────────┘
    ┌─────────────────────────┐
    │ OFF HOOK SPK            │        OFF
    └─────────────────────────┘
    ┌─────────────────────────┐
    │ SQL                     │        ON
    └─────────────────────────┘
    ┌─────────────────────────┐
    │ SQL LEVEL               │        09
    └─────────────────────────┘
    ┌─────────────────────────┐
    │ BACK                    │
    └─────────────────────────┘
```

2.8.3.2 ALARM BUZZER

Click **[SYSTEM ALARM]** to switch the alarm buzzer on or off.

By setting the **[SYSTEM ALARM]**, alarm that sounds against system faults and message receiving may be enabled or disabled.

```
                    [ AUDIO ]
    ┌─────────────────────────┐
    │ KEY                     │        ON
    └─────────────────────────┘
    ┌─────────────────────────┐
    │ SYSTEM ALARM            │        ON
    └─────────────────────────┘
    ┌─────────────────────────┐
    │ OFF HOOK SPK            │        OFF
    └─────────────────────────┘
    ┌─────────────────────────┐
    │ SQL                     │        ON
    └─────────────────────────┘
    ┌─────────────────────────┐
    │ SQL LEVEL               │        09
    └─────────────────────────┘
    ┌─────────────────────────┐
    │ BACK                    │
    └─────────────────────────┘
```

2.8.3.3 OFF HOOK SPK

Click **[OFF HOOK SPK]** to switch the main speaker on or off when the handset is off-hook.

```
                    [ AUDIO ]
    ┌─────────────────────────┐
    │ KEY                     │        ON
    └─────────────────────────┘
    ┌─────────────────────────┐
    │ SYSTEM ALARM            │        ON
    └─────────────────────────┘
    ┌─────────────────────────┐
    │ OFF HOOK SPK            │        OFF
    └─────────────────────────┘
    ┌─────────────────────────┐
    │ SQL                     │        ON
    └─────────────────────────┘
    ┌─────────────────────────┐
    │ SQL LEVEL               │        09
    └─────────────────────────┘
    ┌─────────────────────────┐
    │ BACK                    │
    └─────────────────────────┘
```

2.8.3.4 SQL

Click **[SQL]** to switch the SQL on or off.

```
                        [ AUDIO ]

       KEY                            ON

       SYSTEM ALARM                   ON

       OFF HOOK SPK                   OFF

       SQL                            ON

       SQL LEVEL                      O9

       BACK
```

2.8.3.5 SQL LEVEL

Click **[SQL LEVEL]** to select the threshold value between 1~10.

```
                        [ AUDIO ]

       KEY                            ON

       SYSTEM ALARM                   ON

       OFF HOOK SPK                   OFF

       SQL                            ON

       SQL LEVEL                      O9

       BACK
```

<u>Note</u>: SQL can also be set on main screen.

2.8.4 Display Setting

2.8.4.1 DISPLAY MODE

Set the display mode (DAY or NIGHT) in the **[SYSTEM SETTING]-[DISPLAY]-[DISPLAY MODE]** by clicking.

```
            [ DISPLAY ]                              [ DISPLAY ]

   LCD DIMMER           1                 LCD DIMMER            6

   DISPLAY MODE         DAY               DISPLAY MODE          NIGHT

   CHANNEL SIZE         oo00              CHANNEL SIZE          oo00

   BACK                                  BACK
```

2.8.4.2 CHANNEL SIZE

There are two kinds of size can be selected. Click **[CHANNEL SIZE]** to change the size.
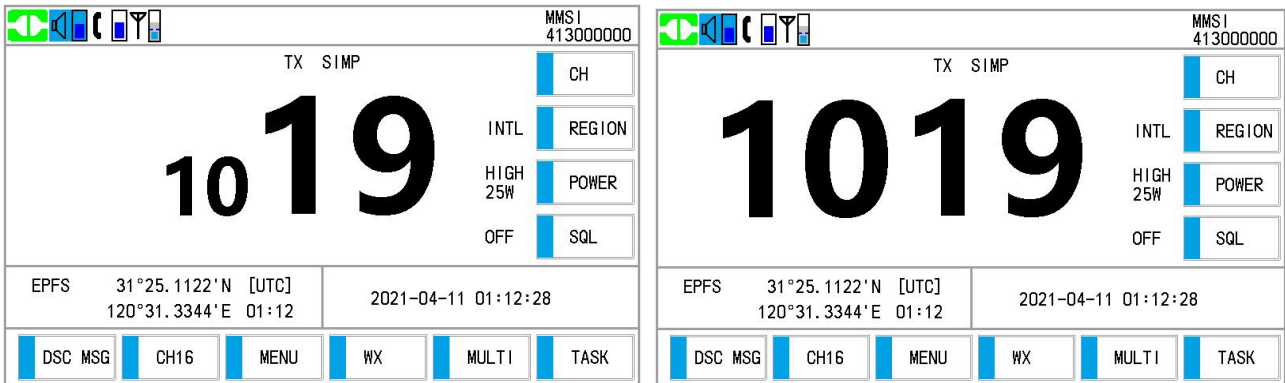
2.8.5 Date/Time Setting

This is to set the date and time for the system.
Click **[DATE/TIME]** in **[SYSTEM SETTING]** to open the **[DATE/TIME SET]** screen. There are four items can be set: MODE, DATE-UTC, TIME-UTC and ZONE.
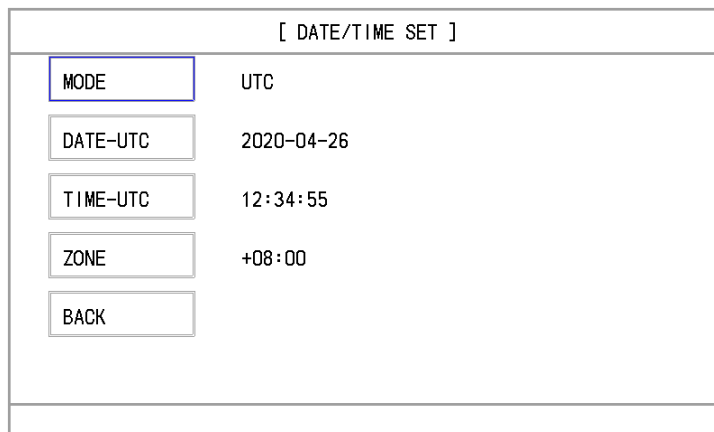
- Date or time cannot be adjusted when they are input from GNSS navigator.
- If date or time is not input from GNSS navigator, click to enter date and time with the numeric keys in the pop-up window. For example:

[DATE/TIME SET]

MODE   UTC

DATE-UTC   2020-04-26

TIME-UTC   12:31:30

ZONE   +08:00

BACK

INPUT
1	2	3
4	5	6
7	8	9
F	0	OK

[DATE/TIME SET]

MODE   UTC

DATE-UTC   2020-04-26

TIME-UTC   12:31:30

ZONE   1:+ 2:-
            08:00

BACK

INPUT
1	2	3
4	5	6
7	8	9
F	0	OK

Note: When manually enter date and time, use UTC (Universal Time Coordinated). Do not use local time (LMT).

If LMT is selected, it will be showed on the bottom right of Main screen.

2.8.6 Position Setting

This is to set a position used for DSC operations only when GNSS input is not available.

Do the following to set your position:

① Click [**POSITION**] in [**SYSTEM SETTING**]. The following screen appears:

[POSITION]

SOURCE   EPFS

POS&TIME   --°--.----
            ---°--.---- --:--

BACK

② Click [**SOURCR**] to select [**EPFS**] or [**MANUAL**].
[**EPFS**]: The position data from EPFS. The system will display "EPFS LOST POSITION" if no any data.

When **[EPFS]** is selected, position data will be input and updated from GNSS navigator connected.

[MANUAL]: Set the position data manually.

For **[MANUAL]**, go to next step.

```
          [ POSITION ]                              [ POSITION ]
  ┌────────┐                            ┌────────┐                    ┌──INPUT──────┐
  │ SOURCE │   MANUAL                   │ SOURCE │   MANUAL           │  1   2   3  │
  └────────┘                            └────────┘                    │             │
  ┌────────┐    00°00.0000N             ┌────────┐    00°00.0000N     │  4   5   6  │
  │POS&TIME│   000°00.0000E 00:00       │POS&TIME│   000°00.0000E 00:00│  7   8   9 │
  └────────┘                            └────────┘                    │             │
  ┌────────┐                            ┌────────┐                    │  F   0   OK │
  │  BACK  │                            │  BACK  │                    └─────────────┘
  └────────┘                            └────────┘
```

③   For manual input, click **[POS&TIME]**, use the numeric keys to enter latitude/longitude of your position, and UTC time. To change coordinate, click 1 for North or East; 2 for South or West.

After entering each data, click OK .

```
          [ POSITION ]                              [ POSITION ]
  ┌────────┐                ┌INPUT──────┐  ┌────────┐                 ┌INPUT──────┐
  │ SOURCE │   MANUAL       │ 1   2   3 │  │ SOURCE │   MANUAL        │ 1   2   3 │
  └────────┘        1:N 2:S │           │  └────────┘                 │           │
  ┌────────┐   31°25.5566N  │ 4   5   6 │  ┌────────┐   31°25.5566N   │ 4   5   6 │
  │POS&TIME│  000°00.0000E 00:00         │  │POS&TIME│  120°31.7788E 00:00         │
  └────────┘                │ 7   8   9 │  └────────┘        1:E 2:W  │ 7   8   9 │
  ┌────────┐                │           │  ┌────────┐                 │           │
  │  BACK  │                │ F   0  OK │  │  BACK  │                 │ F   0  OK │
  └────────┘                └───────────┘  └────────┘                 └───────────┘
```

<u>Note</u>: *When the setting of POSITION input type is [MANUAL], and the message "WARNING: Position data is not updated! " is shown, the Position data was older than 4H. Please update it.*

2.8.7 Timeout Setting

This is to set the time out parameters for some operations.

Click **[TIMEOUT]** in **[SYSTEM SETTING]**. The following screen appears:

```
                    [ TIMEOUT ]
       ┌─────────────────────┐
       │     MENU BACK        │        OFF
       └─────────────────────┘
       ┌─────────────────────┐
       │     TELEPHONE        │        30S
       └─────────────────────┘
       ┌─────────────────────┐
       │     GENERAL DSC      │        15MIN
       └─────────────────────┘
       ┌─────────────────────┐
       │     DISTRESS RX      │        15MIN
       └─────────────────────┘
       ┌─────────────────────┐
       │     BACK             │
       └─────────────────────┘
```

[MENU BACK]:   Back to the upper menu screen automatically.

[TELEPHONE]:   Close the inactive communications for VHF telephone.

[GENERAL DSC]:   Close the inactive communications except the distress call.

[DISTRESS RX]:   Close the inactive communications for the receiving distress call.

Click to select the item and its time interval desired.

[OFF] leaves the menu screen and/or the inactive communications open until you close them manually.

2.8.8 Port Setting

This is to set the baud rate of I/O ports.

Click **[PORT]** in **[SYSTEM SETTING]**. The following screen appears. Click **[INS]**, **[GNSS]** or **[ALARM]** until the desired baud rate appears.

```
                    [ PORT ]

      INS                   38400

      GNSS                   4800

      ALARM                 38400

      BACK
```

2.9 Address List

This is to build up a list of regularly used stations.

```
                    [ DSC ]

        MESSAGE

        ADDRESS

        SCAN SETTING

        ACK  SETTING

        MMSI SETTING

        BACK
```

Click **[ADDRESS]** in the **[MAIN MENU]**-**[DSC]** menu, you can do the following operations.

```
                  [ ADDRESS LIST ]
   NO  MMSI       TYPE   NAME           1/  7          ┌──────┐
  >01  004122100  COAST  SHANGHAI RADIO               │ VIEW │
                                                       └──────┘
   02  004123100  COAST  GUANGZHOU RADIO   ^           ┌──────┐
                                           ^           │ ADD  │
   03  004121100  COAST  TIANJIN RADIO     ^           └──────┘
                                                       ┌──────┐
   04  004121300  COAST  DALIAN RADIO                  │ DEL  │
                                                       └──────┘
   05  004122200  COAST  QINGDAO RADIO                 ┌──────┐
                                                       │ CALL │
   06  004122700  COAST  XIAMEN RADIO      v           └──────┘
                                           v           ┌──────┐
   07  004773500  COAST  HONGKONG RADIO    v           │ BACK │
                                                       └──────┘
```

2.9.1 View an address

① Click to select the address in list.
② Click **[VIEW]** to see the details of the address.

```
                  [ ADDRESS EDIT ]
   ┌──────┐
   │ MMSI │      004122100
   └──────┘
   ┌──────┐
   │ TYPE │      COAST
   └──────┘
   ┌──────┐
   │ NAME │      SHANGHAI RADIO
   └──────┘
   ┌──────┐
   │ BACK │
   └──────┘
```

The address can be edited in this menu.

2.9.2 Add an address

① Click **[ADD]** to add an address. For example, add a group MMSI.

```
                  [ ADDRESS EDIT ]
   ┌──────┐
   │ MMSI │      000000000
   └──────┘
   ┌──────┐
   │ TYPE │      SHIP
   └──────┘
   ┌──────┐
   │ NAME │
   └──────┘
   ┌──────┐
   │ BACK │
   └──────┘
```

② Click **[MMSI]**, enter the MMSI with the numeric keys in **[INPUT]**.

```
                        [ ADDRESS EDIT ]

    ┌──────────┐    041288888
    │  MMSI    │                        ┌─────────────────────┐
    └──────────┘                        │ INPUT               │
                                        │  ┌───┐ ┌───┐ ┌───┐  │
    ┌──────────┐    SHIP                │  │ 1 │ │ 2 │ │ 3 │  │
    │  TYPE    │                        │  └───┘ └───┘ └───┘  │
    └──────────┘                        │  ┌───┐ ┌───┐ ┌───┐  │
                                        │  │ 4 │ │ 5 │ │ 6 │  │
    ┌──────────┐                        │  └───┘ └───┘ └───┘  │
    │  NAME    │                        │  ┌───┐ ┌───┐ ┌───┐  │
    └──────────┘                        │  │ 7 │ │ 8 │ │ 9 │  │
                                        │  └───┘ └───┘ └───┘  │
    ┌──────────┐                        │  ┌───┐ ┌───┐ ┌───┐  │
    │  BACK    │                        │  │ F │ │ 0 │ │OK │  │
    └──────────┘                        │  └───┘ └───┘ └───┘  │
                                        └─────────────────────┘
```

③ Click OK to confirm. The **[TYPE]** is automatically changed to **GROUP** if you enter the group MMSI.

④ Click **[NAME]** to add a group name by using keys in [INPUT] and rotating the PUSH TO ENTER knob.

```
                        [ ADDRESS EDIT ]

    ┌──────────┐    041288888
    │  MMSI    │                        ┌─────────────────────────┐
    └──────────┘                        │ INPUT                   │
                                        │ ┌────┐ ┌────┐ ┌────┐     │
    ┌──────────┐    GROUP               │ │ 1  │ │ 2  │ │ 3  │     │
    │  TYPE    │                        │ │    │ │ABC │ │DEF │     │
    └──────────┘                        │ └────┘ └────┘ └────┘     │
                                        │ ┌────┐ ┌────┐ ┌────┐     │
    ┌──────────┐    □                   │ │ 4  │ │ 5  │ │ 6  │     │
    │  NAME    │                        │ │GHI │ │JKL │ │MNO │     │
    └──────────┘                        │ └────┘ └────┘ └────┘     │
                                        │ ┌────┐ ┌────┐ ┌────┐     │
    ┌──────────┐                        │ │ 7  │ │ 8  │ │ 9  │     │
    │  BACK    │                        │ │PQRS│ │TUV │ │WXYZ│     │
    └──────────┘                        │ └────┘ └────┘ └────┘     │
                                        │ ┌────┐ ┌────┐ ┌────┐     │
                                        │ │ F  │ │ 0  │ │OK  │     │
                                        │ │Del │ │ _  │ │    │     │
                                        │ └────┘ └────┘ └────┘     │
                                        └─────────────────────────┘
```

⑤ Click OK to confirm the editing.

```
                        [ ADDRESS EDIT ]

    ┌──────────┐    041288888                  ┌──────────┐
    │  MMSI    │                               │  SAVE    │
    └──────────┘                               └──────────┘

    ┌──────────┐    GROUP
    │  TYPE    │
    └──────────┘

    ┌──────────┐    GROUP 1
    │  NAME    │
    └──────────┘

    ┌──────────┐
    │  BACK    │
    └──────────┘
```

⑥ Click **[SAVE]** and select YES . The address is added in the list.

[ADDRESS EDIT]

MMSI   041288888

TYPE   GRO   CONFIRM   SAVE

NAME   GRO

BACK   NO

                 YES

[ADDRESS LIST]

NO	MMSI	TYPE	NAME	2/ 8
01	004122100	COAST	SHANGHAI RADIO	
>02	004123100	COAST	GUANGZHOU RADIO	
03	004121100	COAST	TIANJIN RADIO	
04	004121300	COAST	DALIAN RADIO	
05	004122200	COAST	QINGDAO RADIO	
06	004122700	COAST	XIAMEN RADIO	
07	004773500	COAST	HONGKONG RADIO	
08	041288888	GROUP	GROUP 1	

VIEW

ADD

DEL

CALL

BACK

2.9.3 Delete an address

① Click to select an address in list.

② Click **[DEL]**, delete the selected address directly.

2.9.4 Call to an address

① Click to select an address in list.

② Click **[CALL]**, you can send a DSC call to the selected address. For example:

● **To a coast station:** You can send **INDIVIDUAL** or **TEST** call.
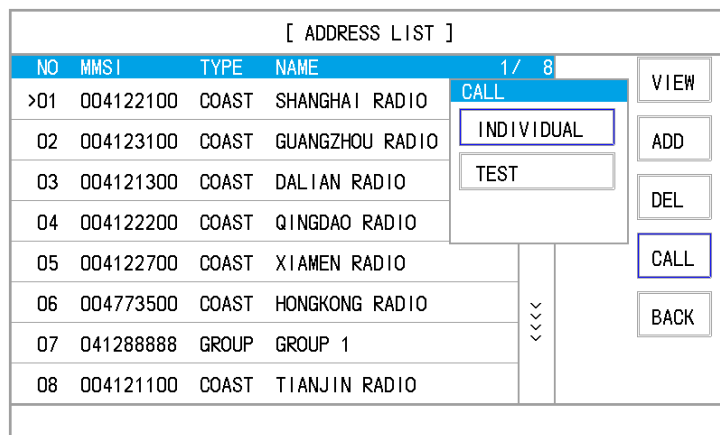
[ADDRESS LIST]

NO	MMSI	TYPE	NAME	1/ 8
>01	004122100	COAST	SHANGHAI RADIO	
02	004123100	COAST	GUANGZHOU RADIO	
03	004121300	COAST	DALIAN RADIO	
04	004122200	COAST	QINGDAO RADIO	
05	004122700	COAST	XIAMEN RADIO	
06	004773500	COAST	HONGKONG RADIO	
07	041288888	GROUP	GROUP 1	
08	004121100	COAST	TIANJIN RADIO	

CALL
  INDIVIDUAL
  TEST

VIEW

ADD

DEL

CALL

BACK

● **To a group:** You can send **GROUP** call.

[ADDRESS LIST]

NO	MMSI	TYPE	NAME	7/ 8
01	004122100	COAST	SHANGHAI RADIO	
02	004123100	COAST	GUANGZHOU RADIO	
03	004121300	COAST	DALIAN RADIO	
04	004122200	COAST	QINGDAO RADIO	
05	004122700	COAST	XIAMEN RADIO	
06	004773500	COAST	HONGKONG RADIO	
>07	041288888	GROUP	GROUP 1	
08	004121100	COAST	TIANJIN RADIO	

CALL
  GROUP

VIEW

ADD

DEL

CALL

BACK
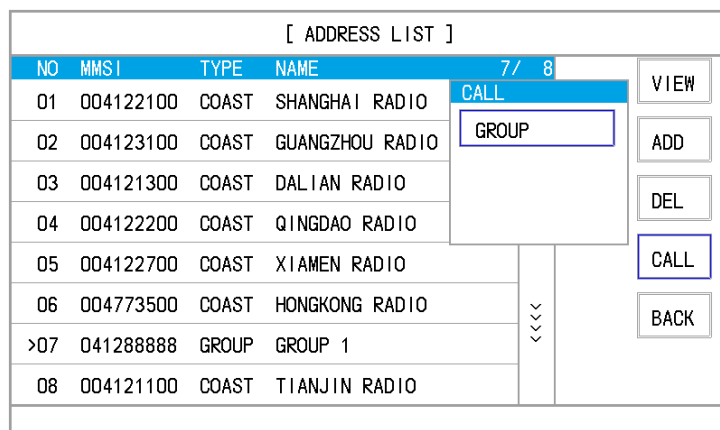
● **To a ship:** You can send **INDIVIDUAL**, **TEST** or **POSITION** call.

```
                    [ ADDRESS LIST ]
    NO  MMSI       TYPE   NAME          9/ 9        VIEW
    02  004123100  COAST  GUANGZHOU RADIO  CALL
                                                    ADD
    03  004121300  COAST  DALIAN RADIO    INDIVIDUAL
    04  004122200  COAST  QINGDAO RADIO   TEST        DEL
    05  004122700  COAST  XIAMEN RADIO    POSITION
    06  004773500  COAST  HONGKONG RADIO              CALL
    07  041288888  GROUP  GROUP 1
    08  004121100  COAST  TIANJIN RADIO              BACK
   >09  413888866  SHIP   NSR 1
```

After editing, click **[CALL]** to send the DSC call.

2.10 Diagnostics

Click **[DIAGOSTICS]** on the **[MAIN MENU]** screen. The following **[DIAGOSTICS**] screen appears：

```
                [ DIAGNOSTICS ]

        PROGRAM VERSION

        LCD    TEST

        KEY    TEST

        AUDIO  TEST

        DSC RX TEST

        BACK
```


2.10.1 Program Version

It is to check the program version at **[DIAGOSTICS]** menu.

Click **[PROGRAM VERSION]**, the following screen appears：

```
                [ PROGRAM VERSION ]

[ VHF RADIO ]                                  BACK
    BOOT :1.00 20210329
    APP  :1.00 20210329
    PA   :0.90 20210329

[ HARDWARE ]
    FONT :OK    PFONT:OK    FLASH:OK    SDRAM:OK
    COMM :OK    RTC  :OK    TOUCH:OK    AUDIO:OK
    NET  :OK



TEST MODE:BUILD:Apr 11 2021 15:49:49
```
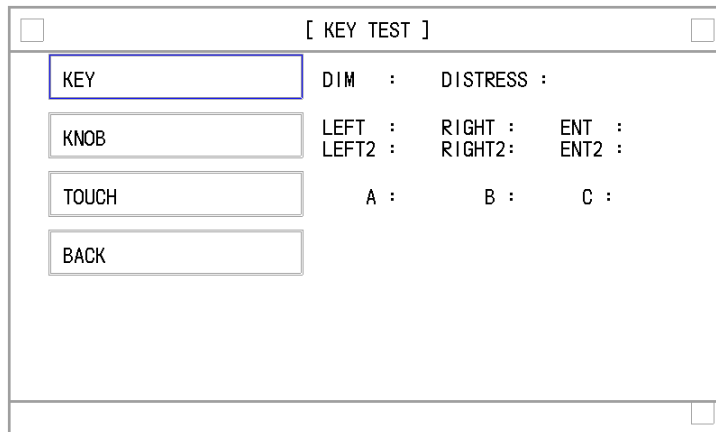
2.10.2 LCD Test

After clicking **[LCD TEST]**, press the `DIM` button to test the Display Brightness. Press the `PUSH TO ENTER` knob to return to the upper menu.

2.10.3 Key Test

It is designed to test whether the key, knob and touch-screen are working or not.
Click **[KEY TEST]** to enter the following screen:

```
┌─────────────────────────────────────────────────┐
│  ☐              [ KEY TEST ]                 ☐   │
│  ┌────────────────────┐                          │
│  │ KEY                │   DIM  :    DISTRESS :   │
│  └────────────────────┘                          │
│  ┌────────────────────┐   LEFT :    RIGHT :   ENT  :  │
│  │ KNOB               │   LEFT2 :   RIGHT2:   ENT2 :  │
│  └────────────────────┘                          │
│  ┌────────────────────┐        A :      B :     C :  │
│  │ TOUCH              │                          │
│  └────────────────────┘                          │
│  ┌────────────────────┐                          │
│  │ BACK               │                          │
│  └────────────────────┘                          │
│                                            ☐     │
└─────────────────────────────────────────────────┘
```

KEY test:
DIM: Press the `DIM` button.
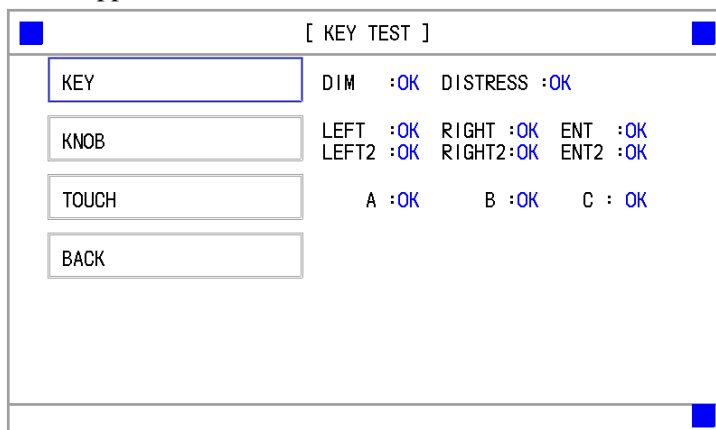DISTRESS: Press the `DISTRESS` button.
KNOB test:
LEFT/RIGHT/ENT: Turn the `PUSH TO ENTER` knob to left and right, then press it.
LEFT2/RIGHT2/ENT2:   Turn the `PUSH TO PWR` knob to left and right, then press it.
TOUCH test: Touch the corner of the screen. The box corresponding to the item will be filled with blue color.
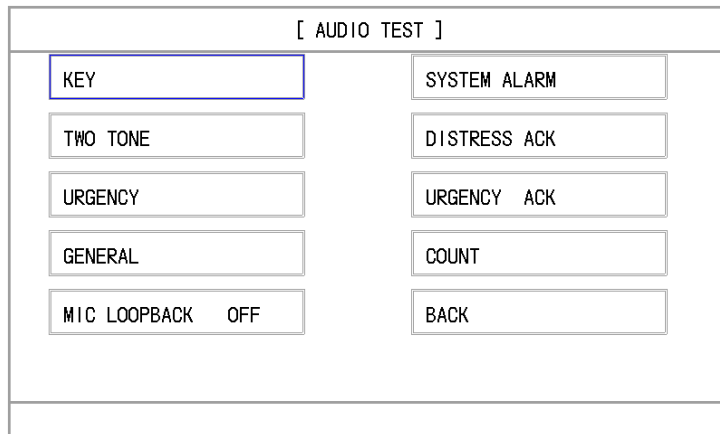If everything is good, **OK** icon will appear.
Click **[BACK]** to return to the upper menu.

```
┌─────────────────────────────────────────────────┐
│  ■              [ KEY TEST ]                 ■   │
│  ┌────────────────────┐                          │
│  │ KEY                │   DIM  :OK  DISTRESS :OK │
│  └────────────────────┘                          │
│  ┌────────────────────┐   LEFT :OK  RIGHT :OK ENT  :OK  │
│  │ KNOB               │   LEFT2 :OK RIGHT2:OK ENT2 :OK  │
│  └────────────────────┘                          │
│  ┌────────────────────┐        A :OK    B :OK   C : OK  │
│  │ TOUCH              │                          │
│  └────────────────────┘                          │
│  ┌────────────────────┐                          │
│  │ BACK               │                          │
│  └────────────────────┘                          │
│                                            ■     │
└─────────────────────────────────────────────────┘
```

2.10.4 Audio Test

It is to check the audio at **[DIAGOSTICS]** menu.

Click **[AUDIO TEST]**, the following screen appears：

```
                         [ AUDIO TEST ]

      ┌─────────────────────┐      ┌─────────────────────┐
      │ KEY                 │      │ SYSTEM ALARM        │
      └─────────────────────┘      └─────────────────────┘

      ┌─────────────────────┐      ┌─────────────────────┐
      │ TWO TONE            │      │ DISTRESS ACK        │
      └─────────────────────┘      └─────────────────────┘

      ┌─────────────────────┐      ┌─────────────────────┐
      │ URGENCY             │      │ URGENCY  ACK        │
      └─────────────────────┘      └─────────────────────┘

      ┌─────────────────────┐      ┌─────────────────────┐
      │ GENERAL             │      │ COUNT               │
      └─────────────────────┘      └─────────────────────┘

      ┌─────────────────────┐      ┌─────────────────────┐
      │ MIC LOOPBACK   OFF  │      │ BACK                │
      └─────────────────────┘      └─────────────────────┘
```
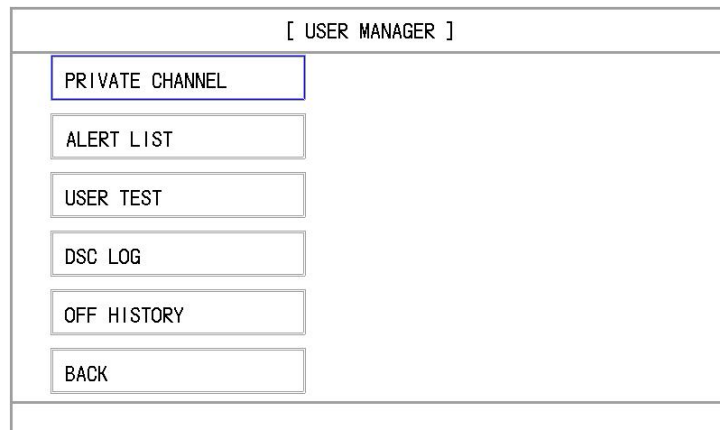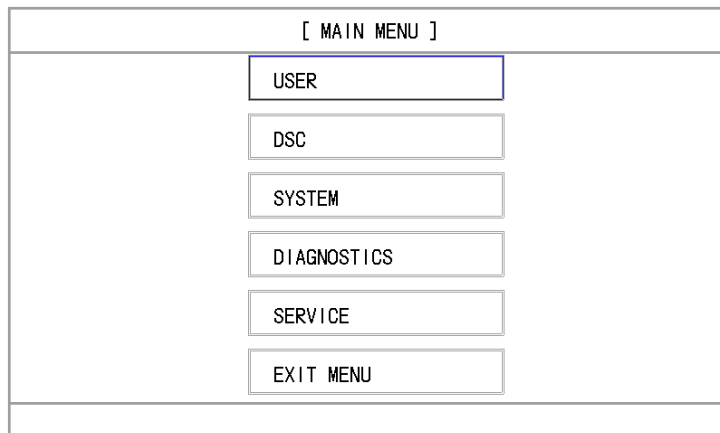
Click the items to test the corresponding audio.

<u>Note</u>: *1. The ALARM buzzer should be set to ON while do the test.*
2. The setting (ON or OFF) of [MIC LOOPBACK] (used for handset microphone loop test) won't be saved.

2.11 User Manager

Click **[USER]** on the **[MAIN MENU]** screen. The **[USER MANAGER]** menu appears.

```
                         [ MAIN MENU ]

              ┌─────────────────────────────┐
              │ USER                        │
              └─────────────────────────────┘
              ┌─────────────────────────────┐
              │ DSC                         │
              └─────────────────────────────┘
              ┌─────────────────────────────┐
              │ SYSTEM                      │
              └─────────────────────────────┘
              ┌─────────────────────────────┐
              │ DIAGNOSTICS                 │
              └─────────────────────────────┘
              ┌─────────────────────────────┐
              │ SERVICE                     │
              └─────────────────────────────┘
              ┌─────────────────────────────┐
              │ EXIT MENU                   │
              └─────────────────────────────┘
```

```
                         [ USER MANAGER ]

      ┌─────────────────────┐
      │ PRIVATE CHANNEL     │
      └─────────────────────┘
      ┌─────────────────────┐
      │ ALERT LIST          │
      └─────────────────────┘
      ┌─────────────────────┐
      │ USER TEST           │
      └─────────────────────┘
      ┌─────────────────────┐
      │ DSC LOG             │
      └─────────────────────┘
      ┌─────────────────────┐
      │ OFF HISTORY         │
      └─────────────────────┘
      ┌─────────────────────┐
      │ BACK                │
      └─────────────────────┘
```

2.11.1 Private Channel

Click [**PRIVATE CHANNEL**], the following screen appears:

```
                    [ PRIVATE CHANNEL ]
  CH   TYPE   TX kHz  RX kHz            1/ 2        ┌──────┐
 >001  SIMP   156800  156800                        │ VIEW │
                                                    └──────┘
  002  S-DUP  156000  158000           ^            ┌──────┐
                                       ^            │ ADD  │
                                       ^            └──────┘
                                                    ┌──────┐
                                                    │ DEL  │
                                                    └──────┘
                                                    ┌──────┐
                                                    │ CALL │
                                       v            └──────┘
                                       v            ┌──────┐
                                       v            │ BACK │
                                                    └──────┘
```

① View/Edit a private channel:

Move the cursor to the wanted channel, click [**VIEW**], the [**CHANNEL EDIT**] screen appears:

```
                    [ CHANNEL EDIT ]
     ┌──────────┐
     │  TYPE    │      SIMP
     └──────────┘
     ┌──────────┐
     │  TX      │      156800  kHz
     └──────────┘
     ┌──────────┐
     │  RX      │      156800  kHz
     └──────────┘
     ┌──────────┐
     │  BACK    │
     └──────────┘
```

You can click the **TYPE**, **TX** frequency or **RX** frequency to edit. For example:

```
                    [ CHANNEL EDIT ]
     ┌──────────┐                        ┌─────────────────┐
     │  TYPE    │      SIMP              │INPUT            │
     └──────────┘                        │ ┌──┐ ┌──┐ ┌──┐ │
     ┌──────────┐                        │ │ 1│ │ 2│ │ 3│ │
     │  TX      │      │156800  kHz      │ └──┘ └──┘ └──┘ │
     └──────────┘                        │ ┌──┐ ┌──┐ ┌──┐ │
     ┌──────────┐                        │ │ 4│ │ 5│ │ 6│ │
     │  RX      │      156800  kHz       │ └──┘ └──┘ └──┘ │
     └──────────┘                        │ ┌──┐ ┌──┐ ┌──┐ │
     ┌──────────┐                        │ │ 7│ │ 8│ │ 9│ │
     │  BACK    │                        │ └──┘ └──┘ └──┘ │
     └──────────┘                        │ ┌──┐ ┌──┐ ┌──┐ │
                                         │ │ F│ │ 0│ │OK│ │
                                         │ └──┘ └──┘ └──┘ │
                                         └─────────────────┘
```

Click [**TX**], enter the TX frequency with the numeric keys in [**INPUT**]. Click OK to confirm the input. Click SAVE and choose "**YES**" to save the edition, "**NO**" to discard the edition.

② Add a channel: Click [**ADD**], open the [**CHANNEL EDIT**] screen. The operation is same as above.

③ Delete a channel: Move the cursor to the wanted channel. Click [**DELETE**], delete the channel directly.

④ Call: Move the cursor to the wanted channel. Click [**CALL**], open Main screen to start voice communication.

2.11.2 Alert list

Click **[MAIN MENU] - [USER]** - **[ALERT LIST],** the following menu appears.

