FURUNO

OPERATOR'S MANUAL

SSB RADIOTELEPHONE

FS-2575

MODEL   **FS-5075**

ECF

(Elemental Chlorine Free)

The paper used in this manual
is elemental chlorine free.

FURUNO ELECTRIC CO., LTD.

9-52 Ashihara-cho,
Nishinomiya, 662-8580, JAPAN

Telephone : +81-(0)798-65-2111
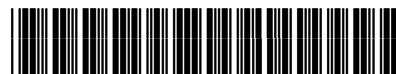Fax   : +81-(0)798-65-4200

·FURUNO Authorized Distributor/Dealer

Pub. No. OME-56770-Z

(YOTA) FS-2575/5075

A :   0000
Z : FEB. 25, 2011

00017516510

IMPORTANT NOTICE

General

- The operator of this equipment must read and follow the descriptions in this manual. Wrong operation or maintenance can cancel the warranty or cause injury.

- Do not copy any part of this manual without written permission from FURUNO.

- If this manual is lost or worn, contact your dealer about replacement.

- The contents of this manual and equipment specifications can change without notice.

- The example screens (or illustrations) shown in this manual can be different from the screens you see on your display. The screens you see depend on your system configuration and equipment settings.

- Save this manual for future reference.

- Any modification of the equipment (including software) by persons not authorized by FURUNO will cancel the warranty.

- All brand and product names are trademarks, registered trademarks or service marks of their respective holders.

How to discard this product

Discard this product according to local regulations for the disposal of industrial waste. For disposal in the USA, see the homepage of the Electronics Industries Alliance (http://www.eiae.org/) for the correct method of disposal.

How to discard a used battery

Some FURUNO products have a battery(ies). To see if your product has a battery, see the chapter on Maintenance. Follow the instructions below if a battery is used. Tape the + and - terminals of battery before disposal to prevent fire, heat generation caused by short circuit.

In the European Union

The crossed-out trash can symbol indicates that all types of batteries must not be discarded in standard trash, or at a trash site. Take the used batteries to a battery collection site according to your national legislation and the Batteries Directive 2006/66/EU.
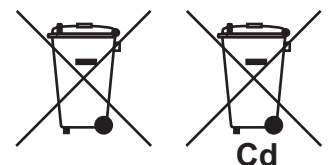
In the USA

The Mobius loop symbol (three chasing arrows) indicates that Ni-Cd and lead-acid rechargeable batteries must be recycled. Take the used batteries to a battery collection site according to local laws.
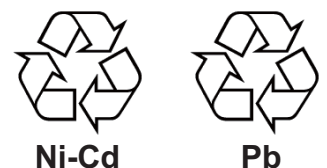
In the other countries

There are no international standards for the battery recycle symbol. The number of symbols can increase when the other countries make their own recycling symbols in the future.

⚠ SAFETY INSTRUCTIONS

The user and installer must read the appropriate safety instructions before attempting to install or operate the equipment.

⚠ **DANGER**	Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
⚠ **WARNING**	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
⚠ CAUTION	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

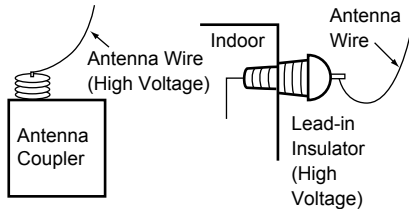| ⚠ Warning, Caution	🚫 Prohibitive Action	❗ Mandatory Action

⚠ DANGER

Never touch the SSB antenna, antenna coupler or lead-in insulator when the SSB radiotelephone is transmitting.

High voltage which will cause death or serious injury is present at the locations shown in the illustration below when the SSB radiotelephone is transmitting.

⚠ WARNING

Do not open the equipment.

Only qualified personnel should work inside the equipment.

Immediately turn off the power at the switchboard if water leaks into the equipment or something is dropped into the equipment.

Continued use of the equipment can cause fire or electrical shock. Contact a FURUNO agent for service.

Do not disassemble or modify the equipment.

Fire, electrical shock or serious injury can result.

⚠ WARNING

Immediately turn off the power at the switchboard if the equipment is emitting smoke or fire.

Continued use of the equipment can cause fire or electrical shock. Contact a FURUNO agent for service.

Do not place liquid-filled containers on the top of the equipment.

Fire or electrical shock can result if a liquid spills into the equipment.

Do not operate the equipment with wet hands.

Electrical shock can result.

Turn off the power immediately if you feel the equipment is behaving abnormally.

Turn off the power at the switchboard if the equipment becomes abnormally warm or is emitting odd noises. Contact a FURUNO dealer or agent for advice.

Make sure no rain or water splash leaks into the equipment.

Fire or electrical shock can result if water leaks in the equipment.

Use the proper fuse.

Use of the wrong fuse can cause fire or electrical shock.

⚠ **WARNING**

🚫 **Do not operate the [DISTRESS] button except in case of a life-endangering situation on your vessel.**

Operating the [DISTRESS] button transmits the distress alert. Accidental transmission may prevent search and rescue operations for actual emergency. If the distress alert is accidentally transmitted, contact the nearest station to cancel the alert.

⚠ **CAUTION**

❗ If the distress alert is accidentally transmitted, contact the nearest coast station and inform them of the accidental transmission, providing the following data:

a) Ship's name
b) Ship's call sign and DSC number
c) Position at time of transmission
d) Time of transmission

🚫 **Do not apply strong pressure to the LCD, which is made of glass.**

Injury can result if the LCD breaks.

WARNING LABELS

Warning labels are attached to the equipment. Do not remove any label. If a label is missing or damaged, contact a FURUNO agent or dealerabout replacement.

⚠ WARNING ⚠
To avoid electrical shock, do not remove cover. No user-serviceable parts inside.
⚠ 警告 ⚠
感電の恐れあり。
 サービスマン以外の方はカバーを開け
 ないで下さい。内部には高電圧部分が
 数多くあり、万一さわると危険です。

Name: Warning Label 1
Type: 86-003-1011-3
Code No.: 100-236-233-10

⚠ **DANGER**
Electrical shock hazard.
Do not touch parts inside this cover.
⚠ 危 険
感電の恐れあり。
カバーの内部には、絶対に
触れないで下さい。

Name: Warning Label
Type: 14-055-4202-1
Code No.: 100-245-221-10

Name: High Temp Warning Label
Type: 05-089-2142-0
Code No.: 100-301-620-00

About the TFT LCD

The TFT LCD is constructed using the latest LCD techniques, and displays 99.99% of its pixels. The remaining 0.01% of the pixels may drop out or blink, however this is not an indication of malfunction.

TABLE OF CONTENTS

FOREWORD

A Word to the Owner of the FS-2575/5075

Congratulations on your choice of the FURUNO FS-2575/5075 SSB Radiotelephone. We are confident you will see why the FURUNO name has become synonymous with quality and reliability.

For over 60 years FURUNO Electric Company has enjoyed an enviable reputation for innovative and dependable marine electronics equipment. This dedication to excellence is furthered by our extensive global network of agents and dealers.

Your equipment is designed and constructed to meet the rigorous demands of the marine environment. However, no machine can perform its intended function unless properly installed and maintained. Please carefully read and follow the operation and maintenance procedures set forth in this manual.

We would appreciate feedback from you, the end-user, about whether we are achieving our purposes.

Thank you for considering and purchasing FURUNO equipment.

Features

The FS-2575/5075 is an MF/HF SSB Radiotelephone with a built-in DSC/Watch Receiver, all contained in a surprisingly compact cabinet. An NBDP (Narrow Band Direct Printing) Terminal Unit is optionally available.

Data is displayed on a large, easy-to-read color LCD. Operation is simplified by the use of few keys and easy-to-follow menus.

The built-in DSC/watch receiver produces and receives digital selective calls for quick and efficient establishment of distress, urgency, safety and general communications with other ships and coast stations that install any MF/HF DSC facilities.

The main features are

General

- Fully meets the following regulations: IMO A.806(19), IMO A.694(17), MSC 36(63), MSC 68(68), IEC 61162-1, IEC 60945, EN 300 373-1, ETS 300 067, EN 300 338, EN 301 033, ITU-R M.476-5, ITU-R M.490, ITU-R M.491-1, ITU-R M.492-6, ITU-R M.493-13, ITU-R M.541-9, ITU-R M.625-3, ITU-R M.821-1, ITU-R M.1082-1, ITU-R M.1173, MSC/Circ. 862.

- Automatic entry of position with manual override

- Optional printer can automatically print out DSC and NBDP received messages and test results.

DSC/watch receiver

- Distress, urgency, safety and general calling

- Scanning of DSC frequencies for distress and general calls on MF/HF

- File editing capability for readiness in case of emergency

- PSTN (Public Switched Telephone Network) capability standard

- Log stores 50 each of latest ordinary, distress and transmitted messages, in separate memory blocks.

SSB

- Receiving voice communication, telex and AM.

- Facsimile signal receiving

- Simplified setting of channel and frequency.

NBDP (with optional NBDP Terminal Unit IB-583)

- Automatic error-free telex communications and distress message in compliance with GMDSS requirements

- LCD monitor and keyboard comply with ITU regulations

- Pop-up menus for user-friendly operation

- Memory for 256 operator-customized channels

- Real time message printing with Printer PP-510

Program Number

FS-2575/5075

Location	PC board	Program No.	Version
FS-2575T/5075T	T-CPU (05P0859)	0550243 (Prog)	01.xx
		0550247 (Boot)	01.xx
	MOT (05P0860)	0550245 (CPLD)	01.xx
FS-2575C	C-CPU (05P0852)	0550246 (Boot)	01.xx
ANTENNA COUPLER	COUP (05P0875)	0550244	01.xx

xx: minor change

Terminal Unit IB-583 (optional unit)

PC board	Program No.	Version
TERMINAL	0550209	1.22

SYSTEM CONFIGURATIONS

*3 For DSC routine frequency
watch keeping receiver

AUTOMATIC ANTENNA
SWITCH AS-102

ANTENNA COUPLER
AT-5075

*3

*1   *1

PREAMP
FAX-5

PREAMP
FAX-5

ANT. JUNC. BOX AJB1-1A or
MATCHING BOX ARD-1

*1 2.6 m whip
antenna

WR BOARD

NAVIGATOR

LOUDSPEAKER
SEM-21Q

CONTROL UNIT
FS-2575C

HANDSET
HS-2003

ALARM
SYSTEM

TRANSCEIVER
UNIT
FS-2575T
(FS-2575)
or
FS-5075T
(FS-5075)

PRINTER
PP-510

EXTERNAL
EQUIPMENT

NBDP TERMINAL UNIT
IB-583

PRINTER
INTERFACE
IF-8500*2

- 24
VDC

ALARM UNIT
IC-350

24 VDC

*2 Required for NBDP Terminal
and DSC to share printer.

BK INTERFACE
BK-300

CONTROL UNIT
FS-2575C

HANDSET
HS-2003

LOUDSPEAKER
SEM-21Q

AC POWER
SUPPLY UNIT
PR-850A

POWER STATUS
MONITOR
PSM-01

SHIP'S MAINS
24 VDC

100/110/120/200/220/240 VAC
1φ, 50/60 Hz

Unit	Category
Preamp Unit	Exposed to the weather
Antenna Coupler	Exposed to the weather OR protected from the weather
Other Units	Protected from the weather

——— : STANDARD
·········· : OPTION
-·-·-· : LOCAL SUPPLY

This page is intentionally left blank.

1. OPERATIONAL OVERVIEW

1.1 Controls
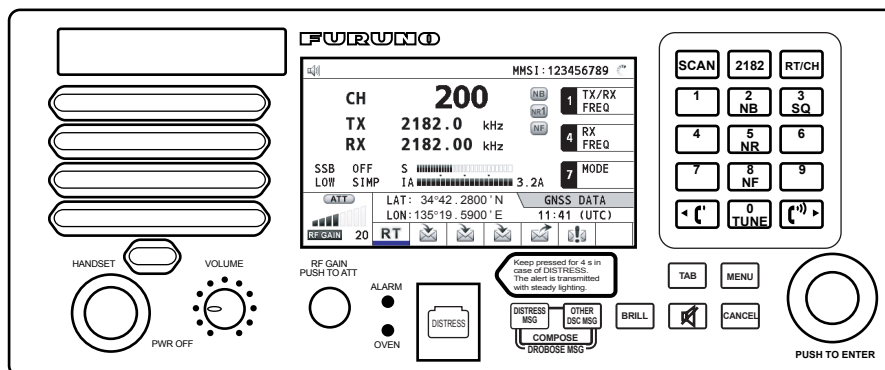
Description of controls

Control	Function
VOLUME/PWR knob	• Turn the power on/off. • Adjust volume.
ENTER knob	Rotate to select the menu items or switch the screen for the data which have multi pages (e.g., log data); press to register the selection.
RF GAIN/ PUSH TO ATT knob	Rotate to adjust gain; press to turn the attenuator on/off.
DISTRESS key	Press and hold down the key more than three seconds to transmit the distress alert.
MENU key	Open/close the menu.
CANCEL key	• Cancel the DSC message in process. • Silence audio alarm. • Go to the operation for the cancel of the distress alert. • Erase error message or pop-up message • Return one layer in multiple level menu. • Erase letters input.
TAB key	• Go to the tab area. • Switch the tab.
⊿ key	Turn the main speaker on/off.
BRILL key	Adjust brilliance.
OTHER DSC MSG key	Compose DSC TX message except DISTRESS ALERT and DROBOSE (Distress Relay On Behalf Of Someone Else).
DISTRESS MSG key	Compose DSC TX message for DISTRESS ALERT.
DROBOSE MSG key	Compose DSC TX message for DROBOSE (Distress Relay On Behalf Of Someone Else). Press the DISTRESS MSG key and the OTHER DSC MSG key simultaneously.

Control	Function
SCAN key	• Open the scan screen. • Stop/start the scanning of DSC general frequencies, on the scan screen.
2182 key	Switch to the RT (radiotelephone) screen and set SSB: 2182.0 kHz
RT/CH key	• Switch to the RT (radiotelephone) screen. • Open the CH setting box on the RT screen.
0 to 9 keys	Enter alphabet, number or symbol.
1, 4 and 7 keys	Execute the operation assigned to the function key in the RT mode.
2/NB key	Turn the noise blanker on/off in the RT mode.
3/SQ key	Turn the squelch on/off in the RT mode.
5/NR key	Reduce the noise in the RT mode (NR3 (High), NR2 (Middle), NR1 (Low), Off).
8/NF key	Turn the notch filter on/off in the RT mode.
0/TUNE key	Tune antenna in radiotelephone operation.
◄(key	• Turn down the handset volume. • Move the cursor when you set channel or RX frequency.
(») ► key	• Turn up the handset volume. • Move the cursor when you set channel or RX frequency.
ALARM lamp	• Flash in red for distress and urgency messages. • Flash in green for safety and routine messages, and when daily test is completed.
OVEN lamp	Light in green when the main switchboard is on.

1.2   How to Turn On/Off the Power

Rotate the **VOLUME/PWR** knob clockwise to turn on the power. The RT screen appears.

To turn off the power, rotate the **VOLUME/PWR** knob counterclockwise to the OFF position.

In the dual control unit system, the control unit connected to the CONTROLLER 1 port on the transceiver unit has priority and it controls the power for both the No.1 and No. 2 control units. The power switch of the No. 2 control unit powers on/off the No. 2 control unit only.

Note: Turn on power at switchboard more than five minutes before turning on this equipment.

1.3 Radiotelephone (RT) Screen

Turn the power on, or press the **RT/CH** key to show the RT (radiotelephone) screen. This is where you set up the transceiver unit, and communicate by voice or telex.
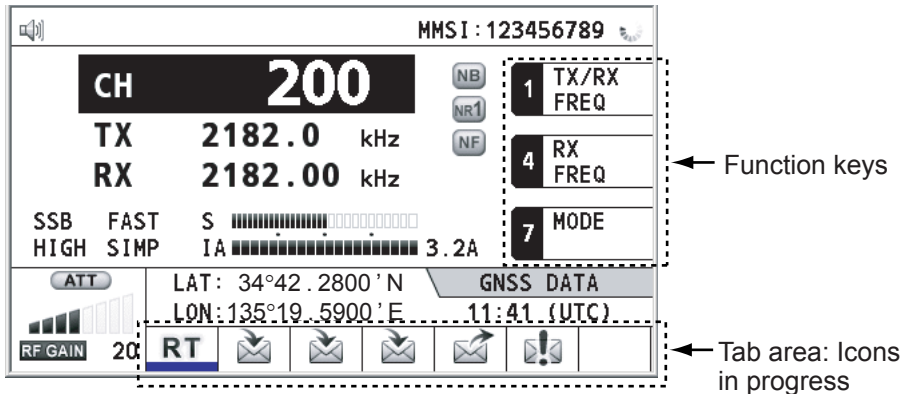
Radiotelephone (RT) screen

Indication	Meaning
⏴)))/ ⏴	Main speaker on/off
CH	Channel
TX	TX frequency (TX: while transmitting)
RX	RX frequency
SSB/TLX/AM/FAX	Class of Emission
OFF/SLOW/FAST (AGC)	Auto gain control (OFF: no adjustment, SLOW: low-speed, FAST: high-speed)
HIGH/MID/LOW(1)/ LOW2	Output power (LOW2: FS-5075 only, minimum output power)
SIMP/S-DUP/DUP	Communication mode (SIMP: simplex, S-DUP: semi-duplex, DUP: full-duplex (only for FS-5075, option))
IA/IC/VC/RF/VS	Transceiver unit status (IA: antenna current, IC: collector current, VC: collector voltage, RF: RF output, VS: source voltage)
S	S-meter, displays the strength of received signal.
NB	Noise blanker (NB:On, No indication: Off)
NR3/NR2/NR1/OFF	Noise reduction (NR3: High, NR2: Middle, NR1: Low, No indication: Off)
NF	Notch filter (NF: On, No indication: Off)
SQ	Squelch (SQ: On, No indication: Off)
MMSI	Own ship's ID (nine digits)
LAT, LON	Own ship's position (LAT: latitude, LON: longitude)
GNSS	UTC (universal time coordinated)
ATT	Attenuator (ATT: On, No indication: Off)
RF GAIN	Adjusted value of gain

1.4 DSC Scan Screen

Press the **SCAN** key to show the DSC scan screen. This screen scans and receives the distress and general frequencies.

WR2: The optional antenna for the routine frequency
RX: Transceiver unit

Maximum six distress and routine frequencies scanned.
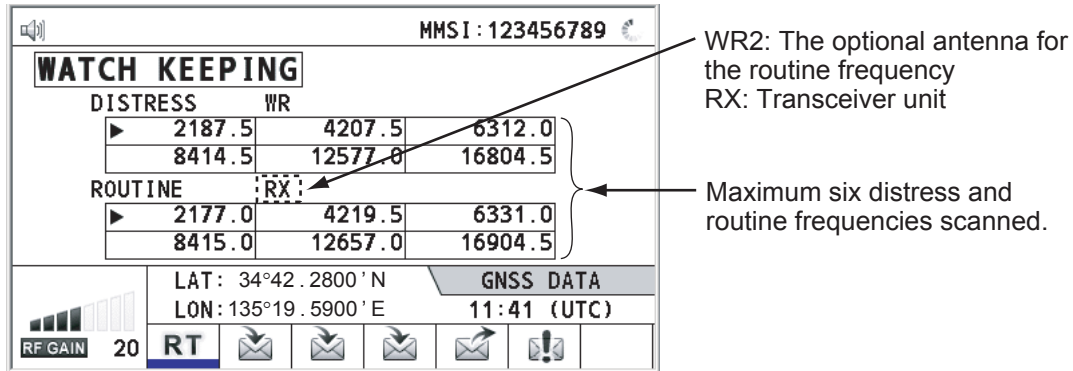
1.5 How to Adjust LCD and Key Panel Brilliance

You can adjust the LCD and the key panel brilliance as follows:

1. Press the **BRILL** key to show the BRILL LEVEL SETUP window.
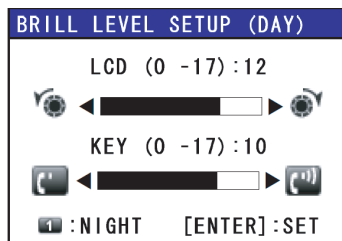
2. Press the **1** key to switch the DAY/NIGHT mode. The setting range depends on the selected mode.
3. To adjust the LCD brilliance, rotate the **ENTER** knob or press the **BRILL** key.
4. To adjust the KEY panel brilliance, press the ◄ or ► key.
5. Press the **ENTER** knob or **CANCEL** key to close the window.

Note: The window closes automatically when there is no operation for three seconds.

1.6 How to Turn On/Off the Main Speaker

You can turn the main speaker (other than DSC communication, error, and key beep) on/off.

1. Press the ⌽ key to alternately disable or enable the main speaker.

Speaker ON   Speaker OFF

2. When you set the speaker on, press the **VOLUME/PWR** knob to adjust volume of main speaker (cw: volume up, ccw: volume down).

1.7 How to Set the Scan Frequencies

The DSC screen scans multiple general frequencies according to operator-set interval. For how to set frequency to scan, see section 6.16.

Note that voice and telex communication are not available when scanning. (However, they are available when the system is equipped with the optional watch receiver.)

2. Press the **SCAN** key to show the DSC scan screen. Scanning starts. When receiving the appropriate frequency signal, the scanning stops, and the frequency is highlighted and flashes.

3. Press the **SCAN** key again to stop the cursor for the general frequencies.
   Note: You can not stop the scanning manually for the distress alert.

4. Rotate the **ENTER** knob to move the cursor to the desired general frequency which you want to watch. You can scan only the frequency selected by cursor.

5. Press the **SCAN** key to restart the scanning.

1.8 How to Set the Auto Acknowledgement

Individual, PSTN (public switched telephone network), position, polling and test calls can be acknowledged automatically or manually. This is set on the REPLY TYPE of ACK SETTING in DSC menu. For details, see chapter 5.

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

The auto acknowledgement is not sent in the following cases:

- The RT or DSC procedures are in progress.

- ECC is NG (No Good).

- Channel is in use.

1.9 Controller Priority

The priority order for controls is high on the controller1. When you operate the controller1 during the operation of the controller2, the right to operate is shifted to the controller1. The screen including the following content appears on the controller which does not have the right to operate.

- The unit name in current use: Controller 1, Controller 2 or NBDP
- The ongoing operation: Composing messages, Transmitting, Communicating

The control unit which you operate has priority on operation in the following conditions:

- The handset goes OFF HOOK.

- Display the menus or setting boxes.

- Display each function screen (for example, Log).

- Press a key or rotate a knob. (The priority is lost after four seconds.)

- NBDP is communicating.

1.10 Intercom

The built-in intercom permits voice communications between two control units.

Calling up

You can call up with both on hook and off hook.

1. Press the **MENU** key.
2. Rotate the **ENTER** knob to select INTERCOM and then press the **ENTER** knob. The called party's control unit rings.
3. Close the menu. The pop-up for calling up appears. To cancel calling up, press the **CANCEL** key.
4. When the called party picks up their handset, the pop-up for calling up disappears and the INTERCOM CONNECTED screen appears. Start communications.
   Note: You do not have to press the **PTT** switch during communications.
5. If needed, adjust the handset volume with or key.
6. Hang up the handset or press the **CANCEL** key to turn the intercom off. The last used screen or the RT screen appears.

Picking up

1. The control unit rings, and the pop-up for calling up and the message, which suggests you to pick up the handset, appear. To cancel reply, press the **CANCEL** key.
2. When you pick up the handset, the alarm stops. The pop-up for calling up disappears and the INTERCOM CONNECTED screen appears. Start communications.
3. Hang up the handset or press the **CANCEL** key to turn the intercom off. The last used screen or the RT screen appears.

2. SSB RADIOTELEPHONE

You can use the SSB communication in any screen which displays the communication frequency.

2.1   How to Select the Class of Emission

You can select the emission mode.