```
                    [ ALERT LIST ]
     ID    TIME    ALERT-DESCRIPTION      1/  7
  > ◀ 3122  07:33  DISTRESS RX                          VIEW
    ! 3016  07:33  LOST POSITION                        MUTE
    ◀ 3115  07:33  IMPAIRED RADIO                       ACK
    ◀ 3008  07:33  TRANSCEIVER FAIL                     LOG
    ✓ 3062  07:33  GENERAL FAULT                        BACK
    ◀ 3062  07:33  SELFTEST FAULT
    ! 3019  07:34  WRONG MMSI

 TIME:UTC
```

[VIEW]: Check the details of the alert selected.

[MUTE]: Mute the alert.

[ACK]: Acknowledge the alert.

[LOG]: Check the alert history.

For example:

```
                    [ ALERT VIEW ]
     ┌─────────┐
     │   ID    │    3122                      ▐ RESET
     └─────────┘
     ┌─────────┐
     │ CATEGORY│    B
     └─────────┘
     ┌─────────┐
     │ PRIORITY│    WARNING
     └─────────┘
     ┌─────────┐
     │  STATE  │    ACTIVE-UNACKNOWLEDGED
     └─────────┘
     ┌─────────┐
     │  TEXT   │    DISTRESS RX
     └─────────┘    Receipt of distress call
     ┌─────────┐
     │  BACK   │
     └─────────┘
```

Note: [RESET] is only used for DISTRESS RX alert reset.

Alert Mark Description Table:

MARK	PRIORITY	STATE
▲		ACTIVE-UNACKNOWLEDGED
▲		ACTIVE-SILENCED
▲	ALARM	ACTIVE-ACKNOWLEDGED
▲		ACTIVE-RESPONSIBILITY TRANSFERRED
▲		RECTIFIED-UNACKNOWLEDGED
◀		ACTIVE-UNACKNOWLEDGED
✦		ACTIVE-SILENCED
!	WARNING	ACTIVE-ACKNOWLEDGED
→		ACTIVE-RESPONSIBILITY TRANSFERRED
✓		RECTIFIED-UNACKNOWLEDGED
!	CAUTION	ACTIVE-ACKNOWLEDGED

Alert Description Table:

Alert identifier	Alert instance	Alert category	Alert priority	Alert text	Additional information
3122	310	B	WARNING	DISTRESS RX	Receipt of distress call
3016	312	B	CAUTION	LOST POSITION	No position data received
3116	313	B	CAUTION	IMPAIRED RADIO	Antenna VSWR
3008	314	B	WARNING	TRANSCEIVER FAIL	Not Transmitting Check
3062	316	B	WARNING	GENERAL FAULT	HW error. Check equipment
3062	317	B	WARNING	SELFTEST FAULT	Built in self test failure
3019	318	B	CAUTION	WRONG MMSI	Check MMSI setting
3009	320	B	CAUTION	LOST TRANSCEIVER	Check transceiver

2.11.3 User Test

Click **[USER TEST]** on the **[USER MANAGER]** screen.

Click **[DAILY]** to open the **[DAILY TEST]** screen.

Then click **[TEST]** and confirm "YES" to start the test.

The test result will be shown after the test.
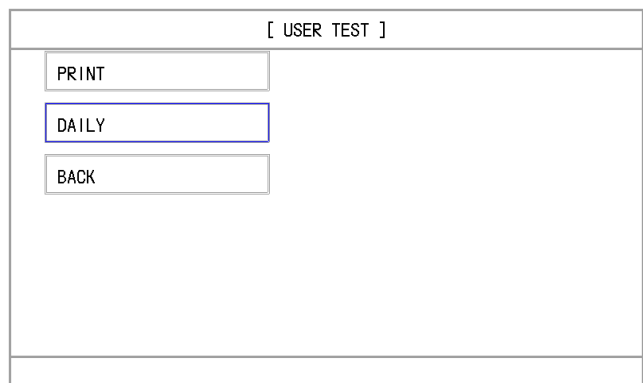
2.11.4 DSC Log

DSC log also can be checked at **[USER MANAGER]** menu.

Click [**DSC LOG**], and then click **[LIST]** repeatedly to check these screens：
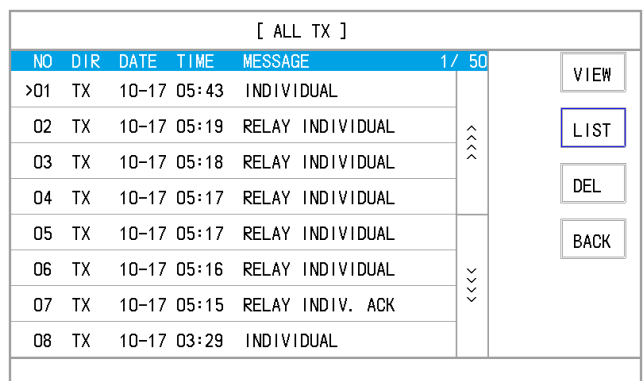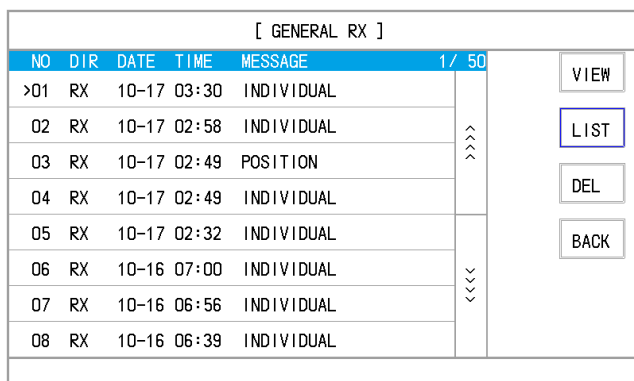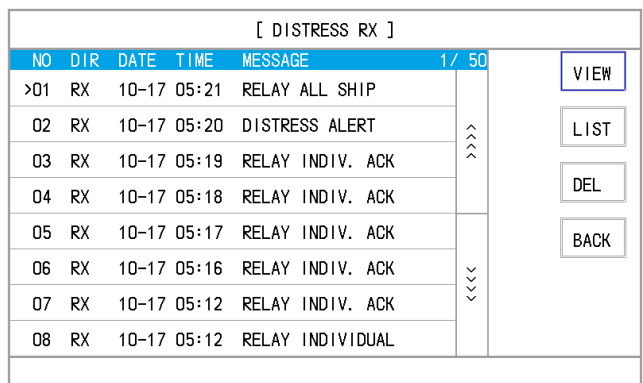
3. VOICE OPERATION

You can make a voice call at Main screen or from **[MAIN MENU]**-**[USER]**-**[PRIVATE CHANNEL]**-**[CALL]**.

3.1 Channel Region Selection

The channel region can be selected by clicking **[REGION]** on the main menu.
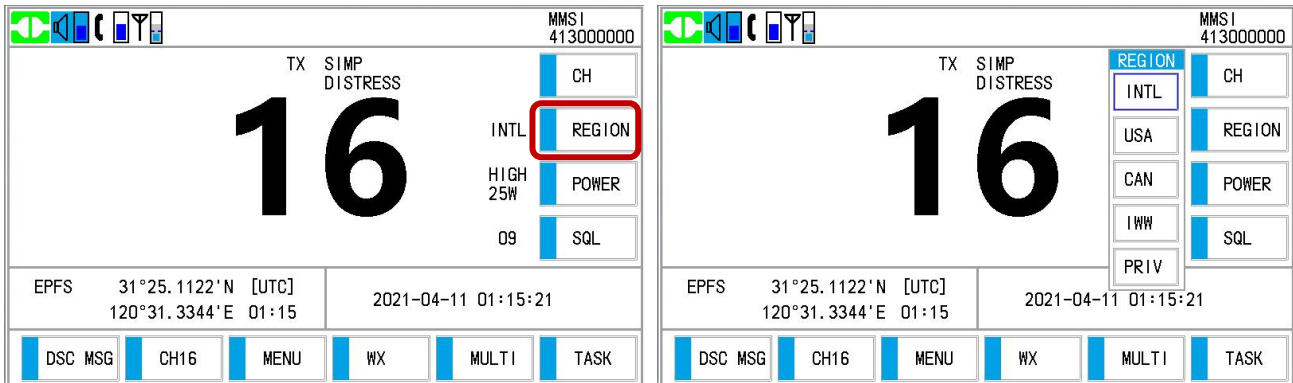
[INTL]: International Channel

[USA]: USA Channel

[CAN]: CANADA Channel

[IWW]: Inland Waterway Channel

[PRIV]: Private Channel

Note: Up to 200 Private channels are available only for fishing or specially assigned channels.

3.2 Channel Setting

There are three ways to set the channel. See below for details:

Note: To set the radiotelephone to CH16, click [CH16].

① Click **[CH]**, the ⚲ ⚲ mark appears:
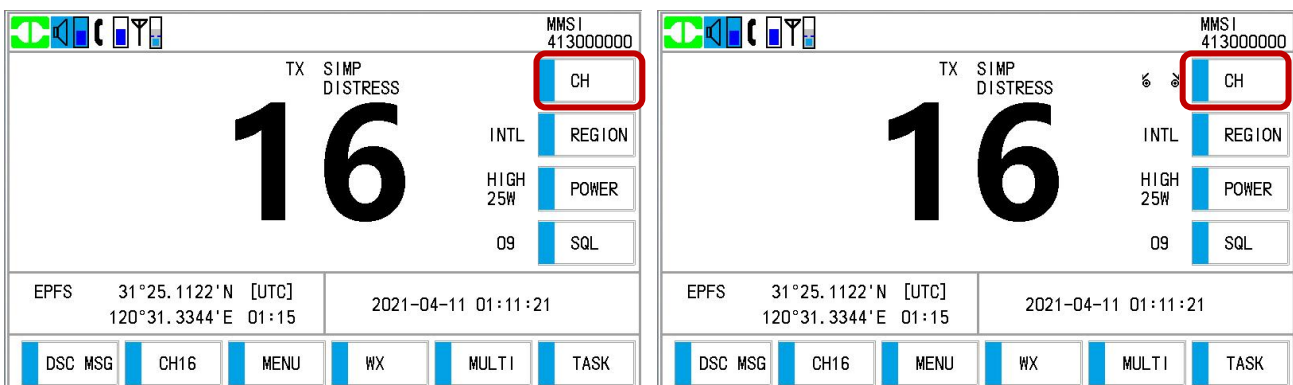
Click **[CH]** again, the following screen appears:
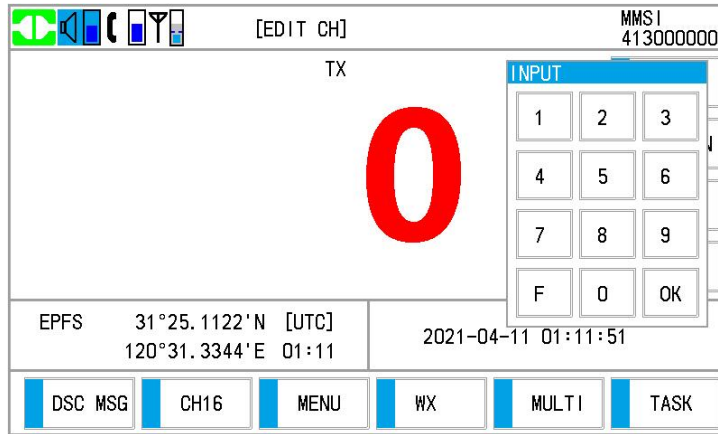
Click the number (2 ~ 4 digits) to enter channel then click OK.

② Click the channel number in the center of the screen.
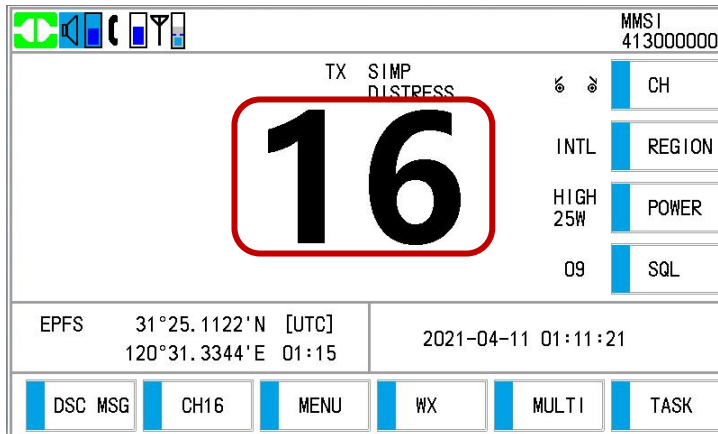
The following screen appears:
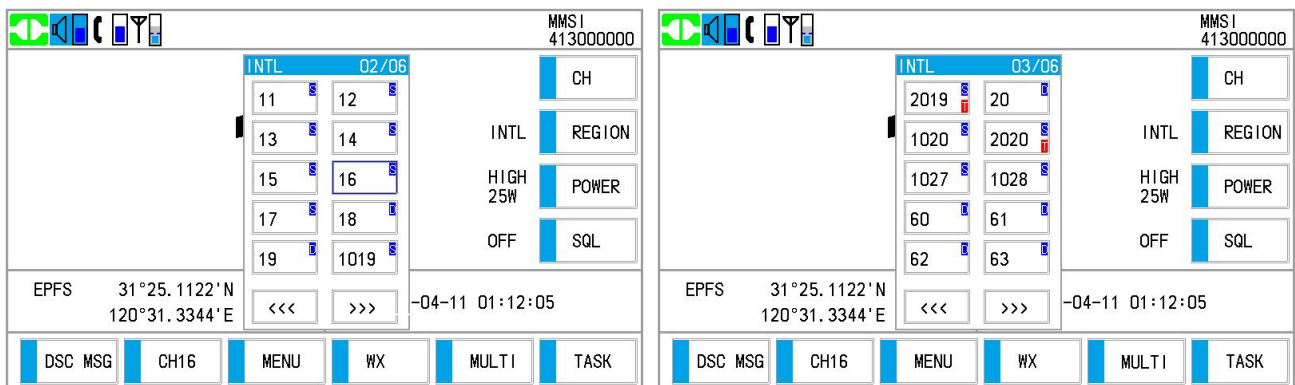
Click to choose the desired channel.

For example:
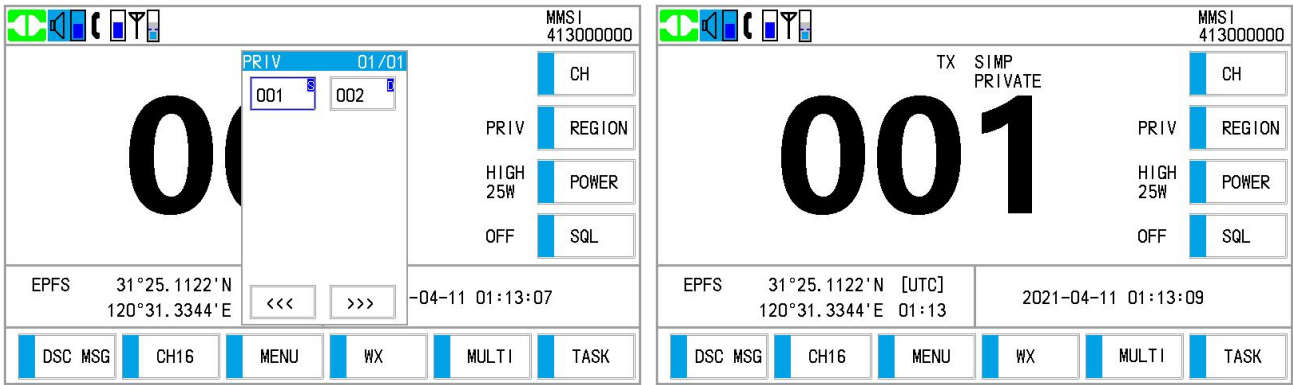
③ Rotate the **PUSH TO ENTER** knob to change the channel number directly while **[SQL]** is **OFF,** or mark appears on the left side of **[CH]**.
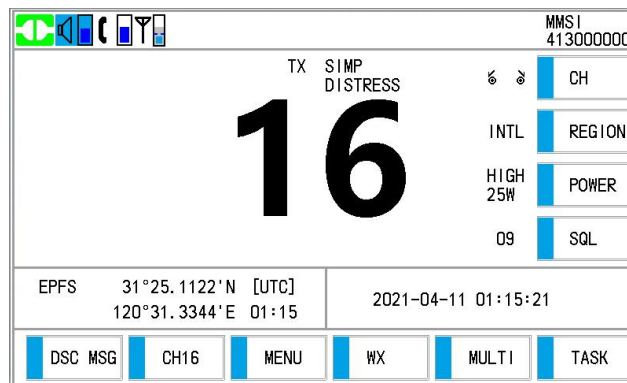
3.3 Transmit

● **Transmitting power setting**

Click **[POWER]** to select **[HIGH]** (**25W**) or **[LOW]** (**1W**).
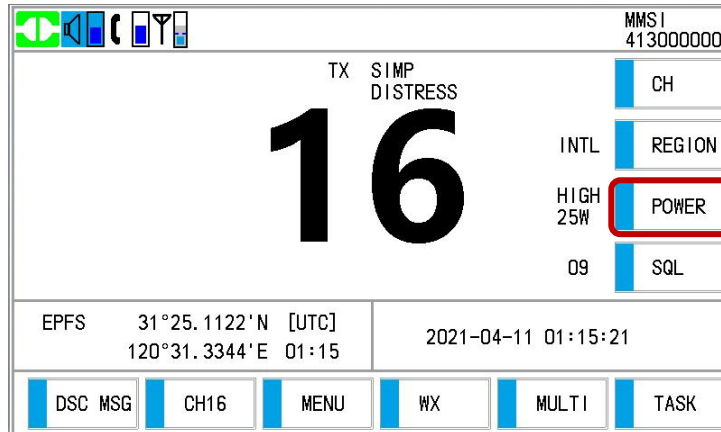
- **Handset Operation**

The handset controls voice communications. Press the PTT (push-to-talk) switch to talk, and release it to listen for response.

① Pick up the handset.

② Hold the handset close to your mouth, press the **PTT** switch and speak clearly.

3.4 Receive

- **Squelch on/off**

The squelch mutes the noise output in the absence of an incoming signal. Click **[SQL]** to alternately turn squelch on and off in **[MENU]** – **[SYSTEM SETTING]** - **[AUDIO]** menu. When radio noise is too jarring during stand-by condition, it can be muted by activating the squelch, and the threshold value （1~10） is displayed on Main screen.

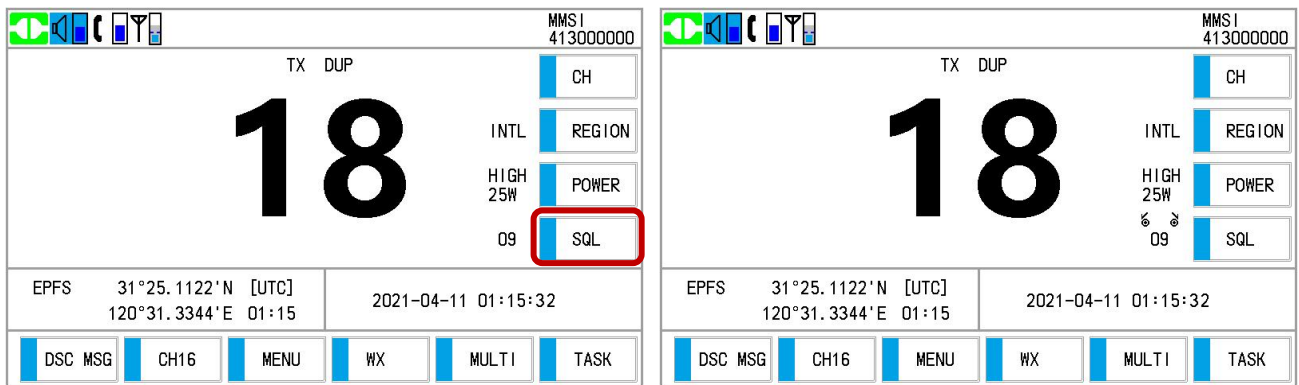| [AUDIO]	
KEY	ON
SYSTEM ALARM	ON
OFF HOOK SPK	OFF
SQL	ON
SQL LEVEL	09
BACK	
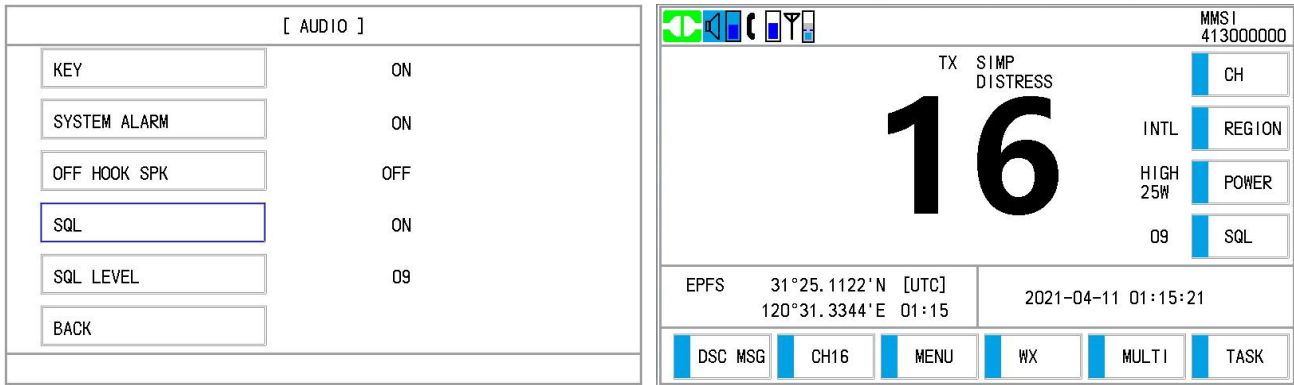
- **SQL level**

The SQL level can be adjusted. Please refer to Section 2.8.3.5.

You can also do the following steps to adjust the squelch level.

① Click **[CH]**, the mark appears.

② Rotate the PUSH TO ENTER knob to change the squelch level.

Note: While using the handset for communication, press the PTT switch to talk and release it to listen.

4. DSC OPERATION

4.1 DSC Description

DSC (Digital Selective Calling) is an important mean for emergency calls at sea. It's a part of GMDSS (Global Maritime Distress and Safety System) set by IMO (International Marine Organization).

DSC should be primarily used for distress, urgent and safety call and response to such calls, in addition, it can be used for general service between ship to ship and ship to shore station and if automatic service is provided for by coastal stations for direct access to shore-based public telephone network.

4.1.1 DSC Message

Normally, the contents of a DSC call include Calling category, Station ID (MMSI), Priority, Communication mode, Communication channel (frequency), Position, DSC channel (frequency), End code.

● **Calling category**

DSC calls are roughly divided in two groups: distress calls and general (urgency, safety and routine) calls. Below are the types of DSC calls.

Call category	Call
DISTRESS	DISTRESS ALERT, DISTRESS RELAY ALL, DISTRESS RELAY INDIVIDUAL, DISTRESS RELAY INDIVIDUAL ACK, DISTRESS ACK，DISTRESS CANCEL ACK
GENERAL	MEDICAL MSG*, NEUTRAL MSG*, INDIVIDUAL MSG, TEST MSG, GROUP MSG, ALL SHIPS MSG, POSITION MSG, POLLING MSG

*SPECIAL MSG: To send these messages, set **[SPECIAL DSC]** to **[ON]**.

```
[ SYSTEM SETTING ]

LANGUAGE     ENG          SPECIAL DSC    ON

PRINT                     AUDIO

DISPLAY                   DATE/TIME

POSITION                  TIMEOUT

PORT                      BACK
```

● **Station ID (MMSI)**

Ship station ID: MIDxxxxxx

Coast station ID: 00MIDxxxx

Group ID: 0MIDxxxxx

Above, MID (Maritime Identification Digits): Country code, x…x: Digital number.

● **Priority**

Distress: In grave and imminent danger and request immediate assistance.
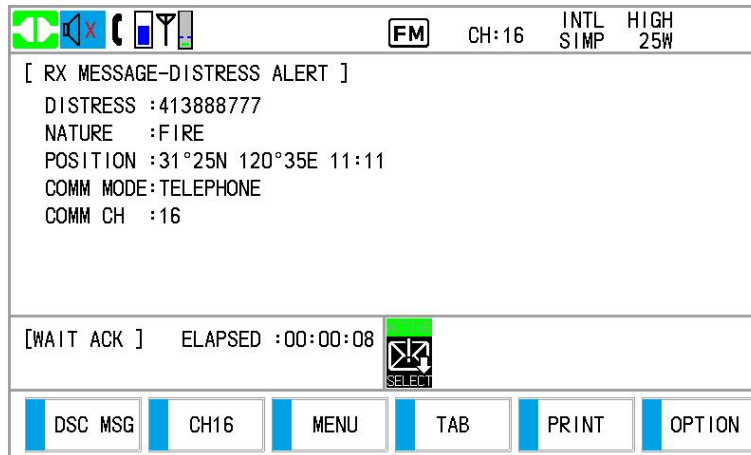
Urgency: A very urgent call concerning safety of ship, aircraft or other vehicle or safety of person.

Safety: A call containing an important navigational or meteorological warning.

Routine: General calling.

● **Communication mode**

TELEPHONE: Telephone (F3E/G3E) by VHF radiotelephone

```
                                    FM   CH:16   INTL  HIGH
                                                 SIMP  25W
[ RX MESSAGE-DISTRESS ALERT ]
  DISTRESS :413888777
  NATURE   :FIRE
  POSITION :31°25N 120°35E 11:11
  COMM MODE:TELEPHONE
  COMM CH  :16



[WAIT ACK ]   ELAPSED :00:00:08
                                              SELECT

   DSC MSG    CH16    MENU    TAB    PRINT    OPTION
```

● **Communication channel**

COMM CH: Subsequent working channel used to call by VHF radiotelephone. The sending station may have the receiving station (ship or coast station) assign the channel to use.
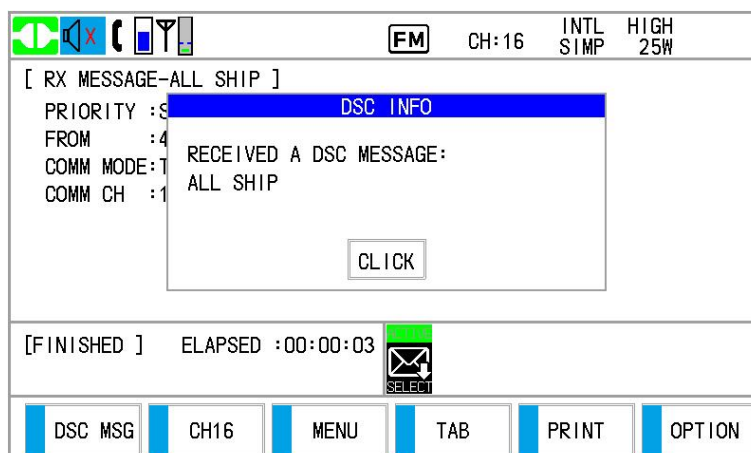
● **Position**

POSITION: Position can be automatically or manually set.

● **End code**

The end of a DSC call is indicated with "EOS" (acknowledgement, acknowledgement required, no acknowledgement required).

4.1.2 Audio Alarms

When you receive a distress alert or general call addressed to own ship, the audio and visual alarms are released. The audio alarm can be silenced with any key on Main screen or CLICK on **[DSC INFO]**.
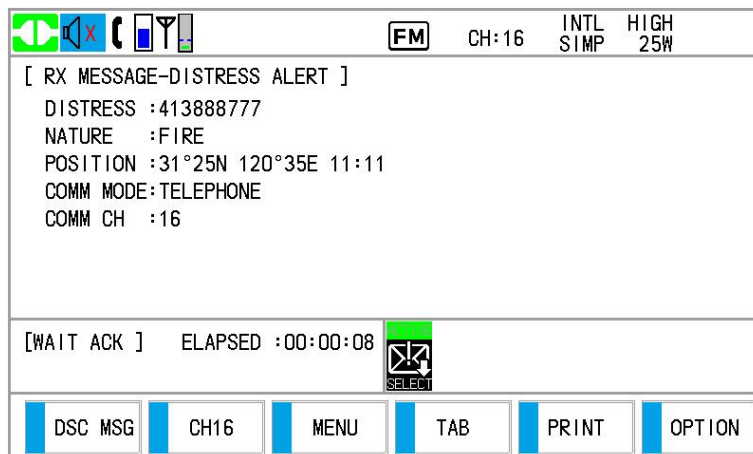
```
                                    FM   CH:16   INTL  HIGH
                                                 SIMP  25W
[ RX MESSAGE-ALL SHIP ]
  PRIORITY :S        DSC INFO
  FROM     :4
  COMM MODE:T   RECEIVED A DSC MESSAGE:
  COMM CH  :1   ALL SHIP

                        CLICK


[FINISHED ]   ELAPSED :00:00:03
                                              SELECT

   DSC MSG    CH16    MENU    TAB    PRINT    OPTION
```

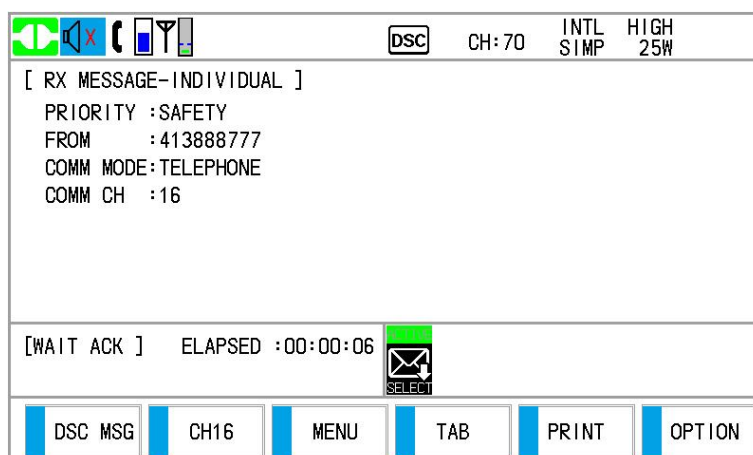| Alarm	Frequency (interval)
Distress Count Down	2000Hz 500ms, Silence 500ms
Two Tone (Distress)	2200Hz 250ms, 1300Hz 250ms
Distress Ack	2200Hz 500ms, 1300Hz 500ms
Urgency	2200Hz 250ms, Silence 250ms
Urgency Ack	2200Hz 500ms, Silence 500ms
General (Routine, Routine Ack)	750Hz 50ms, 650 Hz 50ms
Warning	2000Hz 250ms, 1500 Hz 250ms
System Alarm	2000Hz 250ms, Silence 250ms

4.1.3 DSC Call Screens

4.1.3.1 RX calls

Distress alert:

```
┌──────────────────────────────────────────────┐
│ ◀▶ ◁x ( ▯Y.        FM  CH:16  INTL  HIGH      │
│                                SIMP   25W     │
│ [ RX MESSAGE-DISTRESS ALERT ]                 │
│   DISTRESS :413888777                         │
│   NATURE   :FIRE                              │
│   POSITION :31°25N 120°35E 11:11              │
│   COMM MODE:TELEPHONE                         │
│   COMM CH  :16                                │
│                                               │
│                                               │
│ [WAIT ACK ]   ELAPSED :00:00:08  ⊠↓          │
│                                  SELECT        │
│  DSC MSG   CH16   MENU   TAB   PRINT  OPTION  │
└──────────────────────────────────────────────┘
```

Individual call:

```
┌──────────────────────────────────────────────┐
│ ◀▶ ◁x ( ▯Y.        DSC  CH:70  INTL  HIGH     │
│                                SIMP   25W     │
│ [ RX MESSAGE-INDIVIDUAL ]                     │
│   PRIORITY :SAFETY                            │
│   FROM     :413888777                         │
│   COMM MODE:TELEPHONE                         │
│   COMM CH  :16                                │
│                                               │
│                                               │
│                                               │
│ [WAIT ACK ]   ELAPSED :00:00:06  ⊠↓          │
│                                  SELECT        │
│  DSC MSG   CH16   MENU   TAB   PRINT  OPTION  │
└──────────────────────────────────────────────┘
```

The marks "*", "-" appear on the DSC receiving screen in the following conditions:
- "*" indicates a corrupt character in received data.
- "-" indicates missing digits after decimal point when receiving position data with no information for expansion (expansion: digits after decimal point).

Examples:

1) When receiving position data without expansion, the indication is "LAT: 12°34N".
2) When receiving position data with expansion, the indication is "LAT: 12°34.5678'N".
3) When receiving position data with no information for expansion, the indication is "LAT: 12°34.----'N".

The contents of other types of RX calls are similar to that of the individual call.

4.1.3.2 TX calls

Distress alert:

```
                      [ DISTRESS ALERT ]

     ┌──────────┐      UNDESIGNATED
     │ NATURE   │
     └──────────┘
     ┌──────────┐       31°25.1122N
     │ POSITION │      120°31.3344E 01:48
     └──────────┘
     ┌──────────┐      TELEPHONE
     │ COMM MODE│
     └──────────┘
     ┌──────────┐      16
     │ COMM CH  │
     └──────────┘
     ┌──────────┐
     │ BACK     │
     └──────────┘


  PRESS DISTRESS BUTTON TO SEND ALERT.
```

Distress relay call:

```
                      [ DISTRESS RELAY ]

     ┌──────────┐      RELAY INDIVIDUAL
     │ TYPE     │
     └──────────┘
     ┌──────────┐      ─────────
     │ TO       │
     └──────────┘
     ┌───────────┐     NO INFO
     │ DISSTRESS ID│
     └───────────┘
     ┌──────────┐      UNDESIGNATED
     │ NATURE   │
     └──────────┘
     ┌──────────┐      NO INFO
     │ POSITION │      NO INFO  NO INFO
     └──────────┘
     ┌──────────┐
     │ BACK     │
     └──────────┘
```

Individual call:

```
                      [ COMPOSE MESSAGE ]

     ┌──────────┐      INDIVIDUAL
     │ MSG TYPE │
     └──────────┘
     ┌──────────┐      ─────────
     │ TO       │
     └──────────┘
     ┌──────────┐      ROUTINE
     │ PRIORITY │
     └──────────┘
     ┌──────────┐      TELEPHONE
     │ COMM MODE│
     └──────────┘
     ┌──────────┐      06
     │ COMM CH  │
     └──────────┘
     ┌──────────┐
     │ BACK     │
     └──────────┘
```

The contents of other types of TX calls are similar to the above.

4.2. DSC Distress Operation

When own ship in distress:

① Press the DISTRESS button to send a distress call.
② Wait for the distress alert acknowledgement.
③ Communicate with the coast station.

4.2.1 Send a Distress Call

4.2.1.1 By DISTRESS button with distress information not edited

(1) Open the cover of DISTRESS button then press and keep the DISTRESS button for 3 seconds.

PUSH TO ENTER knob

Cover*   DISTRESS button
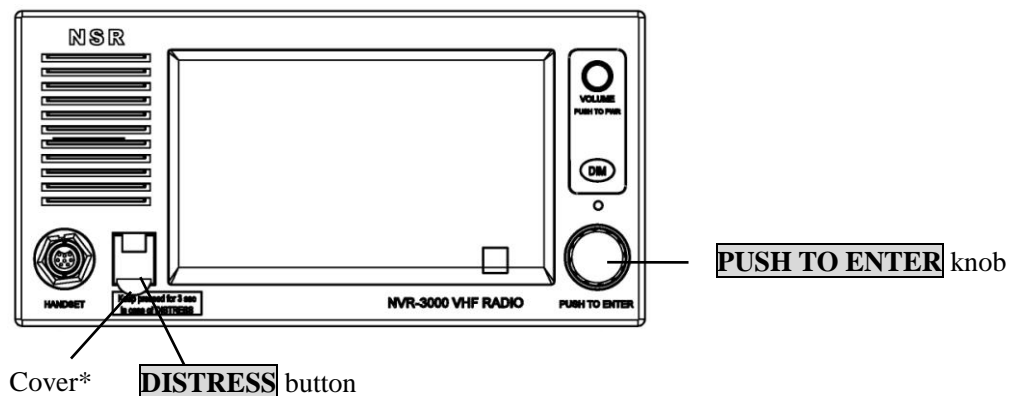
*: The DISTRESS button is covered to prevent false alarm.

The audio alarm sounds while pressing the button, and the button flashes. The countdown message appears on the screen while pressing the DISTRESS button (3S → 2S → 1S). For example:
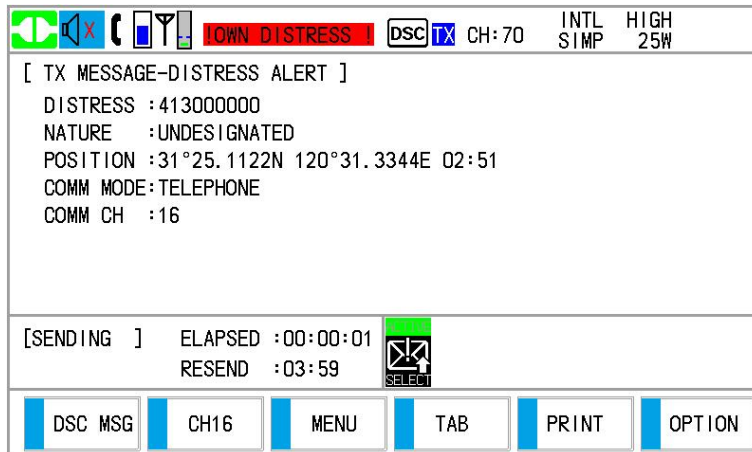
With position information: No position information:

Press the DISTRESS button after the countdown shows 1S, the distress call is sent. The audio alarm sounds for two seconds and the message "!OWN DISTRESS!" appears. The screen shows the contents of the distress alert call. The DISTRESS button flashes and only the icon for DISTRESS transmission ( ) is displayed in the tab area.