• SSB: Single Sideband

• TLX: Telex

• AM: AM (Only receiving)

• FAX: FAX (Only receiving. When you connect the FAX to this equipment, you can print out the receiving data.)

At the RT screen, select the class of emission as follows:

1. Rotate the **ENTER** knob to highlight the emission mode (default: SSB) and then press the **ENTER** knob. When you rotate the **ENTER** knob clockwise, the cursor moves from CH to downward.
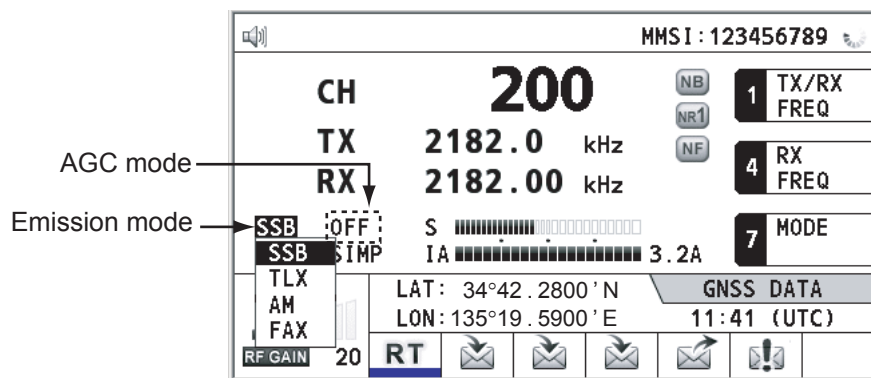
2. Rotate the **ENTER** knob to select the mode desired and then press the **ENTER** knob. AGC is automatically selected according to emission mode.

   • SSB: FAST   • TLX, FAX: OFF   • AM: SLOW

3. However, you can change it as below.

   1) Rotate the **ENTER** knob to select AGC mode and then press the **ENTER** knob.
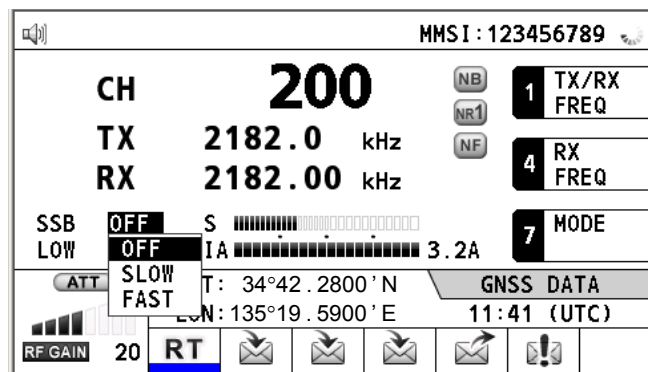
   2) Rotate the **ENTER** knob to select OFF, SLOW or FAST as appropriate and then press the **ENTER** knob.

2.2 How to Select the Channel, Frequency

Select the channel or transmitting/receiving frequency to use for the SSB.

Note: To set the SSB radiotelephone to 2182 kHz/J3E, press the **2182** key.

<u>Channel</u>

1. Rotate the **ENTER** knob to select CH on the RT screen and then press the **ENTER** knob. You can also show the channel setting window by pressing **RT/CH** key.
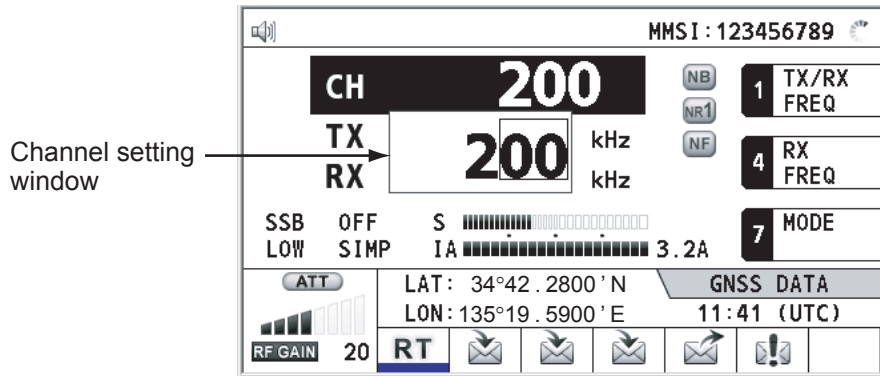
2. Channel can be entered directly with the numeric keys, or by using the **ENTER** knob. See below for details.

   Entering channel with the numeric keys:
   Use the numeric keys to enter channel and then press the **ENTER** knob.

   Selecting band and band channel with the ENTER knob:
   1) Use ◄C or C► key to place the cursor in the band or band channel position, whichever you want to change.

Cursor position for selection of band

Cursor position for selection of band channel
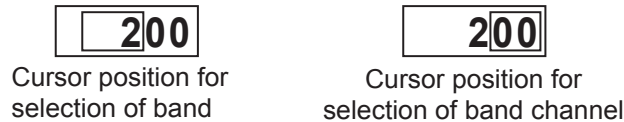
   2) Rotate the **ENTER** knob to set band or band channel desired.

2↔4↔6↔8↔12↔16↔18↔22↔25↔01↔02-----↔029
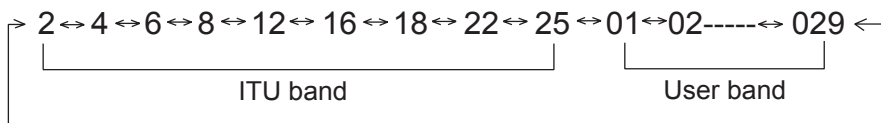
ITU band

User band

Setting Range
ITU Band (SSB, TLX): 2/4/6/8/12/16/18/22/25
ITU Band (CW): 4/6/8/12/16/18/22/25
User Band: 01-029 (First zero is necessary)
ITU Channel (SSB): 00 - XX
ITU Channel (TLX): 000 - XXX
ITU Channel (CW): 001 - XXX
User Channel: 01 - 99

   3) Press the **ENTER** knob to close the window.

Frequency

1. Rotate the **ENTER** knob to select TX or RX as appropriate and then press the **ENTER** knob.

2182.0	2182.00
TX	RX

2. Enter frequency by one of the methods below.

Entering frequency with the numeric keys:
Use the numeric keys to enter frequency and then press the **ENTER** knob. For example, to enter 2161 kHz, key in **2**, **1**, **6**, **1**, **0**. (Keying in 2-1-6-1 will set 216.1 kHz.) Be sure to include zero for 100 Hz place.

Selecting frequency with the ENTER knob (for RX only):
1) Use [◄'] or ['»►] key to change the position which the cursor covers.

2) Rotate the **ENTER** knob to set frequency desired.

3) Press the **ENTER** knob to close the window.

Note: When TX and RX frequencies are different, enter TX and RX in that order:
TX: TX/RX frequencies
RX: RX frequency only

2.3   Transmitting

After selecting class of emission and frequency, you can transmit by pressing the **PTT** switch on the handset. TX is shown on the screen during transmitting.

2.3.1   Transmitting procedure

Maximum transmission power is achieved only when the antenna impedance and transmitter impedance match each other. Because the antenna impedance changes with frequency, antenna impedance matching with the transmitter impedance is done with the antenna coupler. The antenna coupler automatically tunes the transmitter to a wide range of different antenna lengths. The available range is;
- Wire antenna 10 to 18 meters long (horizontal part)
- Whip antenna 8 meters long (Horizontal feeder is 2 meters or longer.)
- Whip antenna 10 meters long

To initiate the tuning, do the following:

1. Press the **PTT** switch on the handset. Tuning is automatically adjusted at first transmission after frequency is changed. For manual tuning, press the **0/TUNE** key on the RT screen. If tuning fails, the message "TUNE NG" appears and the output power is automatically set to LOW (for FS-2575) or LOW2 (for FS-5075).
2. Hold the handset close to your mouth, press the **PTT** switch and speak clearly.

Note: When tuning is initiated in the two control units system, the screen of the idle control unit shows "OCCUPIED (CONTROLLER 1 (or 2))." In this case, only the **DISTRESS** key is operative on the idle control unit.

2.3.2   Reducing transmitter power

To minimize possible interference to other stations, reduce the transmission power. This should be done when using the transceiver in a harbor, near the shore or close to communication partner (other ship).

1. Rotate the **ENTER** knob to select HIGH, MID, LOW(1) or LOW2 (whichever is displayed) in the equipment states area, and then press the **ENTER** knob.
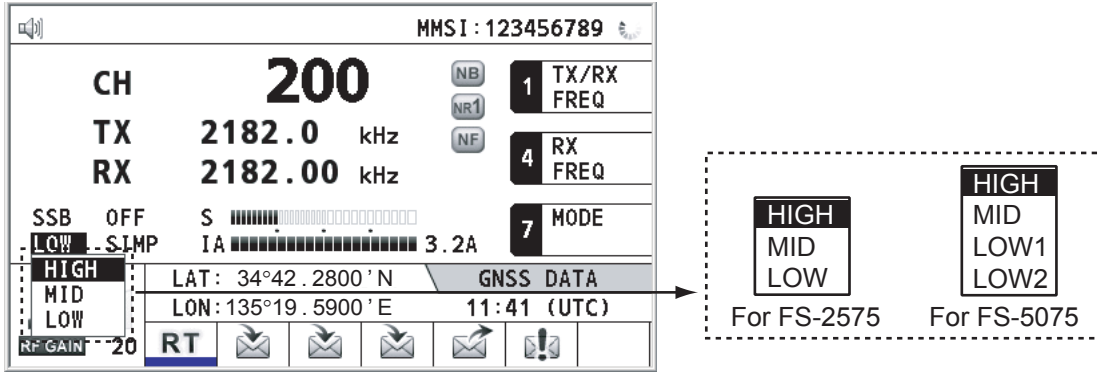
2. Rotate the **ENTER** knob to select option desired and then press the **ENTER** knob.

	FS-2575	FS-5075
HIGH	No reducing	
MID	125Wpep	350Wpep
LOW(1)	90Wpep	200Wpep (for LOW1)
LOW2	-	110Wpep

Note: Power amplifier temperature is monitored, and when its temperature rises above a certain temperature, output power is automatically reduced. For FS-5075, when the over current is detected, output power is automatically reduced.

2.3.3   Condition of the transmitting unit

While transmitting, you can display IA (antenna current), IC (collector current), VC (collector voltage), RF (RF output) or VS (source voltage), at the lower left-hand side of the RT screen.

1. Rotate the **ENTER** knob to select IA, IC, VC, RF or VS (whichever is displayed) in the equipment states area, and then press the **ENTER** knob.

2. Rotate the **ENTER** knob to select option desired and then press the **ENTER** knob.

Checking the transmitting power

During transmission, the IA bar deflects according to the current being fed to the antenna feeder from the antenna coupler. The unit of readout is amperes. The antenna current varies with the effective antenna impedance. The reading differs by the frequency and antenna length. The output power is proportional to the square of an antenna current.
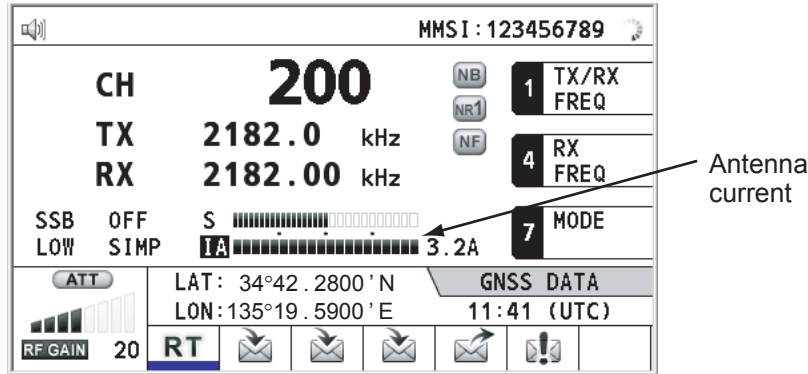
2.4 Receiving

Check if the emission mode and receiving frequency are set properly. If necessary, set them again referring to section 2.1 and 2.2.

2.4.1 RF gain (sensitivity) adjustment

In normal use the sensitivity should be set for maximum. If the audio on the received channel is unclear or interfered with other signals, adjust (usually reduce) sensitivity to improve clarity.

Rotate the **RF GAIN** knob to adjust gain (sensitivity). The setting value is displayed at the lower left-hand side of the screen in icon and number.

2.4.2 S-meter

The S-meter shows relative signal strength coming into the receiver front end.
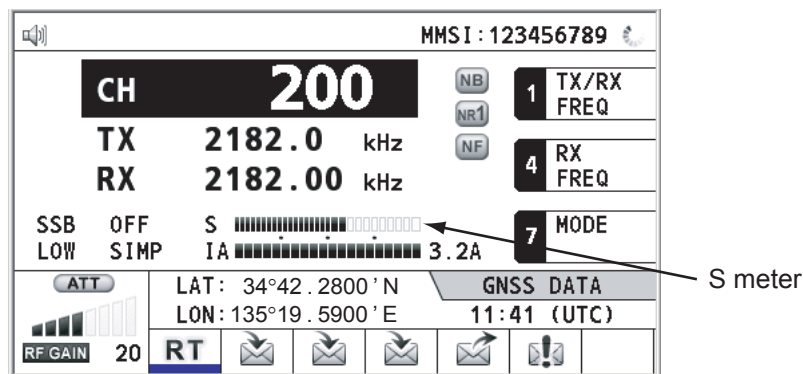
2.4.3 Receiving AM broadcasting stations

1. When the RT screen is not displayed, press the **RT** key to display the RT screen.
2. Rotate the **ENTER** knob to select emission mode and then press the **ENTER** knob.
3. Rotate the **ENTER** knob to select AM and then press the **ENTER** knob (see section 2.1).
4. Rotate the **ENTER** knob to select RX and then press the **ENTER** knob.
5. Enter RX frequency with the numeric keys and then press the **ENTER** knob (see "Frequency" in section 2.2).

2.4.4 Noise blanker

The noise blanker removes pulse noise. Press the **2/NB** key on the RT screen to turn on and off the noise blanker alternately. When the noise blanker function is active, NB is displayed on the RT screen.

2.4.5 Noise reduction

The noise reduction analyzes speech component and noise component, and reduces only noise component. Press the **5/NR** key on the RT screen. Each time you press the **5/NR** key, the effect of noise reduction changes in the sequence of (NR3 (High)→NR2 (Middle)→ NR1(Low)→OFF). When the noise reduction function is active, NR3 (or NR2, NR1) is displayed on the RT screen.

2.4.6 Notch filter

The notch filter removes mixed CW or beat interference. Press the **8/NF** key on the RT screen to turn on and off the notch filter alternately. When the notch filter function is active, NF is displayed on the RT screen.

2.4.7 Squelch function

Squelch on/off

The squelch mutes the audio output in the absence of an incoming signal. Press the **3/SQ** key on the RT screen to turn on and off the squelch alternately. When radio noise is too jarring during stand-by condition, it can be muted by activating the squelch. When the squelch function is active, SQ is displayed on the RT screen.

Squelch frequency

To adjust the squelch frequency, see section 6.3.

2.4.8 Attenuator

The attenuator reduces total gain and prevent saturation. Press the **RF GAIN/ PUSH TO ATT** knob on the RT screen to turn on and off the attenuator alternately. When the attenuator function is active, ATT is displayed on the RT screen.

2.5   User Channels

The USER CH menu provides for registration of user TX and RX channels, where permitted by the Authorities. For further details, contact your dealer. See section 6.2 to register.

NOTICE
FURUNO will assume no responsibility for the disturbance caused by the unlawful or improper setting of user channels.

This page is intentionally left blank.

3. DSC OVERVIEW

3.1 What is DSC?

DSC is an acronym meaning Digital Selective Calling. It is a digital distress and general calling system in the MF and HF bands used by ships for transmitting distress alerts and general calls and by coast stations for transmitting the associated acknowledgements.
For DSC distress and safety calling in the MF and HF bands, the frequencies are 2187.5, 4207.5, 6312.0, 8414.5, 12577.0, and 16804.5 kHz.

The DSC station sends and receives DSC general and distress calls via the radiotelephone.
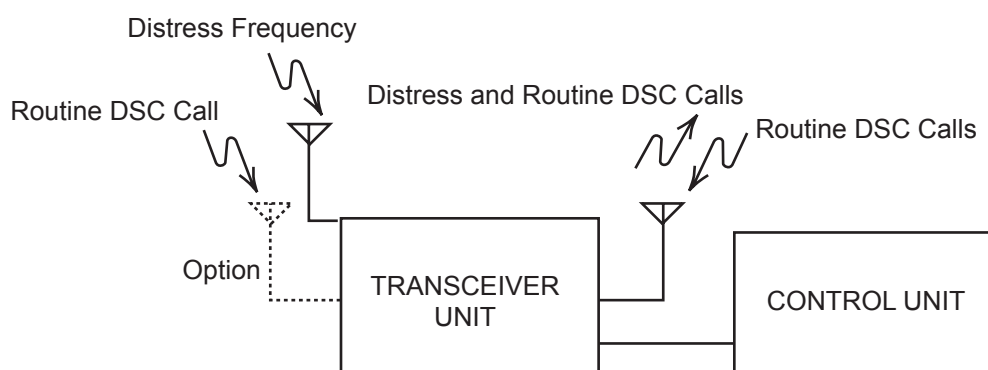
3.2 DSC Message

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

Call	Description
DISTRESS ALERT	Your ship sends distress message
DISTRESS RELAY AREA	Your ship relays distress call to all ships in a specific geographical area
DISTRESS RELAY INDIVIDUAL	Your ship relays distress call to a coast station
MEDICAL MSG	Inform areas that your ship is carrying medical supplies*
NEUTRAL MSG	Inform areas that your ship is not a participant in armed conflict*
INDIVIDUAL MSG	Call to a specific address
PSTN MSG	Call over Public Switched Telephone Network (PSTN)
TEST MSG	Send test signal to a station to test your station's functionality
GROUP MSG	Call to a specific group
AREA MSG	Call to all ships in a specific geographical area
POSITION MSG	Your ship requests position of other ships
POLLING MSG	Confirm if your ship is within communicating range with other ships. (Receive and answer only)

*SPECIAL MSG: When sending these messages, set the acknowledgement. See section 6.16.

3. DSC OVERVIEW

Contents of a DSC call

- **Calling category**

Call category	Call
DISTRESS	DISTRESS ALERT, DISTRESS RELAY AREA, DISTRESS RELAY INDIVIDUAL
GENERAL	MEDICAL MSG, NEUTRAL MSG, INDIVIDUAL MSG, PSTN MSG, TEST MSG, GROUP MSG, AREA MSG, POSITION MSG, POLLING MSG

- **Station ID (MMSI)**

  Your ship ID and sending station ID. Coast station ID begins with 00; Group ID begins with 0.

- **Priority**

  Distress: Grave and imminent danger and request immediate assistance.

  Urgency: A calling station has a very urgent call to transmit concerning safety of ship, aircraft or other vehicle or safety of person.

  Safety: A station is about to transmit a call containing an important navigational or meteorological warning.

  Routine: General calling

- **Communication mode**

  TELEPHONE: Telephone (J3E) by SSB radiotelephone

  NBDP-ARQ: Telex (J2B) mode ARQ via NBDP Terminal Unit

  NBDP-FEC: Telex (J2B) mode FEC via NBDP Terminal Unit

  DATA: Data communication by SSB (Routine individual only)

- **Communication frequency**

  Working frequency used to call by telephone, NBDP or DATA. The sending station may have the receiving frequency (ship or coast station) assign the frequency to use.

- **Position**

  Position can be automatically or manually sent.

- **DSC frequency**

  DSC frequency to use. If the call priority is SAFETY, URGENCY and DISTRESS, select a DSC distress frequency.

- **End code**

  The end of a DSC call is denoted by RQ (Acknowledgement required), BQ (Acknowledgement) or EOS (no acknowledgement required).

3.3 Audio Alarms

When you receive a distress alert or general call addressed to your ship, the audio and visual alarms are released. The audio alarm sounds until the **CANCEL** key is pressed.

Alarm	Frequency (interval)
Safety call received	750 Hz and 650 Hz (50 ms)
Routine call received	750 Hz and 650 Hz (50 ms)
While DISTRESS button is pressed for four s	2000 Hz and 0 Hz (500 ms)
Distress alert sent	2200 Hz, continuous (2 seconds)
Own ship position not updated	2000 Hz (250 ms) and 0 Hz (500 ms)
Distress alert call received	2200 Hz and 1300 Hz (250 ms)
Distress relay call received	2200 Hz and 1300 Hz (250 ms)
Distress relay ack call received	2200 Hz and 1300 Hz (250 ms)
Distress ack call received	2200 Hz (500 ms) and 1300 Hz (500 ms)
Urgency call received	2200 Hz and 0 Hz (250 ms)
Urgency ack call received	2200 Hz and 0 Hz (500 ms)

3.4 Interpreting Call Screens

This section provides the information necessary for interpreting receive and send call screens.

3.4.1 Receive calls

Below are sample distress alert and general receive call. The content of other types of receive calls is similar to that of the general call.

Distress alert

Individual receive call

Icon → 🔊 | [SSB] TX 8291.0 /RX 8291.00kHz ↻ ← Working frequency to use

[SELECT AN ACK]   ELAPSED TIME: ← Elapsed time
Call type → INDIVIDUAL MSG   00H03M22S

ID No. (MMSI) of → FROM :11111111
ship sending this   PRIORITY :ROUTINE ← Priority (Routine, Safety, Urgency)
message   COMM MODE :TELEPHONE ← Communication mode
Communication → COMM FREQ :2182.0 kHz
frequency

ACCEPT UNABLE PROPOSE INFO ← Available user options
PRINT HOLD QUIT

RF GAIN 25 ✉ ← Icon in progress

RF gain

3.4.2 Send calls

Below are sample distress alert and individual send call. The content of other types of send calls is similar to that of the individual call.

Distress alert

🔊 [SSB] TX 8291.0 /RX 8291.00kHz ↻

COMPOSE MESSAGE

MSG TYPE :DISTRESS ALERT
NATURE :UNDESIGNATED ← Nature of Distress
LAT : 09° 12.1234'N
LON/UTC :123° 45.1234'E /12:34 ← Position of ship in distress (your ship) and time of distress
COMM MODE :TELEPHONE ← Communication mode
DSC FREQ :MULTI 2,4,6,8,12,16MHz ← DSC frequency to send distress call

PRESS DISTRESS BUTTON
TO SEND DISTRESS ALERT.

Individual send call

🔊 [SSB] TX 2182.0/RX 2182.00 kHz

COMPOSE MESSAGE

MSG TYPE : INDIVIDUAL MSG ← Message type (Individual)
ID No. of station → TO : 123456789
where message   PRIORITY : ROUTINE ← Priority (Routine, Safety, Urgency)
is to be sent
COMM MODE : TELEPHONE ← Communication mode (Telephone, NBDP-ARQ, NBDP-FEC, Data)
Communication → COMM FREQ : 2182.0kHz
frequency   DSC FREQ : 2177.0kHz ← DSC frequency

GO TO CALL

4. DISTRESS OPERATIONS

Distress operation overview

1. Press the **DISTRESS** key.
2. Wait for the distress alert acknowledgement.
3. Communicate with the coast station.
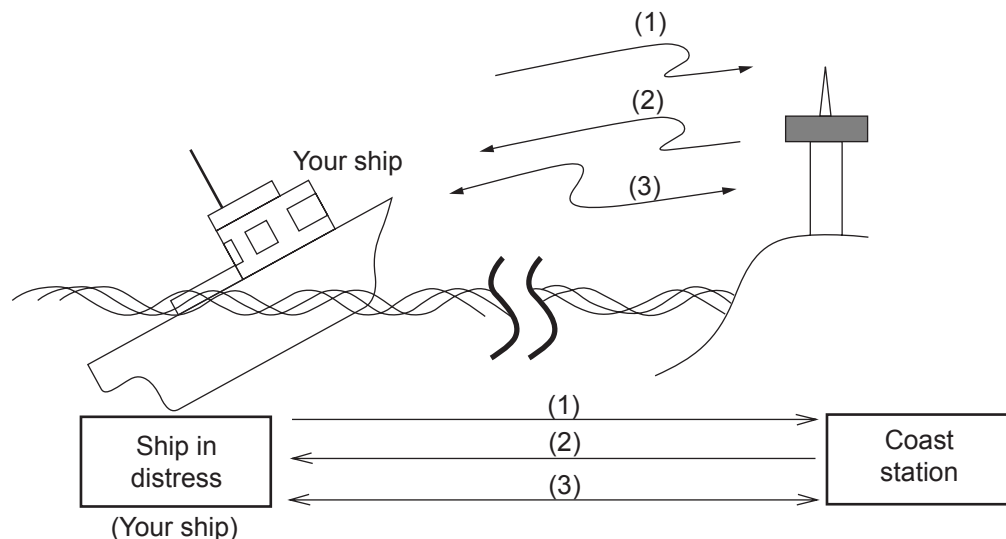
(1) Ship in distress sends Distress Alert.
(2) Coast station sends distress acknowledgement (DIST ACK).
(3) Voice or telex communications between ship in distress and coast station.

For details, see below.

4.1   Sending Distress Alert

GMDSS ships carry a DSC terminal with which to transmit the distress alert in the event of a life-endangering situation. A coast station receives the distress alert and sends the distress alert acknowledge call to the ship in distress. Then, voice or telex communications between the ship in distress and coast station begins. Transmission of the distress alert and receiving of the distress alert acknowledgement are completely automatic – simply press the **DISTRESS** key to initiate the sequence.

There are three types of sending distress alert; MULTI, SINGLE, AUTO. MULTI is used normally. When changing to other method, see step 11 on paragraph 4.1.2.

4.1.1 Sending distress alert by DISTRESS key with distress information not edited

1. Open the DISTRESS key cover and then press the **DISTRESS** key for four seconds. The audio alarm sounds during pressing the key, and the key flashes in red. The countdown message appears on the screen during pressing the **DISTRESS** key (3S → 2S → 1S → 0S).
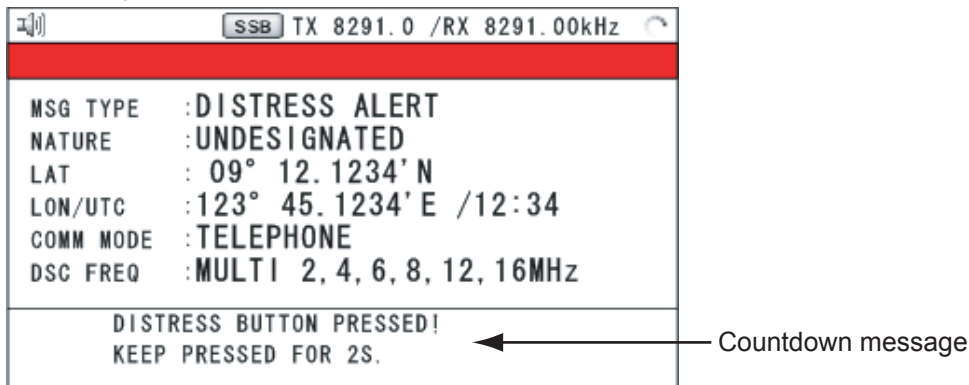
```
                    SSB  TX 8291.0 /RX 8291.00kHz

  MSG TYPE  :DISTRESS ALERT
  NATURE    :UNDESIGNATED
  LAT       : 09° 12.1234'N
  LON/UTC   :123° 45.1234'E /12:34
  COMM MODE :TELEPHONE
  DSC FREQ  :MULTI 2,4,6,8,12,16MHz

       DISTRESS BUTTON PRESSED!          ◄——— Countdown message
       KEEP PRESSED FOR 2S.
```

When the countdown shows 0S, the distress alert is sent. The audio alarm sounds for two seconds and the message "Sending DISTRESS ALERT." appears. The screen shows the contents of the distress alert call. The **DISTRESS** key lights in red and only the icon for DISTRESS transmitting ((((!)))) is displayed on the tab area.

After the distress alert has been sent, the screen changes as below. Wait to receive the distress acknowledge call from a coast station. When waiting the distress acknowledge, the elapsed time is displayed. At this time, the icons for other DSC received messages except the distress alert acknowledge call are not displayed. You can only confirm them in the log.

```
                    SSB  TX 8291.0 /RX 8291.00kHz

  [WAIT FOR ACK]            ELAPSED TIME:
   DISTRESS ALERT              00H00M02S       ◄——— Elapsed time

   NATURE   :UNDESIGNATED   RESEND: 0M02S
   COMM     :TELEPHONE
   DSC      :MULTI 2,4,6,8,12,16MHz


        PAUSE  CANCEL   CHANGE   INFO          ◄——— User options
        PRINT
  RF GAIN 25  (((!)))      OWN DISTRESS
```

Screen for waiting for DISTRESS ACK

Note: If you do not receive the distress alert acknowledge call, the equipment automatically re-transmits the distress alert and then awaits the distress alert acknowledge call. This is repeated until the distress alert is acknowledged.

You can temporarily stop the countdown for next retransmission with selecting PAUSE in the user options. PAUSE indication changes to START and PAUSE is displayed instead of the countdown indication. When you select START, the countdown restarts and START indication in the user options changes to PAUSE.

Also, you can re-send the distress alert manually with pressing the **DISTRESS** key for four seconds on the screen for waiting for DISTRESS ACK.

When the distress acknowledge call is received, the audio alarm sounds, the LED flashes in red, the icon for DISTRESS transmitting ((((•)))) flashes. The screen changes as below.

```
[ACKNOWLEDGED]                    ELAPSED TIME:
 DISTRESS ALERT                     00H01M02S

 FROM       :001231234
 COMM       :TELEPHONE / 8291.0 kHz

              DISTRESS ACK received!
              [CANCEL]: Stop alarm
```
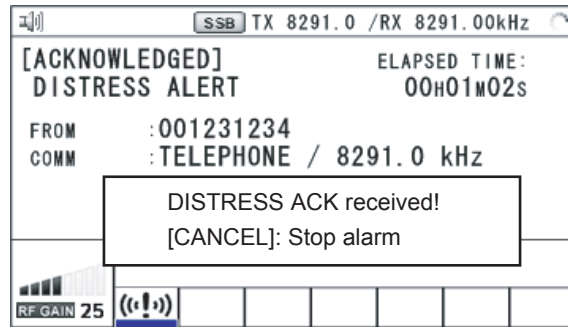
2. Press the **CANCEL** key to silence the audio alarm. The LED and the icon stop to flash, and the pop-up message disappears.

```
[ACKNOWLEDGED]                    ELAPSED TIME:
 DISTRESS ALERT                     00H01M02S      ◄── Count up the elapsed time after
                                                        receiving distress acknowledge call.
 FROM       :001231234
 COMM       :TELEPHONE / 8291.0 kHz


              CHANGE   INFO   HISTORY   PRINT

 RF GAIN 25  (((•)))  ◄────────────────────────────── Icon for DISTRESS transmitting
```
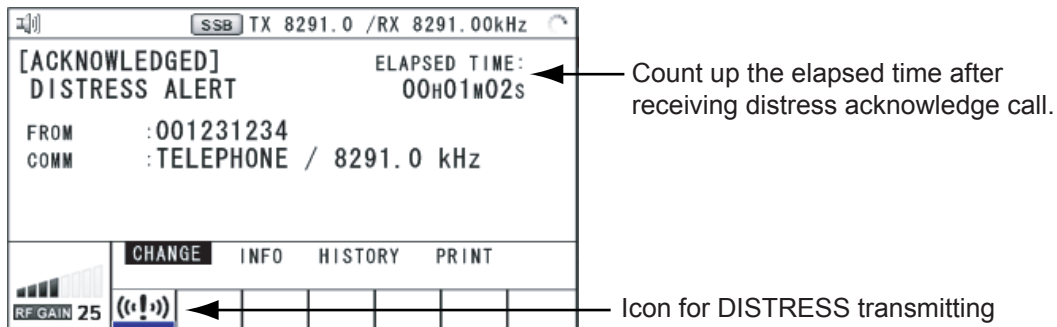
3. Communicate with the coast station via radiotelephone, following the instructions below. When sending the distress alert with MULTI mode, the radiotelephone automatically sets working frequency on which the distress acknowledge call is received first.

   a) Say MAYDAY three times.
   b) Say "This is … " name of your ship and call sign three times.
   c) Give nature of distress and assistance needed.
   d) Give description of your ship (type, color, number of persons onboard, etc.).

4.1.2   Sending distress alert by DISTRESS key with distress information edited

If you have the time to designate the distress information, send the distress alert as follows:

1. Press the **DISTRESS MSG** key to display the following screen.
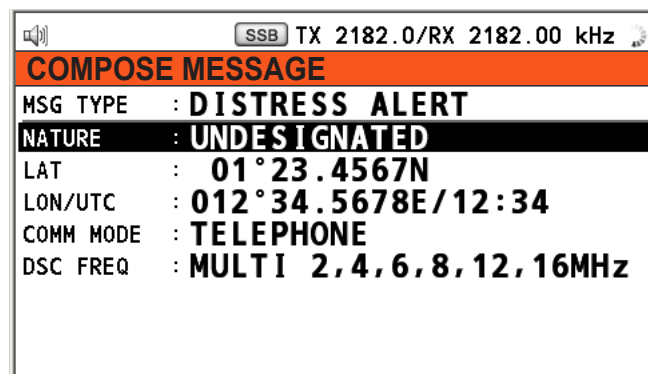
```
                    SSB TX 2182.0/RX 2182.00 kHz
 COMPOSE MESSAGE
 MSG TYPE   :DISTRESS  ALERT
 NATURE     :UNDESIGNATED
 LAT        : 01°23.4567N
 LON/UTC    :012°34.5678E/12:34
 COMM MODE  :TELEPHONE
 DSC FREQ   :MULTI 2,4,6,8,12,16MHz
```

2. Rotate the **ENTER** knob to select NATURE and then press the **ENTER** knob.

3. Rotate the **ENTER** knob to select nature of distress among the following 11 options and then press the **ENTER** knob.

• UNDESIGNATED	• FIRE	• FLOODING
• COLLISION	• GROUNDING	• LISTING
• SINKING	• DISABLED&ADRIFT	• ABANDONING
• PIRACY	• MAN OVER BOARD	

4. When you enter your position manually, rotate the **ENTER** knob to select LAT (or LON) and then press the **ENTER** knob. Your position is automatically shown when getting the position information from GNSS.
5. For manual entering, use the numeric keys to enter latitude (or longitude). (If necessary, switch coordinates: **1** key to switch to North (East for longitude); **2** key to switch to South (West for longitude).) Press the **ENTER** knob.
6. Rotate the **ENTER** knob to select COMM MODE and then press the **ENTER** knob.
7. Rotate the **ENTER** knob to select TELEPHONE or NBDP-FEC and then press the **ENTER** knob.
8. Rotate the **ENTER** knob to select DSC FREQ and then press the **ENTER** knob.
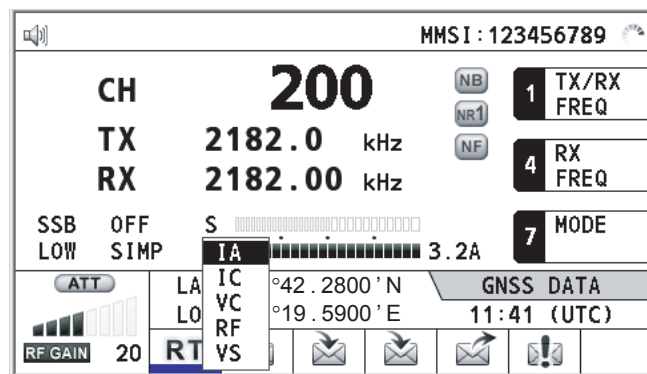9. Rotate the **ENTER** knob to select DSC frequency desired and then press the **ENTER** knob.

   MULTI: Transmit the distress alert on three to six frequencies, which you can select among 2 MHz, 4 MHz, 6 MHz, 8 MHz, 12 MHz and 16 MHz, in a transmission. Please note that 2 MHz and 8 MHz should be selected at any time.
   SINGLE: You can transmit on the distress frequencies of your choice. Select one frequency among 2 MHz, 4 MHz, 6 MHz, 8 MHz, 12 MHz and 16 MHz.
   AUTO: Transmit the distress alert on 2 MHz at first time (40 to 60 seconds). If the distress alert is not acknowledged, the following sequence occurs:
   2nd: 8 MHz, 3rd: 16 MHz, 4th: 4 MHz, 5th: 12 MHz and 6th: 6 MHz

10. Press the **DISTRESS** key for four seconds to send the distress alert. The audio alarm sounds during pressing the key, and the key flashes in red. The countdown appears on the screen during pressing the **DISTRESS** key (3S → 2S → 1S → 0S). When the countdown shows 0S, the distress alert is sent. The audio alarm sounds for two seconds.
11. When the distress acknowledge call is received, use the telephone or telex to communicate. For NBDP, follow the procedure in "Communicating by NBDP terminal unit" on next page. For telephone, follow step 3 on section 4.1.1. When you select MULTI on step 9, you can communicate via telephone with communication frequency on which the distress acknowledge call is received. Do the following procedures to switch the communication frequency;

    1) Rotate the **ENTER** knob to select CHANGE and then press the **ENTER** knob.
    2) Rotate the **ENTER** knob to select the appropriate frequency and then press the **ENTER** knob.

Communicating by NBDP Terminal Unit

The message "STATION ENTRY COMPLETED FROM DSC. Press any key to escape." appears on the NBDP's screen.

1. Press any key on the NBDP terminal unit to erase the message.
2. Press the function key **F3** on the keyboard of the NBDP terminal unit to open the Operate menu.
3. Select Call Station and then press the **ENTER** knob.

```
                       ─── Call Station ───
   ── Station List ──          ── Station Set up ──
   DSC                      Station  : DSC
   ABC-6M                   ID Code  :
   ABC-12M                  Mode     : ARQ FEC
   ABC-8M                   Tx Freq  : 2174.50
   FURUNO                   Rx Freq  : 2174.50
```

4. DSC is selected; press the **Enter** key to connect the communications line. Connect appears in reverse video.
5. Type and transmit your message, giving the following information:
   • Ship's name and call sign
   • Nature of distress and assistance needed
   • Description of your ship
6. Press the function key **F10** (BREAK) to disconnect the line.

For NBDP details, see chapters 7 through 10.

4.2   Receiving a Distress Alert

When you receive a distress alert from a ship in distress, the audio alarm sounds and the LED flashes in red. The icon for DISTRESS receiving (🔔) on the tab area flashes and the pop-up message "DISTRESS ALERT message received! [CANCEL]: Stop alarm" appears on the screen. Press the **CANCEL** key to silence the audio alarm and stop the flashing of the LED and the icon. Press the **TAB** key to select the icon for DISTRESS receiving and then press the **ENTER** knob. Rotate the **ENTER** knob to select ACTIVE (see the following "Switching the procedures") and then press the **ENTER** knob. The screen for receiving the distress alert appears. Wait for the distress acknowledge call from a coast station. If you do not receive the distress acknowledge call from a coast station, which usually takes about five minutes from the time of receiving a distress alert, follow the appropriate flow chart in this section to determine your course of action.

Note: An asterisk (*) appearing in a distress alert message indicates error at asterisk location.

Switching the procedures

When one procedure is active and another message arrives, a new procedure for the received message does not start automatically. Only one procedure always can be active. For example, when you are transmitting a DSC message and another message arrives, the

option ACTIVE appears to start the new procedure.

The steps throughout this manual are for the ACTIVE option.

4.2.1   Distress alert received on MF band

Do the following:

- Continue watching on 2182 kHz. Wait for coast station to acknowledge the distress call. Watch until "SEELONCE FINI" is announced.

- If multiple DSC distress alerts are received from the same ship in distress and it is near your ship, communicate with RCC or Coast Station and send distress acknowledge call to the ship in distress under the direction of RCC or Coast Station.

- Watch on the distress frequency.

Action for ship receiving distress alert on MF band

CS = Coast Station
RCC = Rescue Co-ordination Center
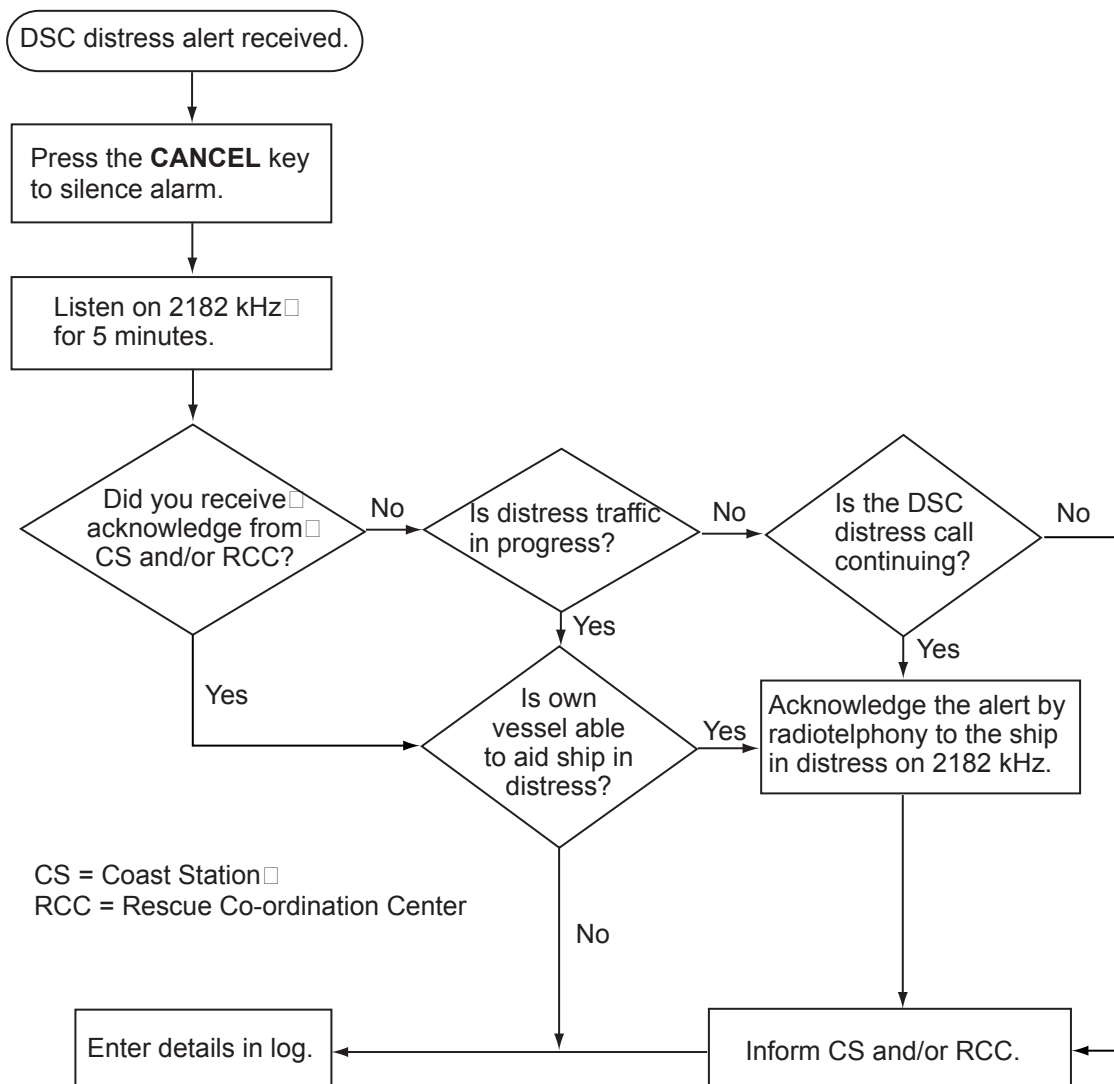
Sending the distress acknowledge call to ship in distress (on MF band)

Note: You cannot send the distress acknowledge call for five minutes because of receiving the distress acknowledgement from the coast station.

Transmit the distress acknowledge call to the ship in distress only when you do not receive it from a coast station and you are able to aid the ship in distress. First, contact the ship in distress over radiotelephone. To terminate transmission of the distress alert, send acknowledge call as follows.

When you receive a distress alert from a ship in distress, the audio alarm sounds and the LED flashes in red. The icon for DISTRESS receiving on the tab area flashes and the pop-up message "DISTRESS ALERT message received! [CANCEL]: Stop alarm" appears on the screen.

1. Press the **CANCEL** key to silence the audio alarm and stop the flashing of the LED and the icon.
2. Press the **TAB** key to select the icon for DISTRESS receiving ( ) and then press the **ENTER** knob.

DISTRESS receiving icon

3. Rotate the **ENTER** knob to select ACTIVE and then press the **ENTER** knob. The screen for receiving the distress alert appears.
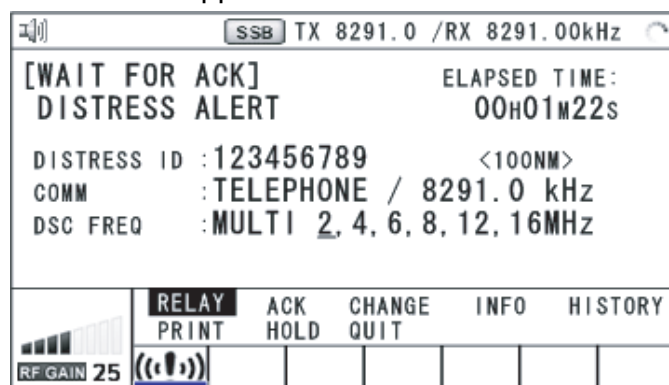
4. If you do not receive the distress acknowledge call from a coast station and you have received the distress alert more than twice, contact the ship in distress over radiotelephone.
5. Rotate the **ENTER** knob to select ACK and then press the **ENTER** knob. The message "DISTRESS ACK to send? CONTINUE/RETURN" appears.
6. Rotate the **ENTER** knob to select CONTINUE and then press the **ENTER** knob to transmit the distress acknowledge call to the ship in distress.

   Note: You can not edit the message for the distress acknowledge call.

4-7

4.2.2   Distress alert received on HF band

If you receive a distress alert on the HF band, the audio alarm sounds and the LED flashes in red. The icon for DISTRESS receiving ( ) on the tab area flashes and the pop-up message "DISTRESS ALERT message received! [CANCEL]: Stop alarm" appears on the screen. Press the **CANCEL** key to silence the audio alarm and stop the flashing of the LED and the icon. Press the **TAB** key to select the icon for DISTRESS receiving. Rotate the **ENTER** knob to select ACTIVE and then press the **ENTER** knob. The screen for receiving the distress alert appears. Wait for the distress acknowledge call from a coast station. If you do not receive the distress acknowledge call from a coast station, which usually takes about five minutes from the time of receiving a distress alert, follow the appropriate flow chart in this section to determine your course of action.

- Watch on the distress frequency.

- Relay the distress alert in the following cases:
  - You have not received a distress acknowledge call from a coast station within five minutes after receiving a distress call.
  - You have not received a distress relay from other ship.
  - You cannot receive distress communications from other ship over radiotelephone.
  - If it is clear the ship or persons in distress are not near your ship and/or other crafts are better placed to assist, superfluous communications which could interfere with search and rescue activities should be avoided. Details should be recorded in the appropriate log book.
  - The ship relaying the distress alert should establish communications with the station controlling the distress as directed and render such assistance as required and appropriate.

- When the received distress frequency is different from the current communication frequency do the following:

  1. Rotate the **ENTER** knob to select CHANGE and then press the **ENTER** knob.
  2. Rotate the **ENTER** knob to select the frequency same as the received distress one and then press the **ENTER** knob.