```
[ TX MESSAGE-DISTRESS ALERT ]
   DISTRESS  :413000000
   NATURE    :UNDESIGNATED
   POSITION  :31°25.1122N 120°31.3344E 02:51
   COMM MODE:TELEPHONE
   COMM CH   :16



[SENDING  ]   ELAPSED :00:00:01
              RESEND  :03:59

   DSC MSG    CH16     MENU     TAB     PRINT    OPTION
```

(2) After the distress call has been sent, the screen changes as below. Wait to receive the distress acknowledge call from a coast station. The elapsed time since transmission is displayed. At this time, the icons for other DSC received messages except the distress acknowledge call are not displayed. You can only confirm them in the DSC log.
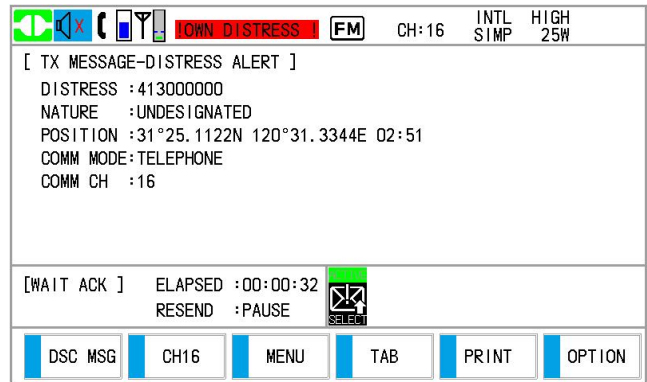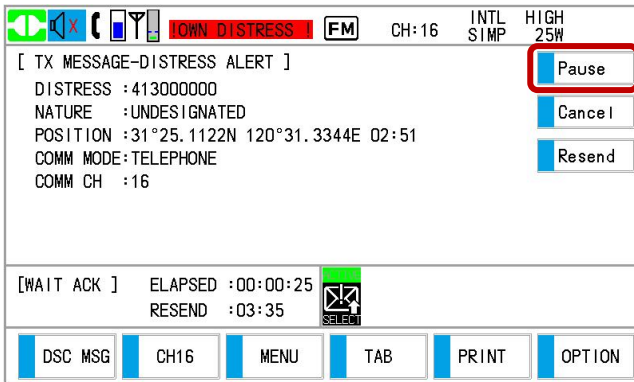
```
[ TX MESSAGE-DISTRESS ALERT ]
   DISTRESS  :413000000
   NATURE    :UNDESIGNATED
   POSITION  :31°25.1122N 120°31.3344E 02:51
   COMM MODE:TELEPHONE
   COMM CH   :16



[WAIT ACK ]   ELAPSED :00:00:05
              RESEND  :03:55

   DSC MSG    CH16     MENU     TAB     PRINT    OPTION
```
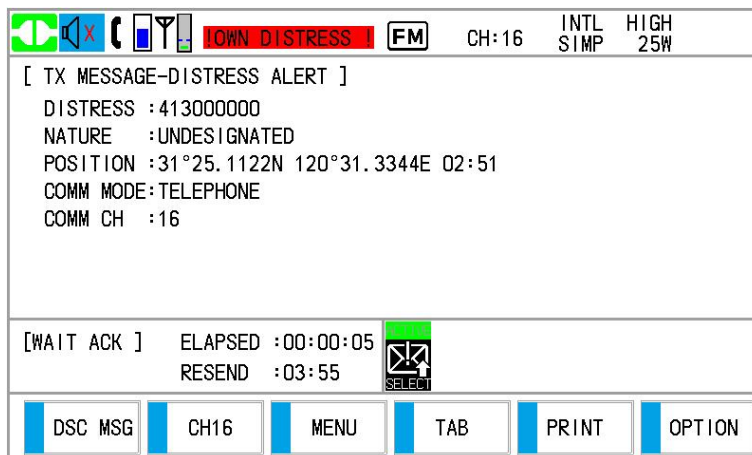
Note: The equipment automatically re-transmits the distress alert after 3 min 30 seconds to 4 min 30 seconds if doesn't receive the distress acknowledge call. Then awaits the distress acknowledge call. This is repeated until the distress call is acknowledged.

(3) Click **[OPTION]**, you can temporarily stop the countdown during next retransmission by selecting **[PAUSE]** in the user options area. **[Pause]** is displayed instead of the countdown indication at **[RESEND]** indication.

To restart, click **[OPTION]** again, **[Pause]** indication changes to **[Start]**, select **[Start]**. The countdown restarts.

You can also cancel the sending/resending by clicking **[Cancel]**.

For example:

① **[OPTION]- [Pause]**:

[TX MESSAGE-DISTRESS ALERT]
DISTRESS :413000000
NATURE :UNDESIGNATED
POSITION :31°25.1122N 120°31.3344E 02:51
COMM MODE:TELEPHONE
COMM CH :16

Pause Cancel Resend

[WAIT ACK] ELAPSED :00:00:25
RESEND :03:35

DSC MSG | CH16 | MENU | TAB | PRINT | OPTION
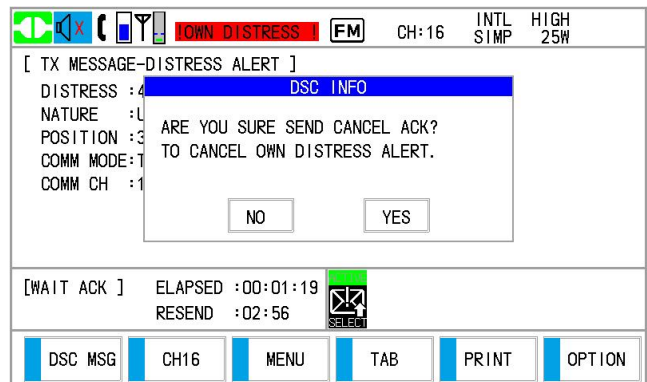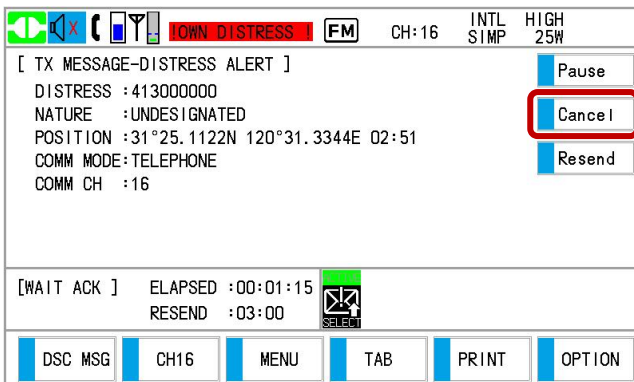
[TX MESSAGE-DISTRESS ALERT]
DISTRESS :413000000
NATURE :UNDESIGNATED
POSITION :31°25.1122N 120°31.3344E 02:51
COMM MODE:TELEPHONE
COMM CH :16

[WAIT ACK] ELAPSED :00:00:32
RESEND :PAUSE

DSC MSG | CH16 | MENU | TAB | PRINT | OPTION

② **[OPTION]- [Start]**:

[TX MESSAGE-DISTRESS ALERT]
DISTRESS :413000000
NATURE :UNDESIGNATED
POSITION :31°25.1122N 120°31.3344E 02:51
COMM MODE:TELEPHONE
COMM CH :16

Start Cancel Resend

[WAIT ACK] ELAPSED :00:00:44
RESEND :PAUSE

DSC MSG | CH16 | MENU | TAB | PRINT | OPTION

[TX MESSAGE-DISTRESS ALERT]
DISTRESS :413000000
NATURE :UNDESIGNATED
POSITION :31°25.1122N 120°31.3344E 02:51
COMM MODE:TELEPHONE
COMM CH :16

[WAIT ACK] ELAPSED :00:00:51
RESEND :03:24

DSC MSG | CH16 | MENU | TAB | PRINT | OPTION

③ **[OPTION]- [Cancel]**:

[TX MESSAGE-DISTRESS ALERT]
DISTRESS :413000000
NATURE :UNDESIGNATED
POSITION :31°25.1122N 120°31.3344E 02:51
COMM MODE:TELEPHONE
COMM CH :16

Pause **Cancel** Resend

[WAIT ACK] ELAPSED :00:01:15
RESEND :03:00

DSC MSG | CH16 | MENU | TAB | PRINT | OPTION

[TX MESSAGE-DISTRESS ALERT]
DISTRESS :4
NATURE :U
POSITION :3
COMM MODE:T
COMM CH :1

```
DSC INFO
ARE YOU SURE SEND CANCEL ACK?
TO CANCEL OWN DISTRESS ALERT.
     NO          YES
```

[WAIT ACK] ELAPSED :00:01:19
RESEND :02:56

DSC MSG | CH16 | MENU | TAB | PRINT | OPTION
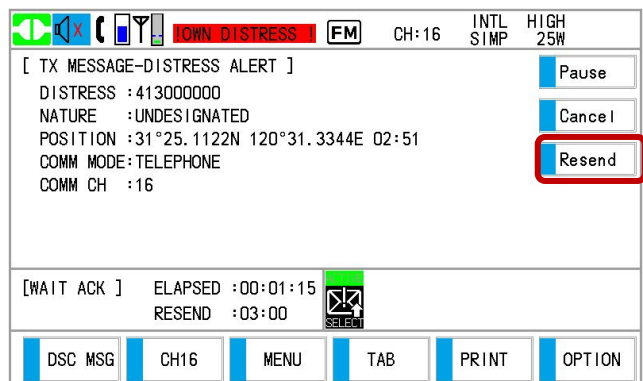
Please see the details in Section 4.2.4 - Cancel a Distress Call.

(4) You can click **[Resend]** to resend the distress call.

Also, you can re-send the distress alert manually by pressing the **DISTRESS** button for 3 seconds.

[TX MESSAGE-DISTRESS ALERT]
DISTRESS :413000000
NATURE :UNDESIGNATED
POSITION :31°25.1122N 120°31.3344E 02:51
COMM MODE:TELEPHONE
COMM CH :16

Pause Cancel **Resend**

[WAIT ACK] ELAPSED :00:01:15
RESEND :03:00

DSC MSG | CH16 | MENU | TAB | PRINT | OPTION

(5) When the distress acknowledge call is received, the audio alarm sounds, the LED of **DISTRESS** button flashes and the icon for DISTRESS ACK received

(![icon]) appears. The screen changes as right.

① Click **CLICK** to silence the audio alarm. Then, the **DISTRESS** button stops flashing, and the pop-up message disappears.
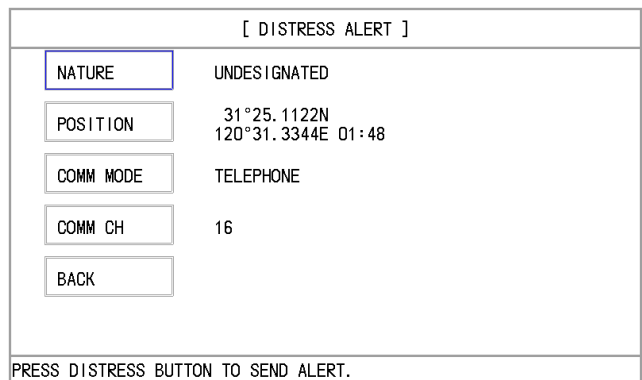
② Communicate with the coast station via radiotelephone, following the instructions below:

- Say "MAYDAY" three times.
- Say "This is ..." name of own ship and call sign three times.
- Give nature of distress and assistance needed.
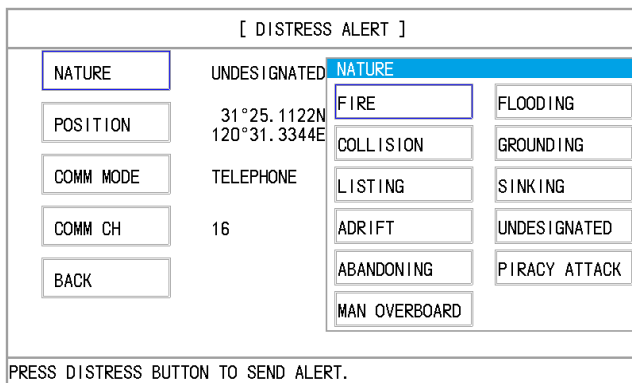- Give description of own ship (type, color, number of persons onboard, etc.).

```
┌──────────────────────────────────────────────┐
│ ⟲ ◁x [ ▯Y▮        FM  CH:16   INTL  HIGH      │
│                               SIMP  25W        │
│ [ RX MESSAGE-DISTRESS ACK ]                    │
│   PRIORITY :D ┌────── DSC INFO ──────┐         │
│   FROM    :4 │                       │         │
│   DISTRESS :4 │ RECEIVED A DSC MESSAGE:│        │
│   NATURE  :L │ DISTRESS ACK           │        │
│   POSITION :3 │                       │         │
│   COMM MODE:T │      ┌───────┐        │         │
│   COMM CH  :1 │      │ CLICK │        │         │
│              └──────┴───────┴────────┘         │
│                                                │
│ [FINISHED ]   ELAPSED :00:00:02  ▨            │
│                                   SELECT       │
│ ┌──────┐ ┌─────┐ ┌──────┐ ┌─────┐ ┌─────┐ ┌──────┐ │
│ │DSC MSG│ │CH16 │ │ MENU │ │ TAB │ │PRINT│ │OPTION│ │
│ └──────┘ └─────┘ └──────┘ └─────┘ └─────┘ └──────┘ │
└──────────────────────────────────────────────┘
```

4.2.1.2 Send a distress call by DSC MSG with distress information edited

If you have a time to prepare the distress message, send the distress call as follows:

① Click **[DSC MSG]**, or click [**MENU**] and choose **[DSC]** – **[MESSAGE]**, then click **[DISTRESS ALERT]** in **[MESSAGE]**.

```
┌──────────────────────────┐   ┌──────────────────────────┐
│      [ MESSAGE ]         │   │    [ DISTRESS ALERT ]    │
│ ┌──────────────────┐     │   │ ┌────────┐               │
│ │ DISTRESS ALERT   │     │   │ │ NATURE │  UNDESIGNATED │
│ └──────────────────┘     │   │ └────────┘               │
│ ┌──────────────────┐     │   │ ┌────────┐  31°25.1122N  │
│ │ DISTRESS RELAY   │     │   │ │POSITION│ 120°31.3344E 01:48│
│ └──────────────────┘     │   │ └────────┘               │
│ ┌──────────────────┐     │   │ ┌────────┐               │
│ │ GENERAL  MESSAGE │     │   │ │COMM MODE│  TELEPHONE   │
│ └──────────────────┘     │   │ └────────┘               │
│ ┌──────────────────┐     │   │ ┌────────┐               │
│ │ BACK             │     │   │ │COMM CH │  16           │
│ └──────────────────┘     │   │ └────────┘               │
│                          │   │ ┌────────┐               │
│                          │   │ │ BACK   │               │
│                          │   │ └────────┘               │
│                          │   │PRESS DISTRESS BUTTON TO SEND ALERT.│
└──────────────────────────┘   └──────────────────────────┘
```

② Click [**NATURE**] to select nature of distress, among the following eleven selections:

```
┌────────────────────────────────────────┐
│          [ DISTRESS ALERT ]            │
│ ┌──────┐  UNDESIGNATED ┌─NATURE────────┐│
│ │NATURE│              │┌──────┐┌───────┐││
│ └──────┘  31°25.1122N ││ FIRE ││FLOODING│││
│ ┌────────┐120°31.3344E│└──────┘└───────┘││
│ │POSITION│            │┌────────┐┌────────┐│
│ └────────┘            ││COLLISION││GROUNDING││
│ ┌─────────┐TELEPHONE  │└────────┘└────────┘│
│ │COMM MODE│           │┌───────┐┌───────┐ ││
│ └─────────┘           ││LISTING││SINKING│ ││
│ ┌────────┐  16        │└───────┘└───────┘ ││
│ │COMM CH │            │┌──────┐┌────────────┐│
│ └────────┘            ││ADRIFT││UNDESIGNATED││
│ ┌──────┐              │└──────┘└────────────┘│
│ │ BACK │              │┌─────────┐┌──────────────┐│
│ └──────┘              ││ABANDONING││PIRACY ATTACK││
│                       │└─────────┘└──────────────┘│
│                       │┌─────────────┐ ││
│                       ││MAN OVERBOARD│ ││
│                       │└─────────────┘ ││
│PRESS DISTRESS BUTTON TO SEND ALERT.    │
└────────────────────────────────────────┘
```

Nature of Distress	Description
FIRE	Fire, explosion
FLOODING	Flooding
COLLISION	Collision
GROUNDING	Grounding
LISTING	Listing, in danger of capsizing
SINKING	Sinking
ADRIFT	Adrift
UNDESIGNATED	Undesignated distress
ABANDONING	Abandoning ship
PIRACY ATTACK	Piracy/armed robbery attack
MAN OVERBOARD	Man overboard

③ Click **[POSITION]**, select **[EPFS]**, **[MANUAL]** or **[NO INFO]** in pop-up window.

```
[ DISTRESS ALERT ]

NATURE          UNDESIGNATED              POSITION

POSITION        NO INFO                   EPFS
                NO INFO   NO INFO
                                          MANUAL
COMM MODE       TELEPHONE
                                          NO INFO
COMM CH         16

BACK

PRESS DISTRESS BUTTON TO SEND ALERT.
```

[EPFS]: The position information from EPFS is automatically shown.

```
[ DISTRESS ALERT ]

NATURE          UNDESIGNATED

POSITION         31°25.1122N
                120°31.3344E 01:48

COMM MODE       TELEPHONE

COMM CH         16

BACK

PRESS DISTRESS BUTTON TO SEND ALERT.
```

[MANUAL]: Input your position manually.

```
[ DISTRESS ALERT ]

NATURE          UNDESIGNATED         INPUT

POSITION         31°25.1122N          1   2   3
                120°31.3344E 01:48
                                      4   5   6
COMM MODE       TELEPHONE
                                      7   8   9
COMM CH         16
                                      F   0   OK
BACK

PRESS DISTRESS BUTTON TO SEND ALERT.
```

[NO INFO]: No information.

```
[ DISTRESS ALERT ]

NATURE          UNDESIGNATED

POSITION        NO INFO
                NO INFO   NO INFO

COMM MODE       TELEPHONE

COMM CH         16

BACK

PRESS DISTRESS BUTTON TO SEND ALERT.
```

For **[MANUAL]**, go to step ④. For others, go to step ⑤.

④ Use the numeric keys to enter latitude/longitude of your position, and UTC time. To change coordinate, click **1** for North or East; **2** for South or West.
After enter each data, click OK .

⑤ Press and keep the **DISTRESS** button for 3 seconds to send the distress alert and wait for the acknowledgement. This operation is same as Section 4.2.1.1.

⑥ When the distress acknowledge call is received, use the telephone to communicate with the coast station.
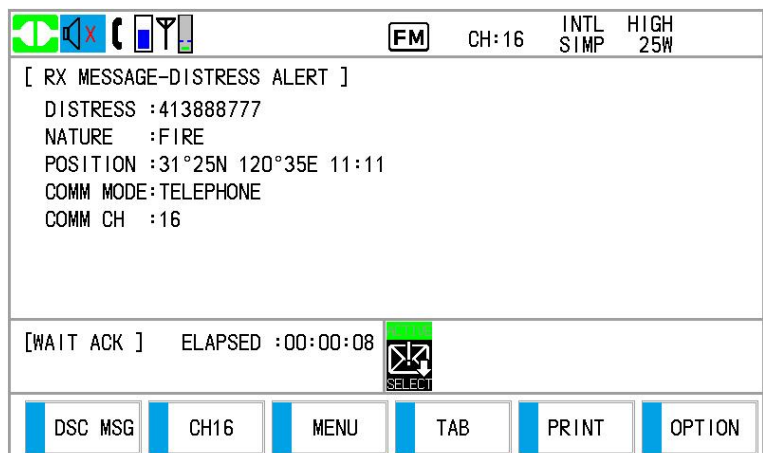Refer to Section 4.2.1.1 (5).
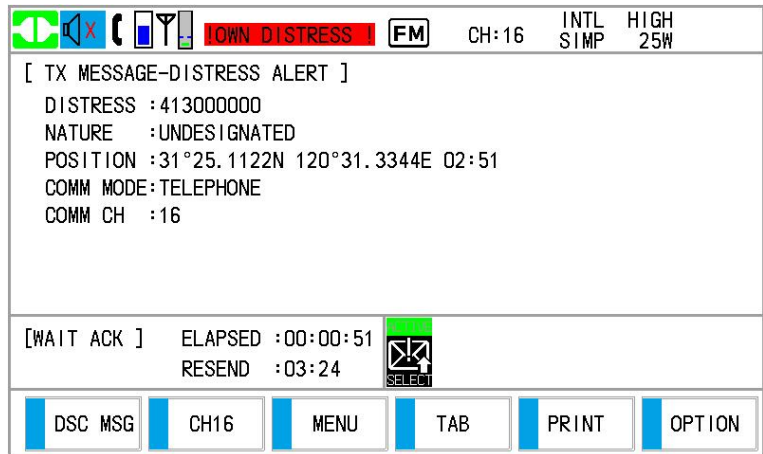
4.2.2 Receive a Distress Call

When you receive a distress call from a ship in distress, the audio alarm sounds, and the LED of the **DISTRESS** button flashes. The icon for DISTRESS receiving ( ) appears in the tab area.

Click **CLICK** to silence the audio alarm. Wait for the distress acknowledgement from a coast station.

If you do not receive the distress acknowledgement from a coast station in about 5 minutes after receiving a distress call, please follow the flow charts in this section to determine your action.

Note: An asterisk (*) appearing in a distress alert message indicates an error at the asterisk's location.
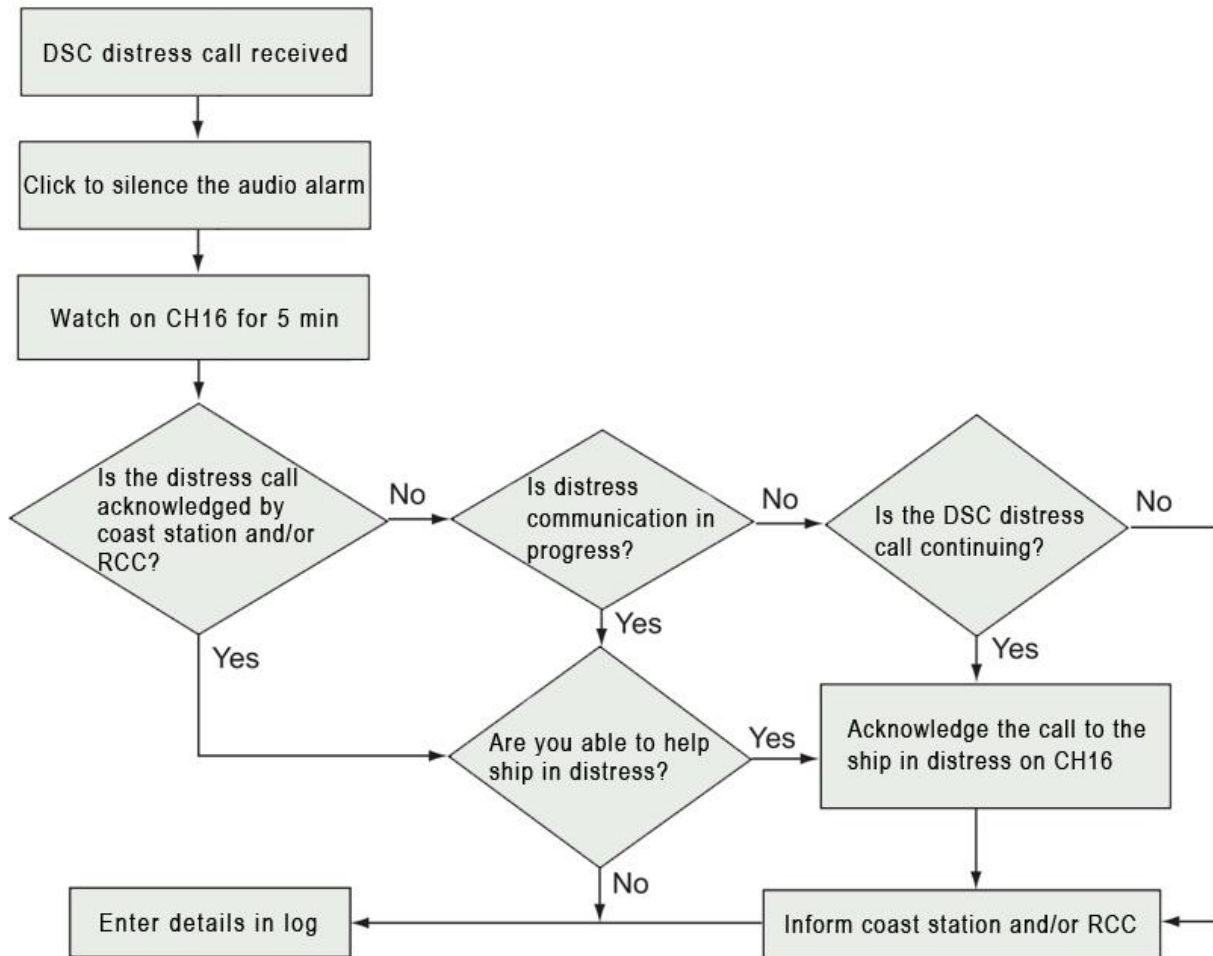
Note: You must wait at least 5 minutes before you can acknowledge the distress call so that the coast station has time to send a distress acknowledgement.

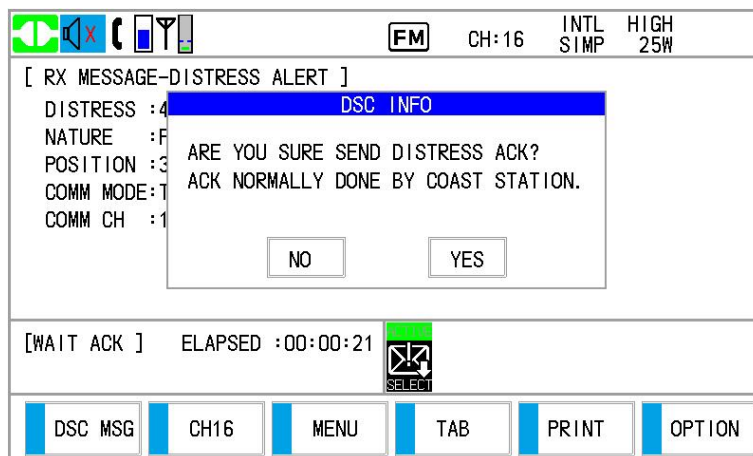(1) Send the DSC distress acknowledgement to ship in distress :

If you do not receive the DSC distress acknowledgement from a coast station and you are able to aid the ship in distress, you may transmit the distress acknowledgement to the ship in distress after consulting with the RCC or a coast station.

Send acknowledgement on CH70 as follows:
① When you received a distress call, click CLICK to silence the audio alarm and stop the flashing of the LED.
② Wait 5 minutes after receiving a distress call.
③ If you do not receive the distress acknowledgement from a coast station and you have received the distress call more than twice, contact the ship in distress on CH16 according to the following procedure.
  ● Say "MAYDAY".
  ● Repeat MMSI of the ship in distress 3 times.
  ● Say "This is..." (own ship's name)
  ● Repeat MMSI of own ship 3 times
  ● Say "RECEIVED MAYDAY".
④ Click **[OPTION]**, select [**Ack**].

```
                                        FM    CH:16   INTL  HIGH
                                                      SIMP  25W
[ RX MESSAGE-DISTRESS ALERT ]                         ┌─────┐
    DISTRESS :413888777                               │Hold │
    NATURE   :FIRE                                     └─────┘
    POSITION :31°25N 120°35E 11:11                     ┌─────┐
    COMM MODE:TELEPHONE                                │Quit │
    COMM CH  :16                                       └─────┘
                                                       ┌─────┐
                                                       │Ack  │
                                                       └─────┘
                                                       ┌─────┐
                                                       │Relay│
                                                       └─────┘
                                                       ┌───────┐
                                                       │History│
                                                       └───────┘
[WAIT ACK ]    ELAPSED :00:00:16

  DSC MSG    CH16     MENU     TAB     PRINT    OPTION
```
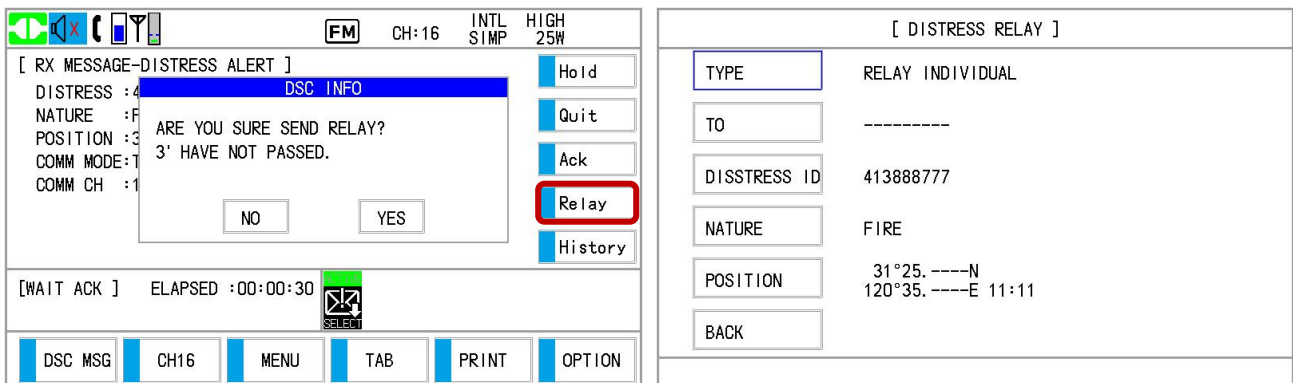
⑤   The following message appears on the screen.

```
                                        FM    CH:16   INTL  HIGH
                                                      SIMP  25W
[ RX MESSAGE-DISTRESS ALERT ]
    DISTRESS :4      ┌──────DSC INFO──────┐
    NATURE   :F      │                    │
    POSITION :3      │ARE YOU SURE SEND DISTRESS ACK?
    COMM MODE:T      │ACK NORMALLY DONE BY COAST STATION.
    COMM CH  :1      │                    │
                     │   ┌────┐    ┌────┐ │
                     │   │ NO │    │YES │ │
                     │   └────┘    └────┘ │
                     └────────────────────┘
[WAIT ACK ]    ELAPSED :00:00:21

  DSC MSG    CH16     MENU     TAB     PRINT    OPTION
```

⑥   Click **YES** to transmit the distress acknowledgement to the ship in distress.

Note: You can not edit the message for the distress acknowledgement.

(2) Send the distress relay to coast station:

①   Click **[OPTION]**, select **[Relay]**, then click **YES** to open the composing screen for the distress relay.

```
                              FM   CH:16  INTL  HIGH
                                          SIMP  25W
[ RX MESSAGE-DISTRESS ALERT ]          ┌─────┐
  DISTRESS :4   ┌────DSC INFO────┐     │Hold │
  NATURE   :F   │                │     └─────┘
  POSITION :3   │ARE YOU SURE SEND RELAY?  ┌─────┐
  COMM MODE:T   │3' HAVE NOT PASSED.   │   │Quit │
  COMM CH  :1   │                │     └─────┘
               │  ┌───┐  ┌────┐ │     ┌─────┐
               │  │NO │  │YES │ │     │Ack  │
               │  └───┘  └────┘ │     └─────┘
               └────────────────┘     ┌─────┐
                                      │Relay│
                                      └─────┘
[WAIT ACK ]   ELAPSED :00:00:30       ┌───────┐
                                      │History│
  DSC MSG  CH16   MENU   TAB  PRINT  OPTION
```

```
                [ DISTRESS RELAY ]

  ┌──────────┐
  │ TYPE     │    RELAY INDIVIDUAL
  └──────────┘
  ┌──────────┐
  │ TO       │    ---------
  └──────────┘
  ┌──────────┐
  │DISSTRESS ID│  413888777
  └──────────┘
  ┌──────────┐
  │ NATURE   │    FIRE
  └──────────┘
  ┌──────────┐
  │ POSITION │     31°25.----N
  └──────────┘    120°35.----E 11:11
  ┌──────────┐
  │ BACK     │
  └──────────┘
```

②   Click [**TYPE**] to select **[RELAY INDIVIDUAL]**.

③   Click **[TO]**, enter the MMSI of the coast station, where to send the distress relay, with the numeric keys then click **OK** to confirm.

④ Click **[CALL]**, the screen changes to the **[TX MESSAGE-RELAY INDIVIDUAL]** for transmitting as following. After transmitting, the **[WAIT ACK]** screen appears.


When the distress relay individual acknowledgement from the coast station is received, the audio alarm sounds and a pop-up message appears. Click CLICK to silence the alarm and erase the pop-up message. Communicate with the coast station by telephone, over the channel specified. If you do not receive the distress acknowledgement from a coast station, click **[OPTION]**, select **[RESEND]** to transmit the distress relay again, or select **[Quit]** to finish the distress relay. You can also transmit the distress relay (refer to 4.2.3) again.

(3) Send the distress relay to all ships:
① Click **[OPTION]**, select **[Relay]** , then click YES to open the composing screen for the distress relay.
② Click [**TYPE**] to select **[RELAY ALL SHIP]**.

③ Click **[CALL]**, then click YES to send the relay call, the screen changes to the **[TX MESSAGE-RELAY ALL SHIP]** for transmitting as following. After transmitting, the **[WAIT ACK]** screen appears.
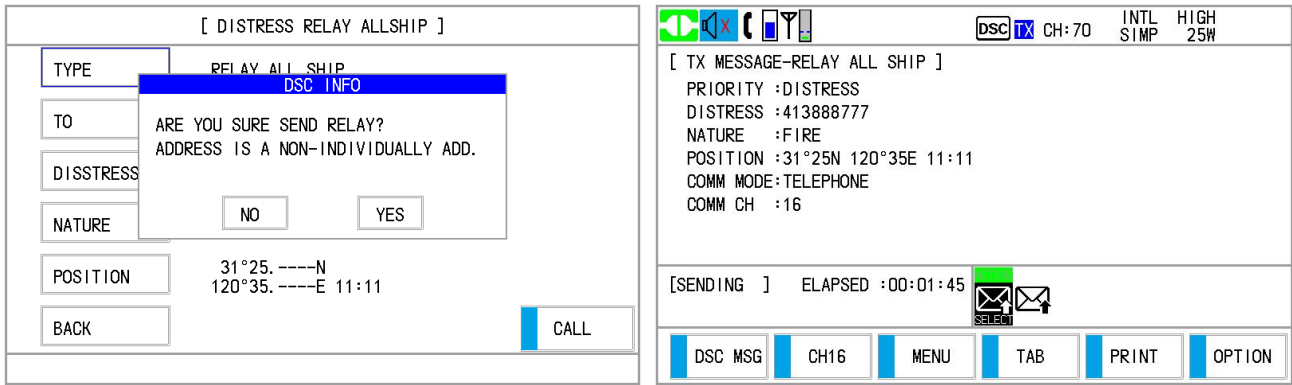
4.2.3 Relay a Distress Call

4.2.3.1 Send distress relay to coast station

You can send the distress relay to a coast station on behalf of a ship in distress in the following cases:
● You are near the ship in distress and the ship in distress cannot transmit the distress alert.
● When the master or person responsible for own ship considers that further assistance is necessary.

Note: Do not use the DISTRESS *button to relay distress.*

① Click **[DSC MSG]** or **[MENU]**-**[DSC]**-**[MESSAGE]**.
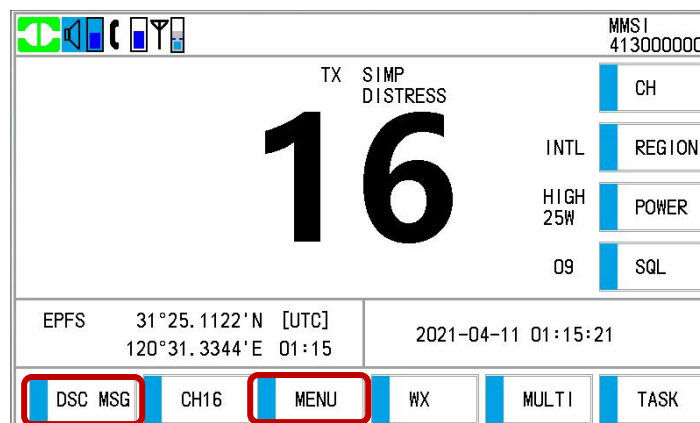
② Click **[DISTRESS RELAY]** in the **[MESSAGE]** menu to open the composing screen for the distress relay.

③ Click **[TYPE]** to select **[RELAY INDIVIDUAL]**.