Action for ships receiving distress alert on HF band

```
      ( DSC Distress alert received. )
                   |
                   v
      +---------------------------+
      |    Press the CANCEL       |
      |   key to silence alarm.   |
      +---------------------------+
                   |
                   v
      +---------------------------+
      | Listen to associated RTF or|
      | NBDP channel(s) for 5 minutes.|
      +---------------------------+
                   |
                   v
             Is the alert
          acknowledged or        No
          relayed by CS and  ------->  Is distress
            or RCC?                     communication in    No
                   |                    progress on       ------->  Transmit distress
                 Yes                    associated RTF              relay on HF to CS
                   |                    channels?                   and inform RCC.
                   |                         |
                   |                        Yes
                   |                         |
                   |                         v
                   |                  Is own vessel      Yes
                   +------------->    able to          ------->  Contact RCC via most
                                      assist?                    efficient medium to
                                          |                      offer assistance.
                                         No
                                          |
                                          v
      +---------------------+
      |  Enter details in log.| <---------+
      +---------------------+
```

HF DSC, RTF AND NBDP CHANNELS (kHz)		
DSC	RTF*	NBDP
4207.5	4125	4177.5
6312.0	6215	6268
8414.5	8291	8376.5
12577.0	12290	12520
16804.5	16420	16695

* = Radiotelephone

CS = Coast Station
RCC = Rescue Co-ordination Center

Sending the distress relay to coast station (on HF band)

When you receive a distress alert from a ship in distress, the audio alarm sounds and the LED flashes in red. The icon for DISTRESS receiving ( ) on the tab area flashes and the pop-up message appears on the screen.

1. Press the **CANCEL** key to silence the audio alarm and stop the flashing of the LED and the icon.
2. Press the **TAB** key to select the icon for DISTRESS receiving ( ) and then press the **ENTER** knob.
3. Rotate the **ENTER** knob to select ACTIVE and then press the **ENTER** knob. The screen for receiving the distress alert appears.
4. Rotate the **ENTER** knob to select RELAY and then press the **ENTER** knob.
5. Rotate the **ENTER** knob to select RELAY INDIVIDUAL and then press the **ENTER** knob.
6. Rotate the **ENTER** knob to select TO and then press the **ENTER** knob.
7. Enter the ID of the coast station, where to send the distress relay, with the numeric keys and then press the **ENTER** knob.

4-9

8. Rotate the **ENTER** knob to select DSC FREQ and then press the **ENTER** knob.
9. Rotate the **ENTER** knob to select appropriate frequency and then press the **ENTER** knob. You should first select 8414.5 kHz.
10. Rotate the **ENTER** knob to select GO TO CALL and then press the **ENTER** knob. The screen changes to one for transmitting. After transmitting, the screen for waiting DISTRESS RELAY INDIVIDUAL ACK appears.

   Note: If a coast station acknowledges the call before the timer counts down to zero, press the **CANCEL** key to cancel the distress relay call.

When you receive the distress acknowledgement from the coast station, the audio alarm sounds and the icon flashes in red. The pop-up message appears. Press the **CANCEL** key to silence the alarm and stop the flashing of the icon. The pop-up message disappears. Communicate with the coast station by telephone, over the frequency specified. If you do not receive the distress acknowledgement from a coast station after the timer counts down to zero, select RESEND and press the **ENTER** knob to transmit the distress relay again, over a different frequency.

4.3 Sending Distress Relay on Behalf of a Ship in Distress

4.3.1 Sending 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 your ship considers that further assistance is necessary.

Note: In the above cases, never use the **DISTRESS** key.

1. Press the **DISTRESS MSG** key and the **OTHER DSC MSG** key simultaneously to open the composing screen for the distress relay individual.
2. Rotate the **ENTER** knob to select TO and then press the **ENTER** knob.
3. Enter the ID of the coast station, where to send the distress relay, with the numeric keys.
4. Rotate the **ENTER** knob to select DISTRESS ID and then press the **ENTER** knob.
5. Enter the ID of the ship in distress with the numeric keys and then press the **ENTER** knob.
6. Rotate the **ENTER** knob to select NATURE and then press the **ENTER** knob.
7. Rotate the **ENTER** knob to select nature of distress and then press the **ENTER** knob.
8. Rotate the **ENTER** knob to select LAT or LON and then press the **ENTER** knob.
9. Use the numeric keys to enter latitude (or longitude) of the ship in distress. (If necessary, switch coordinates: **1** key to switch to North (East for longitude); **2** key to switch to South (West for longitude).) Press the **ENTER** knob.
10. Rotate the **ENTER** knob to select COMM MODE and then press the **ENTER** knob.
11. Rotate the **ENTER** knob to select TELEPHONE or NBDP-FEC and then press the **ENTER** knob.
12. Rotate the **ENTER** knob to select DSC FREQ and then press the **ENTER** knob.

13. Rotate the **ENTER** knob to select appropriate frequency and then press the **ENTER** knob.
14. Rotate the **ENTER** knob to select GO TO CALL and then press the **ENTER** knob. The distress relay is transmitted to the coast station. The screen changes to one for transmitting. After transmitting, the screen for waiting DISTRESS RELAY INDIVIDUAL ACK appears. The elapsed time since transmitting is displayed.

When you receive the distress relay individual acknowledgement from the coast station, the audio alarm sounds and the icon flashes in red. The pop-up message "RELAY INDIVIDUAL ACK received! [CANCEL]: Stop alarm" appears. Press the **CANCEL** key to silence the alarm and stop the flashing of the icon. The pop-up message disappears. Communicate with the coast station by telephone, over the frequency specified. To quit the distress receiving procedure, select QUIT and then press the **ENTER** knob.

4.3.2   Sending distress relay to area ships

Use this procedure to send the distress relay to area ships.

1. Press the **DISTRESS MSG** key and the **OTHER DSC MSG** key simultaneously to open the composing screen for the distress relay individual.
2. Rotate the **ENTER** knob to select MSG TYPE and then press the **ENTER** knob.
3. Rotate the **ENTER** knob to select RELAY AREA and then press the **ENTER** knob.
4. Rotate the **ENTER** knob to select CR or LL and then press the **ENTER** knob.
5. Set the area with the numeric keys. The geographical area call is for sending a call to all ships within the area you designate in your geographical area call. In the figure below, for example, the call will be sent to all ships within 24-34°N, 135-140°W (LL) and 34°N, 140°W, range: 500 NM (CR).

Reference point
(For example,
34° 00N 140° 00W)

500NM

CR (CIRCLE)
34° 00N 140° 00W 0500NM

Reference point →
(For example,
34° N 140° W)

34° N

10°

24° N

140° W   5°   135° W

LL (QUAD)
34° N 140° W ↓10° → 5°

6. Rotate the **ENTER** knob to select DISTRESS ID and then press the **ENTER** knob.
7. Enter the ID of the ship in distress and then press the **ENTER** knob.
8. Rotate the **ENTER** knob to select NATURE and then press the **ENTER** knob.
9. Rotate the **ENTER** knob to select nature of distress and then press the **ENTER** knob.
10. Rotate the **ENTER** knob to select LAT or LON and then press the **ENTER** knob.
11. Use the numeric keys to enter latitude (or longitude) of the ship in distress. (If necessary, switch coordinates: **1** key to switch to North (East for longitude); **2** key to switch to South (West for longitude).) Press the **ENTER** knob.
12. Rotate the **ENTER** knob to select COMM MODE and then press the **ENTER** knob.

13. Rotate the **ENTER** knob to select TELEPHONE or NBDP-FEC and then press the **ENTER** knob.
14. Rotate the **ENTER** knob to select DSC FREQ and then press the **ENTER** knob.
15. Rotate the **ENTER** knob to select appropriate frequency and then press the **ENTER** knob.
16. Rotate the **ENTER** knob to select GO TO CALL and then press the **ENTER** knob. The distress relay is transmitted to the area ships.

4.4   Receiving Distress Relay from Coast Station

Your ship receives the distress relay when:

- The coast station sends the distress relay to your ship (DISTRESS RELAY INDIVIDUAL).

- The coast station sends the distress relay to the area where you are navigating (DISTRESS RELAY AREA).

When you receive a distress relay message from a coast station, continue monitoring distress and safety frequencies. The audio alarm sounds and the LED flashes in red. The icon (⬛❗) on the tab area flashes and the pop-up message appears on the screen.

1. Press the **CANCEL** key to silence the audio alarm and stop the flashing of the LED and the icon. The pop-up message disappears.
2. Watch distress/safety frequency.
   If you receive a DISTRESS RELAY INDIVIDUAL with the different frequency from the transceiver unit, the radiotelephone automatically sets working frequency. Do the following:
   1. Rotate the **ENTER** knob to select CHANGE and then press the **ENTER** knob.
   2. Rotate the **ENTER** knob to select working frequency and then press the **ENTER** knob.

4.5   Canceling Distress Alert

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

1. Rotate the **ENTER** knob to select CANCEL and then press the **ENTER** knob. The following guide message appears. You can display this guide message with pressing the **CANCEL** key.

```
Select "CONTINUE"
to start  DISTRESS CANCEL
Operation
CONTINUE        RETURN
```

2. Rotate the **ENTER** knob to select CONTINUE and then press the **ENTER** knob to cancel the distress alert. After transmitting the distress cancel call, the message appears on the screen.
3. Press the **ENTER** knob to close the message window. The screen for the selection of frequency appears.
4. Rotate the **ENTER** knob to select appropriate frequency and then press the **ENTER** knob.

5. Communicate with all ships via radiotelephone referring to the illustration at step 4.

6. Press the **ENTER** knob. The screen for the selection of frequency appears (see the illustration at step 3). Asterisk marks the frequency over which the cancellation call by voice was completed.

7. Repeat steps 3 through 6 to cancel for all frequencies. When all cancellation is completed, the message "DISTRESS CANCEL was finished. FINISH/RESEND" appears.

8. Rotate the **ENTER** knob to select FINISH and then press the **ENTER** knob.

This page is intentionally left blank.

5. GENERAL MESSAGE CALLING, RECEIVING

Operation overview

The following shows about the individual message as example of the general message. The individual call is for sending a call to a specific station.

1. Send the individual message.
2. Wait for the individual message acknowledgement.
3. Start the communication.

Own Ship	(1)DSC Message [Called Acknowledge Request (ACK RQ) Signal] → ← (2)Acknowledge Back (ACK BQ) Signal (3)Voice or telex communication ↔	Coast Station
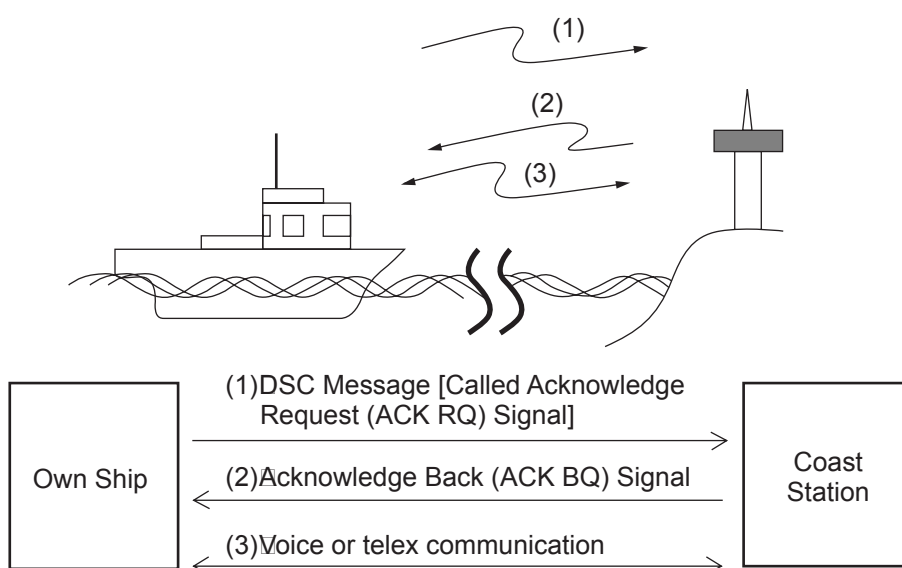
5.1 Individual Call

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.

5.1.1 Sending an individual call

1. Press the **OTHER DSC MSG** key.

```
🔊                SSB  TX 2182.0/RX 2182.00 kHz
 COMPOSE  MESSAGE
 MSG TYPE    : INDIVIDUAL  MSG
 TO          : - - - - - - - -
 PRIORITY    : ROUTINE
 COMM MODE   : TELEPHONE
 COMM FREQ   : NO  INFO
 DSC FREQ    :  2177.0kHz


                              GO TO CALL
```

2. Rotate the **ENTER** knob to select MSG TYPE and then press the **ENTER** knob.

```
INDIVIDUAL MSG
GROUP MSG
PSTN MSG
AREA MSG
POSITION MSG
TEST MSG
SPECIAL MSG
```

3. Rotate the **ENTER** knob to select INDIVIDUAL MSG and then press the **ENTER** knob.
4. Rotate the **ENTER** knob to select TO and then press the **ENTER** knob.

```
DIRECT INPUT
ADDRESS BOOK DATA
```

5. Rotate the **ENTER** knob to select DIRECT INPUT or ADDRESS BOOK DATA and then press the **ENTER** knob.
6. For ADDRESS BOOK DATA, select an ID from the ADDRESS BOOK (see section 6.14).
7. For DIRECT INPUT, enter the ID of the station where to send the call and then press the **ENTER** knob.
8. Rotate the **ENTER** knob to select PRIORITY and then press the **ENTER** knob.

```
ROUTINE
SAFETY
URGENCY
```

9. Rotate the **ENTER** knob to select ROUTINE, SAFETY or URGENCY and then press the **ENTER** knob.
10. Rotate the **ENTER** knob to select COMM MODE and then press the **ENTER** knob.

```
TELEPHONE
NBDP-ARQ
NBDP-FEC
DATA ◄──── Only for ROUTINE priority
```

11. Rotate the **ENTER** knob to select communication mode and then press the **ENTER** knob.
12. Rotate the **ENTER** knob to select COMM FREQ and then press the **ENTER** knob. For urgency and safety priority, go to step 14.

```
FREQUENCY
CHANNEL
```
To a ship station

```
NO INFO
FREQUENCY
CHANNEL
POSITION
```
To a coast station

13. Rotate the **ENTER** knob to select communication frequency setting method desired and then press the **ENTER** knob. For CHANNEL and FREQUENCY, see the following "How to set working channel, frequency". POSITION and NO INFO let the receiving station set the working frequency. Select POSITION or NO INFO to send the call to a coast station; CHANNEL or FREQUENCY to send the call to a ship station.

How to set working channel, frequency

To send a call, set the working frequency as below, to communicate with the receiving station. The working frequency can be entered by TX and RX frequencies or channel number.

Routine priority

a) Rotate the **ENTER** knob to select CHANNEL or FREQUENCY and then press the
   ENTER knob.

b) Enter TX/RX frequency or channel referring to section 2.2.

Urgency or safety priority

For urgency or safety priority the communication frequency cannot be selected; it is
automatically set to the pair frequency as set for the DSC frequency.

14. Do the following "How to set DSC frequency".

How to set DSC frequency

Routine priority

a) Rotate the **ENTER** knob to select DSC FREQ and then press the **ENTER** knob.

```
2MHz
4MHz
6MHz
8MHz
12MHz
16MHz
18MHz
22MHz
25MHz
```

b) Rotate the **ENTER** knob to select appropriate DSC band and then press the **ENTER**
   knob. One of the menus shown below appears depending on the band selected.

2MHz
```
INTL      :T 2189.5/R 2177.0
```

8MHz
```
INTL      :T 8415.0/R 8436.5
LOCAL1    :T 8415.5/R 8437.0
LOCAL2    :T 8416.0/R 8437.5
```

18MHz
```
INTL      :T18898.5/R19703.5
LOCAL1    :T18899.0/R19704.0
LOCAL2    :T18899.5/R19704.5
```

4MHz
```
INTL      :T 4208.0/R 4219.5
LOCAL1    :T 4208.5/R 4220.0
LOCAL2    :T 4209.0/R 4220.5
```

12MHz
```
INTL      :T12577.5/R12657.0
LOCAL1    :T12578.0/R12657.5
LOCAL2    :T12578.5/R12658.0
```

22MHz
```
INTL      :T22374.5/R22444.0
LOCAL1    :T22375.0/R22444.5
LOCAL2    :T22375.5/R22445.0
```

6MHz
```
INTL      :T 6312.5/R 6331.0
LOCAL1    :T 6313.0/R 6331.5
LOCAL2    :T 6313.5/R 6332.0
```

16MHz
```
INTL      :T16805.0/R16903.0
LOCAL1    :T16805.5/R16903.5
LOCAL2    :T16806.0/R16904.0
```

25MHz
```
INTL      :T25208.5/R26121.0
LOCAL1    :T25209.0/R26121.5
LOCAL2    :T25209.5/R26122.0
```

c) Rotate the **ENTER** knob to select DSC frequency and then press the **ENTER** knob. The
   screen shows the DSC frequency band selected, at DSC FREQ.

Urgency or safety priority

For urgency and/or safety priority, COMM FREQ is automatically set to the same pair
frequency as the DSC frequency.

a) Rotate the **ENTER** knob to select DSC FREQ and then press the **ENTER** knob.

```
2187.5 kHz
4207.5 kHz
6312.0 kHz
8414.5 kHz
12577.0 kHz
16804.5 kHz
```

5-3

b) Rotate the **ENTER** knob to select appropriate frequency and then press the **ENTER** knob.

15. Rotate the **ENTER** knob to select GO TO CALL and then press the **ENTER** knob to send the individual call. The screen is changed to one for transmission and the pop-up message "Sending DSC MSG." appears. After the call is sent, the equipment waits for acknowledgement of the call, showing the screen for waiting for ACK. The timer starts counting up the time to wait for acknowledgement. When receiving the ACK, the audio alarm sounds and the pop-up message "ROUTINE (or SAFETY, URGENCY) INDIVIDUAL ACK received! [CANCEL]: Stop alarm" appears on the screen. The timer starts counting up the time since receiving ACK.

    There are three types of ACK messages; ABLE ACK, UNABLE ACK and ABLE CHANGE FREQ.
16. Do one of the following depending on the message type shown in step 15.

Able acknowledge call received

1. Press the **CANCEL** key to silence the audio alarm. The pop-up message disappears.
2. The working frequency is automatically set; you can communicate by radiotelephone or NBDP (see the following "Sending message by NBDP terminal unit").
3. After you finish communicating, rotate the **ENTER** knob to select QUIT and then press the **ENTER** knob.
4. Rotate the **ENTER** knob to select CONTINUE and then press the **ENTER** knob.

Sending message by NBDP terminal unit

The message "STATION ENTRY COMPLETED FROM DSC. Press any key to escape." appears on the screen of the NBDP terminal unit.

1. Press any key on the NBDP terminal unit to erase the message.
2. Press the function key **F3** on the keyboard of the NBDP terminal unit to open the Operate menu.
3. Select Call Station and then press the **Enter** key.
4. DSC is selected; press the **Enter** key. Connect appears in reverse video.
5. Type and transmit your message.
6. When you finished sending your message, press the function key **F10** to disconnect the line.

Able change frequency acknowledge call received

This call means that the station you sent the individual call accepts your call with the frequency or communication mode that the station requires.

1. Press the **CANCEL** key to silence the audio alarm. The pop-up message disappears.
2. The working frequency is changed to one that the station requires, with showing the pop-up message. You can communicate by radiotelephone, NBDP or DATA, whichever the station requires.
3. After you finish communicating, rotate the **ENTER** knob to select QUIT and then press the **ENTER** knob.
4. Rotate the **ENTER** knob to select CONTINUE and then press the **ENTER** knob.

5-4

Unable acknowledge call received

1. Press the **CANCEL** key to silence the audio alarm. The pop-up message disappears. The reason for UNABLE ACK is displayed on the receiving screen.

Reason for unable to acknowledge

• NO REASON	• CAN'T USE CH
• BUSY	• CAN'T USE MODE
• EQUIP ERROR	• CONGESTION AT CENTER*
• QUEUE INDICATION*	• OPERATOR ABSENT*
• STATION BARRED*	• TEMP. UNAVAILABLE*

*: Coast station use

2. If the coast station sends the message "QUEUE INDICATION," wait until your turn arrives.
3. Rotate the **ENTER** knob to select QUIT and then press the **ENTER** knob.
4. Rotate the **ENTER** knob to select CONTINUE and then press the **ENTER** knob.

If there are no responses from the coast station, do one of the following procedures:
• Rotate the ENTER knob to select GO TO CALL and then press the ENTER knob to re-send call.
• Rotate the **ENTER** knob to select QUIT and then press the **ENTER** knob to cancel call.

5.1.2 Receiving an individual call

Unable acknowledge is sent automatically or manually depending on the REPLY TYPE setting (see section 6.14). Able acknowledge is sent only manually.

Note: The handset must be on hook to enable automatic acknowledge.

Sending unable acknowledge with REPLY TYPE "UNABLE"

When an individual call is received with "UNABLE" setting on REPLY TYPE menu, an unable acknowledge is sent automatically. It takes about seven seconds to transmit the call.

Sending able/unable acknowledge manually with REPLY TYPE "ABLE"

When an individual call is received with "ABLE" setting on REPLY TYPE menu, the audio alarm sounds and the pop-up message appears. Press the **CANCEL** key to silence the audio alarm and close the pop-up message. There are three types of ACK transmission.

• **Sending able acknowledge call**
1. Rotate the **ENTER** knob to select ACCEPT and then press the **ENTER** knob.
2. Rotate the **ENTER** knob to select GO TO CALL and then press the **ENTER** knob to send able acknowledge call.
3. Communicate by radiotelephone or NBDP (see "Communicating by NBDP terminal unit" on next page).
4. After you finish communicating, rotate the **ENTER** knob to select QUIT and then press the **ENTER** knob.
5. Rotate the **ENTER** knob to select CONTINUE and then press the **ENTER** knob to finish communication.

Communicating by NBDP terminal unit

After acknowledging an individual call, do the following to communicate by NBDP terminal unit. The control unit's screen shows "OCCUPIED" and the TX and RX frequencies. The message from the other party appears on your NBDP terminal unit.

1. After receiving the message from the other party, type your message and transmit it.
2. Press the function key **F10** (BREAK) to disconnect the line.

- **Sending unable acknowledge call**
1. Rotate the **ENTER** knob to select UNABLE and then press the **ENTER** knob.
2. Rotate the **ENTER** knob to select REASON.and then press the **ENTER** knob.
3. Rotate the **ENTER** knob to select appropriate rejection reason.and then press the **ENTER** knob.
4. Rotate the **ENTER** knob to select GO TO CALL and then press the **ENTER** knob to send unable acknowledge call.

- **Sending able change frequency acknowledge call**
1. Rotate the **ENTER** knob to select PROPOSE and then press the **ENTER** knob.
2. Rotate the **ENTER** knob to select COMM MODE and then press the **ENTER** knob.
3. Rotate the **ENTER** knob to select TELEPHONE, NBDP-ARQ or NBDP-FEC and then press the **ENTER** knob.
4. Rotate the **ENTER** knob to select COMM FREQ and then press the **ENTER** knob.
5. Rotate the **ENTER** knob to select communication frequency desired and then press the **ENTER** knob.
6. Rotate the **ENTER** knob to select GO TO CALL and then press the **ENTER** knob to send able change frequency acknowledge call.
7. Communicate by radiotelephone or NBDP (see "Communicating by NBDP terminal unit" on this page).
8. After you finish communicating, rotate the **ENTER** knob to select QUIT and then press the **ENTER** knob.

5.2 Group Call

A group call is for calling a specific group by specifying its group ID.