```
                        [ DISTRESS RELAY ]

      ┌──────────────┐
      │    TYPE      │      RELAY INDIVIDUAL
      └──────────────┘
      ┌──────────────┐
      │    TO        │      ---------
      └──────────────┘
      ┌──────────────┐
      │ DISSTRESS ID │      NO INFO
      └──────────────┘
      ┌──────────────┐
      │   NATURE     │      UNDESIGNATED
      └──────────────┘
      ┌──────────────┐      NO INFO
      │  POSITION    │      NO INFO   NO INFO
      └──────────────┘
      ┌──────────────┐
      │    BACK      │
      └──────────────┘
```

④   With [**TO**] selected, click to enter the MMSI where to send the distress relay by numeric keys in **[INPUT]**.
   Click OK to confirm.

```
                        [ DISTRESS RELAY ]

      ┌──────────────┐                           ┌─────────────────────┐
      │    TYPE      │      RELAY INDIVIDUAL      │ INPUT               │
      └──────────────┘                           │  ┌───┐ ┌───┐ ┌───┐  │
      ┌──────────────┐                           │  │ 1 │ │ 2 │ │ 3 │  │
      │    TO        │      004122100            │  └───┘ └───┘ └───┘  │
      └──────────────┘                           │  ┌───┐ ┌───┐ ┌───┐  │
      ┌──────────────┐                           │  │ 4 │ │ 5 │ │ 6 │  │
      │ DISSTRESS ID │      NO INFO              │  └───┘ └───┘ └───┘  │
      └──────────────┘                           │  ┌───┐ ┌───┐ ┌───┐  │
      ┌──────────────┐                           │  │ 7 │ │ 8 │ │ 9 │  │
      │   NATURE     │      UNDESIGNATED          │  └───┘ └───┘ └───┘  │
      └──────────────┘                           │  ┌───┐ ┌───┐ ┌───┐  │
      ┌──────────────┐      NO INFO              │  │ F │ │ 0 │ │OK │  │
      │  POSITION    │      NO INFO   NO INFO     │  └───┘ └───┘ └───┘  │
      └──────────────┘                           └─────────────────────┘
      ┌──────────────┐
      │    BACK      │
      └──────────────┘
```

⑤   Click **[DISTRESS ID]**, choose INPUT to enter the ID (MMSI) of the ship in distress with the numeric keys
   then click OK .

```
          [ DISTRESS RELAY ]                              [ DISTRESS RELAY ]

 ┌──────────────┐                   ┌──────────┐   ┌──────────────┐                   ┌────────────────────┐
 │    TYPE      │ RELAY INDIVIDUAL  │DISSTRESS │   │    TYPE      │ RELAY INDIVIDUAL  │INPUT               │
 └──────────────┘                   │   ID     │   └──────────────┘                   │ ┌──┐ ┌──┐ ┌──┐     │
 ┌──────────────┐                   │ ┌──────┐ │   ┌──────────────┐                   │ │1 │ │2 │ │3 │     │
 │    TO        │ 413000001         │ │INPUT │ │   │    TO        │ 004122100         │ └──┘ └──┘ └──┘     │
 └──────────────┘                   │ └──────┘ │   └──────────────┘                   │ ┌──┐ ┌──┐ ┌──┐     │
 ┌──────────────┐                   │ ┌──────┐ │   ┌──────────────┐                   │ │4 │ │5 │ │6 │     │
 │ DISSTRESS ID │ NO INFO           │ │NO INFO││   │ DISSTRESS ID │ 413000000         │ └──┘ └──┘ └──┘     │
 └──────────────┘                   │ └──────┘ │   └──────────────┘                   │ ┌──┐ ┌──┐ ┌──┐     │
 ┌──────────────┐                   └──────────┘   ┌──────────────┐                   │ │7 │ │8 │ │9 │     │
 │   NATURE     │ UNDESIGNATED                     │   NATURE     │ UNDESIGNATED      │ └──┘ └──┘ └──┘     │
 └──────────────┘                                  └──────────────┘                   │ ┌──┐ ┌──┐ ┌──┐     │
 ┌──────────────┐ NO INFO                          ┌──────────────┐ NO INFO           │ │F │ │0 │ │OK│     │
 │  POSITION    │ NO INFO  NO INFO                 │  POSITION    │ NO INFO  NO INFO  │ └──┘ └──┘ └──┘     │
 └──────────────┘                                  └──────────────┘                   └────────────────────┘
 ┌──────────────┐               ┌──────────┐       ┌──────────────┐               ┌──────────┐
 │    BACK      │               │  CALL    │       │    BACK      │               │  CALL    │
 └──────────────┘               └──────────┘       └──────────────┘               └──────────┘
```

⑥   With [**NATURE**] selected, click to select nature of distress.

```
                      [ DISTRESS RELAY ]

   TYPE          RELAY INDIVI   NATURE

   TO            004122100      FIRE        FLOODING

   DISSTRESS ID  413888777      COLLISION   GROUNDING

                                LISTING     SINKING
   NATURE        UNDESIGNATED
                                ADRIFT      UNDESIGNATED
   POSITION      NO INFO
                 NO INFO NO     ABANDONING  PIRACY ATTACK

   BACK                         MAN OVERBOARD  EPIRB EMISSION

                                            CALL
```

⑦ With [**POSITION**] selected, click to select **[EPFS]**, **[MANUAL]** or **[NO INFO]**.
For **[MANUAL]**, go to step ⑧. For others, go to step ⑨.

```
                      [ DISTRESS RELAY ]

   TYPE          RELAY INDIVIDUAL    POSITION

   TO            004122100           EPFS

   DISSTRESS ID  413888777
                                     MANUAL
   NATURE        FIRE
                                     NO INFO
   POSITION      NO INFO
                 NO INFO  NO INFO

   BACK                                      CALL
```

⑧ Use the numeric keys to enter latitude and longitude of the ship in distress. Switch coordinates: Click $\boxed{1}$ to switch to North (East for longitude); $\boxed{2}$ to switch to South (West for longitude). Also, enter the UTC time then click $\boxed{OK}$ to confirm.

⑨ Click [**CALL**], the distress relay is transmitted to the coast station. After transmitting, the **[WAIT ACK]** screen appears. The elapsed time since transmitting is displayed.

```
                              DSC TX CH:70  INTL  HIGH              FM   CH:16  INTL  HIGH
                                            SIMP  25W                            SIMP  25W
[ TX MESSAGE-RELAY INDIVIDUAL ]                      [ TX MESSAGE-RELAY INDIVIDUAL ]
  PRIORITY :DISTRESS                                   PRIORITY :DISTRESS
  TO       :004122100                                  TO       :004122100
  DISTRESS :413888777                                  DISTRESS :413888777
  NATURE   :FIRE                                       NATURE   :FIRE
  POSITION :31°25.1122N 120°31.3344E 03:06             POSITION :31°25.1122N 120°31.3344E 03:06
  COMM MODE:TELEPHONE                                  COMM MODE:TELEPHONE
  COMM CH  :16                                         COMM CH  :16

[SENDING ]  ELAPSED :00:00:01                       [WAIT ACK ]  ELAPSED :00:00:06
                              SELECT                                             SELECT

  DSC MSG   CH16   MENU   TAB   PRINT   OPTION         DSC MSG   CH16   MENU   TAB   PRINT   OPTION
```

When the distress relay individual acknowledgement from the coast station is received, the audio alarm sounds and a pop-up message appears. Click $\boxed{CLICK}$ to silence the alarm and erase the pop-up message. Communicate with the coast station by telephone. If you do not receive the distress acknowledgement from a coast station, click **[OPTION]** to select further operation.

```
                                                    FM    CH:16    INTL  HIGH
                                                                   SIMP  25W
[ TX MESSAGE-RELAY INDIVIDUAL ]                              Hold
   PRIORITY :DISTRESS
   TO       :004122100                                       Quit
   DISTRESS :413888777
   NATURE   :FIRE                                            Relay
   POSITION :31°25.1122N 120°31.3344E 03:06
   COMM MODE:TELEPHONE                                       History
   COMM CH  :16
                                                             Resend

[WAIT ACK ]    ELAPSED :00:00:14

   DSC MSG    CH16     MENU     TAB     PRINT    OPTION
```
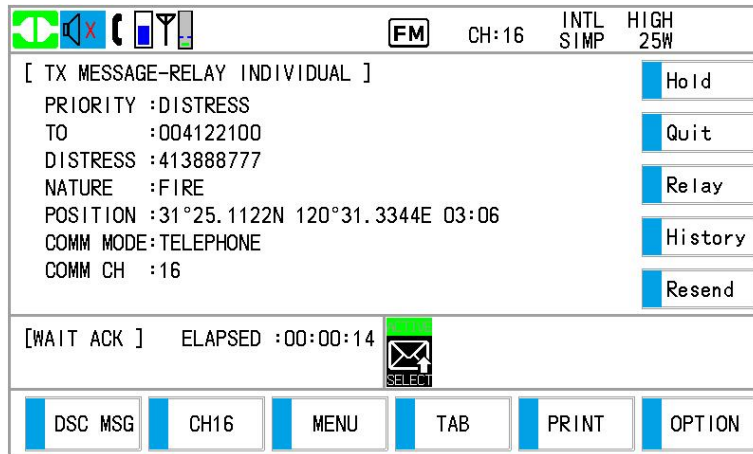
[Hold]: You can hold the distress relay (changes to   ) and activate it again by clicking **[OPTION]**.

Note: If you click [CH16] to Main screen, the operation is held automatically, and click [TASK] to return to DSC screen.

[Quit]: You can finish the distress relay. Click YES to return to Main screen.

[Relay]: You can send the distress relay call to others.

[Resend]: You can resend the distress relay.

[History]: View the history.

The above option functions are the same as in other DSC calls.

4.2.3.2 Send a distress relay to all ships

If a coast station directs you to send a distress relay to all ships, follow the procedure as below. You can not transmit a distress relay unless directed by a coast station.

① Click [DISTRESS RELAY] in the [MESSAGE] menu to open the composing screen for the distress relay. Click [**TYPE**] to select **[RELAY ALL SHIP]**.

```
               [ DISTRESS RELAY ALLSHIP ]

     TYPE           RELAY ALL SHIP

     TO             ALL SHIP

     DISSTRESS ID   NO INFO

     NATURE         UNDESIGNATED

     POSITION       NO INFO
                    NO INFO   NO INFO

     BACK                              CALL
```
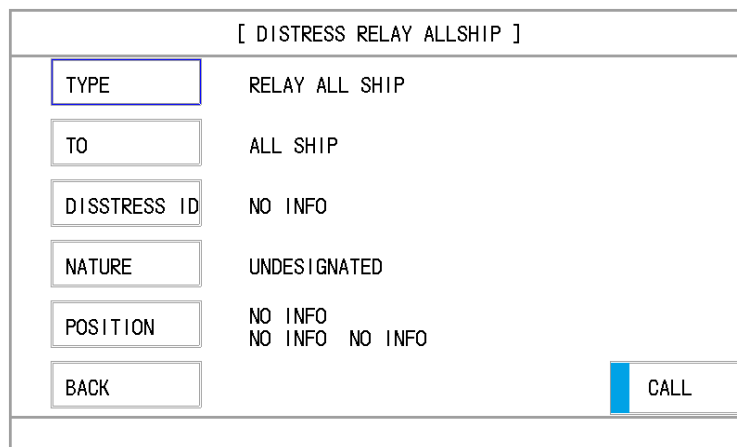
② With **[DISTRESS ID]** selected, enter the ID (MMSI) of the ship in distress. Refer to Section 4.2.3.1 ⑤.

③ With [**NATURE**] selected, click to select nature of distress. Refer to Section 4.2.3.1⑥.

④ With [**POSITION**] selected, enter latitude and longitude of the ship in distress. Refer to Section 4.2.3.1 ⑦~⑧.

⑤ Click **[CALL]**, the following message appears on the screen.

[DISTRESS RELAY ALLSHIP]

TYPE   RELAY ALL SHIP

TO

DISSTRESS

NATURE

POSITION   31°25.1122N
120°31.3344E 03:10

BACK   CALL

DSC INFO

ARE YOU SURE SEND RELAY?
ADDRESS IS A NON-INDIVIDUALLY ADD.

NO   YES
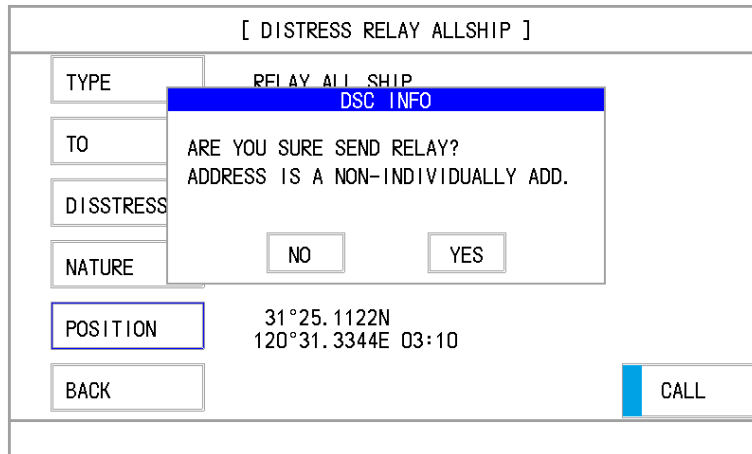
⑥   Click YES, the distress relay is transmitted to all ships.

4.2.4 Cancel a Distress Call

You can cancel the distress call while it is being sent or while waiting for its acknowledgement as follows.

①   Click **[OPTION]**, then select **[Cancel]**.

[TX MESSAGE-DISTRESS ALERT]
DISTRESS :413000000
NATURE   :UNDESIGNATED
POSITION :31°25.1122N 120°31.3344E 03:11
COMM MODE:TELEPHONE
COMM CH   :16

Pause
Cancel
Resend

[WAIT ACK]   ELAPSED :00:00:08
RESEND   :03:22

DSC MSG   CH16   MENU   TAB   PRINT   OPTION

[TX MESSAGE-DISTRESS ALERT]
DISTRESS :4
NATURE   :U
POSITION :3
COMM MODE:T
COMM CH   :1

DSC INFO

ARE YOU SURE SEND CANCEL ACK?
TO CANCEL OWN DISTRESS ALERT.

NO   YES

[WAIT ACK]   ELAPSED :00:00:17
RESEND   :03:13

DSC MSG   CH16   MENU   TAB   PRINT   OPTION

②   Click YES to cancel, the sending screen appears:

[TX MESSAGE-CANCEL ACK]
PRIORITY :DISTRESS
DISTRESS :413000000
NATURE   :UNDESIGNATED
POSITION :31°25.1122N 120°31.3344E 03:11
COMM MODE:TELEPHONE
COMM CH   :16

[SENDING]   ELAPSED :00:00:01

DSC MSG   CH16   MENU   TAB   PRINT   OPTION
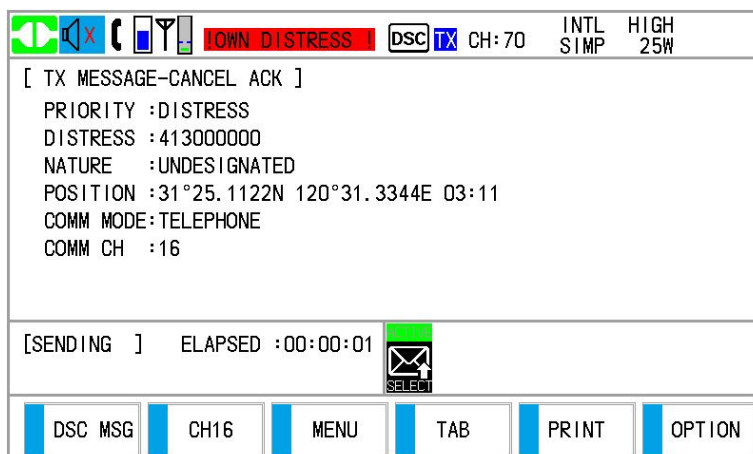
③   Pick up the handset, make a voice announcement with all ships via radiotelephone referring to the message on screen.
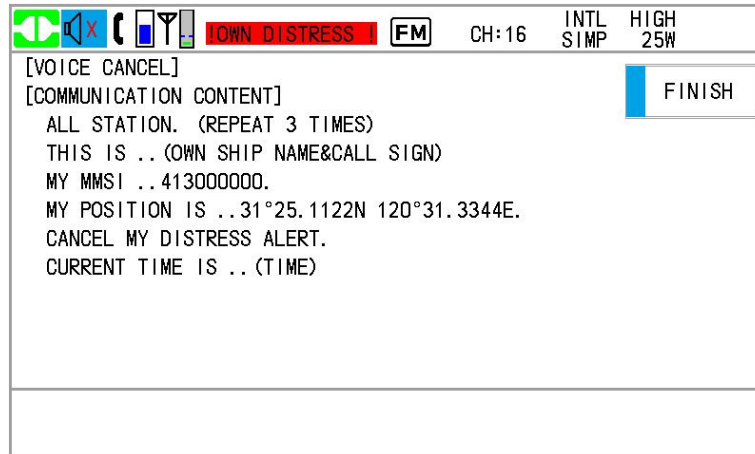
④ Click **[FINISH]** to finish the operation.
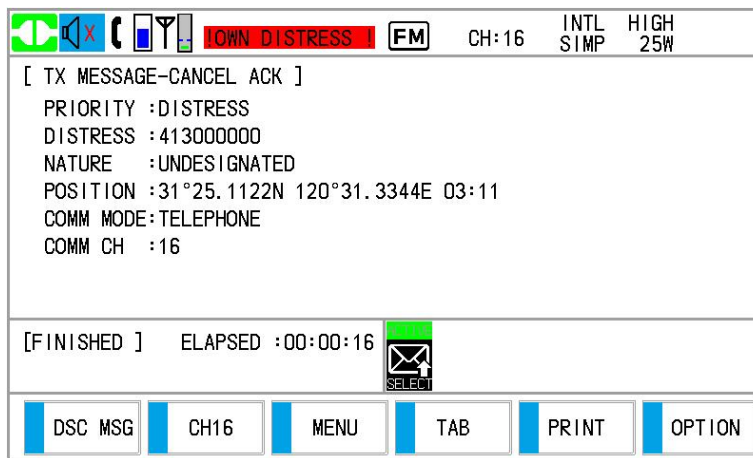
⑤ Click **[OPTION]** to select the further operation.
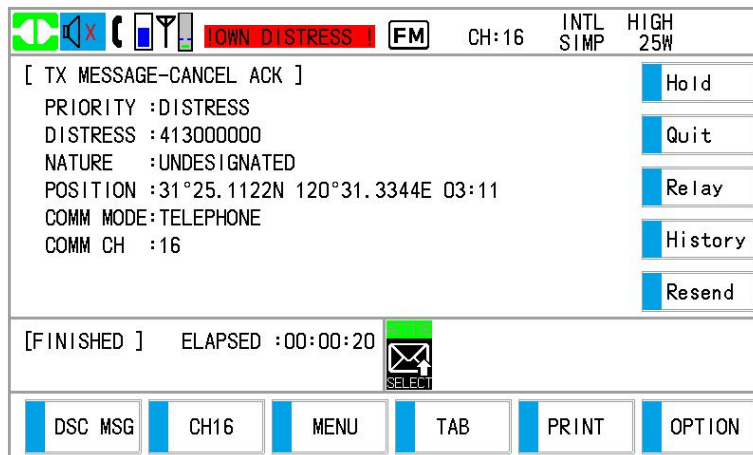
4.3. DSC GENERAL CALLS

The procedure for sending and receiving non-distress DSC messages is similar among different message types. The following is an example of the procedure for an individual call.

① Send the individual call.

② Wait for the individual message acknowledgement.

③ Start the communication.

4.3.1 Individual Call

The individual call is for calling a specific station. After sending an individual call, called ACK RQ transmission, wait to receive the acknowledge back (ACK BQ) signal from the receiving station.

4.3.1.1 Send an individual call
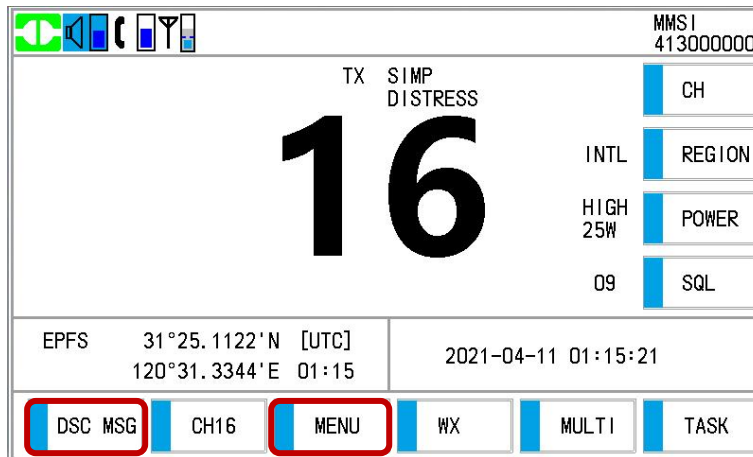
(1) Click **[DSC MSG]**, or click [**MENU**] and choose **[DSC]** – **[MESSAGE]**, then click **[GENERAL MESSAGE]** in **[MESSAGE]**.
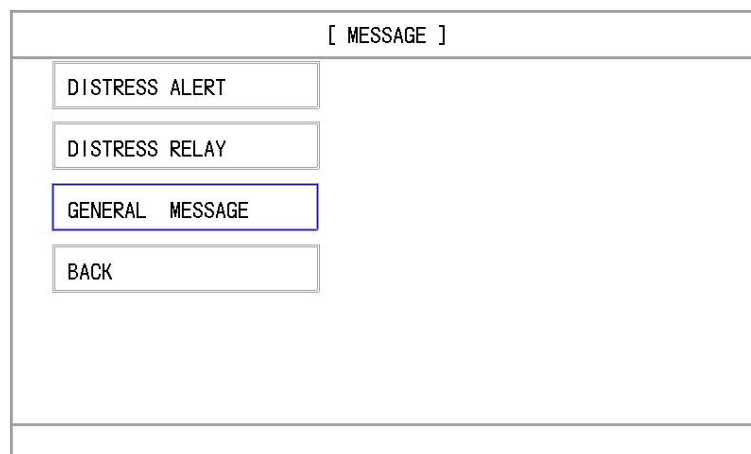
(2) Click [**MSG TYPE**] or rotate the PUSH TO ENTER knob to select [**MSG TYPE**] then push the knob, select **[INDIVIDUAL]** among INDIVIDUAL, GROUP, ALL SHIP, POSITION and TEST.
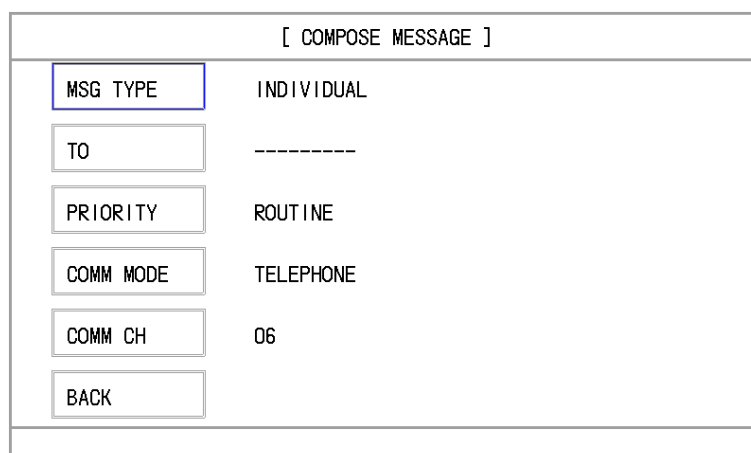
(3) With **[TO]** selected, enter the MMSI where to send the call with the numeric keys in **[INPUT]**. Click OK to confirm.

```
[ COMPOSE MESSAGE ]

  MSG TYPE       INDIVIDUAL            INPUT
                                       1    2    3
  TO             413888777
                                       4    5    6
  PRIORITY       ROUTINE
                                       7    8    9
  COMM MODE      TELEPHONE
                                       F    0    OK
  COMM CH        06

  BACK                                       CALL
```

(4) Click [**PRIORITY**] to select [**PRIORITY**] then push the knob, select **[ROUTINE]**, **[SAFETY]** or **[URGENCY]**.

```
[ COMPOSE MESSAGE ]

  MSG TYPE       INDIVIDUAL

  TO             413888777

  PRIORITY       SAFETY

  COMM MODE      TELEPHONE

  COMM CH        06

  BACK                                       CALL
```

(5) The **[COMM MODE]** is **[TELEPHONE]** automatically.

(6) Click **[COMM CH]**, use the numeric keys to enter the VHF channel and click OK to confirm. For example:

```
[ COMPOSE MESSAGE ]

  MSG TYPE       INDIVIDUAL            INPUT
                                       1    2    3
  TO             413888777
                                       4    5    6
  PRIORITY       SAFETY
                                       7    8    9
  COMM MODE      TELEPHONE
                                       F    0    OK
  COMM CH        06

  BACK                                       CALL
```

(7) Click **[CALL]** to send the individual call.
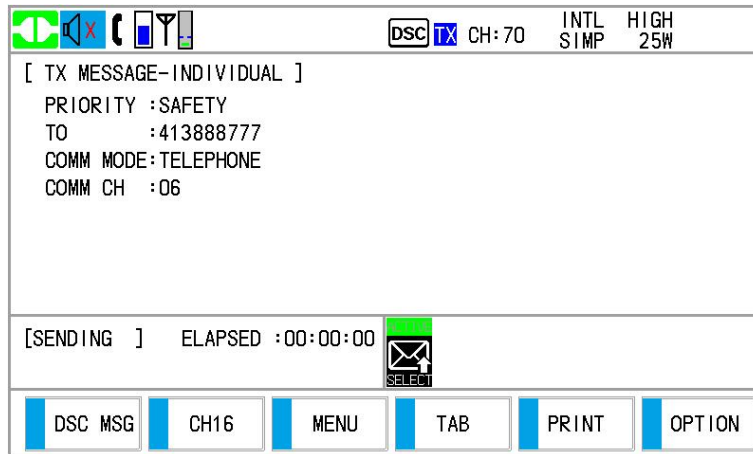
The timer starts counting up the time since the call is sent. After the call is sent, the equipment waits for acknowledgement of the call, showing the [WAIT ACK] screen as below.
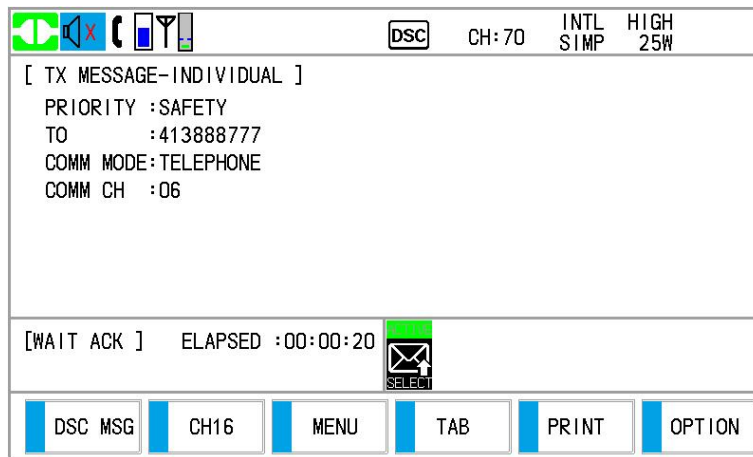
You can also do the option: [Hold]/[Quit]/[Resend].
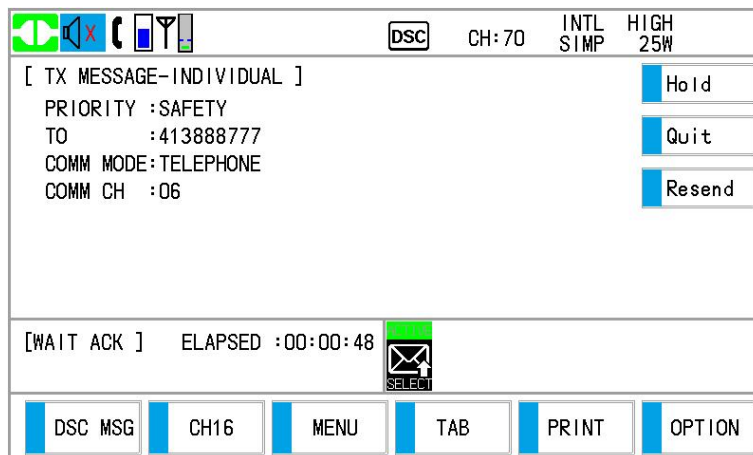
(8) When the ACK is received, the audio alarm sounds and the pop-up message appears on the screen as below. The timer starts counting up the time since the ACK is received.
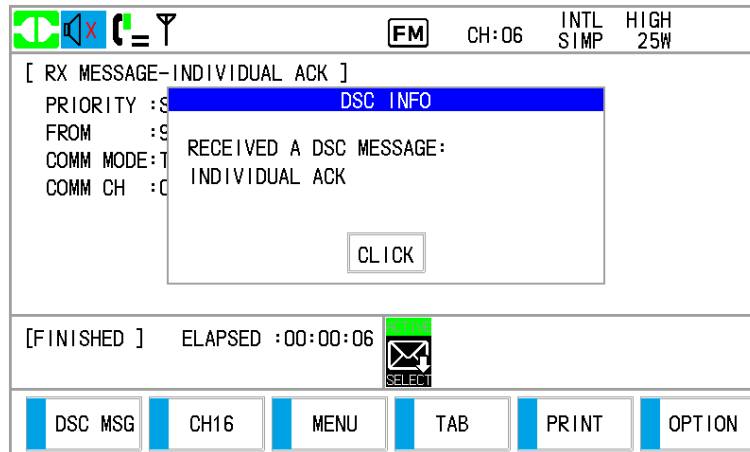
There are three types of ACK messages: [INDIVIDUAL ACK], [INDIVIDUAL ACK] (NEW CH) and [UNABLE ACK].

(9)   Do one of the following depending on the message type shown at step (9).

● **Individual acknowledge call received:**

①   Click CLICK to silence the audio alarm and erase the pop-up message.

②   The working channel is automatically set; you can communicate by radiotelephone (pick up the handset to talk).
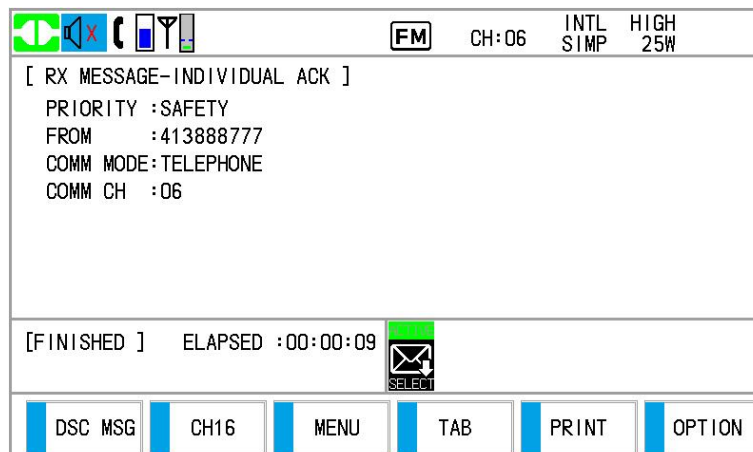
③   After you have completed communications, click **[OPTION]**, select **[Quit]** to Main screen.

● **Individual acknowledge call (new channel) received:**

This call means that the station you sent the individual call to accepts your call, but requests their channel.

①   Click CLICK to silence the audio alarm and erase the pop-up message. You can do the communication on the new channel, whichever the station requests.

```
[ RX MESSAGE-INDIVIDUAL ACK ]          DSC   CH:70   INTL  HIGH
                                                     SIMP  25W
  PRIORITY :S        DSC INFO
  FROM     :S
  COMM MODE:T   RECEIVED A DSC MESSAGE:
  COMM CH  :1   INDIVIDUAL ACK


                        CLICK


[FINISHED ]   ELAPSED :00:00:02

  DSC MSG   CH16   MENU   TAB   PRINT   OPTION
```

```
[ RX MESSAGE-INDIVIDUAL ACK ]          FM    CH:16   INTL  HIGH
                                                     SIMP  25W
  PRIORITY :S        DSC INFO
  FROM     :9
  COMM MODE:T   NEW COMM FREQ SUGGESTED.
  COMM CH  :1


                        CLICK


[FINISHED ]   ELAPSED :00:00:07

  DSC MSG   CH16   MENU   TAB   PRINT   OPTION
```

② After you have completed communications, click **[OPTION],** select **[Quit]** to Main screen.

● **Unable to acknowledge call received:**

① Click CLICK to silence the audio alarm and erase the pop-up message. The reason for **[UNABLE ACK]** is displayed on the screen.