5.2.1 Sending a group call

1. Press the **OTHER DSC MSG** key.

```
⊲))                    SSB  TX 2182.0/RX 2182.00 kHz

COMPOSE MESSAGE
MSG TYPE   : INDIVIDUAL MSG
TO         : - - - - - - - -
PRIORITY   : ROUTINE
COMM MODE  : TELEPHONE
COMM FREQ  : NO INFO
DSC FREQ   :  2177.0kHz


                                      GO TO CALL
```

2. Rotate the **ENTER** knob to select MSG TYPE and then press the **ENTER** knob.
3. Rotate the **ENTER** knob to select GROUP MSG and then press the **ENTER** knob.
4. Rotate the **ENTER** knob to select TO and then press the **ENTER** knob.
5. Rotate the **ENTER** knob to select DIRECT INPUT or ADDRESS BOOK DATA and then press the **ENTER** knob.
6. For ADDRESS BOOK DATA, select an ID from the ADDRESS BOOK (see section 6.14).
7. For DIRECT INPUT, enter group ID (eight digits) with the numeric keys and then press the **ENTER** knob.
8. Rotate the **ENTER** knob to select COMM MODE and then press the **ENTER** knob.
9. Rotate the **ENTER** knob to select TELEPHONE or NBDP-FEC and then press the **ENTER** knob.
10. Rotate the **ENTER** knob to select COMM FREQ and then press the **ENTER** knob.
11. Rotate the **ENTER** knob to select communication frequency setting method desired and then press the **ENTER** knob. For CHANNEL and FREQUENCY, see "How to set working channel, frequency" on page 5-2. POSITION and NO INFO let the receiving station set the working frequency. Select POSITION or NO INFO to send the call to a coast station; CHANNEL or FREQUENCY to send the call to a ship station.
12. Rotate the **ENTER** knob to select DSC FREQ and then press the **ENTER** knob.
13. Rotate the **ENTER** knob to select DSC frequency desired and then press the **ENTER** knob (see "How to set DSC frequency" on page 5-3).
14. Rotate the **ENTER** knob to select GO TO CALL and then press the **ENTER** knob to send a group call.
15. Communicate by radiotelephone or NBDP (see "Sending message by NBDP terminal unit" on next page).
16. After you finish communicating, rotate the **ENTER** knob to select QUIT and then press the **ENTER** knob.

Sending message by NBDP terminal unit

The message "STATION ENTRY COMPLETED FROM DSC. Press any key to escape." appears on the screen of the NBDP terminal unit.

1. Press any key on the NBDP terminal unit to erase the message.
2. Press the function key **F3** on the keyboard of the NBDP terminal unit to open the Operate menu.
3. Select Call Station and then press the **Enter** key.
4. DSC is selected; press the **Enter** key. Connect appears in reverse video.
5. Type and transmit your message.
6. When you finished sending your message, press the function key **F10** to disconnect the line.

5.2.2   Receiving a group call

Group ID must be registered in order to receive a group call (see paragraph 6.15.3).

When a group call is received, the audio alarm sounds. The icon () on the tab area flashes in black and white, and the pop-up message "GROUP MSG received! [CANCEL]: Stop alarm" appears.

1. Press the **CANCEL** key to silence the audio alarm. The pop-up message disappears.
2. Press the **TAB** key to select the icon.
3. Press the **ENTER** knob.
4. Rotate the **ENTER** knob to select ACTIVE and then press the **ENTER** knob.
5. Watch on the working frequency. Communicate by radiotelephone or NBDP (see "Receiving message by NBDP terminal unit" on next page). If there is the difference between the registered frequency and used frequency to receive, the pop-up message appears. Select Agree for the voice communication, or Disagree when you do not change the frequency.
6. After you finish communicating, rotate the **ENTER** knob to select QUIT and then press the **ENTER** knob.
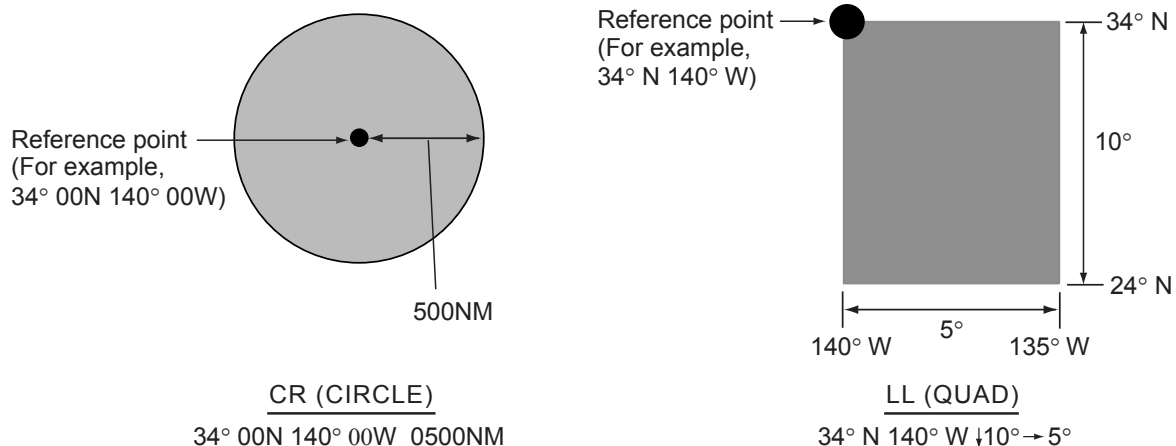7. Rotate the **ENTER** knob to select CONTINUE and then press the **ENTER** knob to finish communication.

Receiving message by NBDP terminal unit

After receiving a group call, confirm the following.
• The control unit's screen shows "OCCUPIED" and the TX and RX frequencies.
• The message from the sending station appears on your NBDP terminal unit.

5.3 Geographical Area Call

The geographical area call is for sending a call to all ships within the area you designate in your geographical area call. In the figure below, for example, the call will be sent to all ships within 24-34°N, 135-140°W (QUADRANT) and 34°N, 140°W, range: 500 NM (CIRCLE).

Note: At the high-latitude area, set the area so that the longitude is within 99°. If the setting is over 99°, it can be adjusted automatically.

Reference point → (For example, 34 N 140 W)
34 N
10
24 N
140 W   5   135 W
QUADRANT

500NM
Reference point (For example, 34 N 140 W)
CIRCLE
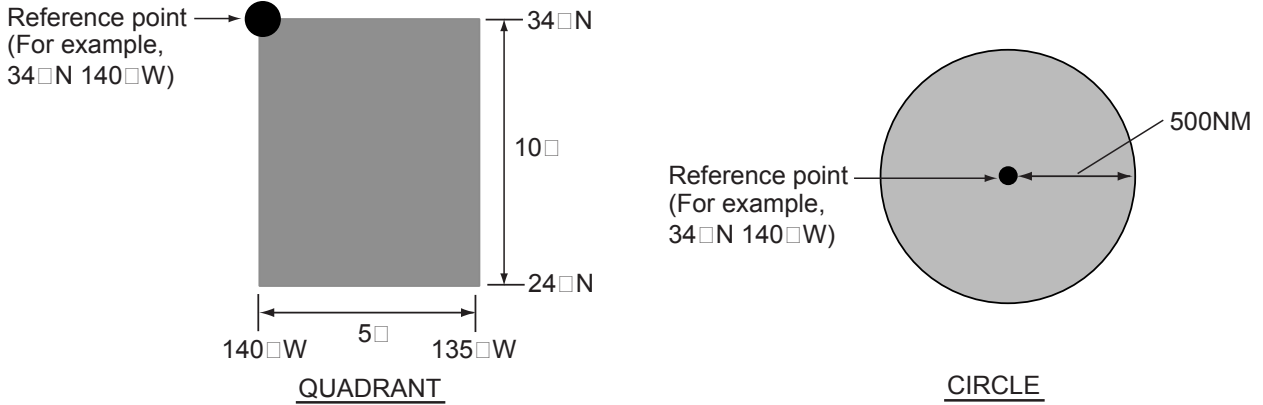
5.3.1 Sending a geographical area call

1. Press the **OTHER DSC MSG** key.
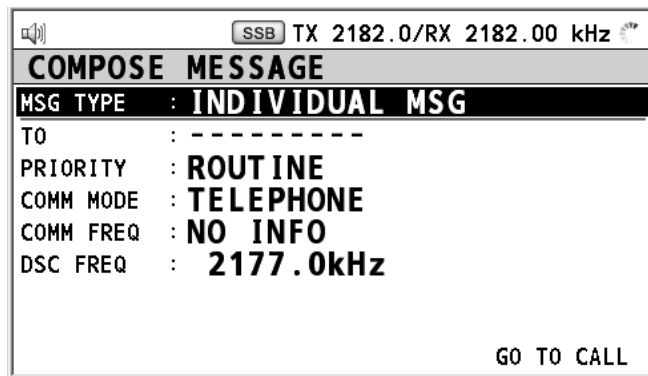
```
       [SSB] TX 2182.0/RX 2182.00 kHz
COMPOSE MESSAGE
MSG TYPE   : INDIVIDUAL MSG
TO         : - - - - - - - -
PRIORITY   : ROUTINE
COMM MODE  : TELEPHONE
COMM FREQ  : NO INFO
DSC FREQ   :  2177.0kHz

                        GO TO CALL
```

2. Rotate the **ENTER** knob to select MSG TYPE and then press the **ENTER** knob.
3. Rotate the **ENTER** knob to select AREA MSG and then press the **ENTER** knob.

```
       [SSB] TX 2182.0/RX 2182.00 kHz
COMPOSE MESSAGE
MSG TYPE   : AREA MSG
AREA CR    : --°--N ---°--W ----NM
PRIORITY   : SAFETY
COMM MODE  : TELEPHONE
COMM FREQ  :  2182.0kHz
DSC FREQ   :  2187.5kHz

                        GO TO CALL
```
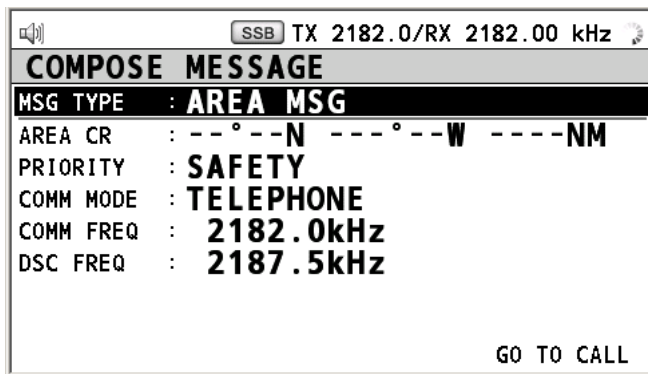
4. Rotate the **ENTER** knob to select AREA CR and then press the **ENTER** knob.

```
CIRCLE
QUADRANT
```

5. Rotate the **ENTER** knob to select CIRCLE or QUADRANT and then press the **ENTER** knob.
6. **For QUADRANT:** Using the numeric keys, enter latitude and longitude of reference point and southerly degrees and easterly degrees of area. To change coordinate, select it and press the **1** key for North or East; **2** key for South or West. After entering data, press the **ENTER** knob.
7. **For CIRCLE:** Using the numeric keys, enter latitude and longitude of reference point and radius of area. To change coordinate, select it and press the **1** key for North or East; **2** key for South or West. After entering data, press the **ENTER** knob.
8. Rotate the **ENTER** knob to select PRIORITY and then press the **ENTER** knob.
9. Rotate the **ENTER** knob to select SAFETY or URGENCY and then press the **ENTER** knob.
10. Rotate the **ENTER** knob to select COMM MODE and then press the **ENTER** knob.
11. Rotate the **ENTER** knob to select TELEPHONE or NBDP-FEC and then press the **ENTER** knob.
12. Rotate the **ENTER** knob to select DSC FREQ and then press the **ENTER** knob.

```
  2187.5 kHz
  4207.5 kHz
  6312.0 kHz
  8414.5 kHz
 12577.0 kHz
 16804.5 kHz
```

13. Rotate the **ENTER** knob to select DSC frequency desired and then press the **ENTER** knob. The communication frequency changes in conjunction with DSC frequency.
14. Rotate the **ENTER** knob to select GO TO CALL and then press the **ENTER** knob to send an area call.
15. Communicate by radiotelephone or NBDP (see "Sending message by NBDP terminal unit" on next page).
16. After you finish communicating, rotate the **ENTER** knob to select QUIT and then press the **ENTER** knob.

Sending message by NBDP terminal unit

The message "STATION ENTRY COMPLETED FROM DSC. Press any key to escape." appears on the screen of the NBDP terminal unit.

1. Press any key on the NBDP terminal unit to erase the message.
2. Press the function key **F3** on the keyboard of the NBDP terminal unit to open the Operate menu.
3. Select Call Station and then press the **Enter** key.
4. DSC is selected; press the **Enter** key. Connect appears in reverse video.
5. Type and transmit your message.
6. When you finished sending your message, press the function key **F10** to disconnect the line.

5.3.2 Receiving a geographical area call

When you receive an area message, the audio alarm sounds. The icon (📨) on the tab area flashes in black and white, and the pop-up message "URGENCY (SAFETY) AREA MSG received! [CANCEL]: Stop alarm" appears.

1. Press the **CANCEL** key to silence the audio alarm. The pop-up message disappears.
2. Press the **TAB** key to select the 📨 icon.
3. Press the **ENTER** knob.
4. Rotate the **ENTER** knob to select ACTIVE and then press the **ENTER** knob.
5. Watch on the working frequency. Communicate by radiotelephone or NBDP (see "Receiving message by NBDP terminal unit" on this page). If there is the difference between the registered frequency and used frequency to receive, the pop-up message appears. Select Agree for the voice communication, or Disagree when you do not change the frequency.
6. After you finish communicating, rotate the **ENTER** knob to select QUIT and then press the **ENTER** knob.

Receiving message by NBDP terminal unit

After receiving a geographic area call, confirm the following.
• The control unit's screen shows "OCCUPIED" and the TX and RX frequencies.
• The message from the sending station appears on your NBDP terminal unit.

5.4 Neutral Craft Call

The neutral craft call, which contains your ship position and ID, informs all ships that your ship is not a participant in armed conflict. The neutral craft call is necessary the setting on the SPECIAL MSG menu. See section 6.17.

5.4.1 Sending a neutral craft call

1. Press the **OTHER DSC MSG** key.
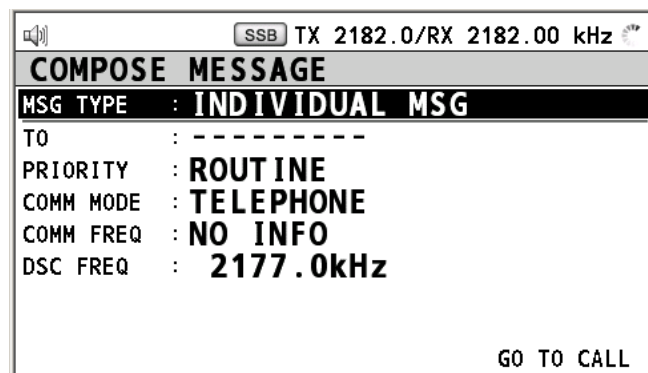
```
◁))                [SSB] TX 2182.0/RX 2182.00 kHz
COMPOSE MESSAGE
MSG TYPE   : INDIVIDUAL MSG
TO         : - - - - - - - -
PRIORITY   : ROUTINE
COMM MODE  : TELEPHONE
COMM FREQ  : NO INFO
DSC FREQ   :  2177.0kHz

                              GO TO CALL
```

2. Rotate the **ENTER** knob to select MSG TYPE and then press the **ENTER** knob.
3. Rotate the **ENTER** knob to select SPECIAL MSG and then press the **ENTER** knob.

```
NEUTRAL MSG
MEDICAL MSG
PSTN MSG
AREA MSG
POSITION MSG
TEST MSG
SPECIAL MSG
```
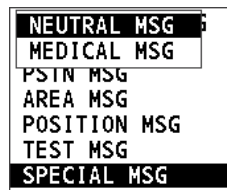
4. Rotate the **ENTER** knob to select NEUTRAL MSG and then press the **ENTER** knob. PRIORITY is automatically selected to URGENCY.

```
◁))                    SSB TX 2182.0/RX 2182.00 kHz
 COMPOSE  MESSAGE
MSG TYPE   : NEUTRAL  MSG
AREA CR    : --°--N  ---°--W  ----NM
PRIORITY   : URGENCY
COMM MODE  : TELEPHONE
COMM FREQ  :  2182.0kHz
DSC FREQ   :  2187.5kHz


                                    GO TO CALL
```

5. Rotate the **ENTER** knob to select AREA and then press the **ENTER** knob.
6. Enter the area range referring to step 5 to 7 in paragraph 5.3.1.
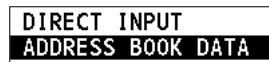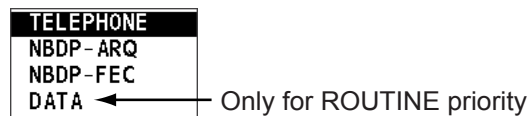7. Rotate the **ENTER** knob to select COMM MODE and then press the **ENTER** knob.
8. Rotate the **ENTER** knob to select TELEPHONE or NBDP-FEC and then press the **ENTER** knob.
9. Rotate the **ENTER** knob to select DSC FREQ and then press the **ENTER** knob.
10. Rotate the **ENTER** knob to select DSC frequency desired and then press the **ENTER** knob. The communication frequency changes in conjunction with DSC frequency.
11. Rotate the **ENTER** knob to select GO TO CALL and then press the **ENTER** knob send a neutral craft call.
12. Inform all ships by radiotelephone that your ship is not a participant in armed conflict. For communication by NBDP, see "Sending message by NBDP terminal unit" on this page.
13. After you finish communicating, rotate the **ENTER** knob to select QUIT and then press the **ENTER** knob.

Sending message by NBDP terminal unit

The message "STATION ENTRY COMPLETED FROM DSC. Press any key to escape." appears on the screen of the NBDP terminal unit.

1. Press any key on the NBDP terminal unit to erase the message.
2. Press the function key **F3** on the keyboard of the NBDP terminal unit to open the Operate menu.
3. Select Call Station and then press the **Enter** key.
4. DSC is selected; press the **Enter** key. Connect appears in reverse video.
5. Type and transmit your message.
6. When you finished sending your message, press the function key **F10** to disconnect the line.

5.4.2 Receiving a neutral craft call

When you receive a neutral craft call, the audio alarm sounds. The icon (icon) on the tab area flashes in black and white, and the pop-up message "NEUTRAL MSG received! [CANCEL]: Stop alarm" appears.

1. Press the **CANCEL** key to silence the audio alarm. The pop-up message disappears.
2. Press the **TAB** key to select the icon.
3. Press the **ENTER** knob.
4. Rotate the **ENTER** knob to select ACTIVE and then press the **ENTER** knob.
5. Watch on the working frequency. Communicate by radiotelephone or NBDP (see "Receiving message by NBDP terminal unit" on this page). If there is the difference between the registered frequency and used frequency to receive, the pop-up message appears. Select Agree for the voice communication, or Disagree when you do not change the frequency.
6. After you finish communicating, rotate the **ENTER** knob to select QUIT and then press the **ENTER** knob.

Receiving message by NBDP terminal unit

After receiving a neutral craft call, confirm the following.
• The control unit's screen shows "OCCUPIED" and the TX and RX frequencies.
• The message from the sending station appears on your NBDP terminal unit.

5.5 Medical Transport Call

The medical transport call informs all ships, by urgency priority, that your ship carries medical supplies. The medical call is necessary the setting on the SPECIAL MSG menu. See section 6.16.

5.5.1 Sending a medical transport call

1. Press the **OTHER DSC MSG** key.

```
🔊                    SSB  TX 2182.0/RX 2182.00 kHz
 COMPOSE MESSAGE
 MSG TYPE  : INDIVIDUAL MSG
 TO        : - - - - - - - - -
 PRIORITY  : ROUTINE
 COMM MODE : TELEPHONE
 COMM FREQ : NO INFO
 DSC FREQ  :  2177.0kHz

                              GO TO CALL
```

2. Rotate the **ENTER** knob to select MSG TYPE and then press the **ENTER** knob.
3. Rotate the **ENTER** knob to select SPECIAL MSG and then press the **ENTER** knob.
4. Rotate the **ENTER** knob to select MEDICAL MSG and then press the **ENTER** knob. PRIORITY is automatically selected to URGENCY.

```
◁))                    SSB  TX 2182.0/RX 2182.00 kHz
 COMPOSE MESSAGE
 MSG TYPE   : MEDICAL MSG
 AREA CR    : --°--N  ---°--W  ----NM
 PRIORITY   : URGENCY
 COMM MODE  : TELEPHONE
 COMM FREQ  :  2182.0kHz
 DSC FREQ   :  2187.5kHz


                              GO TO CALL
```

5. Rotate the **ENTER** knob to select AREA and then press the **ENTER** knob.
6. Enter the area range referring to step 5 to 7 in paragraph 5.3.1.
7. Rotate the **ENTER** knob to select COMM MODE and then press the **ENTER** knob.
8. Rotate the **ENTER** knob to select TELEPHONE or NBDP-FEC and then press the **ENTER** knob.
9. Rotate the **ENTER** knob to select DSC FREQ and then press the **ENTER** knob.
10. Rotate the **ENTER** knob to select DSC frequency desired and then press the **ENTER** knob. The communication frequency changes in conjunction with DSC frequency.
11. Rotate the **ENTER** knob to select GO TO CALL and then press the **ENTER** knob to send a medical transport call.
12. Inform all ships by radiotelephone that your ship is transporting medical supplies. For communication by NBDP, see "Sending message by NBDP terminal unit" on next page.
13. After you finish communicating, rotate the **ENTER** knob to select QUIT and then press the **ENTER** knob.

Sending message by NBDP terminal unit

The message "STATION ENTRY COMPLETED FROM DSC. Press any key to escape." appears on the screen of the NBDP terminal unit.

1. Press any key on the NBDP terminal unit to erase the message.
2. Press the function key **F3** on the keyboard of the NBDP terminal unit to open the Operate menu.
3. Select Call Station and then press the **Enter** key.
4. DSC is selected; press the **Enter** key. Connect appears in reverse video.
5. Type and transmit your message.
6. When you finished sending your message, press the function key **F10** to disconnect the line.

5.5.2 Receiving a medical transport call

When you receive a medical transport call, the audio alarm sounds. The icon ( ) on the tab area flashes in black and white, and the pop-up message "MEDICAL MSG received! [CANCEL]: Stop alarm" appears.

1. Press the **CANCEL** key to silence the audio alarm. The pop-up message disappears.
2. Press the **TAB** key to select the icon.
3. Press the **ENTER** knob.
4. Rotate the **ENTER** knob to select ACTIVE and then press the **ENTER** knob.

5. Watch on the working frequency. Communicate by radiotelephone or NBDP (see "Receiving message by NBDP terminal unit" on this page). If there is the difference between the registered frequency and used frequency to receive, the pop-up message appears. Select Agree for the voice communication, or Disagree when you do not change the frequency.

Receiving message by NBDP terminal unit

After receiving a medical transport call, confirm the following.
• The control unit's screen shows "OCCUPIED" and the TX and RX frequencies.
• The message from the sending station appears on your NBDP terminal unit.

5.6 Receiving a Polling Request

Polling means confirming if your ship is within communicating range with other ship.
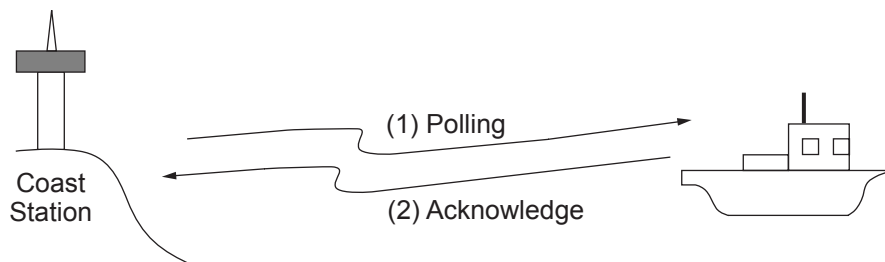
5.6.1 Automatic reply

When a polling request message is received with AUTO setting on POLLING MSG of ACK SETTING menu, an acknowledge is sent automatically. For details see section 6.15 (PRIORITY: ROUTINE only).