```
[ RX MESSAGE-UNABLE ACK ]              FM    CH:16   INTL  HIGH
                                                     SIMP  25W
  PRIORITY :S        DSC INFO
  FROM     :9
  REASON   :C   RECEIVED A DSC MESSAGE:
               UNABLE ACK


                        CLICK


[FINISHED ]   ELAPSED :00:00:03

  DSC MSG   CH16   MENU   TAB   PRINT   OPTION
```

```
[ RX MESSAGE-UNABLE ACK ]              DSC   CH:70   INTL  HIGH
                                                     SIMP  25W
  PRIORITY :SAFETY
  FROM     :413888777
  REASON   :CH  UNABLE


[FINISHED ]   ELAPSED :00:00:08

  DSC MSG   CH16   MENU   TAB   PRINT   OPTION
```
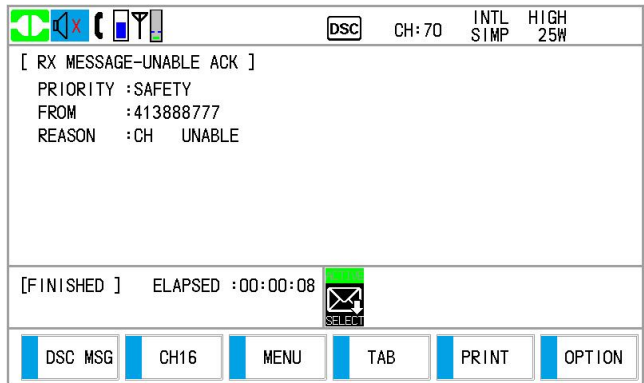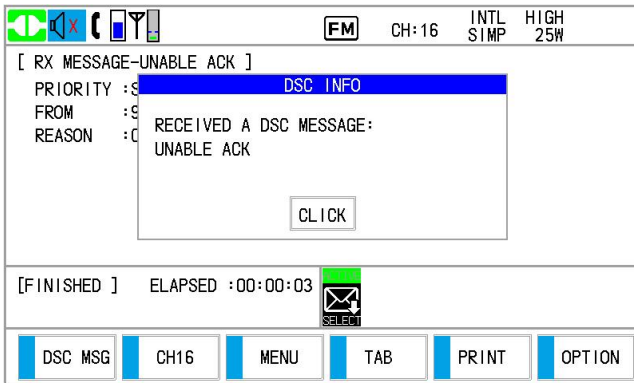
Reason for unable to acknowledge

NO REASON	CONESTION*
BUSY	QUEUE
STA. BARRED	NO OPERATOR
TEMP. NO ONE	EUT DISABLED
CH UBABLE	MODE UBABLE

*: Coast station use

② Click **[OPTION]**, select **[Quit]** to Main screen.

Note: If the coast station sends the message "QUEUE", wait until your turn comes.

If there is no response from the receiving station, do one of the following procedures:
Resend call: Click **[OPTION]**, select **[Resend]**.
Cancel call: Click **[OPTION]**, select **[Quit]**, then select **[Yes]** to cancel the call.

4.3.1.2 Receive an individual call

Unable acknowledge is sent automatically or manually depending on the acknowledgement method setting. Able acknowledge is sent only manually.

Note: The handset must be on hook and all sessions must be quit to enable automatic acknowledge.

● **Send unable acknowledge automatically:**

If you cannot use the channel specified by the sending station, an unable acknowledge [CH UNABLE] is sent automatically. The [ACK SETTING] menu is set to [AUTO-UNABLE]. It takes a few seconds to transmit the call.

● **Send able/unable acknowledge manually:**

When an individual call is received with the setting [MANUAL] on the [ACK SETTING] menu, the audio alarm sounds and a pop-up message appears on the screen as below.
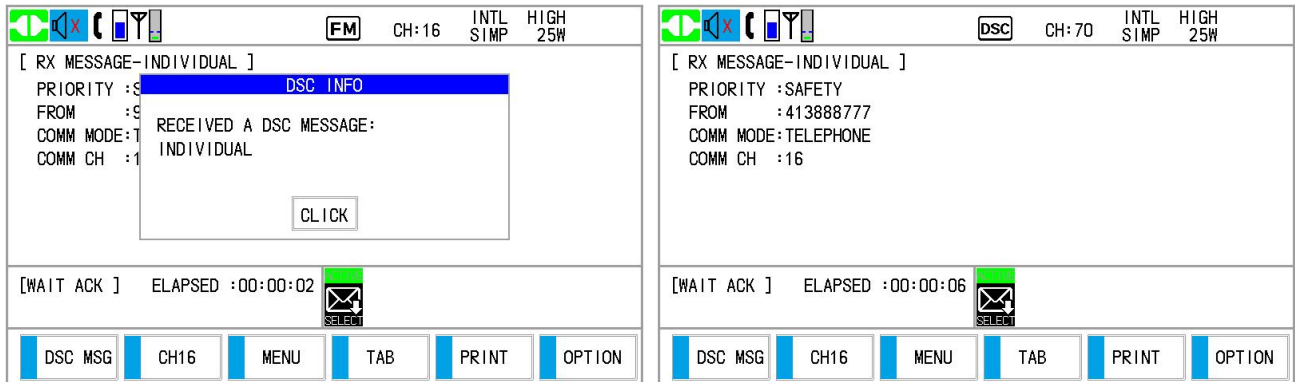
Click CLICK to silence the audio alarm and erase the pop-up message.

There are three types of ACK transmission; able acknowledge, able to change channel and unable acknowledge. Click **[OPTION]**, follow the appropriate procedure as bellow.
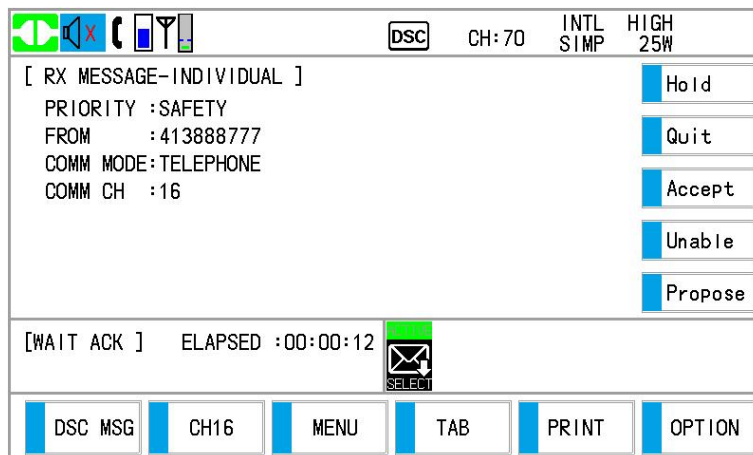
(1) Send able acknowledge call

① Click **[Accept]**, send the able acknowledge call.
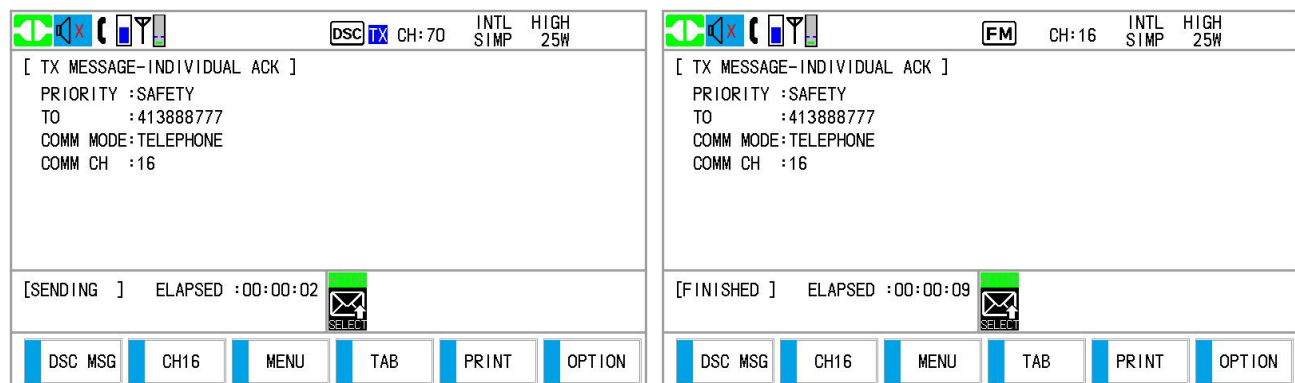
② Communicate by radiotelephone.

③ After you have completed communications, click **[OPTION]** to select **[Quit]**.

(2) Send unable acknowledge call

① Click **[Unable]**.

```
                                    DSC   CH:70   INTL   HIGH
                                                  SIMP   25W
[ RX MESSAGE-INDIVIDUAL ]    ┌─ REASON ──────────────────┐
  PRIORITY :SAFETY           │ ┌─────────────┐ ┌──────────┐
  FROM     :413888777        │ │ NO REASON   │ │CONGESTION│
  COMM MODE:TELEPHONE        │ └─────────────┘ └──────────┘
  COMM CH  :16               │ ┌─────────────┐ ┌──────────┐
                             │ │ BUSY        │ │QUEUE     │
                             │ └─────────────┘ └──────────┘
                             │ ┌─────────────┐ ┌──────────┐
                             │ │ STA. BARRED │ │NO OPERATOR│
                             │ └─────────────┘ └──────────┘
                             │ ┌─────────────┐ ┌──────────┐
                             │ │ TEMP. NO ONE│ │EUT DISABLED│
                             │ └─────────────┘ └──────────┘
[WAIT ACK ]   ELAPSED :00:00:05│ ┌──────────┐ ┌──────────┐
                             │ │ CH  UNABLE│ │MODE UNABLE│
                             │ └──────────┘ └──────────┘
                                    SELECT
  DSC MSG    CH16    MENU    TAB    PRINT    OPTION
```
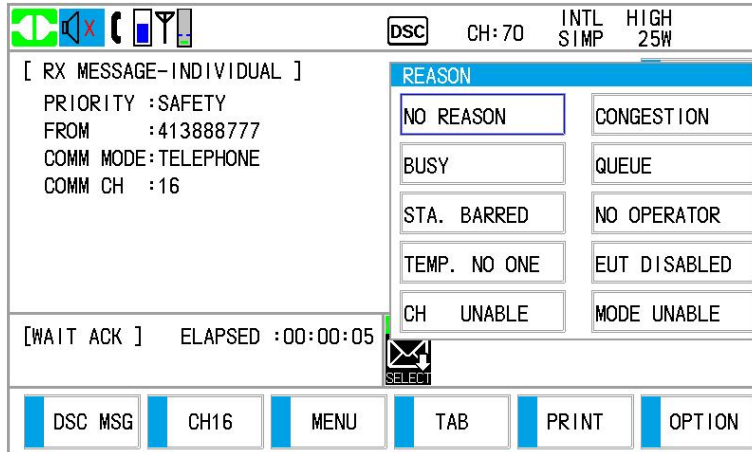
② With **[REASON]** selected, click **[CALL]** to send unable acknowledge call.

```
                                DSC TX CH:70   INTL   HIGH
                                               SIMP   25W
[ TX MESSAGE-UNABLE ACK ]
  PRIORITY :SAFETY
  TO       :413888777
  REASON   :BUSY




[SENDING  ]   ELAPSED :00:00:00
                                    SELECT
  DSC MSG    CH16    MENU    TAB    PRINT    OPTION
```

(3) Send able acknowledge call and change channel

① Click **[Propose]**, the following screen appears.

```
                [ COMPOSE MESSAGE ]

    ┌──────────┐
    │ MSG TYPE │      INDIVIDUAL ACK
    └──────────┘
    ┌──────────┐
    │ TO       │      413888777
    └──────────┘
    ┌──────────┐
    │ PRIORITY │      SAFETY
    └──────────┘
    ┌──────────┐
    │ COMM MODE│      TELEPHONE
    └──────────┘
    ┌──────────┐
    │ COMM CH  │      06
    └──────────┘
    ┌──────────┐                    ┌──────────┐
    │ BACK     │                    │ CALL     │
    └──────────┘                    └──────────┘
```

② Click **[COMM CH]**.

```
                    [ COMPOSE MESSAGE ]

  ┌──────────┐                          ┌INPUT──────────────┐
  │ MSG TYPE │    INDIVIDUAL ACK        │  ┌──┐ ┌──┐ ┌──┐   │
  └──────────┘                          │  │ 1│ │ 2│ │ 3│   │
  ┌──────────┐                          │  └──┘ └──┘ └──┘   │
  │ TO       │    413888777             │  ┌──┐ ┌──┐ ┌──┐   │
  └──────────┘                          │  │ 4│ │ 5│ │ 6│   │
  ┌──────────┐                          │  └──┘ └──┘ └──┘   │
  │ PRIORITY │    SAFETY                │  ┌──┐ ┌──┐ ┌──┐   │
  └──────────┘                          │  │ 7│ │ 8│ │ 9│   │
  ┌──────────┐                          │  └──┘ └──┘ └──┘   │
  │ COMM MODE│    TELEPHONE             │  ┌──┐ ┌──┐ ┌──┐   │
  └──────────┘                          │  │ F│ │ 0│ │OK│   │
  ┌──────────┐                          │  └──┘ └──┘ └──┘   │
  │ COMM CH  │    06                    └───────────────────┘
  └──────────┘
  ┌──────────┐                                   ┌───────┐
  │ BACK     │                                   │ CALL  │
  └──────────┘                                   └───────┘
```

③   Set the channel by the numeric keys and click **OK** to confirm. For example, CH06.

④   Click **[CALL]**, send the able to change channel acknowledge call.

```
┌─────────────────────────────────────────────┐  ┌─────────────────────────────────────────────┐
│              DSC TX CH:70  INTL  HIGH         │  │               FM      CH:06  INTL  HIGH       │
│                            SIMP  25W          │  │                              SIMP  25W        │
│ [ TX MESSAGE-INDIVIDUAL ACK ]                 │  │ [ TX MESSAGE-INDIVIDUAL ACK ]                 │
│  PRIORITY :SAFETY                             │  │  PRIORITY :SAFETY                             │
│  TO       :413888777                          │  │  TO       :413888777                          │
│  COMM MODE:TELEPHONE                           │  │  COMM MODE:TELEPHONE                           │
│  COMM CH  :06                                  │  │  COMM CH  :06                                  │
│                                               │  │                                               │
│ [SENDING ]   ELAPSED :00:00:24    ✉          │  │ [FINISHED ]   ELAPSED :00:00:30   ✉          │
│                                  SELECT        │  │                                  SELECT        │
│ ┌────────┐┌──────┐┌──────┐┌───────┐┌───────┐ │  │ ┌────────┐┌──────┐┌──────┐┌───────┐┌───────┐ │
│ │DSC MSG ││CH16  ││MENU  ││ TAB   ││PRINT  ││OPTION│ │ │DSC MSG ││CH16  ││MENU  ││ TAB   ││PRINT  ││OPTION│
│ └────────┘└──────┘└──────┘└───────┘└───────┘ │  │ └────────┘└──────┘└──────┘└───────┘└───────┘ │
└─────────────────────────────────────────────┘  └─────────────────────────────────────────────┘
```

⑤   Communicate by radiotelephone.

⑥   After you have completed communications, click **[OPTION]** to select **[Quit]**.

4.3.2 Group Call

Group call is used to call a specific group by specifying its group MMSI.

4.3.2.1 Send a group call

```
┌────────────────────────────────────────────────────┐
│                                          MMSI        │
│                                          413000000   │
│                    TX  SIMP                           │
│                    DISTRESS            ┌────┐        │
│                                        │ CH │        │
│                  16            INTL    └────┘        │
│                                        ┌──────┐      │
│                                        │REGION│      │
│                               HIGH     └──────┘      │
│                               25W      ┌──────┐      │
│                                        │POWER │      │
│                                        └──────┘      │
│                               09       ┌──────┐      │
│                                        │ SQL  │      │
│                                        └──────┘      │
│ EPFS    31°25.1122'N [UTC]                           │
│         120°31.3344'E 01:15    2021-04-11 01:15:21   │
│ ┌────────┐┌──────┐┌──────┐┌──────┐┌──────┐┌──────┐  │
│ │DSC MSG ││CH16  ││MENU  ││ WX   ││MULTI ││TASK  │  │
│ └────────┘└──────┘└──────┘└──────┘└──────┘└──────┘  │
└────────────────────────────────────────────────────┘
```
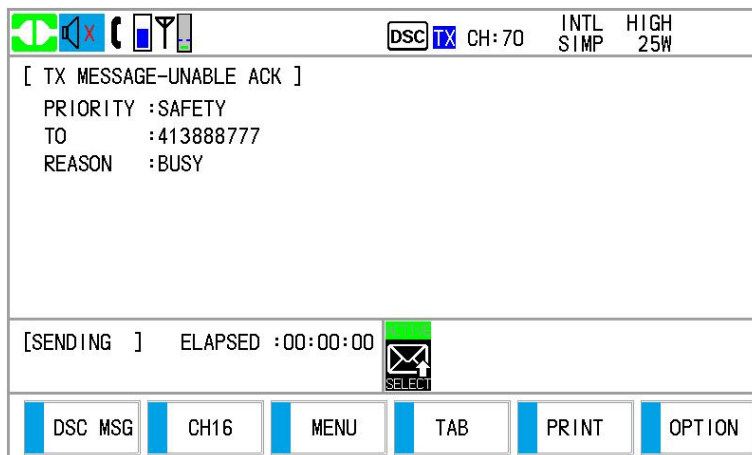
(1) Click **[DSC MSG]**, or click [**MENU**] and choose **[DSC]** – **[MESSAGE]**, then click **[GENERAL MESSAGE]**

in **[MESSAGE]**.

```
                       [ MESSAGE ]

       DISTRESS ALERT

       DISTRESS RELAY

       GENERAL  MESSAGE

       BACK
```

(2) Click [**MSG TYPE**] to select **[GROUP]**.

(3) With **[TO]** selected, enter the group MMSI that where to send the group call in **[INPUT]**, then click OK to confirm.

```
                     [ COMPOSE MESSAGE ]

       MSG TYPE        GROUP              INPUT

       TO              080000000           1    2    3

       PRIORITY        ROUTINE             4    5    6

       COMM MODE       TELEPHONE           7    8    9

       COMM CH         06                  F    0    OK

       BACK                                     CALL
```

(4) [**PRIORITY**] is automatically selected to **[ROUTINE]**.

(5) Click **[COMM CH]**, set the channel by the numeric keys and click OK to confirm. For example, CH06.

```
                     [ COMPOSE MESSAGE ]

       MSG TYPE        GROUP              INPUT

       TO              080000000           1    2    3

       PRIORITY        ROUTINE             4    5    6

       COMM MODE       TELEPHONE           7    8    9

       COMM CH         06                  F    0    OK

       BACK                                     CALL
```

(6) After finish setting, click **[CALL]** to send the group call. The screen changes as below.

```
┌─────────────────────────────────────────┐  ┌─────────────────────────────────────────┐
│ ◄►◄x ( █Y.      DSC TX CH:70  INTL  HIGH │  │ ◄►◄x ( █Y.        FM   CH:06  INTL  HIGH │
│                             SIMP   25W   │  │                            SIMP    25W  │
│ [ TX MESSAGE-GROUP ]                     │  │ [ TX MESSAGE-GROUP ]                     │
│   PRIORITY :ROUTINE                      │  │   PRIORITY :ROUTINE                      │
│   TO       :080000000                    │  │   TO       :080000000                    │
│   COMM MODE:TELEPHONE                    │  │   COMM MODE:TELEPHONE                    │
│   COMM CH  :06                           │  │   COMM CH  :06                           │
│                                          │  │                                          │
│                                          │  │                                          │
│ [SENDING  ]  ELAPSED :00:00:01  ✉SELECT  │  │ [FINISHED ]  ELAPSED :00:00:06  ✉SELECT  │
│  DSC MSG   CH16   MENU   TAB  PRINT OPTION│  │  DSC MSG   CH16   MENU   TAB  PRINT OPTION│
└─────────────────────────────────────────┘  └─────────────────────────────────────────┘
```
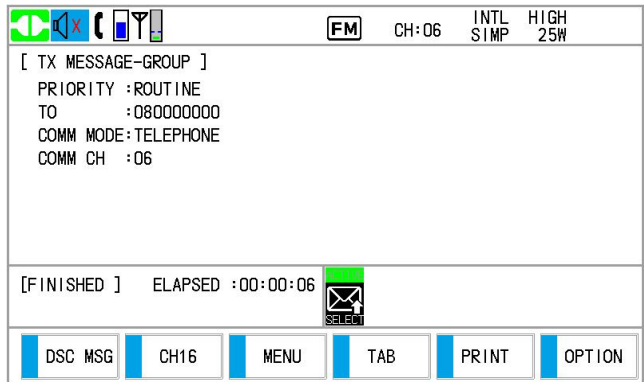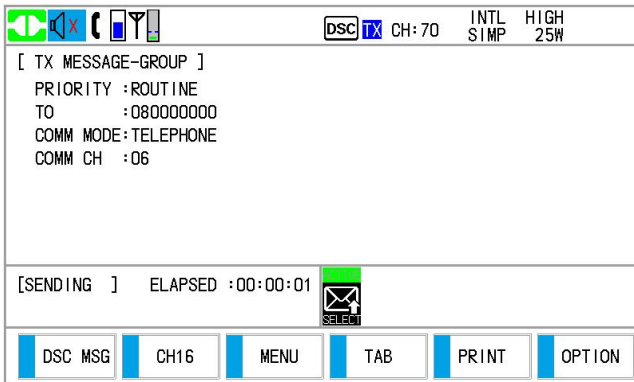
Communicate by radiotelephone.

(7) After you have completed communications, click **[OPTION]**, select **[Quit]** and click YES to Main screen.

(8) You can also do the option: **[Hold]** or /**[Resend]**.

4.3.2.2 Receive a group call

Group MMSI must be registered in order to receive a group call. Refer to Section 2.10.

When a group call is received, the audio alarm sounds. The icon (✉) appears in the tab area, and the pop-up message "RECEIVED A DSC MESSAGE. GROUP" appears.

```
┌─────────────────────────────────────────┐
│ ◄►◄x ( █Y.        FM   CH:06  INTL  HIGH │
│                            SIMP    25W   │
│ [ RX MESSAGE-GROUP ]                     │
│   PRIORITY :R┌──────DSC INFO──────┐      │
│   TO       :0│                    │      │
│   FROM     :4│ RECEIVED A DSC MESSAGE:   │
│   COMM MODE:T│ GROUP              │      │
│   COMM CH  :0│                    │      │
│              │       CLICK        │      │
│              └────────────────────┘      │
│ [FINISHED ]  ELAPSED :00:00:05  ✉SELECT  │
│  DSC MSG   CH16   MENU   TAB  PRINT OPTION│
└─────────────────────────────────────────┘
```

(1) Click CLICK to silence the audio alarm and erase the pop-up message.
    The channel is automatically tuned to the received channel.

```
┌─────────────────────────────────────────┐
│ ◄►◄x ( █Y.        FM   CH:06  INTL  HIGH │
│                            SIMP    25W   │
│ [ RX MESSAGE-GROUP ]                     │
│   PRIORITY :ROUTINE                      │
│   TO       :099888777                    │
│   FROM     :413888777                    │
│   COMM MODE:TELEPHONE                    │
│   COMM CH  :06                           │
│                                          │
│ [FINISHED ]  ELAPSED :00:00:11  ✉SELECT  │
│  DSC MSG   CH16   MENU   TAB  PRINT OPTION│
└─────────────────────────────────────────┘
```

(2)   Watch on the channel. Communicate by radiotelephone.

(3)   After you have completed communications, click **[OPTION]** to select **[Quit]**.

4.3.3 All Ships Call

The purpose of an all ships call is to send an urgency or safety call to all ships for assistance within the area you designate. After sending the call, you can communicate by radiotelephone. Do the following before beginning actual communications:

- URGENCY priority: Say "PAN" three times followed by own ship's call sign.
- SAFETY priority: Say "SECURITE" three times followed by own ship's call sign.

4.3.3.1 Send an all ships call
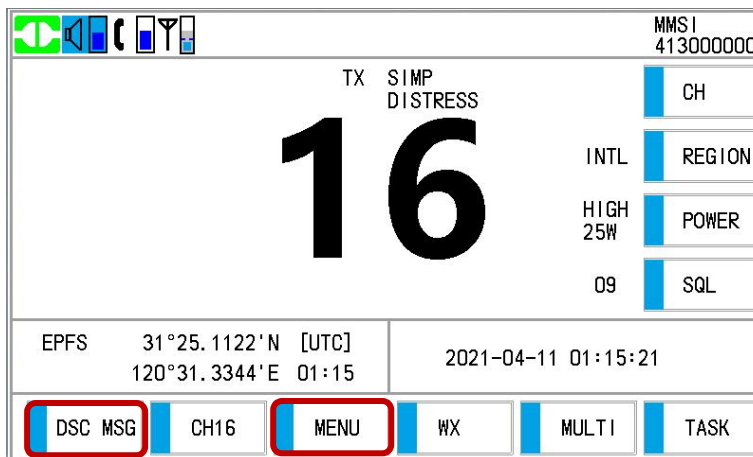
(1)   Click **[DSC MSG]**, or click [**MENU**] and choose **[DSC]** – **[MESSAGE]**, then click **[GENERAL MESSAGE]** in **[MESSAGE]**.

(2)   Click [**MSG TYPE**] to select **[ALL SHIP]**.

(3)   Click **[PRIORITY]** to select **[URGENCY]** or **[SAFETY]**.

(4)   Click [**COMM CH**], set the channel by the numeric keys and click $\boxed{\text{OK}}$ to confirm. For example, CH16.

```
                        [ COMPOSE MESSAGE ]

   ┌──────────────┐                        ┌──────────────────────┐
   │  MSG TYPE    │      ALL SHIP          │ INPUT                │
   └──────────────┘                        │  ┌───┐ ┌───┐ ┌───┐  │
                                           │  │ 1 │ │ 2 │ │ 3 │  │
   ┌──────────────┐                        │  └───┘ └───┘ └───┘  │
   │  PRIORITY    │      SAFETY            │  ┌───┐ ┌───┐ ┌───┐  │
   └──────────────┘                        │  │ 4 │ │ 5 │ │ 6 │  │
                                           │  └───┘ └───┘ └───┘  │
   ┌──────────────┐                        │  ┌───┐ ┌───┐ ┌───┐  │
   │  COMM MODE   │      TELEPHONE         │  │ 7 │ │ 8 │ │ 9 │  │
   └──────────────┘                        │  └───┘ └───┘ └───┘  │
                                           │  ┌───┐ ┌───┐ ┌───┐  │
   ┌──────────────┐                        │  │ F │ │ 0 │ │OK │  │
   │  COMM CH     │      ▣16               │  └───┘ └───┘ └───┘  │
   └──────────────┘                        └──────────────────────┘

   ┌──────────────┐                                  ┌──────────┐
   │  BACK        │                                  │  CALL    │
   └──────────────┘                                  └──────────┘
```

(5) Click **[CALL]** to send the call. The screen changes as below.

```
┌──────────────────────────────────────┐  ┌──────────────────────────────────────┐
│ ◁▷ ◁x ( ▣Y.    DSC TX CH:70 INTL HIGH│  │ ◁▷ ◁x ( ▣Y.      FM    CH:16 INTL HIGH│
│                         SIMP  25W    │  │                        SIMP  25W     │
│ [ TX MESSAGE-ALL SHIP ]              │  │ [ TX MESSAGE-ALL SHIP ]              │
│   PRIORITY :SAFETY                   │  │   PRIORITY :SAFETY                   │
│   COMM MODE:TELEPHONE                │  │   COMM MODE:TELEPHONE                │
│   COMM CH  :16                       │  │   COMM CH  :16                       │
│                                      │  │                                      │
│                                      │  │                                      │
│ [SENDING ]  ELAPSED :00:00:17  ✉    │  │ [FINISHED ]  ELAPSED :00:00:33  ✉   │
│                               SELECT │  │                               SELECT │
│ DSC MSG  CH16  MENU  TAB PRINT OPTION│  │ DSC MSG  CH16  MENU  TAB PRINT OPTION│
└──────────────────────────────────────┘  └──────────────────────────────────────┘
```
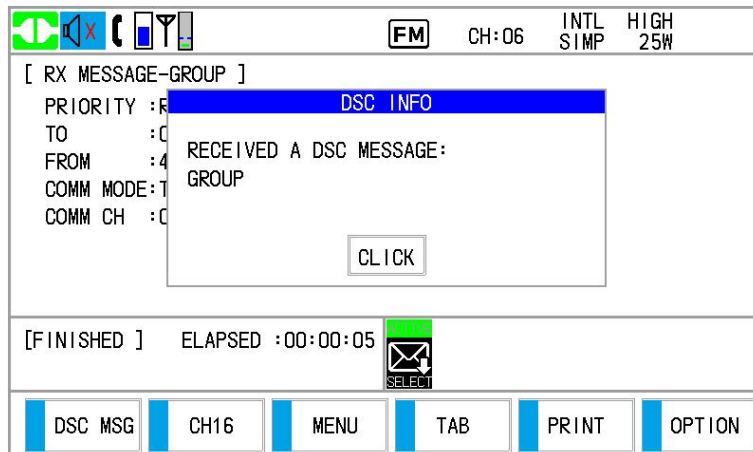
Communicate by radiotelephone.

(6) After you have completed communications, click **[OPTION]**, select **[Quit]** and click YES to Main screen.
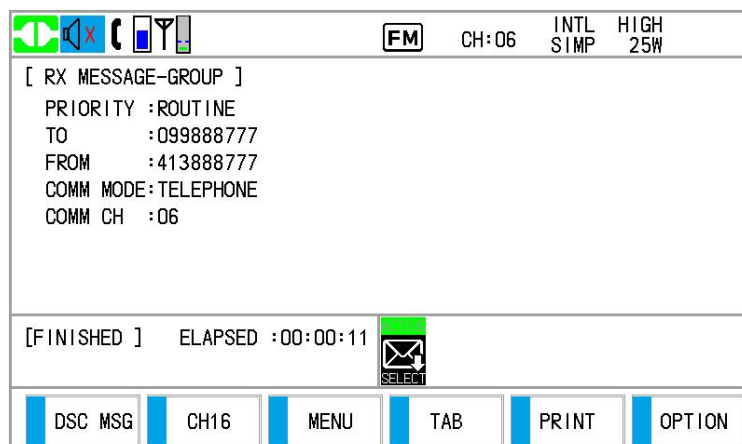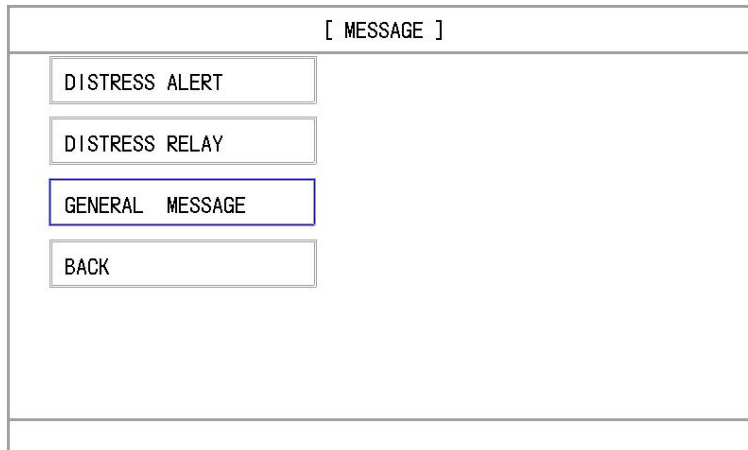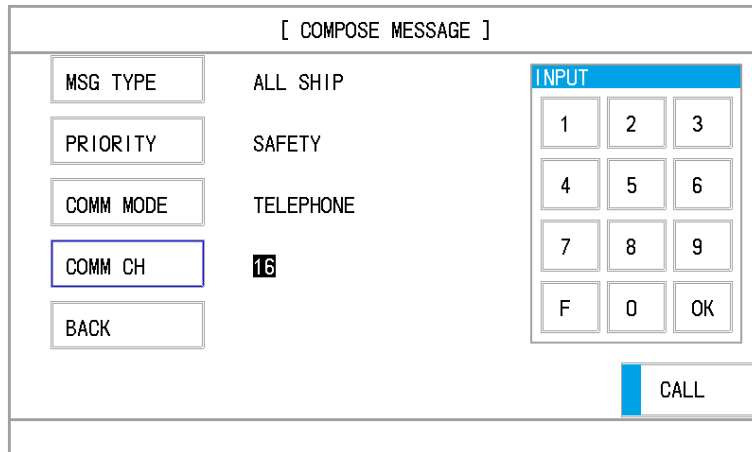
(7) You can also do the option: **[Hold]** or **[Resend]**.

```
┌────────────────────────────────────────────────┐
│ ◁▷ ◁x ( ▣Y.        FM   CH:16  INTL  HIGH      │
│                                SIMP   25W       │
│ [ TX MESSAGE-ALL SHIP ]              ┌────────┐ │
│   PRIORITY :SAFETY                   │ Hold   │ │
│   COMM MODE:TELEPHONE                └────────┘ │
│   COMM CH  :16                       ┌────────┐ │
│                                      │ Quit   │ │
│                                      └────────┘ │
│                                      ┌────────┐ │
│                                      │ Resend │ │
│                                      └────────┘ │
│                                                 │
│ [FINISHED ]  ELAPSED :00:00:47  ✉              │
│                               SELECT            │
│ DSC MSG   CH16   MENU   TAB  PRINT  OPTION      │
└────────────────────────────────────────────────┘
```

```
                                              INTL   HIGH
                                 FM    CH:16   SIMP   25W
[ TX MESSAGE-ALL SHIP ]                              Hold
   PRIORITY :SAFETY
   COMM MODE:TELEPHONE                               Quit
   COMM CH  :16
                                                     Resend




[FINISHED ]   ELAPSED :00:00:47

                                  SELECT

   DSC MSG    CH16      MENU     TAB     PRINT    OPTION
```
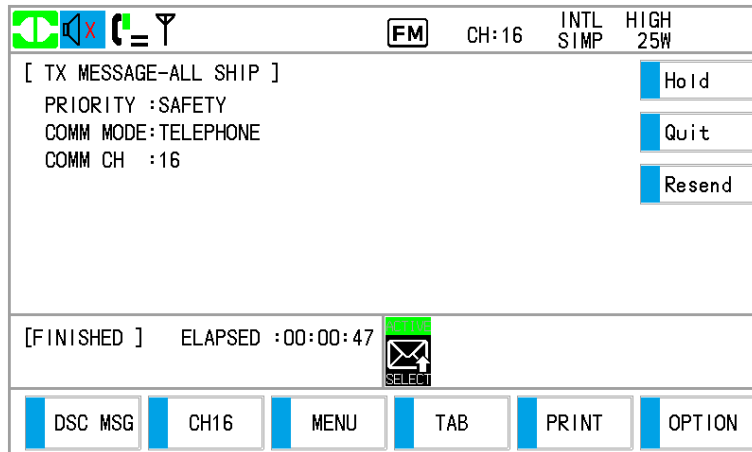
4.3.3.2 Receive an all ships call

When you receive an all ships call, the audio alarm sounds. The icon ( ) appears in the tab area, and the pop-up message "RECEIVED A DSC MESSAGE. ALL SHIP" appears.
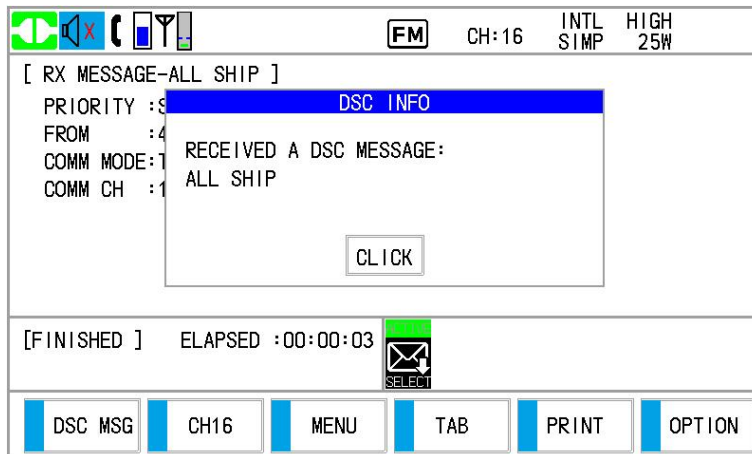
```
                                              INTL   HIGH
                                 FM    CH:16   SIMP   25W
[ RX MESSAGE-ALL SHIP ]
   PRIORITY :S            DSC INFO
   FROM     :4
   COMM MODE:1   RECEIVED A DSC MESSAGE:
   COMM CH  :1   ALL SHIP


                           CLICK



[FINISHED ]   ELAPSED :00:00:03

                                  SELECT

   DSC MSG    CH16      MENU     TAB     PRINT    OPTION
```

(1)   Click CLICK to silence the audio alarm and erase the pop-up message. The channel is automatically tuned to the received communication channel.

```
                                              INTL   HIGH
                                 FM    CH:16   SIMP   25W
[ RX MESSAGE-ALL SHIP ]
   PRIORITY :SAFETY
   FROM     :413888777
   COMM MODE:TELEPHONE
   COMM CH  :16




[FINISHED ]   ELAPSED :00:00:06

                                  SELECT

   DSC MSG    CH16      MENU     TAB     PRINT    OPTION
```

(2)   Watch on the channel. Communicate by radiotelephone.
(3)   After you have completed communications, click **[OPTION]** to select **[Quit]**.

4.3.4 Position Call

There are two types of position calls: own ship requests another ship's position and other station requires own ship's position.

● **Request position of other station:**
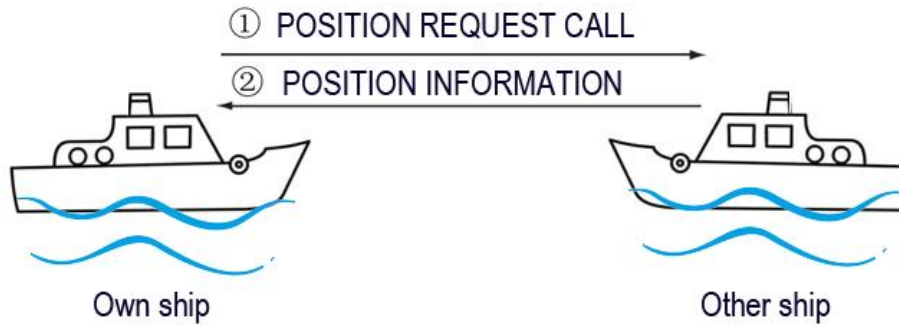
● **Send own ship's position to other station:**
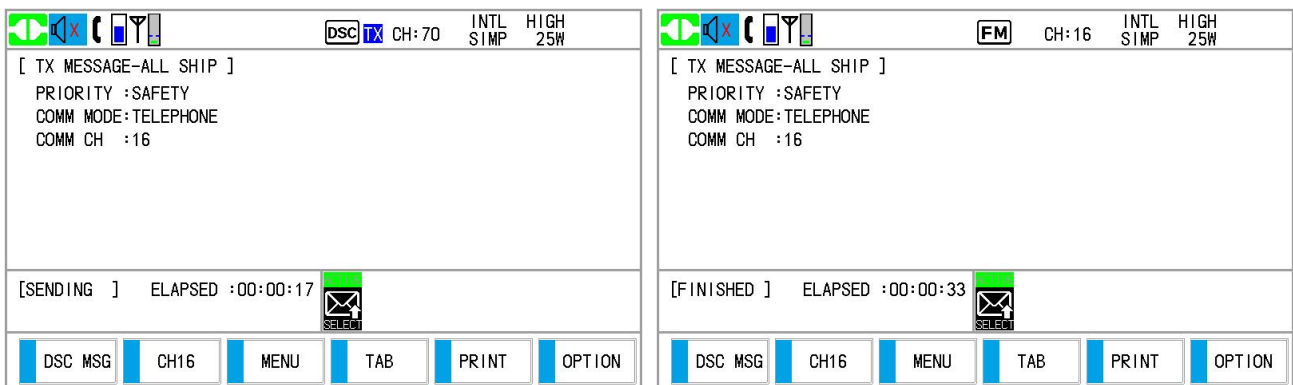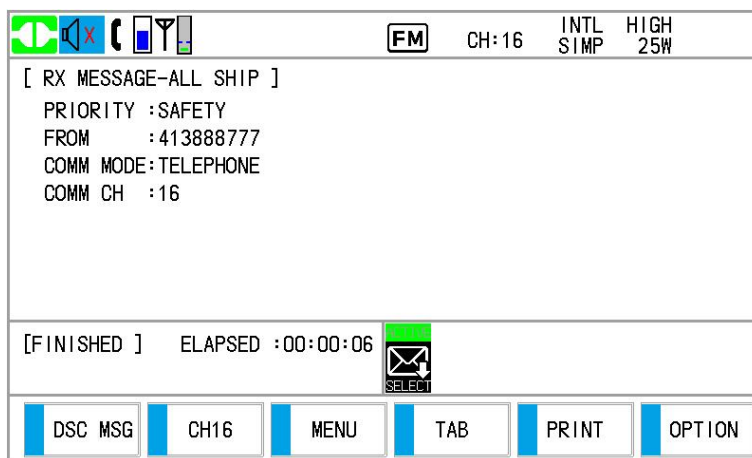

4.3.4.1 Request other ship's position

(1)   Click **[DSC MSG]**, or click [**MENU]** and choose **[DSC]** – **[MESSAGE]**, then click **[GENERAL MESSAGE]** in **[MESSAGE]**.

```
                      [ MESSAGE ]

        ┌─────────────────────────────┐
        │  DISTRESS ALERT             │
        └─────────────────────────────┘

        ┌─────────────────────────────┐
        │  DISTRESS RELAY             │
        └─────────────────────────────┘

        ┌─────────────────────────────┐
        │  GENERAL  MESSAGE           │
        └─────────────────────────────┘

        ┌─────────────────────────────┐
        │  BACK                       │
        └─────────────────────────────┘
```
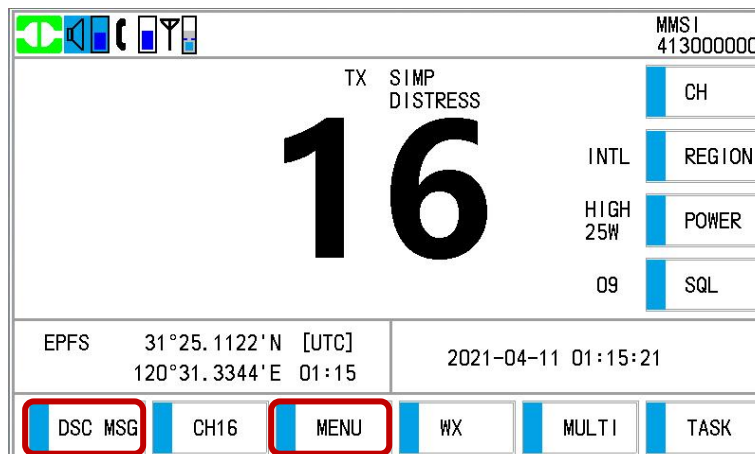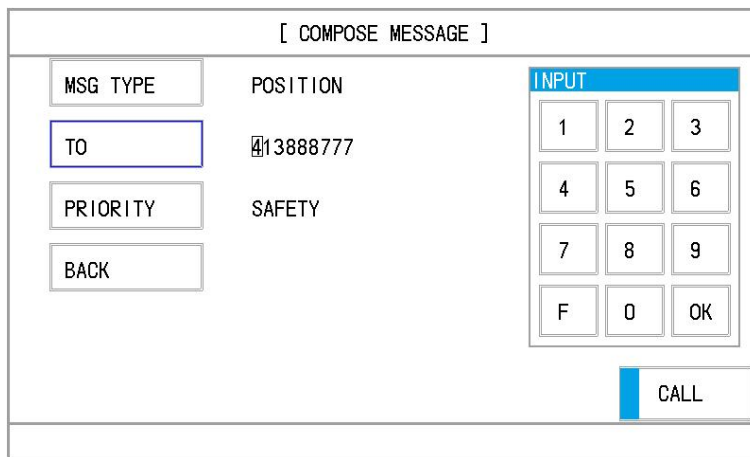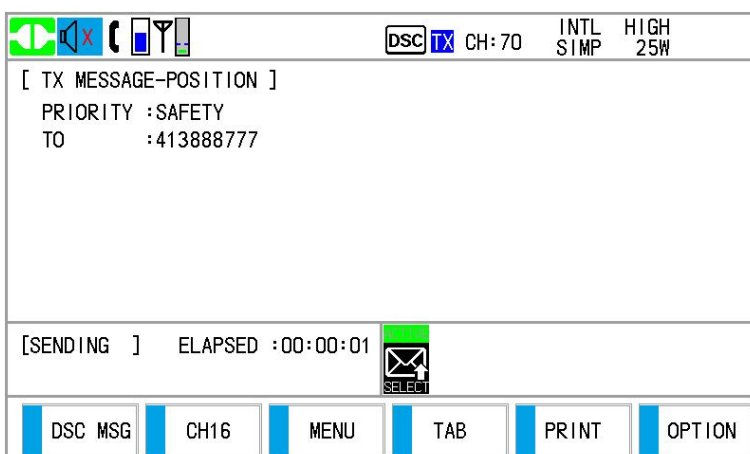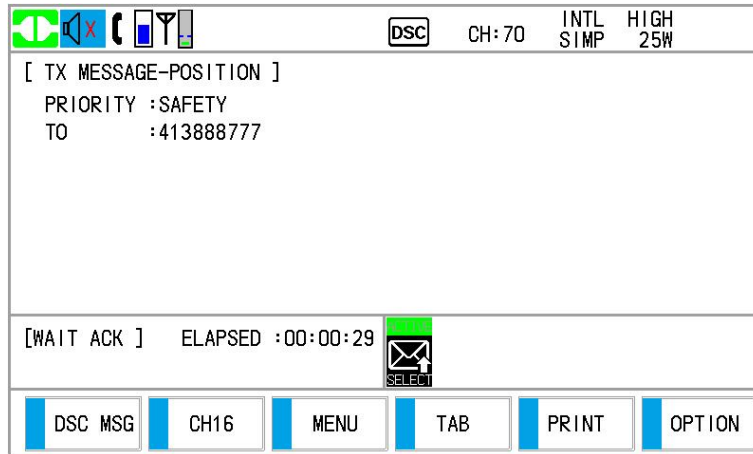
(2)   Click [**MSG TYPE**] to select **[POSITION]**.

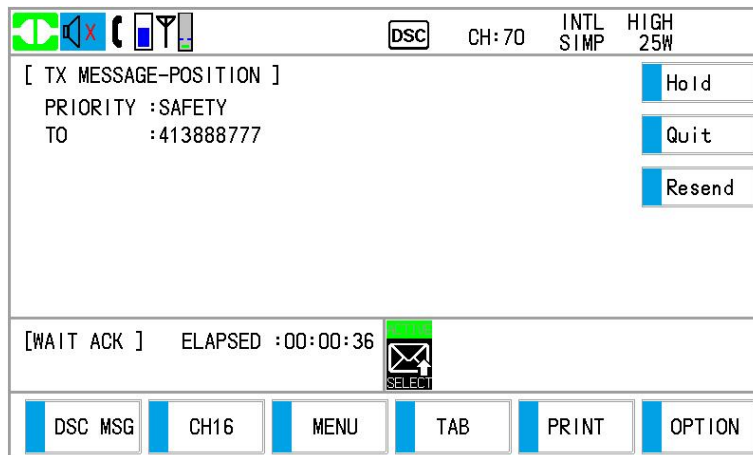(3)   Click **[TO]**, enter the MMSI where to send the position call in **[INPUT]**, then click $\boxed{\text{OK}}$ to confirm.

```
                  [ COMPOSE MESSAGE ]

  ┌──────────┐                      INPUT
  │ MSG TYPE │      POSITION     ┌────┬────┬────┐
  └──────────┘                   │ 1  │ 2  │ 3  │
                                 ├────┼────┼────┤
  ┌──────────┐                   │ 4  │ 5  │ 6  │
  │   TO     │      413888777    ├────┼────┼────┤
  └──────────┘                   │ 7  │ 8  │ 9  │
                                 ├────┼────┼────┤
  ┌──────────┐                   │ F  │ 0  │ OK │
  │ PRIORITY │      SAFETY       └────┴────┴────┘
  └──────────┘
                                        ┌──────────┐
  ┌──────────┐                          │   CALL   │
  │   BACK   │                          └──────────┘
  └──────────┘
```

(4)   [**PRIORITY**] is automatically selected to **[SAFETY]**.

(5)   Click [**CALL**] to send position call. The screen changes as below.

```
  ◀▶ ◁x 〔 ▮Ψ▮                DSC TX CH:70    INTL  HIGH
                                              SIMP  25W
  [ TX MESSAGE-POSITION ]
    PRIORITY :SAFETY
    TO       :413888777




  [SENDING  ]   ELAPSED :00:00:01   ✉
                                    SELECT
  ┌─────────┬────────┬────────┬────────┬────────┬─────────┐
  │ DSC MSG │  CH16  │  MENU  │  TAB   │ PRINT  │ OPTION  │
  └─────────┴────────┴────────┴────────┴────────┴─────────┘
```

(6)   After the call has been sent, the **[WAIT ACK]** screen appears as below. The elapsed time since sending the call is displayed.

```
┌─────────────────────────────────────────────────────────────────┐
│ ◀▶ ◁✕ ( ▯Υ▮      DSC   CH:70  INTL  HIGH                        │
│                               SIMP  25W                         │
│ [ TX MESSAGE-POSITION ]                                          │
│   PRIORITY :SAFETY                                               │
│   TO      :413888777                                            │
│                                                                 │
│                                                                 │
│                                                                 │
│                                                                 │
│                                                                 │
│ [WAIT ACK ]   ELAPSED :00:00:29   ⊠                            │
│                                  SELECT                          │
├─────────────────────────────────────────────────────────────────┤
│ │DSC MSG  │CH16    │MENU    │ TAB    │PRINT   │OPTION           │
└─────────────────────────────────────────────────────────────────┘
```
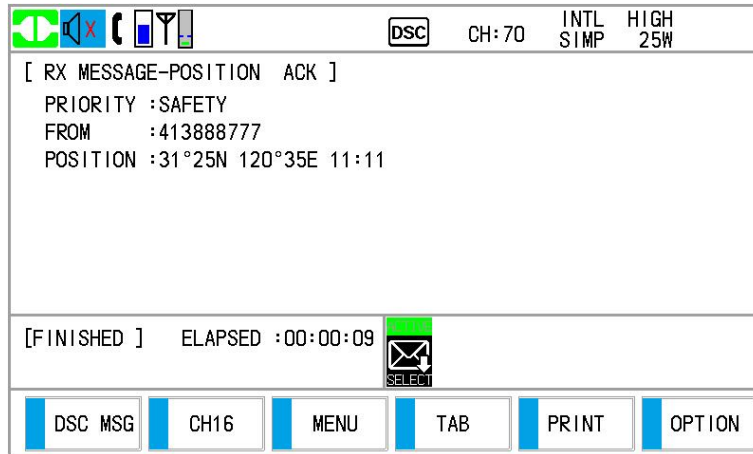
You can also do the option during waiting acknowledgement: **[Hold], [Quit]** or **[Resend]**.

```
┌─────────────────────────────────────────────────────────────────┐
│ ◀▶ ◁✕ ( ▯Υ▮      DSC   CH:70  INTL  HIGH                        │
│                               SIMP  25W                         │
│ [ TX MESSAGE-POSITION ]                          │Hold│         │
│   PRIORITY :SAFETY                                              │
│   TO      :413888777                             │Quit│         │
│                                                                │
│                                                  │Resend│       │
│                                                                │
│                                                                │
│ [WAIT ACK ]   ELAPSED :00:00:36   ⊠                            │
│                                  SELECT                          │
├─────────────────────────────────────────────────────────────────┤
│ │DSC MSG  │CH16    │MENU    │ TAB    │PRINT   │OPTION           │
└─────────────────────────────────────────────────────────────────┘
```

(7) When you receive an acknowledge message, the audio alarm sounds and a popup message appears.

```
┌─────────────────────────────────────────────────────────────────┐
│ ◀▶ ◁✕ ( ▯Υ▮      DSC   CH:70  INTL  HIGH                        │
│                               SIMP  25W                         │
│ [ RX MESSAGE-POSITION  ACK ]                                    │
│   PRIORITY :S┌────────DSC INFO────────┐                         │
│   FROM    :4 │                        │                         │
│   POSITION :3│ RECEIVED A DSC MESSAGE:│                         │
│              │ POSITION  ACK          │                         │
│              │                        │                         │
│              │        │CLICK│         │                         │
│              └────────────────────────┘                         │
│ [FINISHED ]   ELAPSED :00:00:02   ⊠                            │
│                                  SELECT                          │
├─────────────────────────────────────────────────────────────────┤
│ │DSC MSG  │CH16    │MENU    │ TAB    │PRINT   │OPTION           │
└─────────────────────────────────────────────────────────────────┘
```

(8) Click **CLICK** to silence the audio alarm and erase the pop-up message.

```
[DSC]  CH:70   INTL  HIGH
               SIMP  25W
[ RX MESSAGE-POSITION  ACK ]
  PRIORITY :SAFETY
  FROM     :413888777
  POSITION :31°25N 120°35E 11:11




[FINISHED ]   ELAPSED :00:00:09

SELECT

 DSC MSG   CH16   MENU   TAB   PRINT   OPTION
```

(9)   Click **[OPTION]**, select **[Quit]** to back to Main screen.

```
[DSC]  CH:70   INTL  HIGH
               SIMP  25W
[ RX MESSAGE-POSITION  ACK ]         Hold
  PRIORITY :SAFETY
  FROM     :413888777                Quit
  POSITION :31°25N 120°35E 11:11




[FINISHED ]   ELAPSED :00:00:15

SELECT

 DSC MSG   CH16   MENU   TAB   PRINT   OPTION
```

4.3.4.2 Receive a position request call

You can enable automatic acknowledge of position request with [**POSITION**] on the [**ACK SETTING**] menu.

● **Automatic reply**

When another ship requests your position and the setting of [**POSITION**] on the [**ACK SETTING**] menu is [**AUTO**], the equipment automatically transmits a reply.
There are two types of automatic replies: one with position information (the setting is **[AUTO -ABLE]**) and the other with no position information (the setting is **[AUTO -UNABLE]**).

● **Manual reply**

When a position request message is received and the setting of [**POSITION**] on the [**ACK SETTING**] menu is **[MANUAL]**, send the reply manually.

When you receive a position request call, the audio alarm sounds. The icon (   ) appears in the tab area, and the pop-up message "RECEIVED A DSC MESSAGE. POSITION" appears.
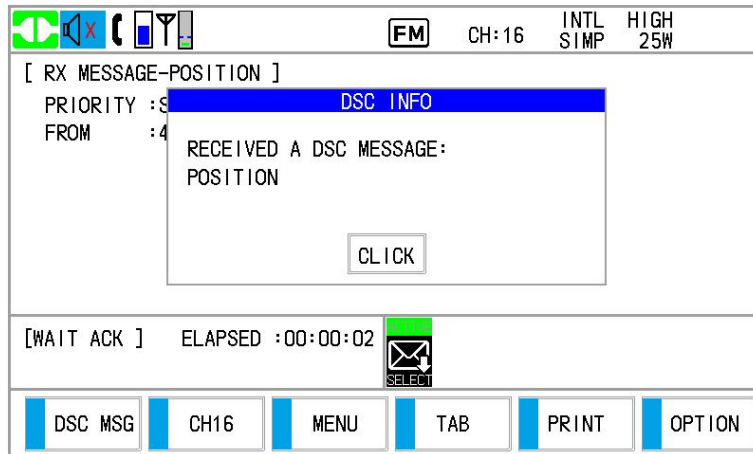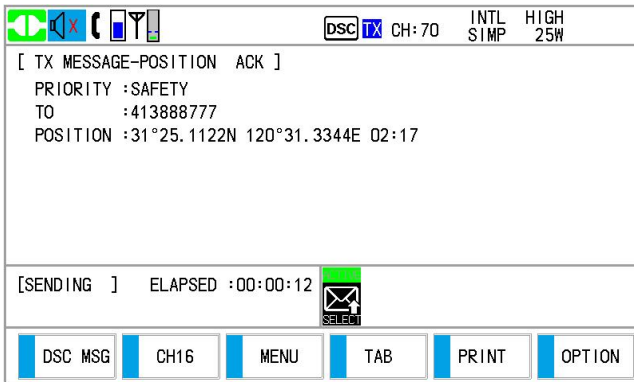
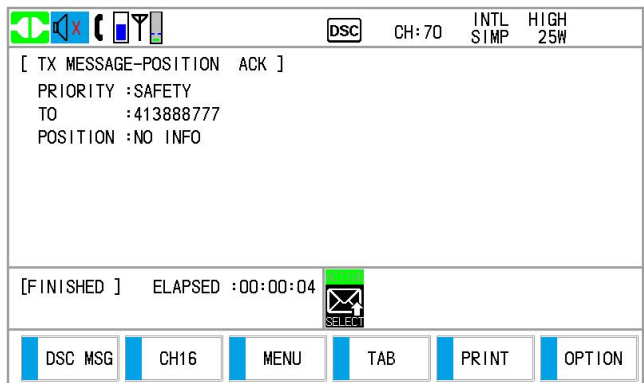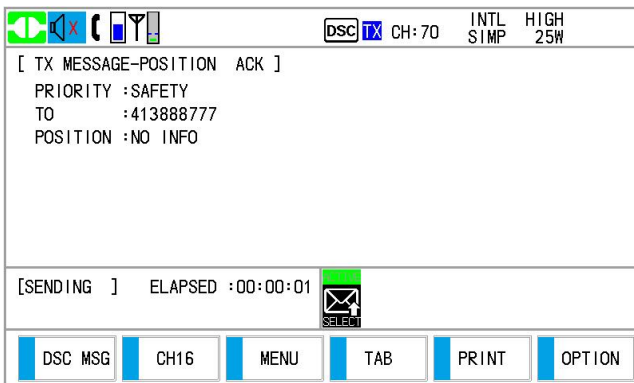(1)   To silence the audio alarm, click CLICK .
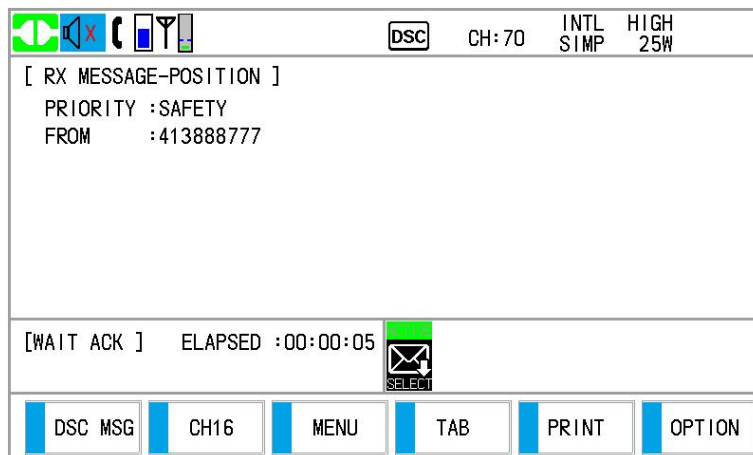
(2)   Click **[OPTION]**, do the operation as follows.
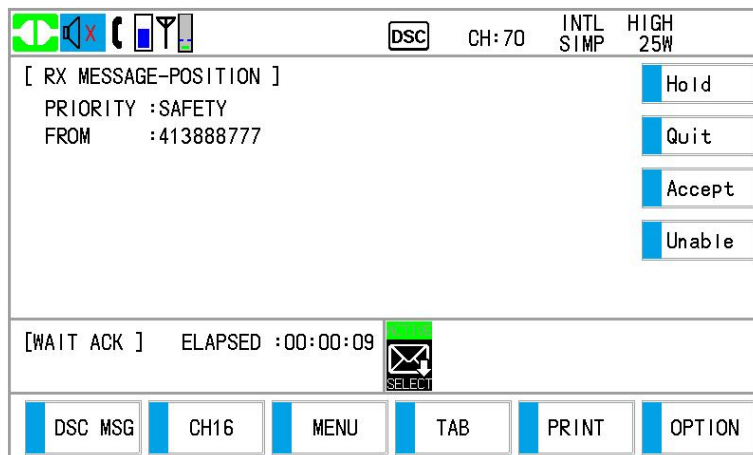
● Send the ACK with position information:

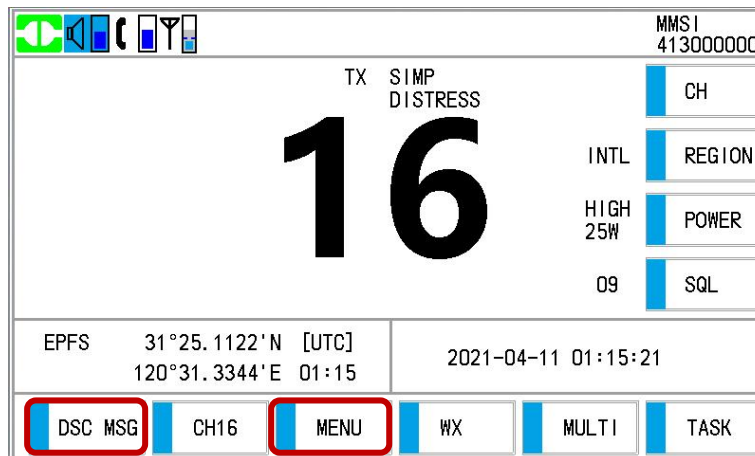Click **[Accept]**, send position information of own ship.

[TX MESSAGE-POSITION ACK]
  PRIORITY :SAFETY
  TO   :413888777
  POSITION :31°25.1122N 120°31.3344E 02:17

[SENDING]   ELAPSED :00:00:12

DSC MSG   CH16   MENU   TAB   PRINT   OPTION

[TX MESSAGE-POSITION ACK]
  PRIORITY :SAFETY
  TO   :413888777
  POSITION :31°25.1122N 120°31.3344E 02:17

[FINISHED]   ELAPSED :00:00:37

DSC MSG   CH16   MENU   TAB   PRINT   OPTION
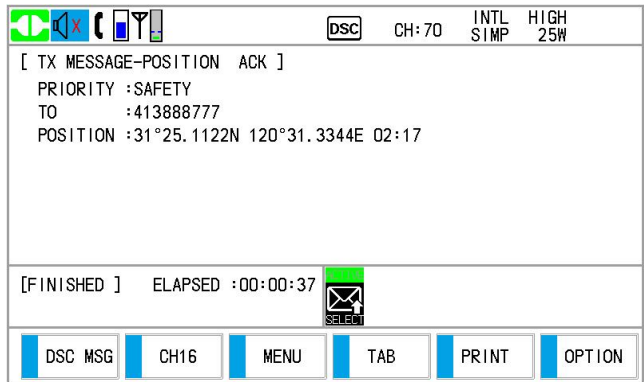
- Send the ACK with no position information:
    Click **[Unable]**. The screen changes as below.

[TX MESSAGE-POSITION ACK]
  PRIORITY :SAFETY
  TO   :413888777
  POSITION :NO INFO

[SENDING]   ELAPSED :00:00:01

DSC MSG   CH16   MENU   TAB   PRINT   OPTION

[TX MESSAGE-POSITION ACK]
  PRIORITY :SAFETY
  TO   :413888777
  POSITION :NO INFO

[FINISHED]   ELAPSED :00:00:04

DSC MSG   CH16   MENU   TAB   PRINT   OPTION

(3) After the ACK is finished, click **[OPTION]** to select **[Quit]**.

4.3.5 Test Call

4.3.5.1 Send a test call

MMSI
413000000

TX SIMP
DISTRESS

16

INTL   REGION

HIGH   POWER
25W

09   SQL

CH

EPFS   31°25.1122'N [UTC]
        120°31.3344'E 01:15

2021-04-11 01:15:21

DSC MSG   CH16   MENU   WX   MULTI   TASK

(1) Click **[DSC MSG]**, or click [**MENU]** and choose **[DSC]** – **[MESSAGE]**, then click **[GENERAL MESSAGE]** in **[MESSAGE]**.
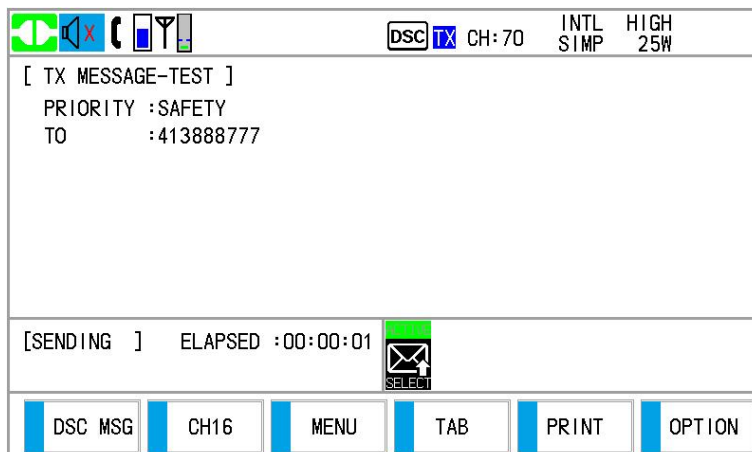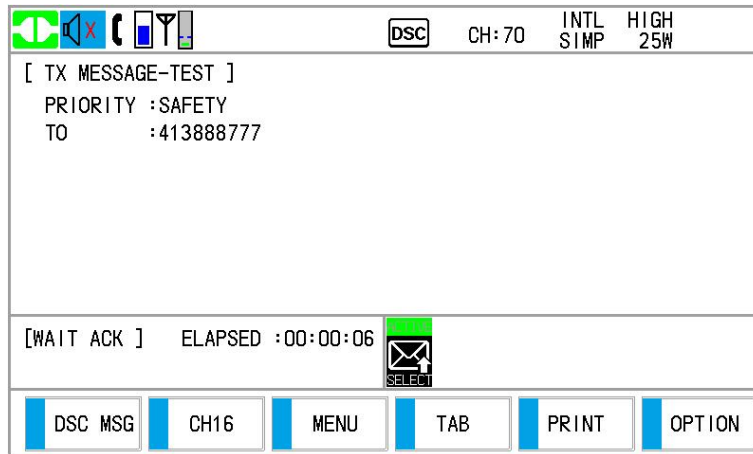
```
                          [ MESSAGE ]

        ┌─────────────────────────────┐
        │ DISTRESS ALERT              │
        └─────────────────────────────┘
        ┌─────────────────────────────┐
        │ DISTRESS RELAY              │
        └─────────────────────────────┘
        ┌─────────────────────────────┐
        │ GENERAL  MESSAGE            │
        └─────────────────────────────┘
        ┌─────────────────────────────┐
        │ BACK                        │
        └─────────────────────────────┘
```

(2) Click [**MSG TYPE**] to select [**TEST**].

(3) Click [**TO**], enter the MMSI where to send the test call in [**INPUT**], then click OK to confirm.

```
                    [ COMPOSE MESSAGE ]

     ┌──────────────┐                      INPUT
     │  MSG TYPE    │      TEST        ┌──────┬──────┬──────┐
     └──────────────┘                  │  1   │  2   │  3   │
     ┌──────────────┐                  ├──────┼──────┼──────┤
     │    TO        │      413888777   │  4   │  5   │  6   │
     └──────────────┘                  ├──────┼──────┼──────┤
     ┌──────────────┐                  │  7   │  8   │  9   │
     │  PRIORITY    │      SAFETY      ├──────┼──────┼──────┤
     └──────────────┘                  │  F   │  0   │  OK  │
     ┌──────────────┐                  └──────┴──────┴──────┘
     │    BACK      │
     └──────────────┘                           ┌──────────┐
                                                 │   CALL   │
                                                 └──────────┘
```
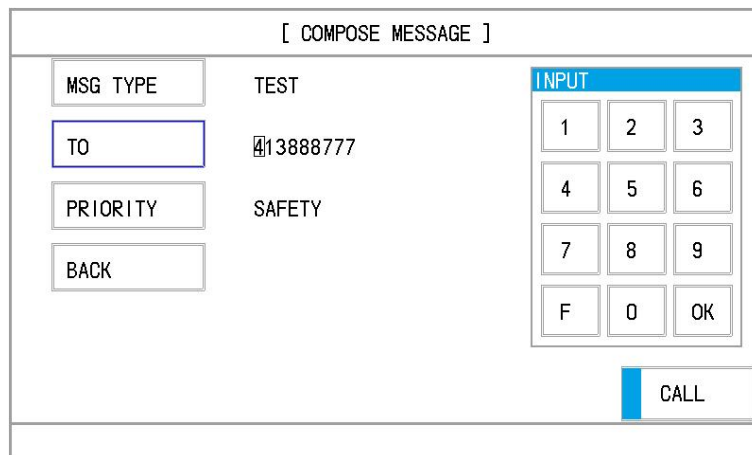
(4)   Click [**CALL**] to send test call. The screen changes as below.

```
   ◄►  🔇X  [ ▮ 📶.          DSC TX CH:70   INTL  HIGH
                                            SIMP  25W
  [ TX MESSAGE-TEST ]
    PRIORITY :SAFETY
    TO       :413888777




  [SENDING  ]   ELAPSED :00:00:01   ✉
                                    SELECT
  ┌──────────┬──────────┬──────────┬──────────┬──────────┬──────────┐
  │ DSC MSG  │  CH16    │  MENU    │  TAB     │ PRINT    │ OPTION   │
  └──────────┴──────────┴──────────┴──────────┴──────────┴──────────┘
```

(5)   After the call has been sent, the [**WAIT ACK**] screen appears as below. The elapsed time since sending the call is displayed.

```
[ TX MESSAGE-TEST ]
  PRIORITY :SAFETY
  TO        :413888777




[WAIT ACK ]   ELAPSED :00:00:06

   DSC MSG    CH16    MENU    TAB    PRINT    OPTION
```

(6)   When you receive an acknowledge message, the audio alarm sounds and a popup message appears.

```
[ RX MESSAGE-TEST ACK ]
  PRIORITY :S        DSC INFO
  FROM      :4
                RECEIVED A DSC MESSAGE:
                TEST ACK


                          CLICK

[FINISHED ]   ELAPSED :00:00:02

   DSC MSG    CH16    MENU    TAB    PRINT    OPTION
```

(7)   Click **CLICK** to silence the audio alarm and erase the pop-up message.