5.6.2 Manual reply

When you receive a polling request message, the audio alarm sounds. The icon () on the tab area flashes in black and white, and the pop-up message "POLLING MSG received! [CANCEL]: Stop alarm" appears. The equipment is set up for manual acknowledge: POLLING MSG on the ACK SETTING menu is MANUAL.

1. Press the **CANCEL** key to silence the audio alarm. The pop-up message disappears.
2. Press the **TAB** key to select the icon.
3. Press the **ENTER** knob.
4. Rotate the **ENTER** knob to select ACCEPT and then press the **ENTER** knob. The polling acknowledge message is sent.
5. Rotate the **ENTER** knob to select QUIT and then press the **ENTER** knob.
6. Rotate the **ENTER** knob to select CONTINUE and then press the **ENTER** knob.

5.7 Position Call

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

Finding position of other station
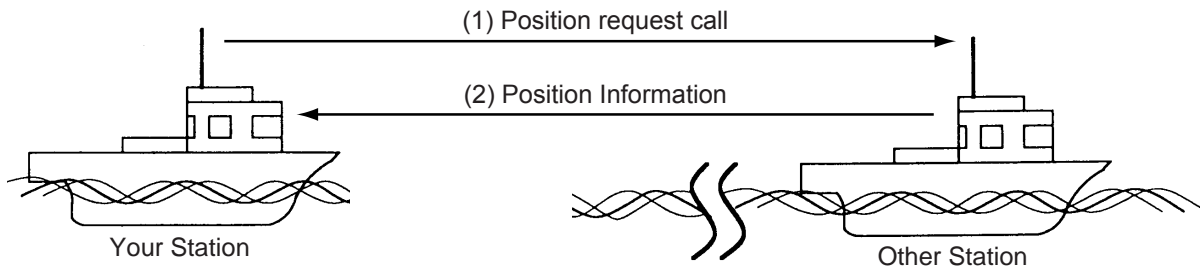
Sending your ship's position to other station

5.7.1 Requesting other ship's position

1. Press the **OTHER DSC MSG** key.
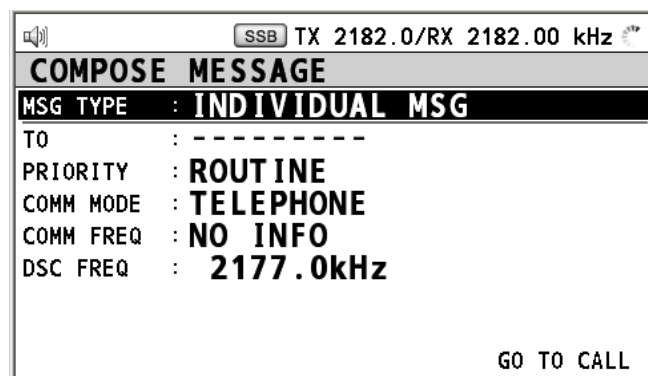
2. Rotate the **ENTER** knob to select MSG TYPE and then press the **ENTER** knob.
3. Rotate the **ENTER** knob to select POSITION MSG and then press the **ENTER** knob.
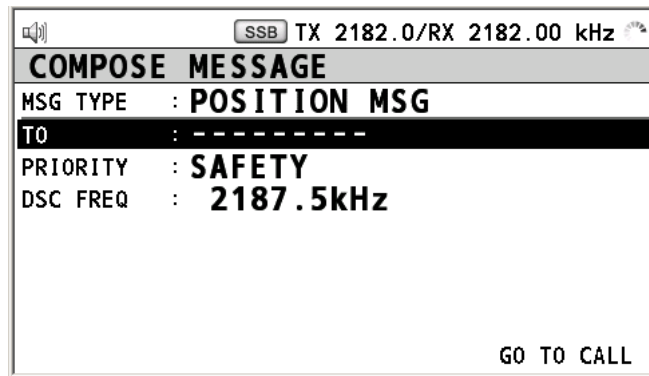
```
 ◁)))                    SSB  TX 2182.0/RX 2182.00 kHz
 COMPOSE MESSAGE
 MSG TYPE   : POSITION MSG
 TO         : - - - - - - - -
 PRIORITY   : SAFETY
 DSC FREQ   :  2187.5kHz



                                       GO TO CALL
```

4. Rotate the **ENTER** knob to select TO and then press the **ENTER** knob.

5. Rotate the **ENTER** knob to select DIRECT INPUT or ADDRESS BOOK DATA and then press the **ENTER** knob.

6. For ADDRESS BOOK DATA, select an ID from the ADDRESS BOOK (see section 6.14).

7. For DIRECT INPUT, enter ID of station, which you want to know its position, with the numeric keys and then press the **ENTER** knob.

8. Rotate the **ENTER** knob to select DSC FREQ and then press the **ENTER** knob.

9. Rotate the **ENTER** knob to select DSC frequency desired and then press the **ENTER** knob.

10. Rotate the **ENTER** knob to select GO TO CALL and then press the **ENTER** knob. The pop-up message "Sending DSC MSG now" appears. After the call has been sent, the screen for waiting ACK appears. The elapsed time since sending the call is displayed. When you receive an acknowledge message, the audio alarm sounds and the pop-up message appears.

11. Press the **CANCEL** key to silence the audio alarm. The pop-up message disappears. There are two types of ACK screen; one is including the position information and the other is no position information.

5.7.2   Position call: other ship requests your position

You can turn automatic acknowledge of position request on with POSITION on the ACK SETTING menu is AUTO (see section 6.15).

Automatic reply

When another ship requests your position and the setting of POSITION on the ACK SETTING menu is AUTO, the equipment transmits automatic reply. To silence the audio alarm, press the **CANCEL** key. There are two types of automatic reply; one is including the position information (the setting is AUTO (ABLE)) and the other is no position information (the setting is AUTO (NO INFO)).

Manual reply

When a position request message is received and the setting of POSITION on the ACK SETTING menu is MANUAL, you can send the manual reply. To silence the audio alarm, press the **CANCEL** key. Press the **TAB** key to select the 🖂 icon. Do one of the following.

•   When you send the ACK with position information, rotate the **ENTER** knob to select ACCEPT and then press the **ENTER** knob. After sending the ACK, rotate the **ENTER** knob to select QUIT and then press the **ENTER** knob. Rotate the **ENTER** knob to select CONTINUE and then press the **ENTER** knob.

- When you send the ACK with no position information, rotate the **ENTER** knob to select UNABLE and then press the **ENTER** knob.

5.8   PSTN Call

The PSTN call allows the making and receiving of telephone calls over public switched telephone networks. To use the PSTN call feature, use a handset which has a HOOK ON/OFF function. The standard supply handset has this feature.

5.8.1   Sending a PSTN call

1. Press the **OTHER DSC MSG** key.
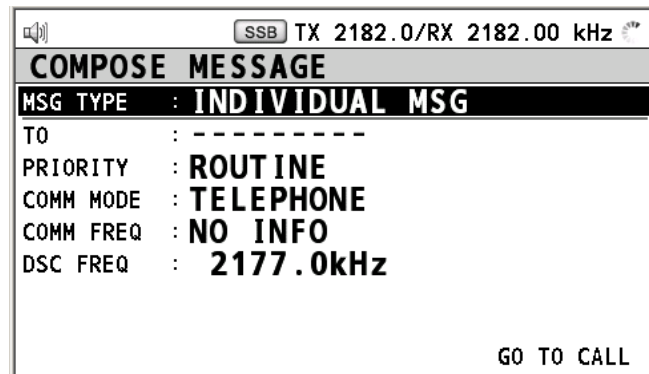
```
🔊                    SSB  TX 2182.0/RX 2182.00 kHz
COMPOSE  MESSAGE
MSG TYPE    : INDIVIDUAL  MSG
TO          : - - - - - - - - -
PRIORITY    : ROUTINE
COMM MODE   : TELEPHONE
COMM FREQ   : NO  INFO
DSC FREQ    :  2177.0kHz

                            GO TO CALL
```

2. Rotate the **ENTER** knob to select MSG TYPE and then press the **ENTER** knob.
3. Rotate the **ENTER** knob to select PSTN MSG and then press the **ENTER** knob.
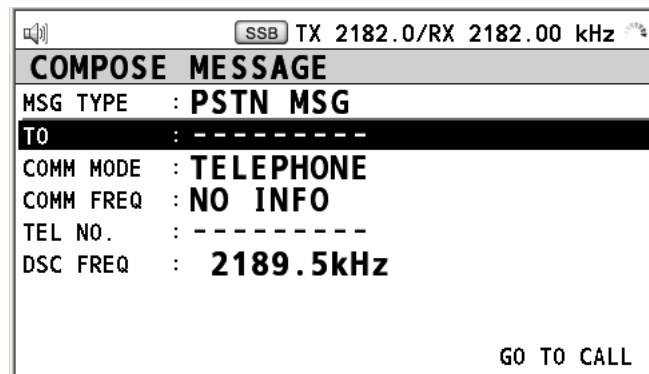
```
🔊                    SSB  TX 2182.0/RX 2182.00 kHz
COMPOSE  MESSAGE
MSG TYPE    : PSTN  MSG
TO          : - - - - - - - - -
COMM MODE   : TELEPHONE
COMM FREQ   : NO  INFO
TEL NO.     : - - - - - - - - -
DSC FREQ    :  2189.5kHz

                            GO TO CALL
```

4. Rotate the **ENTER** knob to select TO and then press the **ENTER** knob.
5. Rotate the **ENTER** knob to select DIRECT INPUT or ADDRESS BOOK DATA and then press the **ENTER** knob.
6. For ADDRESS BOOK DATA, select an ID from the ADDRESS BOOK (see section 6.14).
7. For DIRECT INPUT, enter ID of coast station (seven digits) with the numeric keys and then press the **ENTER** knob.
8. Rotate the **ENTER** knob to select COMM MODE and then press the **ENTER** knob.
9. Rotate the **ENTER** knob to select TELEPHONE, NBDP-ARQ, NBDP-FEC or DATA, and then press the **ENTER** knob.
10. Rotate the **ENTER** knob to select TEL NO. and then press the **ENTER** knob.
11. Enter telephone no. (up to 16 digits) with the numeric keys and then press the **ENTER** knob.
12. Rotate the **ENTER** knob to select DSC FREQ and then press the **ENTER** knob.
13. Rotate the **ENTER** knob to select DSC frequency and then press the **ENTER** knob (see "Routine priority" in "How to set DSC frequency" on page 5-3).

14. Rotate the **ENTER** knob to select GO TO CALL and then press the **ENTER** knob. The PSTN call is sent. After the call has been sent, the screen for waiting ACK appears. The elapsed time since sending the call and the count down time for re-sending the call (25 seconds) is displayed. When you receive an acknowledge message, the audio alarm sounds and the pop-up message appears.
15. Do one of the following depending on ACK message.

Able acknowledge message received

If the PSTN call is accepted, the PSTN connection call is sent. The timer counts down from 25 seconds to zero for waiting ACK of connection. When you receive PSTN ACK of connection, the pop-up message "PSTN connected pick up HANDSET!" appears and the communication frequency changes.

Note: When you do not receive PSTN ACK of connection within 25 seconds, the pop-up message "PSTN disconnected because of timeout. [CANCEL]: Close window" appears.

1. Pick up the handset and communicate with the party you called. The following is the screen for telephone calling. The elapsed time since starting communication is displayed.

```
⊲))                    TX 2222.0 /RX 2333.0kHz    ⟲

[PSTN CONNECTED]               ELAPSED:
 PSTN START MSG                  00H01M22S

  FROM         :001234567
  COMM MODE    :TELEPHONE
  COMM FREQ    : 2222.0 / 2333.0 kHz
  TEL          :1234567890123456

  ⟨ATT⟩    INFO   PRINT    QUIT
 ▂▃▄▅
 RF GAIN  20  RT    ⊠
```

2. To quit the communication, do one of the following.

   - When you quit the communication yourself, on hook the handset or press the **CANCEL** key. END OF CALL is sent automatically. The screen for waiting ACK for END OF CALL appears. When you receive the ACK, rotate the **ENTER** knob to select QUIT and then press the **ENTER** knob. Rotate the **ENTER** knob to select CONTINUE and then press the **ENTER** knob.

   - When the PSTN line is disconnected by the coast station, you receive the END OF ACK. Rotate the **ENTER** knob to select QUIT and then press the **ENTER** knob. Rotate the **ENTER** knob to select CONTINUE and then press the **ENTER** knob.

Unable acknowledge message received

When you receive an unable acknowledge message, the audio alarm sounds. The pop-up message appears. Rotate the **ENTER** knob to select QUIT and then press the **ENTER** knob. Rotate the **ENTER** knob to select CONTINUE and then press the **ENTER** knob.

5.8.2   Receiving a PSTN call

When a PSTN call is received, the 📨 icon appears on the tab area. An able/unable acknowledge is sent automatically. When the setting of REPLY TYPE on the ACK SETTING is ABLE, the automatic able acknowledge which means you can call with party is sent. When the setting of REPLY TYPE on the ACK SETTING is UNABLE, the automatic unable acknowledge which means you cannot call with party is sent.

Able acknowledgement

The automatic able acknowledge is sent and the pop-up message "PSTN connected pick up HANDSET!" appears.

1. Pick up the handset. The timer counts down from 25 seconds to zero for waiting ACK of connection. When you receive PSTN ACK of connection, the screen for telephone calling appears. Communicate with party. The elapsed time since starting communication is displayed.
2. To quit the communication, do one of the following.

    *   When you quit the communication yourself, on hook the handset or press the **CANCEL** key. END OF CALL is sent automatically. The screen for waiting ACK for END OF CALL appears. When you receive the ACK, rotate the **ENTER** knob to select QUIT and then press the **ENTER** knob. Rotate the **ENTER** knob to select CONTINUE and then press the **ENTER** knob.

    *   When the PSTN line is disconnected by the coast station, you receive the END OF ACK. Rotate the **ENTER** knob to select QUIT and then press the **ENTER** knob. Rotate the **ENTER** knob to select CONTINUE and then press the **ENTER** knob.

Unable acknowledgement

The automatic unable acknowledge is sent. The audio alarm sounds and the LED flashes in green. Press the **CANCEL** key.

After disconnect of PSTN line, the charge information is sent.

6. MENU OPERATION

The menu can be accessed from both the RT and DSC screens.

6.1 How to Open the MENU Screen

1. Press the **MENU** key to open the MENU screen.
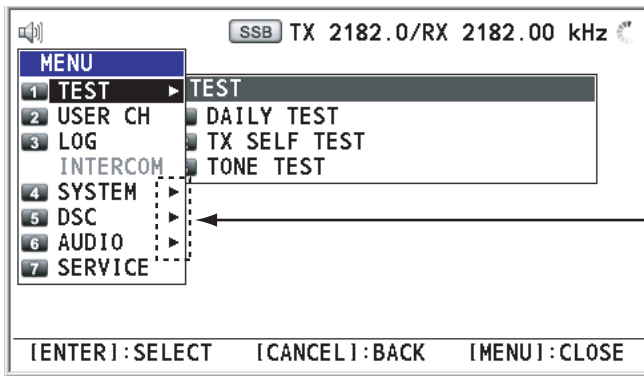
These marks mean that there is next stage.

2. Rotate the **ENTER** knob to select the desired menu item and then press the **ENTER** knob. You can select the desired menu item with pressing the **1** to **8** keys accordingly. When you put the cursor on the menu items with > mark, the menu items of the next stage are displayed. When there are multiple stage, repeat this step.
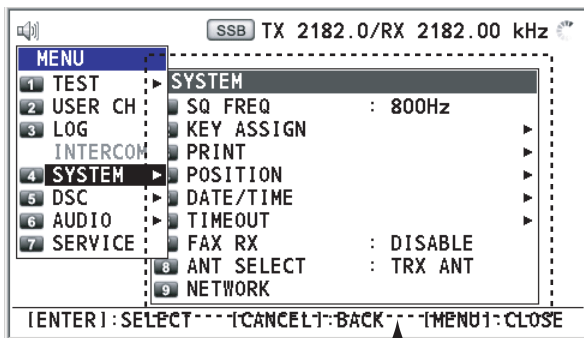
Menu items of the next stage
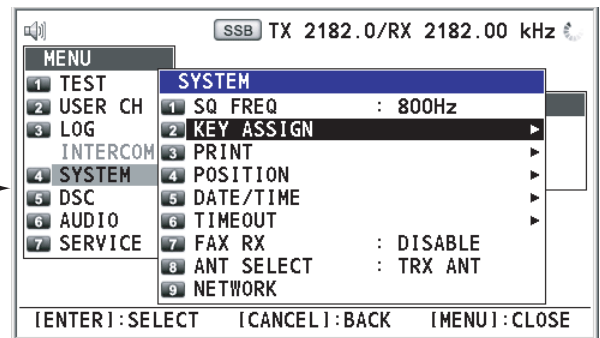
Second stage
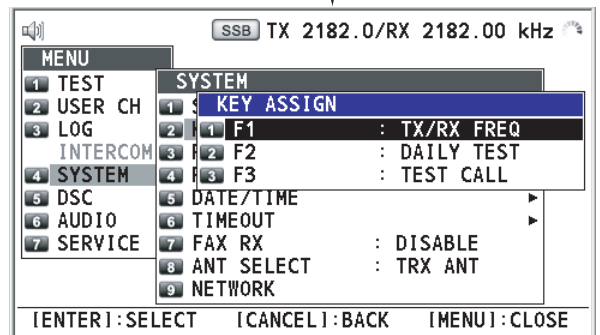
Third stage

Example screens for SYSTEM

6.2   User Channels

The USER CH menu allows registration and deleting of user TX and RX channels, where permitted by the Authorities. Maximum 256 channels can be registered. The user channel consists of four or five digits. The setting range is 01 to 029 for band, 01 to 99 for band channel.

$$0\ 1\ 2\ 3\ 4$$

Band   Band channel

NOTICE

FURUNO will assume no responsibility for the disturbance caused by the unlawful or improper setting of user channels.

6.2.1   List for user channels

Rotate the **ENTER** knob to select USER CH on the MENU screen and then press the **ENTER** knob. The list for user channels is displayed.

```
🔊            [SSB] TX 2182.0/RX 2182.00 kHz
USER CH    (TOTAL 200/256)
  SSB:0          NBDP:0          DSC:0          ◄── Mode
    CH       TX(kHz)      RX(kHz)
 1:  0101     1111.0        1111.0
 2:  0102     1222.0        1222.0
 3:  0103     1333.0        1333.0
 4:  0104     1444.0        1444.0
 5:  0105     1555.0        1555.0
 6:  0106     1666.0        1666.0
 7:  0107     1777.0        1777.0

 1:PREV  3:NEXT  4:DELETE  5:ENTRY  6:LIST
 7:JUMP  8:RT SET  [ENTER]:EDIT  [CANCEL]:BACK
```
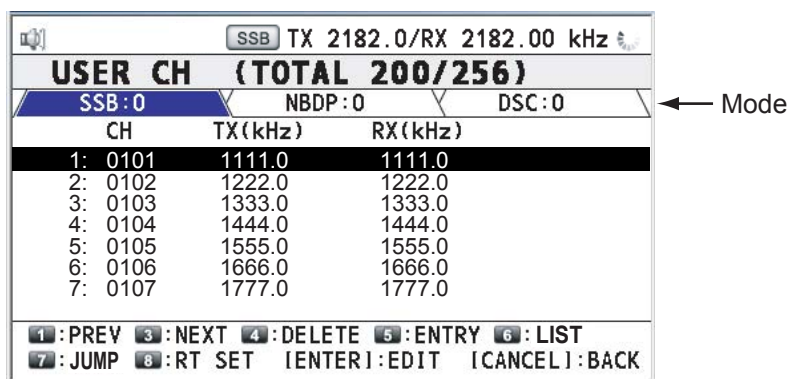
Press the **6** key several times to select desired mode among SSB, NBDP or DSC. Rotate the **ENTER** knob (or press the **1** key for the previous page and **3** key for the next page) to scroll the screen. To return to the MENU screen, press the **CANCEL** key.

6.2.2   Registering user channels

1. Press the **5** key on the USER CH list to open the USER CH ENTRY.

```
🔊            [SSB] TX 2182.0/RX 2182.00 kHz
USER CH ENTRY
MODE    :  SSB
CH      :  - - - -
TX FREQ :  - - - - - . -
RX FREQ :  - - - - - . -



                    <REGISTER>  ◄── This is unavailable
                                    till setting all items.

                    [CANCEL]:BACK
```
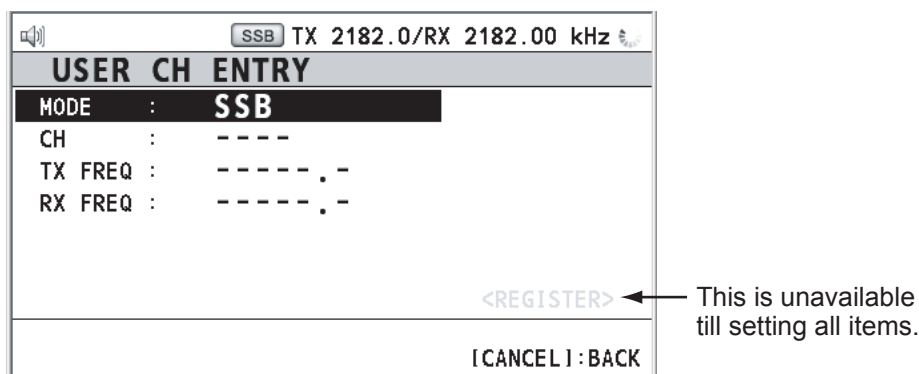
2. Rotate the **ENTER** knob to select MODE and then press the **ENTER** knob.

```
*SELECT*
SSB
NBDP
DSC
```

3. Rotate the **ENTER** knob to select mode desired and then press the **ENTER** knob.
4. Rotate the **ENTER** knob to select CH and then press the **ENTER** knob.
5. Enter band and band channel with the numeric keys (see section 2.2).
6. Rotate the **ENTER** knob to select TX FREQ and then press the **ENTER** knob.
7. Enter TX frequency with the numeric keys (see section 2.2).
8. Rotate the **ENTER** knob to select RX FREQ and then press the **ENTER** knob.
9. Enter RX frequency with the numeric keys (see section 2.2).
10. Rotate the **ENTER** knob to select REGISTER and then press the **ENTER** knob.
11. Rotate the **ENTER** knob to select YES and then press the **ENTER** knob.

6.2.3   Editing user channels

1. Rotate the **ENTER** knob to select user channel, which you want to edit, on the USER CH list and then press the **ENTER** knob.

Press the **ENTER** knob.
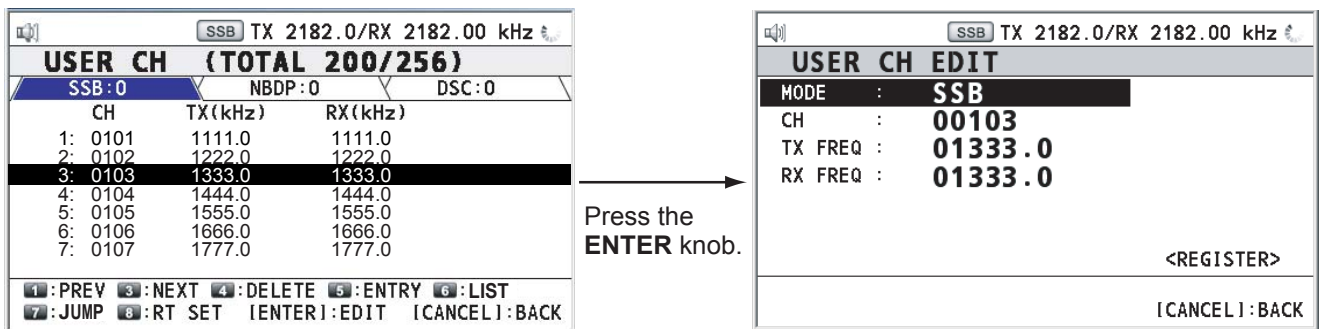
2. Rotate the **ENTER** knob to select item, which you want to edit, and then press the **ENTER** knob.
3. Edit the settings referring to paragraph 6.2.2.
4. After setting, rotate the **ENTER** knob to select REGISTER and then press the **ENTER** knob.
5. Rotate the **ENTER** knob to select YES and then press the **ENTER** knob.