```
[ RX MESSAGE-TEST ACK ]
  PRIORITY :SAFETY
  FROM      :413888777




[FINISHED ]   ELAPSED :00:00:10

   DSC MSG    CH16    MENU    TAB    PRINT    OPTION
```
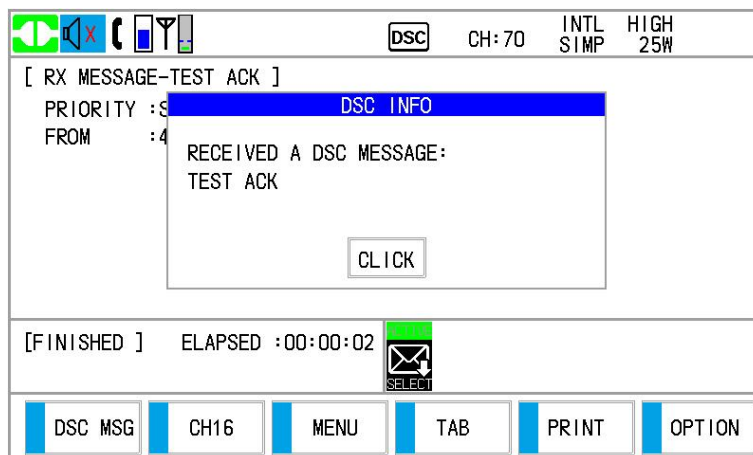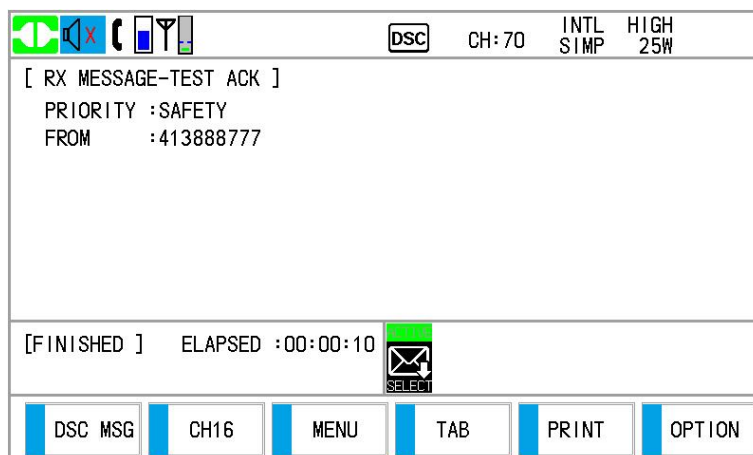
(8)   Click **[OPTION]**, select **[Quit]** to back to Main screen.

4.3.5.2 Receive a test call

● **Automatic acknowledge**

When a test call is received with **[AUTO]** setting on **[TEST]** of the **[ACK SETTING]** menu, an acknowledgement is sent automatically.

● **Manual reply**
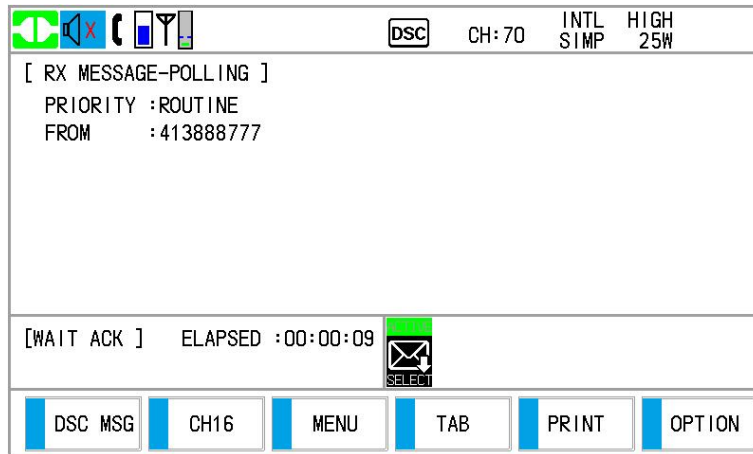
When a test call is received and the setting of **[TEST]** on the **[ACK SETTING**] menu is **[MANUAL]**, send the acknowledgement manually.

When you receive a test call, the audio alarm sounds. The icon (⬛) appears in the tab area, and the pop-up message "RECEIVED A DSC MESSAGE. TEST" appears.
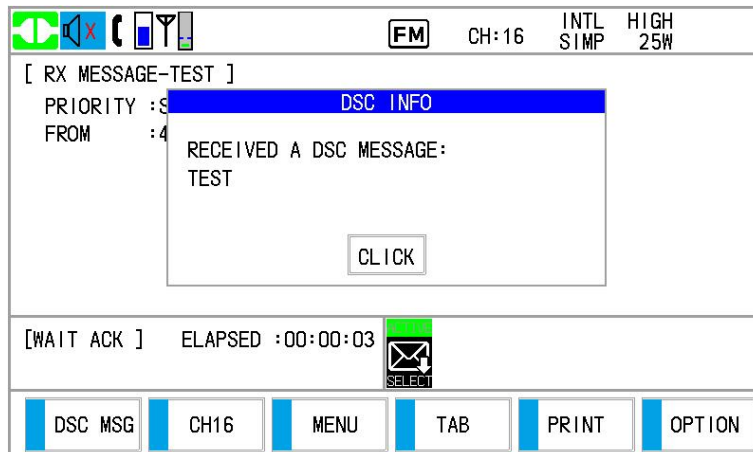
(1)   To silence the audio alarm, click CLICK.
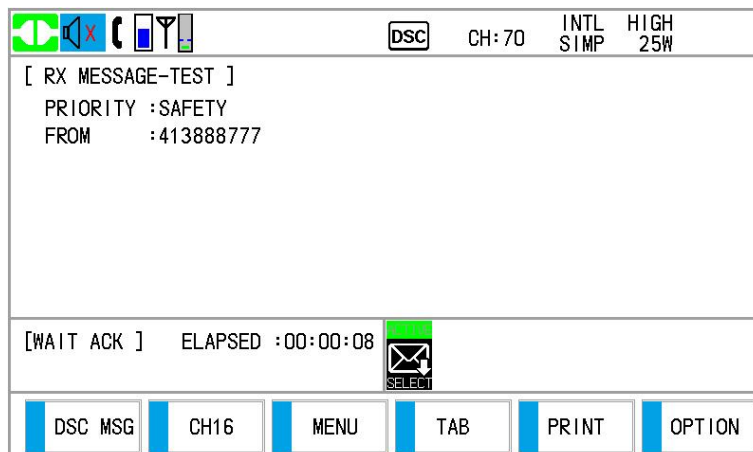
(2)   Click **[OPTION],** choose one of the operations: **[Hold]**, **[Quit]** or **[Accept]**.
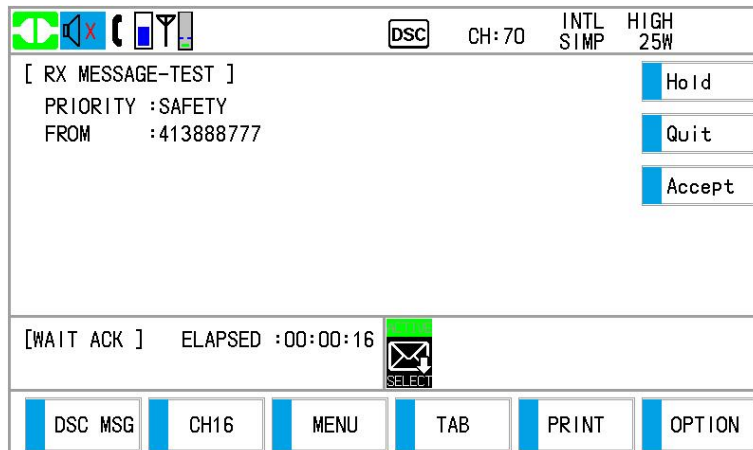
If you click **[Accept]**, the test acknowledgement will be sent.

```
[ TX MESSAGE-TEST ACK ]
   PRIORITY :SAFETY
   TO       :413888777




[SENDING  ]   ELAPSED :00:00:01

 DSC MSG    CH16    MENU     TAB    PRINT    OPTION
```
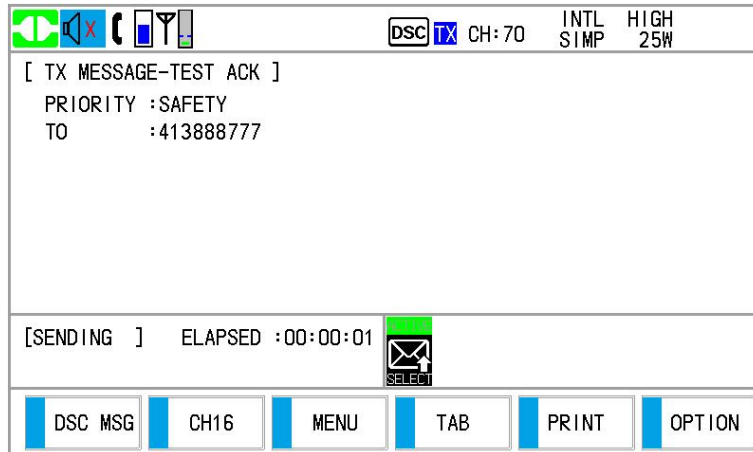
After the acknowledgement is finished, click **[OPTION]** to select **[Quit]**.

4.3.6 Polling Call

Polling means that another ship wants to confirm if it is within communication range of own ship.

4.3.6.1 Automatic reply

When a polling request message is received with **[AUTO]** setting on **[POLLING]** of the **[ACK SETTING]** menu, an acknowledgement is sent automatically.

4.3.6.2 Manual reply

When a polling call is received and the setting of **[POLLING]** on the [**ACK SETTING**] menu is **[MANUAL]**, send the acknowledgement manually.
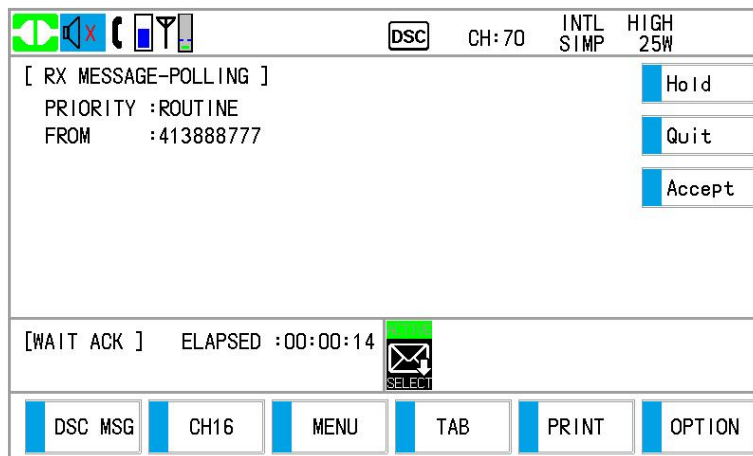
When you receive a polling request message, the audio alarm sounds. The icon ( ) appears in the tab area, and the pop-up message "RECEIVED A DSC MESSAGE POLLING" appears.
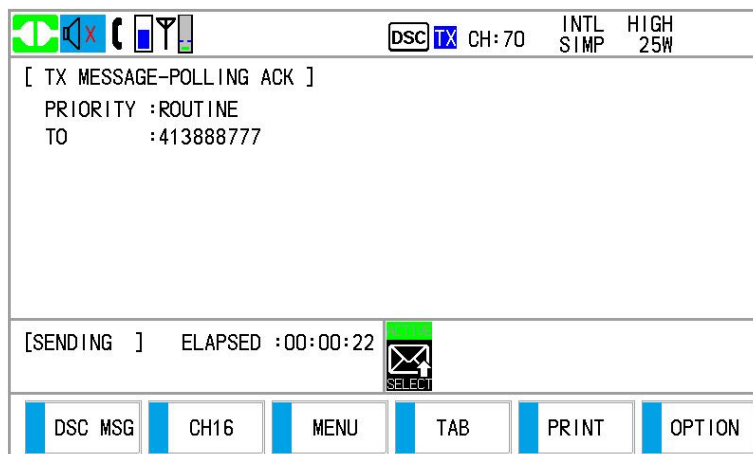
```
[ RX MESSAGE-POLLING ]
   PRIORITY :F          DSC INFO
   FROM     :4
                RECEIVED A DSC MESSAGE:
                POLLING


                      CLICK


[WAIT ACK ]   ELAPSED :00:00:03

 DSC MSG    CH16    MENU     TAB    PRINT    OPTION
```

(1)   To silence the audio alarm, click CLICK.

```
 ◀▶ ◁x ( ▮Y▪           DSC   CH:70   INTL  HIGH
                                     SIMP  25W
[ RX MESSAGE-POLLING ]
   PRIORITY :ROUTINE
   FROM     :413888777




[WAIT ACK ]   ELAPSED :00:00:09  ✉
                                 SELECT

  DSC MSG   CH16   MENU   TAB   PRINT   OPTION
```

(2)   Click **[OPTION]**, choose one of the operations: **[Hold]**, **[Quit]** or **[Accept]**.

```
 ◀▶ ◁x ( ▮Y▪           DSC   CH:70   INTL  HIGH
                                     SIMP  25W
[ RX MESSAGE-POLLING ]                         Hold
   PRIORITY :ROUTINE
   FROM     :413888777                         Quit

                                               Accept



[WAIT ACK ]   ELAPSED :00:00:14  ✉
                                 SELECT

  DSC MSG   CH16   MENU   TAB   PRINT   OPTION
```

If you click **[Accept]**, the polling acknowledgement will be sent.

```
 ◀▶ ◁x ( ▮Y▪        DSC TX CH:70   INTL  HIGH
                                   SIMP  25W
[ TX MESSAGE-POLLING ACK ]
   PRIORITY :ROUTINE
   TO       :413888777




[SENDING  ]   ELAPSED :00:00:22  ✉
                                 SELECT

  DSC MSG   CH16   MENU   TAB   PRINT   OPTION
```

After the acknowledgement is finished, click **[OPTION]** to select **[Quit]**.

5.   INSTALLATION

5.1 VHF Antenna

There are two VHF antennas to be connected.

It's very important to choose a proper location for VHF antenna as a metal object close to the antenna could affect receiving sensitivity.

The following instructions are helpful:

- The antenna should be kept at least 0.5m from a vertical metal object to avoid RF reflection.

- The antenna should be kept at least 3m from other high power radiator, such as radar antenna.

- Two VHF antennas should not be installed at the same height. One VHF antenna can be installed either under or above another VHF antenna. The distance between should be more than 2.8m. If two antennas have to be installed at the same height, the distance between should be more than 10m.

For the cabling, please refer to below suggestions:

- The shorter the cable, the less the loss. The low-loss cable is recommended if the cable is longer than 10m.

- Watertight treatment is required for outdoor connecting.

- The RF cable should be kept at least 10cm from the power cable. The cable cross should be avoided.

5.2 Transceiver

Four screws are supplied to mount the transceiver. The transceiver can be installed either on table or on wall.

Care must be taken when mounting the transceiver to ensure that there is sufficient space for cables and connectors. Especially, sharp bending of the RF cable must be avoided.

5.3 CONNECTION

5.3.1 POWER SUPPLY

The power cable with a rated capacity of 10A should be used. Suggest using NSR PS-10 Power Supply Unit (DC 24V output).

5.3.2 GNSS DATA INPUT

The input data format should be NMEA0183/4800bps, as IEC61162-1 standard. Refer to the installation drawings.

5.3.3 CONNECT TO PRINTER

As an optional device, NSR NPT-100 is recommended as the printer used for NVR-3000.

  - Part No. : **NPT-100**

  - Rating : **DC6.5V, 15W**

Necessary settings are needed for NPT-100 before properly working with NVR-3000. Please refer to the manual supplied by the printer maker. The settings include the following parameters:

- Serial port setting

 The output of NPT-100 should be set as SERIAL.

- Baud rate setting

 NPT-100's baud rate can be 75, 110, 150, 300, 600, 1200, 2400, 4800, 9600, 19200bps. As the default rate, both NVR-3000 and NPT-100 have been set at 4800bps in factory.

5.3.4 CONNECT TO (S)VDR

Please refer to the attached drawings for the connection and wiring.

5.3.5 CONNECT TO INS/BAM

Please refer to the attached drawings for the connection and wiring.
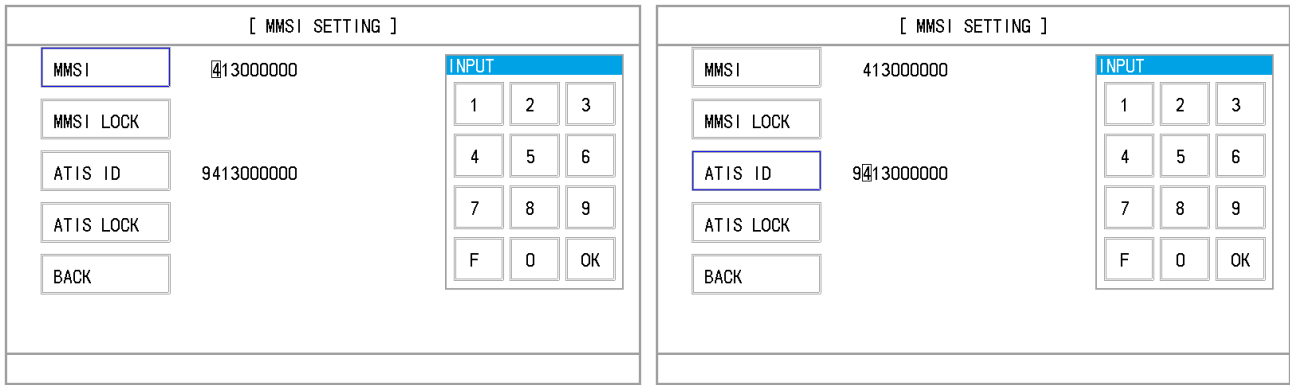
5.4 MMSI & ATIS ID Setting

When the VHF radio is powered on for the first time, typically during installation, the vessel's MMSI number can be entered. Hereafter the MMSI number is briefly displayed after powered on. The MMSI is a unique, 9-digit identifier assigned to own ship.

Do the following to set own ship's MMSI.

① Click **[MENU]** – **[DSC]** – [MMSI **SETTING**] on Main screen.

```
                    [ DSC ]

        ┌──────────────────────┐
        │ MESSAGE              │
        └──────────────────────┘
        ┌──────────────────────┐
        │ ADDRESS              │
        └──────────────────────┘
        ┌──────────────────────┐
        │ SCAN SETTING         │
        └──────────────────────┘
        ┌──────────────────────┐
        │ ACK  SETTING         │
        └──────────────────────┘
        ┌──────────────────────┐
        │ MMSI SETTING         │
        └──────────────────────┘
        ┌──────────────────────┐
        │ BACK                 │
        └──────────────────────┘
```
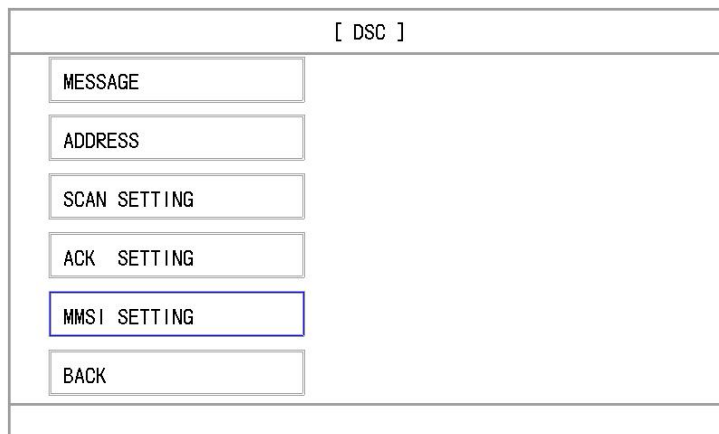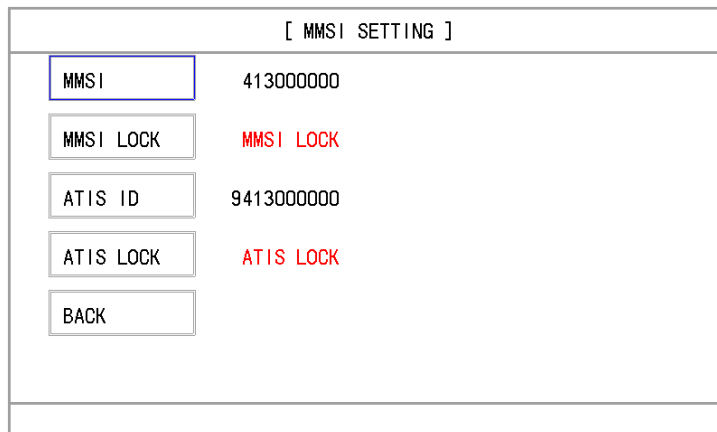
② With [**MMSI**] selected, the screen shown below appears. Click **[MMSI]**/**[ATIS ID]** to enter the MMSI/ATIS ID. Click OK to confirm the input.

③ Click **[MMSI LOCK]** / **[ATIS ID LOCK]** and choose YES to confirm the setting. And MMSI/ATIS ID will be locked afterwards. For example: ATIS LOCK.
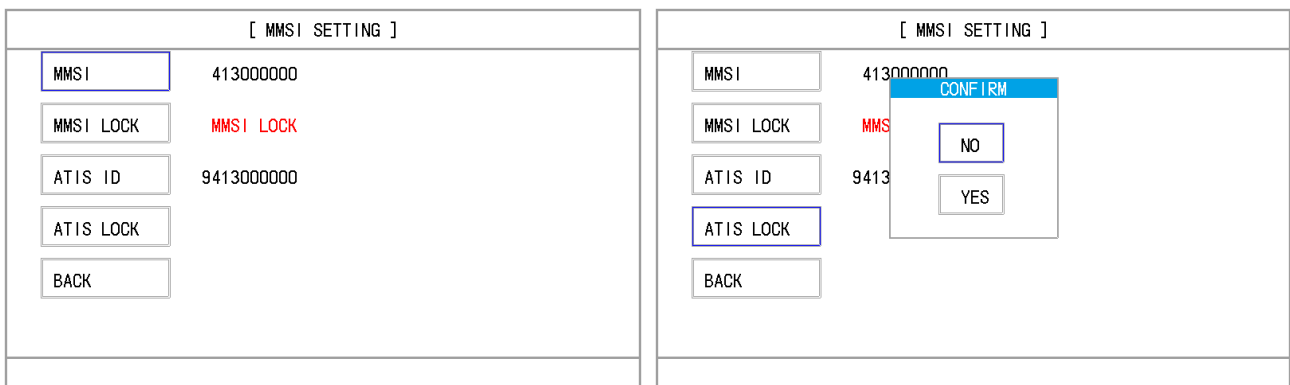
The "ATIS LOCK" appears after clicking **[ATIS LOCK]** again.

NOTE: Without a programmed MMSI, the DISTRESS button will not work! The [DSC MSG] cannot be opened either if the MMSI has not been programmed during installation.
To change or reprogram a new MMSI, please contact NSR or local agent.

6. MAINTENANCE

6.1 Maintenance

Regular maintenance helps to keep your equipment in good condition and prevents future problems. Check the items shown in the table below.

Item	Check point	Remedy/Remarks
Antenna	Check for physical damage and corrosion.	Replace damaged parts.
Transceiver unit	● Check grounding and cable connections. ● Remove dust from the transceiver unit with soft cloth. *Note: Do not use chemical cleaners to clean the transceiver unit; they can remove paint or markings and deform the equipment.*	● Tighten loosened connections. ● Wipe the LCD carefully to prevent scratching, using tissue paper and an LCD cleaner. To remove dirt or salt deposits, use an LCD cleaner, wiping slowly with tissue paper so as to dissolve the dirt or salt. Change paper frequently so the salt or dirt does not scratch the LCD.
Power supply	Check that the supply voltage at transmission is within the rated range (21.6 to 31.2 VDC at the input of Power Supply Unit.	If not within the range, check power source. Low or over voltage may cause operation abnormal.

6.2 Simple Troubleshooting

The table below provides possible problems and the means with which to restore normal operation. If normal operation cannot be restored, do not attempt to check inside the equipment. Any servicing should be referred to a qualified technician.

Problem	Probable cause	Remedy
Power cannot be turned on.	● Mains switchboard is off. ● (DC) voltage is too high.	● Turn on the mains switchboard. ● Check supply voltage.
Dark display.	Display brightness is too low.	Press the **DIM** button to adjust the display brightness.
Power is on but no sound from the main speaker.	Main speaker is off.	Press the **VOLUME** knob to turn on the main speaker.

6.3 Error Messages

The table below shows error messages, their meanings, and remedies. Please refer to section 2.11.2. If other error occurs, contact your dealer.

Error message	Meaning	Remedy
WRONG MMSI	You tried to send a DSC message but your MMSI has not been registered in the equipment.	Enter MMSI of own ship.
GENERAL FAULT	HW error. Check equipment.	Check Version menu
LOST POSITION	Position data is not updated for 15 minutes.	Check external GNSS data input or enter the position.

APPENDIX 1 TECHNICAL SPECIFICATIONS

General Specifications

TX Frequency	156.025-157.425MHz
RX Frequency	156.050-163.275MHz
Number of Channels	ITU channel: 52 channels USA channel: 46 channels CAN channel: 75 channels IWW channel:52 channels WX (Weather): channel: 10 channels PRV (Private) channel : Maximum 200 channels
Channel Spacing	25 kHz
Communication Modes	Simplex and Semi-duplex press talk system
Type of Emission	Radiotelephone communications: F3E (G3E) DSC/ATIS: F2B (G2B)
Antenna Impedance	50 Ω unbalanced
Tx/Rx Switching Interval	300 ms or less
LCD display	7 inch color LCD, touch screen operation
Interface	IEC61162-1 Ed.5 (2016-08) IEC61162-2 Ed.1 (1998-09) 600 Ω balanced (VDR) 600 Ω unbalanced (Ext SP)
Performance Criteria	IMO A.803 (19), A.694 (17), MSC.68 (68), MSC/Circ.862 IEC 60945 Ed.4 (2002-08)
Power Supply Voltage	24 VDC (21.6 VDC - 31.2 VDC)
Current Consumption /Power(24VDC)	When transmitting at 25W: Maximum 4.5 A/108 W When receiving: Maximum 1.5 A/36 W
Operating Temperature Range	-15 ℃ ~ +55 ℃ (parts exposed to condensation -25 ℃ - +55 ℃)
Storage Temperature Range	-15 ℃ ~ +55 ℃ (parts exposed to condensation -25 ℃ - +70 ℃)
Humidity Resistance	No abnormalities after left for 10 hours at +40 ℃, 93% RH
IP grade	IP22 (Transceiver Unit, Handset) IP66 (Antenna)
Compass safe distance	1.2m (between Transceiver Unit and standard compass) 1.1m (between Transceiver Unit and steering compass) 0.35m (between Handset and standard compass) 0.3m (between Handset and steering compass)
Size and weight	**Transceiver Unit:** 146.9 (H) x 311.4 (W) x 81 (D) mm, about 3kg

Transmitter

Output Power	25W (High), 1W (Low)
Maximum Frequency Shift	≤±5kHz
Modulation Type	FM (pre-emphasis 6dB/octave)
Frequency Error	≤±1.5kHz
Occupied Frequency Band	≤±16kHz
Spurious Emission	≤2.5μW (less than -26dBm)
Frequency Stability	≤±10 x 10^{-6}
Upper Audio Limit	≤3kHz

Receiver

Sensitivity	≤2uV e.m.f (SINAD=20dB)
Adjacent Selectivity	≥70dB

Signal To Noise Ratio	≥40dB (1kHz, 70% modulated, 30dBμV RF input)
Spurious Response Rejection	≥70dB
Spurious Emission	≤2nW (9kHz～2GHz)
Intermodulation Rejection	≥65dB
Harmonic Distortion	≤10%
Max Audio Output	3W

DSC Function

Signal Format and Protocol	Comply with the ITU-R M.493-15 and M.541-10
Emission Type	G2B
Modulation Frequency	MARK(signal Y) : 1,300Hz ±10Hz SPACE(signal B) : 2,100Hz ±10Hz
Transmission Speed	1,200bps ±30 x 10^{-6}

Dedicated DSC Receiver (WKR)

Receive frequency	156.525MHz (channel 70)
Sensitivity	Error rate≤1% when receiving signal=1μV

APPENDIX 2 MENU TREE

```
MAIN ── USER ─────────── PRIVATE CHANNEL
MENU                     ALERT LIST
                         USER TEST ───────── PRINT
                         DSC LOG              DAILY
                         OFF HISTORY

      ── DSC ──────────── MESSAGE
                          ADDRESS
                          SCAN SETTING
                          ACK SETTING ─────── REASON (NO REASON/BUSY/EUT DISABLED/CH UNABLE/MODE UNABLE)
                                              INDIVIDUAL (AUTO-UNABLE/MANUAL)
                                              POSITION (AUTO-UNABLE/MANUAL/AUTO-ABLE)
                                              POLLING (MANUAL/AUTO)
                                              TEST (MANUAL/AUTO)
                          MMSI SETTING ────── MMSI
                                              MMSI LOCK
                                              ATIS ID
                                              ATIS LOCK

      ── SYSTEM ───────── LANGUAGE (ENG/CHN)
                          SPECIAL DSC (OFF/ON)
                          PRINT ───────────── TX MESSAGE (MANUAL/AUTO)
                                              RX MESSAGE (MANUAL/AUTO)
                                              SELFTEST INFO (MANUAL/AUTO)
                                              PRINTER TYPE
                                              PRINTER PORT (4800/9600/19200/38400/115200)
                          AUDIO ───────────── KEY (ON/OFF)
                                              ALARM (OFF/ON)
                                              OFF HOOK SPK (ON/OFF)
                                              SQL
                                              SQL LEVEL
                          DISPLAY ─────────── LCD DIMMER (1~10)
                                              DISPLAY MODE (DAY/NIGHT)
                                              CHANNEL SIZE
                          DATE/TIME ───────── MODE (LMT/UTC )
                                              DATE-UTC
                                              TIME-UTC
                                              ZONE
                          POSITION ────────── SOURCE (MANUAL/EPFS)
                                              POS&TIME
                          TIMEOUT ─────────── MENU BACK (OFF/10MIN)
                                              TELEPHONE (30S/10MIN)
                                              GENERAL DSC (OFF/15MIN)
                                              DISTRESS RX (15MIN/OFF)
                          PORT ────────────── INS
                                              GNSS
                                              ALARM

      ── DIAGNOSTICS ──── PROGRAM VERSION
                          LCD TEST
                          KEY TEST
                          AUDIO TEST ──────── KEY
                                              SYSTEM ALARM
                                              TWO TONE
                                              DISTRESS ACK
                                              URGENCY
                                              URGENCY ACK
                                              GENERAL
                                              COUNT
                                              MIC LOOPBACK
                          DSC RX TEST

      ── SERVICE ──────── ADVANCE
                          COM MONITOR
                          FACTORY SET
                          REBOOT
```

APPENDIX 3 CHANNEL TABLES

ITU Channel Table (ITU-RR Appendix18)

CH	TX (MHz)	RX (MHz)	REMARK
1	156.050	160.650	
2	156.100	160.700	
3	156.150	160.750	
4	156.200	160.800	
5	156.250	160.850	
6	156.300	156.300	
7	156.350	160.950	
8	156.400	156.400	
9	156.450	156.450	
10	156.500	156.500	
11	156.550	156.550	
12	156.600	156.600	
13	156.650	156.650	
14	156.700	156.700	
15	156.750	156.750	Fixed at 1W
16	156.800	156.800	Distress, Safety and Calling
17	156.850	156.850	Fixed at 1W
18	156.900	161.500	
19	156.950	161.550	
1019	156.950	156.950	
2019	--	161.550	Transmission prohibited
20	157.000	161.600	
1020	157.000	157.000	
2020	--	161.600	Transmission prohibited
1027	157.350	157.350	
1028	157.400	157.400	
60	156.025	160.625	
61	156.075	160.675	
62	156.125	160.725	
63	156.175	160.775	
64	156.225	160.825	
65	156.275	160.875	
66	156.325	160.925	
67	156.375	156.375	
68	156.425	156.425	
69	156.475	156.475	
70	156.525	156.525	For DSC operation only
71	156.575	156.575	
72	156.625	156.625	
73	156.675	156.675	
74	156.725	156.725	
75	156.775	156.775	Fixed at 1W
76	156.825	156.825	Fixed at 1W
77	156.875	156.875	
78	156.925	161.525	
1078	156.925	156.925	
2078	--	161.525	Transmission prohibited
79	156.975	161.575	
1079	156.975	156.975	
2079	--	161.575	Transmission prohibited
87	157.375	157.375	
88	157.425	157.425	

USA Channel Table (FCC 47 CFR Part 80: 80.215, 80.371 and 80.373)

CH	TX (MHz)	RX (MHz)	REMARK
1001	156.050	156.050	
1005	156.250	156.250	
6	156.300	156.300	
1007	156.350	156.350	
8	156.400	156.400	
9	156.450	156.450	
10	156.500	156.500	
11	156.550	156.550	
12	156.600	156.600	
13	156.650	156.650	1w default
14	156.700	156.700	
15	-	156.750	Transmission prohibited
16	156.800	156.800	Distress, Safety and Calling
17	156.850	156.850	
1018	156.900	156.900	
1019	156.950	156.950	
20	157.000	161.600	
1020	157.000	157.000	
1022	157.100	157.100	
24	157.200	161.800	
25	157.250	161.850	
26	157.300	161.900	
27	157.350	161.950	
28	157.400	162.000	
1063	156.175	156.175	
1065	156.275	156.275	
1066	156.325	156.325	
67	156.375	156.375	1w default
68	156.425	156.425	
69	156.475	156.475	
70	156.525	156.525	For DSC operation only
71	156.575	156.575	1w default
72	156.625	156.625	
73	156.675	156.675	
74	156.725	156.725	
75	156.775	156.775	Fixed at 1w
76	156.825	156.825	Fixed at 1w
77	156.875	156.875	Fixed at 1w
1078	156.925	156.925	
1079	156.975	156.975	
1080	157.025	157.025	
84	157.225	161.825	
85	157.275	161.875	
86	157.325	161.925	
87	157.375	157.375	
88	157.425	157.425	

CAN Cannel Table (INDUSTRY CANADA RBR-2)

CH	TX (MHz)	RX (MHz)	REMARK
1	156.050	160.650	
1001	156.050	156.050	
2	156.100	160.700	
3	156.150	160.750	
4	156.200	160.800	
5	156.250	160.850	
1005	156.250	156.250	
6	156.300	156.300	
7	156.350	160.950	
1007	156.350	156.350	
8	156.400	156.400	
9	156.450	156.450	
10	156.500	156.500	
11	156.550	156.550	
12	156.600	156.600	
13	156.650	156.650	Fixed at 1W
14	156.700	156.700	
15	156.750	156.750	Fixed at 1W
16	156.800	156.800	Distress, Safety and Calling
17	156.850	156.850	Fixed at 1W
18	156.900	161.500	
1018	156.900	156.900	
19	156.950	161.550	
2019	--	161.550	Transmission prohibited
20	157.000	161.600	Fixed at 1W
1020	157.000	157.000	
2020	--	161.600	Transmission prohibited
21	157.050	161.650	
22	157.100	161.700	
23	157.150	161.750	
1023	--	161.750	Transmission prohibited
24	157.200	161.800	
25	157.250	161.850	
26	157.300	161.900	
2026	--	161.900	Transmission prohibited
27	157.350	161.950	
1027	157.350	157.350	
28	157.400	162.000	
60	156.025	160.625	
61	156.075	160.675	
62	156.125	160.725	
63	156.175	160.775	
1063	156.175	156.175	
64	156.225	160.825	
65	156.275	160.875	
1065	156.275	156.275	
66	156.325	160.925	
1066	156.325	156.325	
67	156.375	156.375	
68	156.425	156.425	

69	156.475	156.475	
70	156.525	156.525	For DSC operation only
71	156.575	156.575	
73	156.675	156.675	
74	156.725	156.725	
75	156.775	156.775	Fixed at 1W
76	156.825	156.825	Fixed at 1W
77	156.875	156.875	Fixed at 1W
78	156.925	161.525	
1078	156.925	156.925	
2078	--	161.525	Transmission prohibited
79	156.975	161.575	
1079	156.975	156.975	
2079	--	161.575	Transmission prohibited
80	157.025	161.625	
1080	157.025	157.025	
81	157.075	161.675	
82	157.125	161.725	
83	157.175	161.775	
84	157.225	161.825	
85	157.275	161.875	
86	157.325	161.925	
2086	--	161.925	Transmission prohibited
87	157.375	157.375	
88	157.425	157.425	

IWW Cannel Table (ETSI EN 300 698 V2.2.1)

CH	TX (MHz)	RX (MHz)	REMARK
1	156.050	160.650	
2	156.100	160.700	
3	156.150	160.750	
4	156.200	160.800	
5	156.250	160.850	
6	156.300	156.300	Fixed at 1W
7	156.350	160.950	
8	156.400	156.400	Fixed at 1W
9	156.450	156.450	
10	156.500	156.500	Fixed at 1W
11	156.550	156.550	Fixed at 1W
12	156.600	156.600	Fixed at 1W
13	156.650	156.650	Fixed at 1W
14	156.700	156.700	Fixed at 1W
15	156.750	156.750	Fixed at 1W
16	156.800	156.800	Distress, Safety and Calling
17	156.850	156.850	Fixed at 1W
18	156.900	161.500	
19	156.950	161.550	
1019	156.950	156.950	
2019	--	161.550	Transmission prohibited
20	157.000	161.600	
1020	157.000	157.000	
2020	--	161.600	Transmission prohibited
1027	157.350	157.350	
1028	157.400	157.400	
60	156.025	160.625	
61	156.075	160.675	
62	156.125	160.725	
63	156.175	160.775	
64	156.225	160.825	
65	156.275	160.875	
66	156.325	160.925	
67	156.375	156.375	
68	156.425	156.425	
69	156.475	156.475	
70	156.525	156.525	For DSC operation only
71	156.575	156.575	Fixed at 1W
72	156.625	156.625	Fixed at 1W
73	156.675	156.675	
74	156.725	156.725	Fixed at 1W
75	156.775	156.775	Fixed at 1W
76	156.825	156.825	Fixed at 1W
77	156.875	156.875	Fixed at 1W
78	156.925	161.525	
1078	156.925	156.925	
2078	--	161.525	Transmission prohibited
79	156.975	161.575	
1079	156.975	156.975	
2079	--	161.575	Transmission prohibited
87	157.375	157.375	
88	157.425	157.425	

WX (Weather) Channel Table (FCC Rule 47CER80.371(c) and 80.373(f))

CH	RX (MHz)	REMARK
WX1	162.550	NOAA Weather Channel / CANADA CMB Service
WX2	162.400	NOAA Weather Channel / CANADA CMB Service
WX3	162.475	NOAA Weather Channel / CANADA CMB Service
WX4	162.425	NOAA Weather Channel
WX5	162.450	NOAA Weather Channel
WX6	162.500	NOAA Weather Channel
WX7	162.525	NOAA Weather Channel
WX8	161.650	CANADA CMB Service
WX9	161.775	CANADA CMB Service
WX10	163.275	NOAA Weather Channel (Assigned only)

Private Channels (For fishing or specially assigned channels)

CH	TYPE	FREQUENCY (MHz)
001 - 200	Simplex and Semi-Duplex	155.000 - 163.500

APPENDIX 4 SENTENCE DISCRIPTION

I/O Sentences

Input sentences (IEC 61162-1)
ACN, GGA, ZDA, GNS, RMC

Output sentence (IEC 61162-1)
ALF, ALC, HBT, ARC

ACN – Alert command