Note: If the settings for both MODE and CH overlap with ones for existing user channels, the alarm for key error sounds and the warning pop-up message appears when selecting REGISTER.

6.2.4   Deleting user channels

Deleting individual user channel

1. Rotate the **ENTER** knob to select an user channel, which you want to delete, on the USER CH list, and then press the **4** key.
2. Rotate the **ENTER** knob to select DELETE SELECTION and then press the **ENTER** knob.
3. Rotate the **ENTER** knob to select YES and then press the **ENTER** knob.

6-3

Deleting user channels per mode

1. Press the **6** key several times to select desired mode on the USER CH list.
2. Press the **4** key.
3. Rotate the **ENTER** knob to select DELETE LIST and then press the **ENTER** knob.
4. Rotate the **ENTER** knob to select YES and then press the **ENTER** knob.

Deleting all user channels

1. Press the **4** key on the USER CH list.
2. Rotate the **ENTER** knob to select DELETE ALL LISTS and then press the **ENTER** knob.
3. Rotate the **ENTER** knob to select YES and then press the **ENTER** knob.

6.2.5   Loading head of band

1. Press the **7** key on the USER CH list.
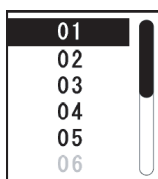
2. Rotate the **ENTER** knob to select band desired and then press the **ENTER** knob. For example, when you select 02, the screen, on which the top page for user channels of 2MHz is, appears.

6.2.6   Quoting user channels

Rotate the **ENTER** knob to select the user channel desired on the USER CH list and then press the **8** key. The RT screen for the selected user channel appears.

6.3 Log File

Three log file modes are provided for storage of calls: RX GENERAL (received ordinary log), RX DISTRESS (received distress log) and TX (transmitted log). Each mode stores 50 calls. The latest call is saved as log no.1 and the log no. of all previous calls in that log increments by one. When the storage capacity is exceeded, the oldest call is deleted to make room for the latest. The icon (✉) marks unread or unacknowledged calls. Received distress calls are automatically deleted 48 hours after being received.

6.3.1 Opening a log file

The procedure for opening a log is common to all logs.

1. Rotate the **ENTER** knob to select LOG on the MENU screen and then press the **ENTER** knob.

```
◁))              SSB  TX 2182.0/RX 2182.00 kHz
                        LOG
   RX DISTRESS:0  \  RX GENERAL:0  /    TX:0
       DATE          TIME      MSG TYPE    1/ 2
     1:14/FEB/2011   23:09     INDIVIDUAL MSG
     2:13/FEB/2011   23:05     GROUP MSG
     3:13/FEB/2011   21:10     ALL SHIP MSG
   ✉ 4:06/FEB/2011   06:20     INDIVIDUAL MSG
     5:04/FEB/2011   23:19     GROUP MSG
     6:03/FEB/2011   06:20     INDIVIDUAL MSG
   ✉ 7:01/FEB/2011   02:19     GROUP MSG
   1:PREV  3:NEXT  4:DELETE  6:LIST
   [ENTER]:DETAIL                  [CANCEL]:BACK
```

2. Press the **6** key to switch the log file mode. Each press changes the mode continuously (RX DISTRESS→ RX GENERAL→ TX → RX DISTRESS → …).
3. When there are multiple pages, press **1** key for the previous page and **3** key for the next page. Rotate the **ENTER** knob to select desired log and press the **ENTER** knob. The detailed information for the selected log file is displayed. To return to the MENU screen, press the **CANCEL** key.

```
◁))              SSB  TX 8291.0 /RX 8291.00kHz
         RX GENERAL LOG   – NO. 1 –

   14/FEB/2011   23:09
   INDIVIDUAL MSG

   FROM         : 123456789
   PRIORITY     : SAFETY
   COMM MODE    : TELEPHONE
   COMM OPTION  : NO INFO
   COMM FREQ    : 2181.0kHz
                                    ▼
   1:PREV  3:NEXT  4:DELETE  5:PRINT
                                 [CANCEL]:BACK
```

4. Rotate the **ENTER** knob to scroll the log. Press the **1** key for the previous log file and **3** key for the next log file.
5. **To print the selected log,** press the **5** key.
6. **To return to the log list,** press the **CANCEL** key.

6.3.2 Deleting log files

You can delete the log files.

Deleting individual log file

1. Rotate the **ENTER** knob to select a log, which you want to delete, on the log file list, and then press the **4** key.
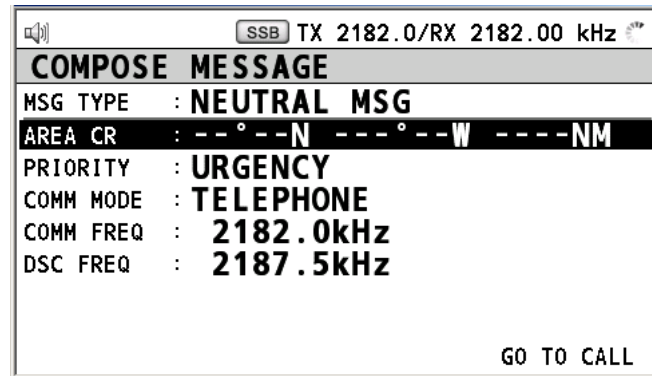2. Rotate the **ENTER** knob to select DELETE SELECTION and then press the **ENTER** knob.
3. Rotate the **ENTER** knob to select YES and then press the **ENTER** knob.

You can delete a log file with pressing **4** key on the screen shown in step 3 in the paragraph 6.3.1.

Deleting log files per mode

1. Press the **6** key several times to select desired mode on the log file list.
2. Press the **4** key.
3. Rotate the **ENTER** knob to select DELETE LIST and then press the **ENTER** knob.
4. Rotate the **ENTER** knob to select YES and then press the **ENTER** knob.

Deleting all log files

1. Press the **4** key on the log file list.
2. Rotate the **ENTER** knob to select DELETE ALL LISTS and then press the **ENTER** knob.
3. Rotate the **ENTER** knob to select YES and then press the **ENTER** knob.

The log files are renumbered to reflect the deletion.

6.4 Squelch Frequency

If you change the squelch frequency (ex. For high voice), do the following procedure (default setting: 800Hz).

1. Rotate the **ENTER** knob to select SYSTEM on the MENU screen and then press the **ENTER** knob.
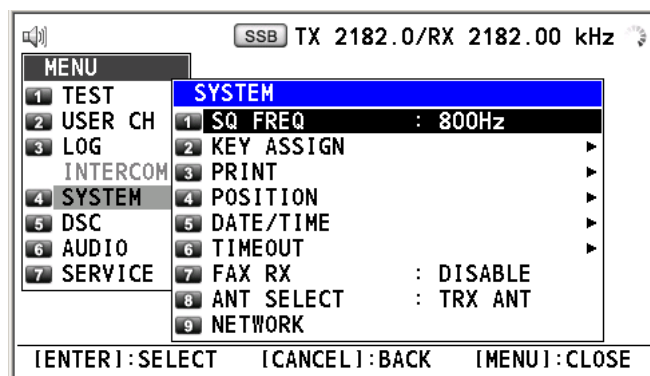
2. Rotate the **ENTER** knob to select SQ FREQ and then press the **ENTER** knob.

```
        ▲
      800Hz
        ▼
  ( 500Hz,2000Hz)
```
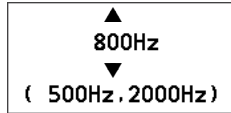
3. Rotate the **ENTER** knob to adjust frequency (setting range: 500-2000 Hz) and then press the **ENTER** knob.

6.5   Key Assignment

You can program function keys (F1, F2 and F3) to provide one-touch access to a required function. The **1** key is assigned with F1, the **4** key with F2 and the **7** key with F3. The default programs are RX FREQ for F1, DAILY TEST for F2, TEST CALL for F3. You can program one of the functions listed below.

• TX/RX FREQ	• RX FREQ	• MODE
• AGC	• TX PWR	• TX MONITOR
• TEST CALL	• MSG FILE	• DAILY TEST
• LOG	• INTERCOM	• ---------- (NONE)*

*: NONE: Not assigned any function

Note: You cannot assign the function key with the same function each other.

1. Rotate the **ENTER** knob to select SYSTEM on the MENU screen and then press the **ENTER** knob.
2. Rotate the **ENTER** knob to select KEY ASSIGN and then press the **ENTER** knob.

```
KEY ASSIGN
[1] F1          : RX FREQ
[2] F2          : DAILY TEST
[3] F3          : TEST CALL
```
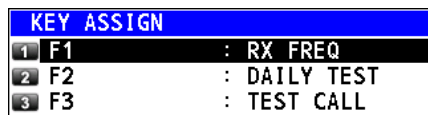
3. Rotate the **ENTER** knob to select F1, F2 or F3 and then press the **ENTER** knob.

```
KEY ASSIGN
[1] F1          : RX FREQ
[2] F2          :  ----------
[3] F3          :  TX/RX FREQ
                   RX FREQ
                   MODE
                   AGC
                   TX PWR
                   TX MONITOR
                   TEST CALL
```
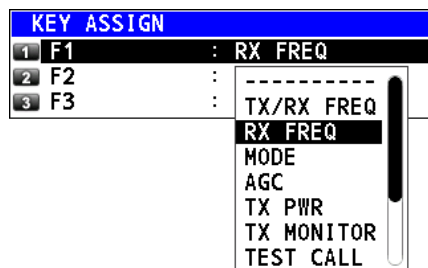
4. Rotate the **ENTER** knob to select a function desired and then press the **ENTER** knob.

6.6   Printing Messages

The PRINT menu enables/disables automatic printing of all transmitted and received calls and the results of the daily test.

1. Rotate the **ENTER** knob to select SYSTEM on the MENU screen and then press the **ENTER** knob.
2. Rotate the **ENTER** knob to select PRINT and then press the **ENTER** knob.

```
PRINT
1 TX CALL     : MANUAL
2 RX CALL     : MANUAL
3 DAILY TEST  : MANUAL
```

3. Rotate the **ENTER** knob to select TX CALL and then press the **ENTER** knob.
4. Rotate the **ENTER** knob to select AUTO or MANUAL and then press the **ENTER** knob.
5. Set the settings for RX CALL and DAILY TEST as well as TX CALL.

6.7   Position Setting

Do the following to set the position:

1. Rotate the **ENTER** knob to select SYSTEM on the MENU screen and then press the **ENTER** knob.
2. Rotate the **ENTER** knob to select POSITION and then press the **ENTER** knob.

```
POSITION
1 SETTING     :
2 OLDER       : 4.0H
```

3. Rotate the **ENTER** knob to select SETTING and then press the **ENTER** knob.

```
INPUT TYPE : MANUAL
LAT ◄  12°34.5678'N
LON ◄  123°45.6789'E
UTC ◄  12:34
```

4. Rotate the **ENTER** knob to select INPUT TYPE and then press the **ENTER** knob.
5. Rotate the **ENTER** knob to select GNSS, MANUAL or NO INFO and then press the **ENTER** knob.

   GNSS: The position data from GPS

   MANUAL: Set the position data manually

   NO INFO: No position data

   For MANUAL, go to next step.
6. Using the numeric keys, enter latitude/longitude of position of your ship, and UTC. To change coordinate, select it and press the **1** key for North or East; **2** key for South or West. After entering each data, press the **ENTER** knob.

```
┌──────────────────────┐      ┌──────────────────────┐
│   00°00.0000'N        │ ───► │   12°34.5678'N        │ ─┐   Press the
└──────────────────────┘      └──────────────────────┘  │   ENTER knob.
  Setting window for latitude    Enter latitude.          │
                                                          │
┌──────────────────────┐      ┌──────────────────────┐   │
│   000°00.0000'E       │ ───► │   123°45.6789'E       │ ─┐│  Press the
└──────────────────────┘      └──────────────────────┘  ││  ENTER knob.
  Setting window for longitude   Enter longitude.         ││
                                                          ││
┌──────────────────────┐      ┌──────────────────────┐   ││
│   00:00               │ ───► │   12:34               │   ││
└──────────────────────┘      └──────────────────────┘   ││
  Setting window for UTC        Enter UTC and then press
                                the ENTER knob.
```
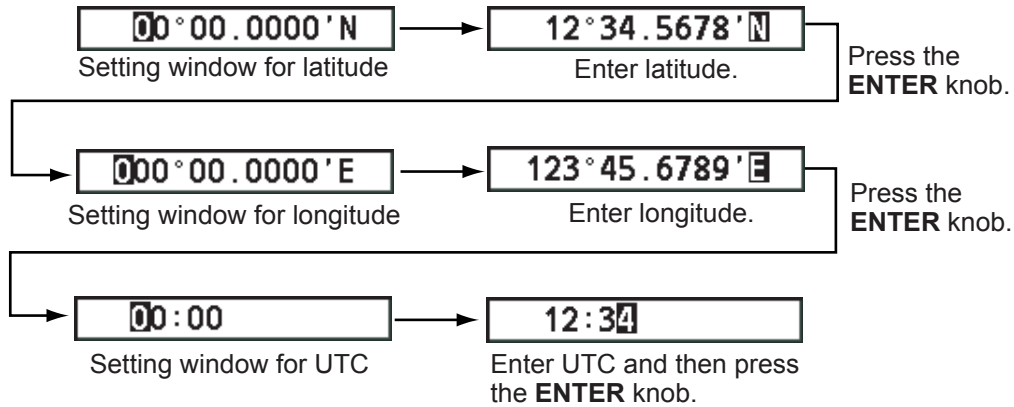
Note: When the setting of INPUT TYPE is MANUAL, the message "WARNING: Position data is not updated! Position data was older than 4.0H*. Update it. [CANCEL]: Stop alarm" appears at set intervals (*: update interval selected with POSITION OLDER on the POSITION menu) to ask you to update position.

How to set POSITION OLDER

1. Rotate the **ENTER** knob to select OLDER on the POSITION menu and then press the **ENTER** knob.

```
4.0H
3.0H
2.0H
1.0H
0.5H
```
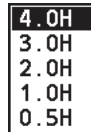
2. Rotate the **ENTER** knob to select appropriate interval time and then press the **ENTER** knob.

6.8   Date and Time Setting

Set the date and time for the system.

1. Rotate the **ENTER** knob to select SYSTEM on the MENU screen and then press the **ENTER** knob.
2. Rotate the **ENTER** knob to select DATE/TIME and then press the **ENTER** knob.
   - When inputting data from GPS, cannot change setting; only for viewing.

```
SOURCE : GNSS
DATE : 20/FEB/2011
TIME : 12:34 UTC
```

- When not inputting data from GPS, enter date and time with the numeric keys.

```
SOURCE : INTERNAL
DATE : 20/FEB/2011
TIME : 12:34 UTC
```
Select DATE or TIME
and then press the
ENTER knob.

Setting window for DATE

```
20/02/2011
```

Enter date and then press the **ENTER** knob.
For example, 20/FEB/2011 is entered as
200211 (20 of 2011 is fixed).

20022011

Day Month Year

Setting window for TIME

```
12:34
```

Enter time and then press the **ENTER** knob.
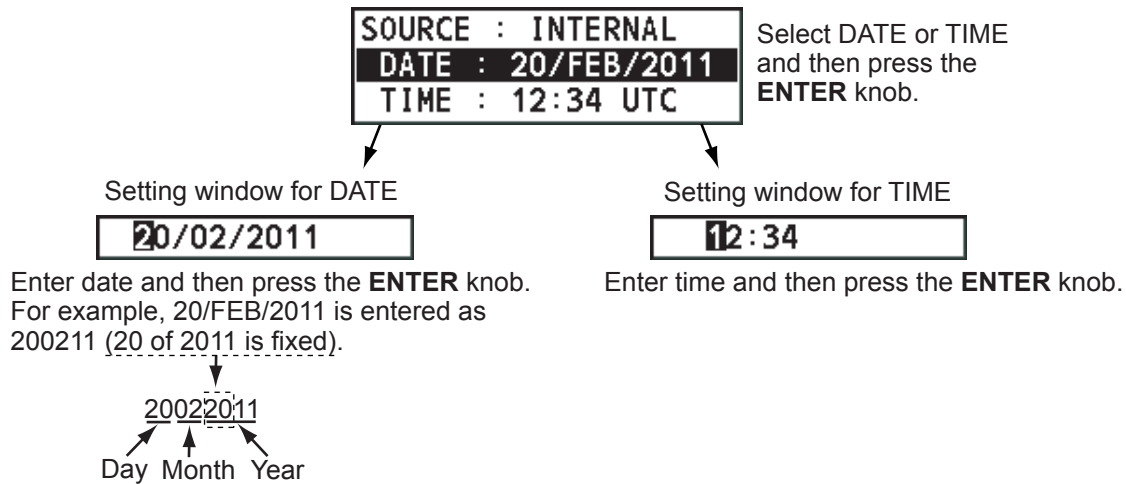
6.9   Timeout Setting

The menu screen or the inactive tab can close automatically when there is no menu operation for specific time. You can set the time interval for auto closing of the menu and tab.

1. Rotate the **ENTER** knob to select SYSTEM on the MENU screen and then press the **ENTER** knob.
2. Rotate the **ENTER** knob to select TIMEOUT and then press the **ENTER** knob.

```
TIMEOUT
1 MENU END     : 10MIN
2 DSC GENERAL : 15MIN
3 RX DISTRESS : NO TIMEOUT
4 SSB         : 30SEC
5 TELEX       : NO TIMEOUT
  FAX         : NO TIMEOUT
7 AM          : NO TIMEOUT
  CW          : NO TIMEOUT
```
FAX and CW are unavailable.

3. Rotate the **ENTER** knob to select the item desired and then press the **ENTER** knob.
4. Rotate the **ENTER** knob to select time interval and then press the **ENTER** knob. If you select NO TIMEOUT, the menu screen and the inactive tabs do not close automatically.

Item	Description	Option
MENU END	Close the menu screen automatically.	10MIN, NO TIMEOUT
DSC GENERAL	Close the inactive tabs except the distress alert.	15MIN, NO TIMEOUT
RX DISTRESS	Close the inactive tab for the receiving distress alert.	
SSB	Close the inactive tabs for RT of SSB and LSB.	10SEC, 30SEC, 10MIN
TELEX	Close the inactive tabs for RT of TELEX.	10SEC, 30SEC, 10MIN, NO TIMEOUT
FAX	Close the inactive tabs for RT of FAX.	
AM	Close the inactive tabs for RT of AM.	

6.10 FAX Enable/Disable

You can enable or disable FAX use as follows. This setting is necessary when the facsimile is connected and used to receive.

1. Rotate the **ENTER** knob to select SYSTEM on the MENU screen and then press the **ENTER** knob.
2. Rotate the **ENTER** knob to select FAX RX and then press the **ENTER** knob.
3. Rotate the **ENTER** knob to select ENABLE or DISABLE and then press the **ENTER** knob. When selecting ENABLE, "FAX" is added to the emission mode.

Emission mode ——→
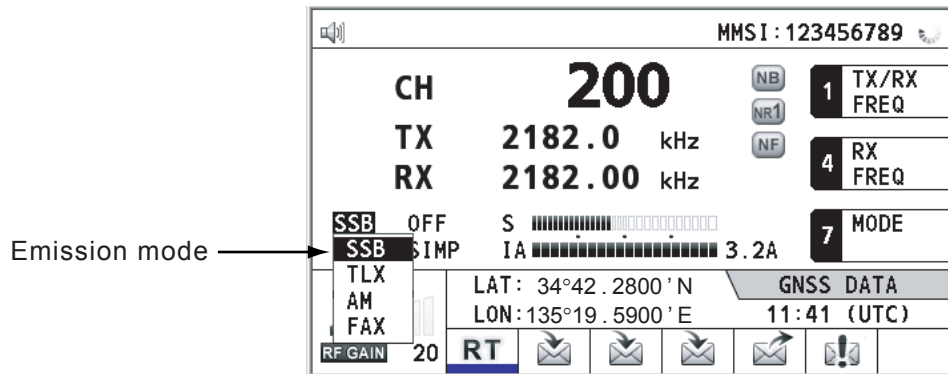
6.11 Selecting Antenna

You can select the antenna to be used for both TX and RX, or separately.

1. Rotate the **ENTER** knob to select SYSTEM on the MENU screen and then press the **ENTER** knob.
2. Rotate the **ENTER** knob to select ANT SELECT and then press the **ENTER** knob.
3. Rotate the **ENTER** knob to select TRX ANT or RX ANT and then press the **ENTER** knob.

6.12 NETWORK Setting

You can see the network information.

1. Rotate the **ENTER** knob to select SYSTEM on the MENU screen and then press the **ENTER** knob.
2. Rotate the **ENTER** knob to select NETWORK and then press the **ENTER** knob.
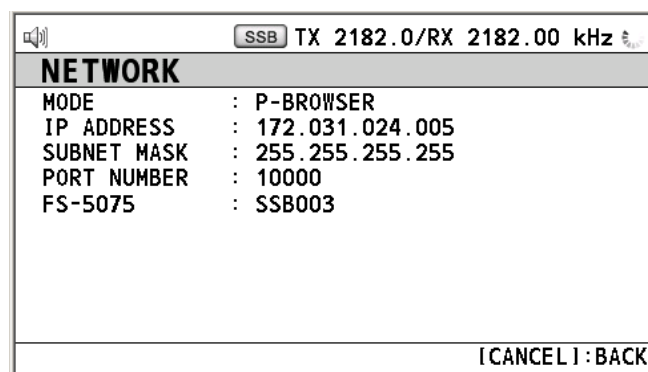
6.13   Address Book

You can register the MMSI or the address name (max. 20 letters) in the memory up to 50.

6.13.1   List for address data

1. Rotate the **ENTER** knob to select DSC on the MENU screen and then press the **ENTER** knob.
2. Rotate the **ENTER** knob to select ADDRESSBOOK and then press the **ENTER** knob.

```
◁))                  [SSB] TX 2182.0/RX 2182.00 kHz
     ADDRESS BOOK    (TOTAL   12/50)
    SHIP:24       COAST:16        GROUP:10
     NAME                 MMSI       3/ 8
 22: NO6 HNKYU           363636363
 23: FERRY KASHII        282828282
 24: SUNRISE             123456789
 25:
 26:
 27:
 28:
 ▢:PREV ▢:NEXT ▢:DELETE ▢:ENTRY ▢:LIST
 [ENTER]:EDIT   [DSC MSG]:COMPOSE [CANCEL]:BACK
```

Key/knob	Function
ENTER	Move the cursor position with rotating the **ENTER** knob.
CANCEL	Return to the MENU screen.
1	Go to the previous page.
3	Go to the next page.
4	Delete address (see paragraph 6.13.4).
5	Open the ADRESS DATA ENTRY screen (see paragraph 6.13.2).
6	Switch the address type. Each press changes the type continuously (SHIP → COAST → GROUP → SHIP → …).

6.13.2   Registering address

1. Press the **5** key on the ADDRESS BOOK screen to open the ADDRESS DATA ENTRY window.
2. Rotate the **ENTER** knob to select NAME and then press the **ENTER** knob.
3. Enter the address name with the numeric keys and then press the **ENTER** knob.
4. Rotate the **ENTER** knob to select MMSI and then press the **ENTER** knob.
5. Enter the address name with the numeric keys and then press the **ENTER** knob.
6. Rotate the **ENTER** knob to select REGISTER and then press the **ENTER** knob.
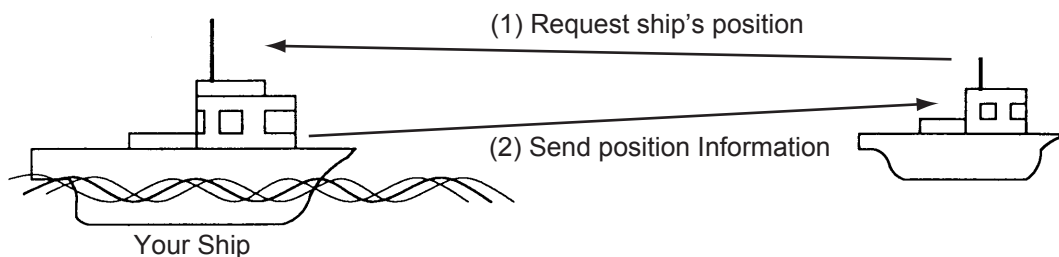7. Rotate the **ENTER** knob to select YES and then press the **ENTER** knob.