```
$--ACN,hhmmss.ss,aaa,x.x,x.x,c,a*hh <CR><LF>
            |         |    |   |  | |   |
            |         |    |   |  | |   +------------------------------------ 7
            |         |    |   |  | +------------------------------ 6
            |         |    |   |  +------------------------- 5
            |         |    |   +------------------------ 4
            |         |    +----------------------- 3
            |         +--------------------- 2
            +-------------------------- 1
```

1. Time (see Note 1)
2. Manufacturer mnemonic code (see Note 2)
3. Alert Identifier (see Note 3)
4. Alert Instance, 1 to 999999 (see Note 4)
5. Alert command, A, Q, O or S (see Note 5)
6. Sentence status flag (see Note 6)
7. Checksum (same as below)

NOTE 1: Release time of the alert command. (e.g. for VDR purposes), optional can be a null field. Sender is allowed to use all alternatives defined in Alert Description Table. Receiver is allowed to ignore content of this field. If receiver does not ignore this field it should support all alternatives defined in Alert Description Table.

NOTE 2: Used for proprietary alerts defined by the manufacturer. For standardized alerts this should be a null field.

NOTE 3: The alert identifier is unique within a single alert source. The alert identifier is a variable length integer field of maximum 7-digit integer. It identifies the type of the alert e.g. a "lost target" alert. Standardized alerts use unique alert identifiers described in equipment standards. Number range 10000-9999999 is reserved for proprietary alerts. Alert Identifier examples:
"001", "2456789", "245".

NOTE 4: The alert instance identifies the current instance of an alert to distinguish alerts of the same type (Alert identifier) and from the same source (e.g. dangerous target). Alert instance is maximum 6-digit integer from 1 to 999999. The number of alert instance can be freely defined by the manufacturer as long as it is unique for one type of alert (alert identifier). It is not permitted to modify the alert instance within a life cycle of a distributed alert (from 'active & unacknowledged' state until 'normal' state is reached). It can be also a null field, when there is only one alert of that type.

NOTE 5: This should not be null field

acknowledge :	A
request / repeat information :	Q
responsibility transfer:	O
silence :	S

NOTE 6: This field should be "C" and should not be null field. This field indicates a command. A sentence without "C" is not a command.

GGA -Global positioning system (GPS) fix data

```
$--GGA,hhmmss.ss,llll.lll,a,yyyyy.yyy,a,x,xx,x.x,x.x,M,x.x,M,x.x,xxxx*hh<CR><LF>
        |        |      |  |        | || |  |  |   |   | |   |  |
        |        |      |  |        | || |  |  |   |   | |   |  +----------------- 10
        |        |      |  |        | || |  |  |   |   | |   +-------------------- 9
        |        |      |  |        | || |  |  |   |   | +--+-------------------- 8
        |        |      |  |        | || |  |  |   +--+----------------------- 7
        |        |      |  |        | || |  +------------------------------ 6
        |        |      |  |        | ||  +------------------------------ 5
        |        |      |  |        | | +----------------------- 4
        |        |      |  |        +----+----------------------- 3
        |        +---+------------------------------- 2
        +----------------------------------------- 1
```
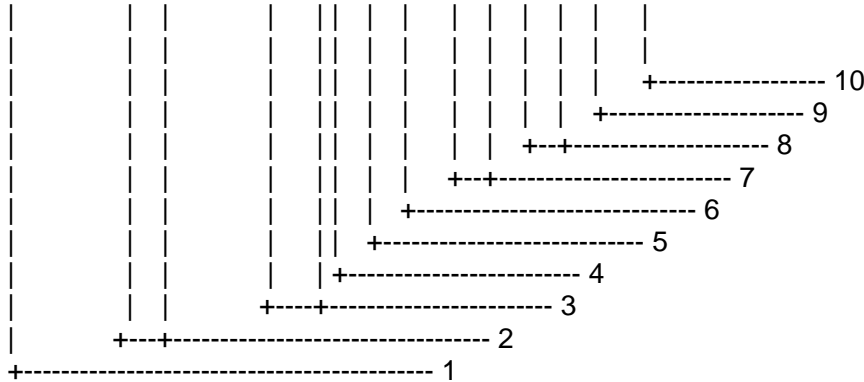
1. UTC of position
2. Latitude, N/S
3. Longitude, E/W
4. GPS quality indicator (see Note 1)
5. Number of satellite in use,00-12, may be different from the number in view
6. Horizontal dilution of precision
7. Antenna altitude above/below mean sea level (geoid), m
8. Geoidal separation, m (see Note 2)
9. Age of differential GPS data (see Note 3)
10. Differential reference station ID, 0000-1023

NOTE 1: All GPS quality indicators in headings 1 through 8 are considered "valid". The heading "0" is the only "invalid" indicator. The GPS quality indicator field should not be a null field.

    0 = fix not available or invalid
    1 = GPS SPS mode
    2 = differential GPS, SPS mode
    3 = GPS PPS mode
    4 = Real Time Kinematic. Satellite system used in RTK mode with fixed integers
    5 = Float RTK. Satellite system used in RTK mode with floating solution
    6 = Estimated (dead reckoning) mode
    7 = Manual input mode
    8 = Simulator mode

NOTE 2: Geoidal separation: the difference between the WGS-84 earth ellipsoid surface and mean sea level (geoid) surface, " – " = mean sea level surface below the WGS-84 ellipsoid surface.

NOTE 3: Time in seconds since last SC104 type 1 or 9 update, null field when DGPS is not used.

ZDA - Time and date

```
$--ZDA,hhmmss.ss,xx,xx,xxxx,xx,xx*hh<CR><LF>
        |        |  |  |    |  |
        |        |  |  |    |  +----------- 6
        |        |  |  |    +------------- 5
        |        |  |  +----------------- 4
        |        |  +-------------------- 3
        |        +----------------------- 2
        +----------------------------- 1
```
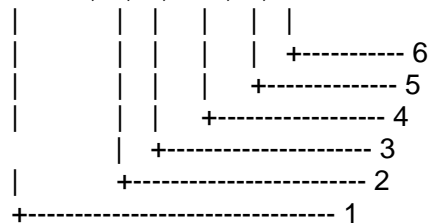
1. UTC
2. Day, 01 to 31 (UTC)

3. Month, 01 to 12 (UTC)
4. Year (UTC)
5. Local zone hours, 00h to ±13h
6. Local zone minutes, 00 to +59 (see Note)

NOTE: Local time zone is the magnitude of hours plus the magnitude of minutes added, with the sign of local zone hours, to local time to obtain UTC. Local zone is generally negative for East longitudes with local exceptions near the international date line.

GNS - GNSS fix data

$-- GNS, hhmmss.ss, llll.ll, a, yyyyy.yy, a, c--c,xx,x.x,x.x,x.x,x.x,x.x,a *hh<CR><LF>

```
                      |        |  |      |  |  |  |  |  |  |  |  | |  |
                      |        |  |      |  |  |  |  |  |  |  |  | |  +--------- 11
                      |        |  |      |  |  |  |  |  |  |  |  | +--------- 10
                      |        |  |      |  |  |  |  |  |  |  |  +--------- 9
                      |        |  |      |  |  |  |  |  |  |  +--------- 8
                      |        |  |      |  |  |  |  |  |  +--------- 7
                      |        |  |      |  |  |  |  |  +----------- 6
                      |        |  |      |  |  |  |  +--------- 5
                      |        |  |      |  |  |  +------------- 4
                      |        |  |      +-------+------------- 3
                      |        +-- +------------------- 2
                      +------------------------- 1
```
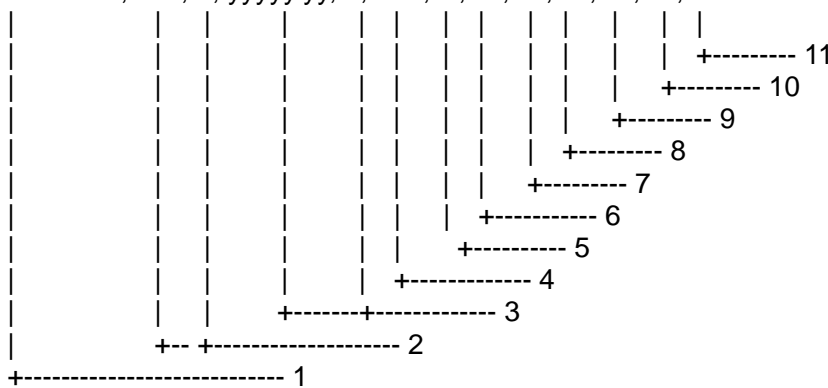
1. UTC of position
2. Latitude, N/S
3. Longitude, E/W
4. Mode indicator (see Note 1)
5. Total number of satellites in use, 00-99
6. HDOP (see Note 2)
7. Antenna altitude, m, re: mean-sea-level (geoid)
8. Geoidal separation, m (see Note 3)
9. Age of differential data (see Note 4)
10. Differential reference station ID (see Note 4)
11. Navigational status indicator (see Note 5)

NOTE 1: Mode indicator. A variable length valid character field type with the first three characters currently defined. The first character indicates the use of GPS satellites, the second character indicates the use of GLONASS satellites and the third indicate the use of Galileo satellites. If another satellite system is added to the standard, the mode indicator will be extended to four characters, new satellite systems should always be added on the right, so the order of characters in the mode indicator is: GPS, GLONASS, Galileo, other satellite systems in the future. The characters should take one of the following values:

A = Autonomous. Satellite system used in non-differential mode in position fix;

D = Differential. Satellite system used in differential mode in position fix;

E = Estimated (dead reckoning) mode;

F = Float RTK. Satellite system used in real time kinematic mode with floating integers;

M = Manual input mode;

N = No fix. Satellite system not used in position fix, or fix not valid;

P = Precise. Satellite system used in precision mode. Precision mode is defined as: no deliberate degradation (such as selective availability) and higher resolution code (P-code) is used to compute position fix. P is also used for satellite system used in multi-frequency, SBAS or Precise Point Positioning (PPP) mode;

R = Real Time Kinematic. Satellite system used in RTK mode with fixed integers;

S = Simulator mode.

The mode indicator should not be a null field.

NOTE 2: HDOP calculated using all the satellites (GPS, GLONASS, Galileo and any future satellites) used in computing the solution reported in each GNS sentence.

NOTE 3: Geoidal Separation: the difference between the earth ellipsoid surface and mean-sea-level (geoid) surface defined by the reference datum used in the position solution, "-" = mean-sea-level surface below ellipsoid.

The reference datum may be specified in the DTM sentence.

NOTE 4: Age of differential data and Differential Reference Station ID:

a) When the talker is GN and more than one of the satellite systems are used in differential mode, then the "Age of differential data" and "Differential reference station ID" fields should be null. In this case, the "Age of differential data" and "Differential reference station ID" fields should be provided in following GNS sentences with talker IDs of GP, GL, etc. These following GNS messages should have the latitude, N/S, longitude, E/W, altitude, geoidal separation, mode, and HDOP fields null. This indicates to the listener that the field is supporting a previous $GNGNS sentence with the same time tag. The "Number of satellites" field may be used in these following sentences to denote the number of satellites used from that satellite system.

The Differential Reference station ID may be the same or different for the different satellite systems.

b) Age of Differential Data For GPS Differential Data:

This value is the average age of the most recent differential corrections in use. When only RTCM SC104 Type 1 corrections are used, the age is that of the most recent Type 1 correction. When RTCM SC104 Type 9 corrections are used solely, or in combination with Type 1 corrections, the age is the average of the most recent corrections for the satellites used. Null field when Differential GPS is not used.

For GLONASS Differential Data:

This value is the average age of the most recent differential corrections in use. When only RTCM SC104 Type 31 corrections are used, the age is that of the most recent Type 31 correction. When RTCM SC104 Type 34 corrections are used solely, or in combination with Type 31 corrections, the age is the average of the most recent corrections for the satellites used. Null field when differential GLONASS is not used.

For Galileo Differential Data:

This value is the average age of the most recent differential corrections in use. When only RTCM SC104 Type 41 corrections are used, the age is that of the most recent Type 41 correction. When RTCM SC104 Type 42 corrections are used solely, or in combination with Type 41 corrections, the age is the average of the most recent corrections for the satellites used. Null field when differential Galileo is not used.

NOTE 5: The navigational status indicator is according to IEC 61108 requirements on 'Navigational (or Failure) warnings and status indications'. This field should not be a NULL field and the character should take one of the following values:

S = Safe when the estimated positioning accuracy (95 % confidence) is within the selected accuracy level corresponding to the actual navigation mode, and integrity is available and within the requirements for the actual navigation mode, and a new valid position has been calculated within 1 s for a conventional craft and 0,5 s for a high speed craft;
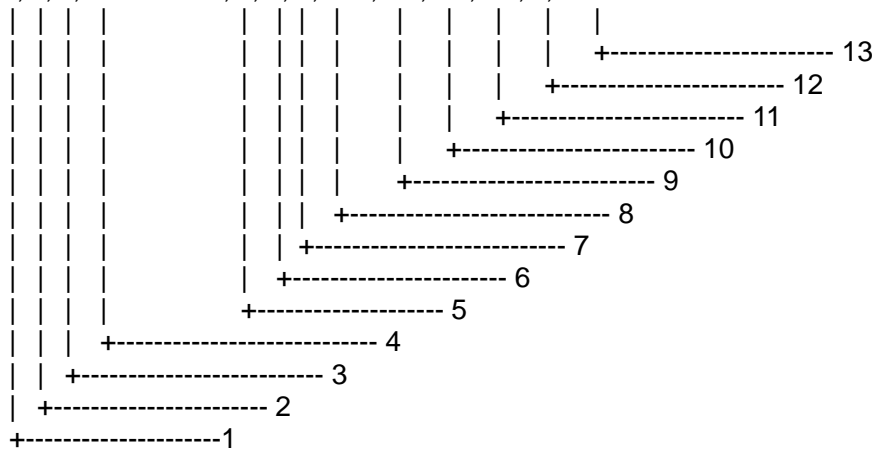
C = Caution   when integrity is not available;

U = Unsafe when the estimated positioning accuracy (95% confidence) is less than the selected accuracy level corresponding to the actual navigation mode, and/or integrity is available but exceeds the requirements for the actual navigation mode, and/or a new valid position has not been calculated within 1 s for a conventional craft and 0,5 s for a high speed craft;

V = Navigational status not valid, equipment is not providing navigational status indication.

RMC- Recommended minimum specific GNSS data

```
$--RMC,hhmmss.ss,A,llll.ll,a,yyyyy .yyy,a,x.x,x.x,xxxxxx,x.x,a,a,a*hh<CR><LF>
               |   |  |  |     |       |  |  |    |    |  | | ||
               |   |  |  |     |       |  |  |    |    | | | |+----------------------10
               |   |  |  |     |       |  |  |    |    | | | +-------------------- 9
               |   |  |  |     |       |  |  |    |    +--+----------------- 8
               |   |  |  |     |       |  |  |    +------------------------ 7
               |   |  |  |     |       |  |  +-------------------------- 6
               |   |  |  |     |       |  +------------------------- 5
               |   |  |  |     +------+------------------------- 4
               |   |  +--+-------------------------------- 3
               |   +------------------------------------ 2
               +----------------------------------------- 1
```

1. UTC of position fix
2. Status (see Note 3): A=data valid, V=navigation receiver warning
3. Latitude, N/S
4. Longitude, E/W
5. Speed over ground, knots
6. Course over ground, degrees true
7. Date: dd/mm/yy
8. Magnetic variation, degrees E/W(see Note 1)
9. Mode indicator (see Notes 2 and 3)
10. Navigational status (see Note 4)

NOTE 1: E = Easterly variation subtracts from True course
W = Westerly variation adds to True course
NOTE 2: Positioning system mode Indicator
A = Autonomous. Satellite system used in non-differential mode in position fix;
D = Differential. Satellite system used in differential mode in position fix;
E = Estimated (dead reckoning) mode;
F = Float RTK. Satellite system used in real time kinematic mode with floating integers;
M = Manual input mode;
N = No fix. Satellite system not used in position fix, or fix not valid;
P = Precise. Satellite system used in precision mode. Precision mode is defined as: no deliberate degradation (such as selective availability) and higher resolution code (P-code) is used to compute position fix. P is also used for satellite system used in multi-frequency, SBAS or Precise Point Positioning (PPP) mode;
R = Real time kinematic. Satellite system used in RTK mode with fixed integers;
S = Simulator mode.
NOTE 3: The positioning system mode indicator field supplements the positioning system status field. The status field should be set to V = Invalid for all values of the mode indicator except for A= Autonomous, D = Differential, F = Float RTK, P = Precise and R = Real time kinematic. The positioning system mode indicator and status fields should not be null fields.
NOTE 4: The navigational status indicator is according to IEC 61108 requirements on 'Navigational (or Failure) warnings and status indications'. This field should not be a NULL field and the character should take one of the following values:
S = Safe. when the estimated positioning accuracy (95 % confidence) is within the selected accuracy level corresponding to the actual navigation mode, and/or integrity is available and within the requirements for the actual navigation mode, and/or a new valid position has been calculated within 1 s for a conventional craft and 0,5 s for a high speed craft.
C = Caution when integrity is not available.
U= Unsafe when the estimated positioning accuracy (95 % confidence) is less than the selected accuracy level corresponding to the actual navigation mode, and/or integrity is available but exceeds the requirements for the actual navigation mode, and/or a new valid position has not been calculated within 1 s for a conventional craft and 0,5 s for a high speed craft.
V = Navigational status not valid, equipment is not providing navigational status indication.

ALF - Alert sentence

$--ALF, x, x, x, hhmmss.ss, a, a, a, aaa, x.x, x.x, x.x, x,c---c*hh <CR><LF>

```
    | | | |          | | | |     | |  |   |   |   |
    | | | |          | | | |     | |  |   |   |   +----------------------- 13
    | | | |          | | | |     | |  |   |   +----------------------- 12
    | | | |          | | | |     | |  |   +----------------------- 11
    | | | |          | | | |     | |  +----------------------- 10
    | | | |          | | | |     | +------------------------ 9
    | | | |          | | | |  +------------------------ 8
    | | | |          | | | +------------------------ 7
    | | | |          | | +-------------------- 6
    | | | |          | +------------------ 5
    | | | |      +------------------------ 4
    | | | +------------------------ 3
    | | +------------------------ 2
    | +--------------------- 2
    +--------------------1
```

1. Total number of ALF sentences for this message, 1 to 2 (see Note 1)
2. Sentence number, 1 to 2 (see Note 1)
3. Sequential message identifier, 0 to 9 (see Note 2)
4. Time of last change (see Note 3)
5. Alert category, A, B or C (see Note 4)
6. Alert priority, E, A, W or C (see Note 5)
7. Alert state, A, S, R, O, U or D (see Note 6)
8. Manufacturer mnemonic code (see Note 7)
9. Alert identifier (see Note 8)
10. Alert instance, 1 to 999999 (see Note 9)
11. Revision counter, 1 to 99 (see Note 10)
12. Escalation counter, 0 to 9 (see Note 11)
13. Alert text (see Note 12)

NOTE 1: The first field specifies the total number of sentences used for a message, minimum value 1. The second field identifies the order of this sentence in the message, minimum value 1, these cannot be null fields. When the sentence number is 2, the following Alert category, Alert priority and Alert state can be null fields.

NOTE 2: The sequential message identifier relates all sentences that belong to a group of multiple sentences (i.e. message). Multiple sentences (see Note 1) with the same sequential message identifier, make up one message.

NOTE 3: Time should represent the last time the data within the alert message has changed. For example changing the alert text by in-/decrementing a contained counter or count down should cause a revision of alert message and a new time. Time is an optional field. The time-field is additional information about when this happened and not used for decision making. There is no mandatory requirement for time synchronization between the equipment. It should by either a null field (if not used) or UTC (if used). Sender is allowed to use all alternatives defined in Alert Description Table. Receiver is allowed to ignore content of this field. If the receiver does not ignore this field it   should support all alternatives defined in Alert Description Table.

NOTE 4: The alert category is in compliance with the category definition as described in INS Performance Standard (MSC.252(83)) and Bridge Alert Management Performance Standard (MSC.302 (87)):

    A, Category A: Alerts where information at operator unit directly assigned to the function generating the alert is necessary, as decision support for the evaluation of the alert-related condition, e.g. graphical information of danger of collision or graphical information of danger of grounding.

    B, Category B: Alerts where no additional information for decision support is necessary besides the information which can be presented using alert source and alert description text.

    C, Category C: Alerts that cannot be acknowledged on the bridge but for which information is required about the status and treatment of the alerts, e.g., certain alerts from the engine.

NOTE 5: Alert priority: Emergency Alarm: E, for use with Bridge alert management
                                 Alarm: A
                                 Warning: W
                                 Caution: C

NOTE 6: The alert state transition is defined in Annex J
active – unacknowledged: V
active – silenced: S
active – acknowledged or active: A
active – responsibility transferred: O
rectified – unacknowledged: U
normal: N

NOTE 7: Used for proprietary alerts defined by the manufacturer. For standardized alerts this should be a null field.

NOTE 8: The alert identifier is unique within a single alert source. The alert identifier is a variable length integer field of maximum 7-digit integer. It identifies the type of the alert e.g. a "lost target" alert. Standardized alerts use unique alert identifiers described in equipment standards. Number range 10000-9999999 is reserved for proprietary alerts. Alert Identifier examples: "001", "2456789", "245".

NOTE 9: The alert instance identifies the current instance of an alert to distinguish alerts of the same type (Alert identifier) and from the same source (e.g. dangerous target). Alert instance is maximum 6-digit integer from 1 to 999999. The number of alert instance can be freely defined by the manufacturer as long as it is unique for one type of alert (alert identifier). It is not permitted to modify the alert instance within a life cycle of a distributed alert (from 'active & unacknowledged' state until 'normal' state is reached). It can be also a null field, when there is only one alert of that type.

NOTE 10: The revision counter is the main method to follow up-to-date status. Revision counter is also unique for each instance of alert. Revision counter starts with 1 and the step for increment is 1. The count resets to 1 after 99 is used. Revision counter increments on each change of content of any field of the alert.

NOTE 11: The escalation counter is presenting the number of alert escalations after time expiration during the state active-unacknowledged. The escalation counter starts with 0 and the step for increment is 1. The count resets to 1 after 9 is used. The alert escalation can be the escalation from warning into warning (activation of audible signal only), the escalation from warning to alarm or the escalation from alarm to alarm with activation of back-up navigator alarm

NOTE 12: This field is used for Alert title which is mandatory and for additional alert description which is optional.
- The first ALF sentence transmits the Alert title. Alert title is maximum 16 characters short form of the alert text.
- The optional second ALF sentence transmits the additional alert description. Additional alert description is the long description of the alert. The additional alert description contains more information for decision making (i.e. alert description text).
- The second ALF sentence uses null fields for Time of last change, Alert category, Alert priority, and Alert state to allow longer text. The actual number of valid characters should be such that the total number of characters in a sentence does not exceed the "82"-character limit.
- Some equipment standards specify alert text longer than 16 characters (for example the AIS standard has defined some alerts to be coded with ALR sentence and with text longer than 16 characters). In such cases the first ALF sentence is used for the first 16 characters of the alert text as alert title and the second ALF sentence to carry the full alert text.

ALC - Cyclic alert list

$--ALC, xx, xx, xx, x.x, aaa, x.x, x.x,x.x, ..., aaa, x.x, x.x,   x.x*hh <CR><LF>

```
          |  |  |    |  |  |    |  |  |    |  |  |              |
          |  |  |    |  |  |    |  |  |    |  |  +--------------+---------- 7
          |  |  |    |  |  |    |  |  |    +--+----------------------- 6
          |  |  |    |  +----+---+--+-------------------------- 5
          |  |  |    +------------------------------------- 4
          |  |  +---------------------------------------- 3
          |  +--------------------------------------- 2
          +--------------------------------------- 1
```
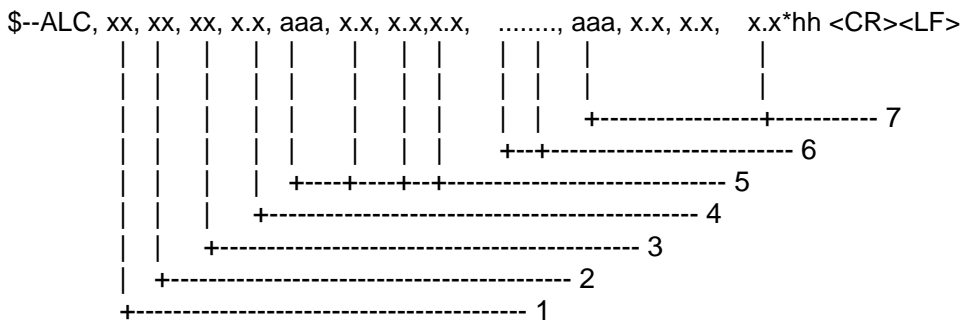
1. Total number of sentences for this message, 01 to 99 (see Note 1)
2. Sentence number, 01 to 99 (see Note 1)
3. Sequential message identifier, 00 to 99 (see Note 2)
4. Number of alert entries (see Note 3)
5. Alert entry 1 (see Note 4)
6. Additional Alert entries (see Note 4)
7. Alert entry n (see Note 4)

NOTE 1: The first field specifies the total number of sentences used for a message, minimum value 1. The second field identifies the order of this sentence in the message, minimum value 1, These cannot be null fields.
NOTE 2: The sequential message identifier relates all sentences that belong to a group of multiple sentences (i.e. message). Multiple sentences (see Note 1) with the same sequential message identifier, make up one message.
NOTE 3: Contains the number of alert entries transported within this sentence.
NOTE 4: Alert entry 0 – n: Each alert entry consists of four fields:
  • Manufacturer Identifier (see ALF Manufacturer Identifier)
  • Alert Identifier (see ALF Alert Identifier)
  • Alert instance (see ALF Alert instance)
  • Revision Counter (see ALF Revision Counter)

Each entry identifies a certain alert with a certain state. It is not allowed that an alert entry is split between two ALC sentences.

HBT – Heartbeat supervision sentence

$--HBT, x.x, A, x*hh<cr><lf>

```
          |   |   |
          |   |   +---------------------- 3
          |   +------------------ 2
          +------------------ 1
```
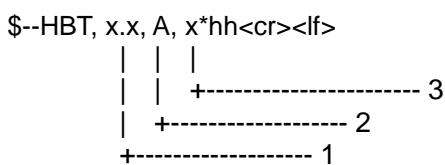
1. Configured repeat interval (see Note 1)
2. Equipment status (see Note 2)
3. Sequential sentence identifier (see Note 3)

NOTE 1: Configured autonomous repeat interval in seconds. This field should be set to NULL in response to a query if this feature is supported.
NOTE 2: Equipment in normal operation A = yes, V = no
  This field can be used can be used to indicate the current equipment status. This could be the result of an built-in integrity testing function.
NOTE 3: The sequential sentence identifier provides a message identification number from 0 to 9 that is sequentially assigned and is incremented for each new sentence. The count resets to 0 after 9 is used.

ARC - Alert command refused

```
$--ARC, hhmmss.ss, aaa, x.x, x.x, c*hh <CR><LF>
             |        |    |    |    |
             |        |    |    |    |
             |        |    |    |    +---------------------------- 5
             |        |    |    +---------------------------- 4
             |        |    +------------------------- 3
             |        +---------------------- 2
             +--------------------1
```
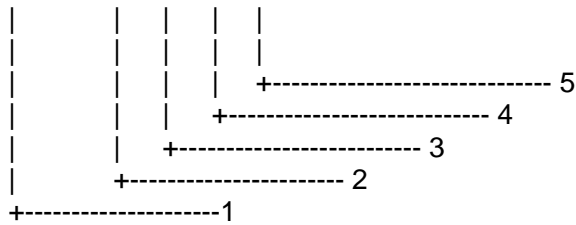
1. Time (see Note 1)
2. Manufacturer mnemonic code (see Note 2)
3. Alert identifier (see Note 3)
4. Alert instance, 1 to 999999 (see Note 4)
5. Refused alert command, A, Q,O or S (see Note 5)

NOTE 1: Release time of the Alert Command Refused. (e.g. for VDR purposes), optional, can be a null field. Sender is allowed to use all alternatives defined in Alert Description Table. Receiver is allowed to ignore content of this field. If receiver does not ignore this field it should support all alternatives defined in Alert Description Table.

NOTE 2: Used for proprietary alerts defined by the manufacturer. For standardized alerts this should be a null field.

NOTE 3: The alert identifier is unique within a single alert source. The alert identifier is a variable length integer field of maximum a 7-digit integer. It identifies the type of the alert, e.g. a "lost target" alert. Standardized alerts use unique alert identifiers described in equipment standards. Number range 10000-9999999 is reserved for proprietary alerts. Alert Identifier examples: "001", "2456789", "245".

NOTE 4: The alert instance identifies the current instance of an alert to distinguish alerts of the same type (Alert identifier) and from the same source (e.g. dangerous target). Alert instance is maximum a 6-digit integer from 1 to 999999. The number of alert instance can be freely defined by the manufacturer as long as it is unique for one type of alert (alert identifier). It is not permitted to modify the alert instance within a life cycle of a distributed alert (from 'active and unacknowledged' state until 'normal' state is reached). It can be also a null field, when there is only one alert of that type.

NOTE 5: Refused Alert Command: Indicates refused "Alert command" of corresponding ACN sentence. This should not be a null field.

acknowledge:	A
request / repeat information:	Q
responsibility transfer:	O
silence:	S

APPENDIX 5 INSTALLATION DRAWINGS

NVR-3000 SYSTEM DIAGRAM

VHF ANTENNA FOR DSC RECEIVER

VHF ANTENNA FOR VHF STATION

（*OPTION）

（*OPTION）

INS
4x0.75mm²

GNSS Navigator
2x0.75mm²

PRINTER
2x0.75mm²

(S)VDR
2x0.75mm²

P1

P2

(20m)
RG123

(20m)
RG213

(1m)

(2m)
2x0.5mm²

DC24V

(1m)
2x0.5mm²

NSK-100
External
Speaker

NHS-200
Handset

VHF ANT

DSC ANT

EXTERNAL
SPEAKER

1. 15V_OUT
2. 15VDC
3. BACKUP_TXA
4. BACKUP_TXB
5. BACKUP_RXA
6. BACKUP_RXB
7. VDR_AUDIO+
8. VDR_AUDIO-

1. INS_TXA
2. INS_TXB
3. INS_RXB
4. INS_RXA
5. GNSS_RXA 2
6. GNSS_RXB 2
7. PRINTER_TXD 2
8. NC
9. GND

POWER   LAN

GND

NOTE: BACKUP - FOR FUTURE USE.

VHF ANT

DSC ANT

SPK

P2

P1

LAN

146.93

116.99

SIDE VIEW

116.99

311.42

TOP VIEW

146.93

134

311.42

267.5

VOLUME
PUSH TO PWR

CH

PUSH TO ENTER

NVR-3000 VHF RADIO

N.S.R

HANDSET

FRONT VIEW

APPLICATION | NVR-3000 DIMENSION DRAWING

| | ITEM | | | V/IR | SIZE | A4 |

DATE						
APPROVAL						
CHECKED						
DRAWING						
DWG.NO.	NVR3000-ID-003					

NSR marine

NEW SUNRISE CO., LTD.

SIDE VIEW

>=80.0

105

FRONT VIEW

146.93

134

311.42

267.5

>=80.0

>=80.0

NSR

VOLUME PUSH TO PWR

DIM

PUSH TO ENTER

NVR-3000 VHF RADIO

HANDSET

BOTTOM VIEW

117

40

235

4-7x11 SLOT, FITTING HOLE

NOTE:

1. USE SELF-TAPPING SCREWS M5X20 FOR FIXING THE UNIT

2. 80MM IS MINIMUM SPACE FOR OPERATION AND CABLING.

3. TABLE MOUNT TYPE.

YARD PANEL

BRACKET

147

270

290

137

4-M4, INSTALL

YARD PANEL

GASKET

BRACKET

12.5

BRACKET

GASKET

YARD PANEL

②

①

VHF ANT

DSC ANT

EXT.

P1

P2

LAN

NSR marine

NVR-3000 VHF RADIO

VOLUME PUSH TO PWR

DIM

PUSH TO ENTER

NSR

HANDSET

30.26

6-R3

5.5

2-Ø4.5

147

106.48

113

BRACKET-2ea/set

4-R6

CONSOLE

270

137

CUTTING AREA

72.1

68.1
62.1

188.9

68.1

210.3

54.9

210.3

APPLICATION

HANDSET SIZE DRAWING

ITEM | NHR-1500 | SIZE | A4
SCALE | N/S | UNIT | mm

DATE
APPROVAL
CHECKED
DRAWING
DWG NO. | NVR3000-HD-006

NSR marine

NEW SUNRISE CO., LTD.

Min. 200mm clearance

Min. 300mm clearance

72.1

68.1
62.1

188.9

68.1

210.3

2-ø7
Mounting Holes

64.0
58.0

12.0   120.0   55.0