6.13.3 Editing address

1. Rotate the **ENTER** knob to select address, which you want to edit, on the ADDRESS BOOK screen and then press the **ENTER** knob.
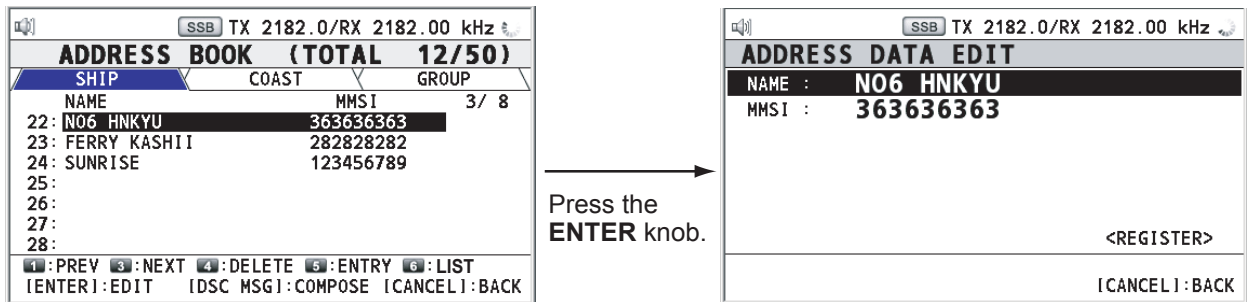
2. Rotate the **ENTER** knob to select NAME or MMSI, which you want to edit, and then press the **ENTER** knob.
3. Enter the address name or MMSI with the numeric keys and then press the **ENTER** knob.
4. After setting, rotate the **ENTER** knob to select REGISTER and then press the **ENTER** knob.
5. Rotate the **ENTER** knob to select YES and then press the **ENTER** knob.

Note: If the MMSI overlaps with the existing ones, the alarm for key error sounds and the warning pop-up message appears when selecting REGISTER.

6.13.4 Deleting address

Deleting individual address

1. Rotate the **ENTER** knob to select an address, which you want to delete, on the ADDRESS BOOK screen, and then press the **4** key.
2. Rotate the **ENTER** knob to select DELETE SELECTION and then press the **ENTER** knob.
3. Rotate the **ENTER** knob to select YES and then press the **ENTER** knob.

Deleting address per type

1. Press the **6** key several times to select desired type on the ADDRESS BOOK screen.
2. Press the **4** key.
3. Rotate the **ENTER** knob to select DELETE LIST and then press the **ENTER** knob.
4. Rotate the **ENTER** knob to select YES and then press the **ENTER** knob.

Deleting all address

1. Press the **4** key on the ADDRESS BOOK screen.
2. Rotate the **ENTER** knob to select DELETE ALL LISTS and then press the **ENTER** knob.
3. Rotate the **ENTER** knob to select YES and then press the **ENTER** knob.

6.13.5 Creating DSC messages with quoting registered address

1. Rotate the **ENTER** knob to select the address, which you want to quote, on the ADDRESS BOOK screen.
2. Press the **OTHER DSC MSG** key to open the COMPOSE MSG screen.
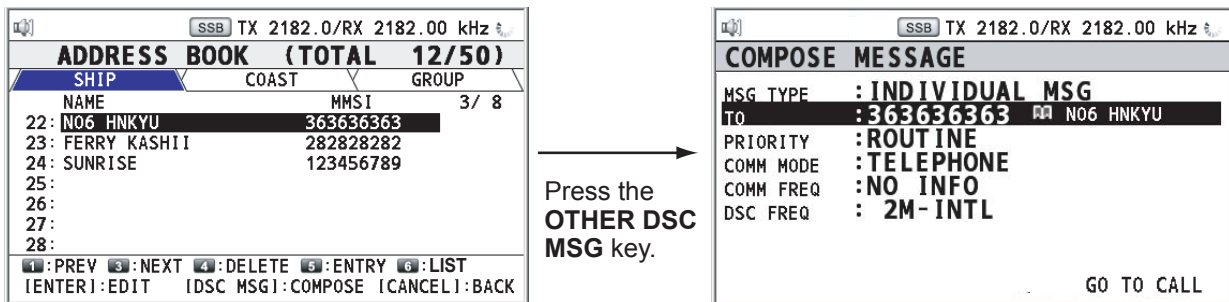
6.14 Preparing TX Message

For the individual, PSTN, group and test messages, you can create messages and store them in the memory for future use. You can edit, send or delete these messages. Maximum 100 messages can be stored into the memory.

6.14.1 List for message files

1. Rotate the **ENTER** knob to select DSC on the MENU screen and then press the **ENTER** knob.
2. Rotate the **ENTER** knob to select MSG FILE and then press the **ENTER** knob.

Key/knob	Function
ENTER	Move the cursor position with rotating the **ENTER** knob.
CANCEL	Return to the MENU screen.
1	Go to the previous page.
3	Go to the next page.
4	Delete messages (see paragraph 6.14.8).
5	Open the MESSAGE FILE ENTRY screen.
6	Switch the message type. Each press changes the type continuously (INDIVIDUAL → GROUP → PSTN → TEST →INDIVIDUAL → …).

Detailed screen for message files

Rotate the **ENTER** knob to select the message file desired on the MESSAGE FILE list and then press the **ENTER** knob. The detailed screen for the selected message file appears.

```
📢                    SSB  TX 2182.0/RX 2182.00 kHz
  MESSAGE FILE   - NO.1 -
 MSG TYPE    :INDIVIDUAL MSG
 TO          :111111112
 PRIORITY    :ROUTINE
 COMM MODE   :TELEPHONE
 COMM FREQ   :2222.0kHz
 DSC FREQ    :2M-INTL
 FILE NAME   :INDIV-001

 1:PREV  3:NEXT  4:DELETE  5:PRINT
 [ENTER]:EDIT   [DSC MSG]:COMPOSE [CANCEL]:BACK
```

To go to the detailed screen for the previous message file, press the **1** key, and for the next message file, press the **3** key. To delete the selected message file, press the **4** key. To print the selected message file, press the **5** key.

6.14.2   Preparing individual calls

1. Press the **5** key on the MESSAGE FILE list to open the MESSAGE FILE ENTRY.

```
📢                    SSB  TX 2182.0/RX 2182.00 kHz
  MESSAGE FILE   ENTRY
 MSG TYPE   :  INDIVIDUAL
 TO         :  - - - - - - - - -
 COMM MODE  :  TELEPHONE
 COMM FREQ  :  NO INFO
 DSC  FREQ  :  2177.0kHz
 FILE NAME  :  -
                            <REGISTER>

                            [CANCEL]:BACK
```

2. Rotate the **ENTER** knob to select MSG TYPE and then press the **ENTER** knob.
3. Rotate the **ENTER** knob to select INDIVIDUAL and then press the **ENTER** knob.
4. Rotate the **ENTER** knob to select TO and then press the **ENTER** knob.
5. Enter the MMSI of coast station or ship station referring to paragraph 5.1.1 and then press the **ENTER** knob.
6. Rotate the **ENTER** knob to select COMM MODE and then press the **ENTER** knob.
7. Rotate the **ENTER** knob to select the communication mode and then press the **ENTER** knob.
8. Rotate the **ENTER** knob to select COMM FREQ and then press the **ENTER** knob.
9. Select communication frequency referring to paragraph 5.1.1and then press the **ENTER** knob.
10. Rotate the **ENTER** knob to select DSC FREQ and then press the **ENTER** knob.
11. Rotate the **ENTER** knob to select DSC frequency referring to paragraph 5.1.1 and then press the **ENTER** knob.
12. Rotate the **ENTER** knob to select FILE NAME and then press the **ENTER** knob.
13. Enter the file name with the numeric keys.
14. Rotate the **ENTER** knob to select REGISTER and then press the **ENTER** knob.
15. Rotate the **ENTER** knob to select YES and then press the **ENTER** knob.

6.14.3   Preparing group calls

To receive the group calls, registering of the group ID is necessary as below.

1. Press the **5** key on the MESSAGE FILE list to open the MESSAGE FILE ENTRY.
2. Rotate the **ENTER** knob to select MSG TYPE and then press the **ENTER** knob.
3. Rotate the **ENTER** knob to select GROUP and then press the **ENTER** knob.
4. Rotate the **ENTER** knob to select TO and then press the **ENTER** knob.
5. Enter the ID of group with the numeric keys and then press the **ENTER** knob.
6. Rotate the **ENTER** knob to select COMM MODE and then press the **ENTER** knob.
7. Rotate the **ENTER** knob to select TELEPHONE or NBDP-FEC and then press the **ENTER** knob.
8. Rotate the **ENTER** knob to select COMM FREQ and then press the **ENTER** knob.
9. Select communication frequency referring to paragraph 5.1.1and then press the **ENTER** knob.
10. Rotate the **ENTER** knob to select DSC FREQ and then press the **ENTER** knob.
11. Rotate the **ENTER** knob to select DSC frequency and then press the **ENTER** knob.
12. Do steps 14 to 17 in paragraph 6.14.2.

6.14.4   Preparing PSTN calls

1. Press the **5** key on the MESSAGE FILE list to open the MESSAGE FILE ENTRY.
2. Rotate the **ENTER** knob to select MSG TYPE and then press the **ENTER** knob.
3. Rotate the **ENTER** knob to select PSTN and then press the **ENTER** knob.
4. Rotate the **ENTER** knob to select TO and then press the **ENTER** knob.
5. Enter the MMSI of coast station referring to paragraph 5.1.1 and then press the **ENTER** knob.
6. Rotate the **ENTER** knob to select TEL NO. and then press the **ENTER** knob.
7. Enter the telephone no. (up to 16 digits) with the numeric keys and then press the **ENTER** knob.
8. Rotate the **ENTER** knob to select DSC FREQ and then press the **ENTER** knob.
9. Rotate the **ENTER** knob to select DSC frequency and then press the **ENTER** knob.
10. Do steps 14 to 17 in paragraph 6.14.2.

6.14.5   Preparing test call

1. Press the **5** key on the MESSAGE FILE list to open the MESSAGE FILE ENTRY.
2. Rotate the **ENTER** knob to select MSG TYPE and then press the **ENTER** knob.
3. Rotate the **ENTER** knob to select TEST and then press the **ENTER** knob.
4. Rotate the **ENTER** knob to select TO and then press the **ENTER** knob.
5. Enter the MMSI where to send the test message referring to paragraph 5.1.1 and then press the **ENTER** knob.
6. Rotate the **ENTER** knob to select DSC FREQ and then press the **ENTER** knob.
7. Rotate the **ENTER** knob to select DSC frequency and then press the **ENTER** knob.
8. Do steps 14 to 17 in paragraph 6.14.2.

6.14.6 Editing prepared messages

1. Rotate the **ENTER** knob to select message file, which you want to edit, on the MESSAGE FILE list and then press the **ENTER** knob.
2. Press the **ENTER** knob to open MESSAGE FILE EDIT screen.

```
◁))                    SSB TX 2182.0/RX 2182.00 kHz
   MESSAGE FILE   EDIT
 MSG TYPE  :  INDIVIDUAL
 TO        :  111222333
 COMM MODE :  TELEPHONE
 COMM FREQ :   2222.0kHz
 DSC  FREQ :   2177.0kHz
 FILE NAME :  INDIV-001
                              <REGISTER>

                           [CANCEL]:BACK
```

3. Rotate the **ENTER** knob to select the item, which you want to edit, and then press the **ENTER** knob.
4. Change the setting accordingly.
5. After setting, rotate the **ENTER** knob to select REGISTER and then press the **ENTER** knob.
6. Rotate the **ENTER** knob to select YES and then press the **ENTER** knob.

6.14.7 Sending prepared messages

Sending without modification

1. Rotate the **ENTER** knob to select the message file desired on the MESSAGE FILE list and then press the **OTHER DSC MSG** key.
2. Rotate the **ENTER** knob to select GO TO CALL and then press the **ENTER** knob.

Editing before sending

Follow the procedures in paragraph 6.14.6 and do the above procedures "Sending without modification".

6.14.8 Deleting prepared messages

Deleting individual prepared message

1. Rotate the **ENTER** knob to select a file, which you want to delete, on the MESSAGE FILE list and then press the **4** key.
2. Rotate the **ENTER** knob to select DELETE SELECTION and then press the **ENTER** knob.
3. Rotate the **ENTER** knob to select YES and then press the **ENTER** knob.

Deleting prepared messages per type

1. Press the **6** key several times to select desired type on the MESSAGE FILE list.
2. Press the **4** key.
3. Rotate the **ENTER** knob to select DELETE LIST and then press the **ENTER** knob.
4. Rotate the **ENTER** knob to select YES and then press the **ENTER** knob.

Deleting all send messages

1. Press the **4** key on the MESSAGE FILE list.
2. Rotate the **ENTER** knob to select DELETE ALL LISTS and then press the **ENTER** knob.
3. Rotate the **ENTER** knob to select YES and then press the **ENTER** knob.

6.15 Setting the AUTO ACK Details

The acknowledgement message can be sent automatically when you receive an individual message or a PSTN message. You can also enable or disable it for position, polling and test messages. Note that the automatic acknowledge is automatically disabled when RX call contains error, as required by law. Further, automatic acknowledge is disabled in case of OFF HOOK.

1. Rotate the **ENTER** knob to select DSC on the MENU screen and then press the **ENTER** knob.
2. Rotate the **ENTER** knob to select ACK SETTINGS and then press the **ENTER** knob.

Default:
AUTO (UNABLE)

AUTO(UNABLE)
MANUAL

AUTO (UNABLE): Send UNABLE acknowledgement automatically.
MANUAL: Send acknowledgement manually. Can select ABLE acknowledgement or UNABLE acknowledgement.

Default:
AUTO (ABLE)

AUTO(ABLE)
AUTO(UNABLE)

AUTO (ABLE): Send ABLE acknowledgement automatically.
AUTO (UNABLE): Send UNABLE acknowledgement automatically.

ACK SETTINGS
1 INDIVIDUAL : AUTO(UNABLE)
2 PSTN : AUTO(ABLE)
3 REASON : NO REASON
4 POSITION MSG : MANUAL
5 POLLING MSG : AUTO
6 TEST MSG : AUTO

NO REASON
BUSY
EQUIP ERROR
CAN'T USE MODE
CAN'T USE CH

Default: NO REASON

Sets reason for UNABLE.

Default: MANUAL

AUTO(ABLE)
AUTO(UNABLE)
MANUAL

AUTO (ABLE): Send automatic acknowledgement of position request.
AUTO (UNABLE): Send automatic acknowledgement of no position information.
MANUAL: Send manual acknowledgement.

AUTO
MANUAL

Default: AUTO

AUTO: Send automatic acknowledgement of test call.
MANUAL: Send manual acknowledgement of test call.

AUTO
MANUAL

Default: AUTO

AUTO: Send automatic acknowledgement of polling request.
MANUAL: Send manual acknowledgement of polling request.

6.16 Special Messages

Permission to transmit NEUTRAL CRAFT and MEDICAL TRANSPORT can be enabled or disabled as follows:

1. Rotate the **ENTER** knob to select DSC on the MENU screen and then press the **ENTER** knob.
2. Rotate the **ENTER** knob to select SPECIAL MSG and then press the **ENTER** knob.

SPECIAL MSG
1 NEUTRAL : UNABLE
2 MEDICAL : UNABLE
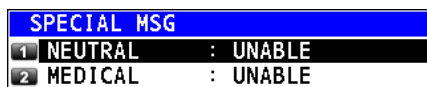
3. Rotate the **ENTER** knob to select NEUTRAL or MEDICAL and then press the **ENTER** knob.
4. Rotate the **ENTER** knob to select ABLE or UNABLE and then press the **ENTER** knob.

6.17 Setting Scan Frequencies

The ROUTINE/DISTRESS SCAN menus determine which DSC routine and distress frequencies to scan. Follow the instructions below to select/deselect DSC routine and distress frequencies to scan.

Routine frequencies

1. Rotate the **ENTER** knob to select DSC on the MENU screen and then press the **ENTER** knob.
2. Rotate the **ENTER** knob to select ROUTINE SCAN and then press the **ENTER** knob.

```
◁))                    SSB  TX 2182.0/RX 2182.00 kHz
ROUTINE SCAN FREQ SETUP
  SCAN1 : OFF
  SCAN2 : OFF
  SCAN3 : OFF
  SCAN4 : OFF
  SCAN5 : OFF
  SCAN6 : OFF


 [ENTER]:SELECT    [CANCEL]:BACK
```
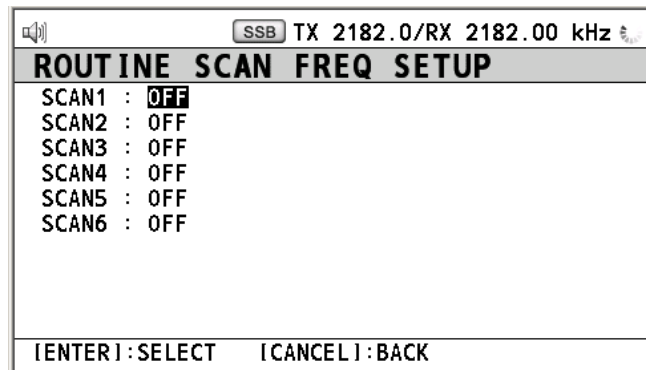
3. Rotate the **ENTER** knob to select SCAN1 (2, 3, 4, 5 or 6) and then press the **ENTER** knob.
4. Rotate the **ENTER** knob to select frequency band and then press the **ENTER** knob. If you select USER CH, go to step 6.
5. Rotate the **ENTER** knob to select frequency desired and then press the **ENTER** knob.
   INTL: International channels
   LOCAL1/LOCAL2: Local channels
   DIST: Distress channels
6. Rotate the **ENTER** knob to select the user channel desired and then press the **ENTER** knob.

Note: Distress frequencies can be stored on the routine frequency memory. This is convenient for backing up the watch-keeping receiver.

Distress and safety frequencies

1. Rotate the **ENTER** knob to select DSC on the MENU screen and then press the **ENTER** knob.
2. Rotate the **ENTER** knob to select DISTRESS SCAN and then press the **ENTER** knob.
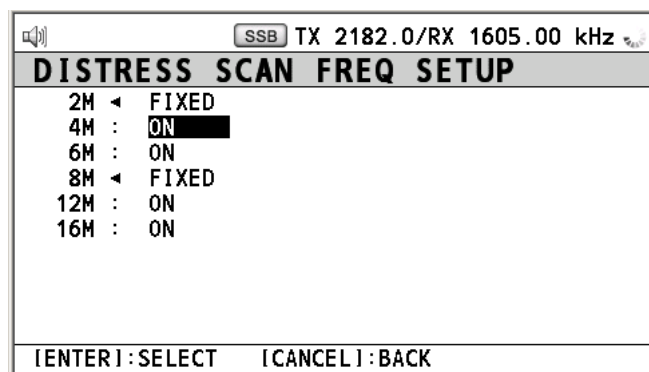
```
◁))                    SSB  TX 2182.0/RX 1605.00 kHz
DISTRESS SCAN FREQ SETUP
   2M ◀  FIXED
   4M :  ON
   6M :  ON
   8M ◀  FIXED
  12M :  ON
  16M :  ON


 [ENTER]:SELECT    [CANCEL]:BACK
```

3. Rotate the **ENTER** knob to select frequency band and then press the **ENTER** knob.
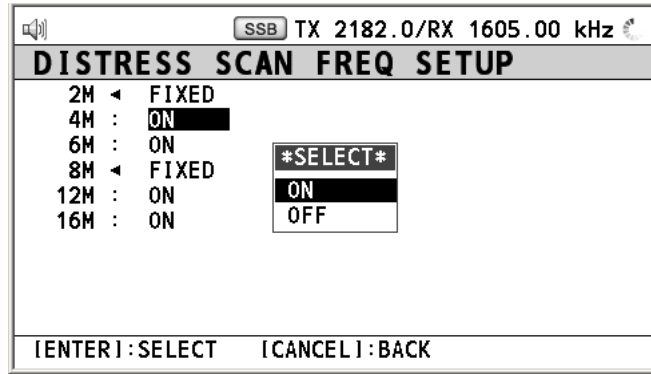
Note: You cannot select 2 MHz and 8 MHz.

4. Rotate the **ENTER** knob to select ON or OFF as appropriate and then press the **ENTER** knob.

Note: Regulations require that 2 MHz and 8 MHz and one more DSC distress frequency be watched continuously. 2 MHz and 8 MHz cannot be turned off. Maximum three bands can be turned off.

6.18 Sound Setting

The AUDIO menu lets you set the volume for the following items:

- Key click on/off

- Speaker on/off with off hook for handset

- Volume of the receiving alarm for the safety and routine messages

- Turn sound alarm on/off for the distress alarm received from a ship in distress which is more than 500NM from your ship

Rotate the **ENTER** knob to select AUDIO on the MENU screen and then press the **ENTER** knob.
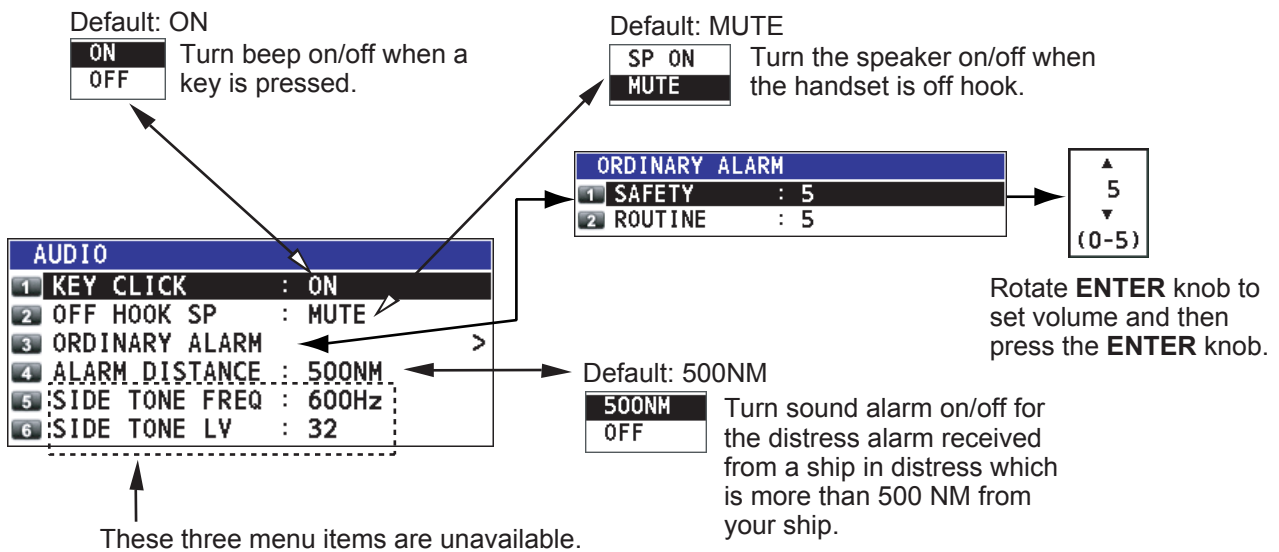
7. NBDP SYSTEM OVERVIEW

7.1 Turning on the NBDP System

Turn on the terminal unit and the printer with their respective power switches.

Operating Lamp POWER Switch

Floppy Disk Drive

TERMINAL UNIT IB-583

PRINTER PP-510 POWER Switch
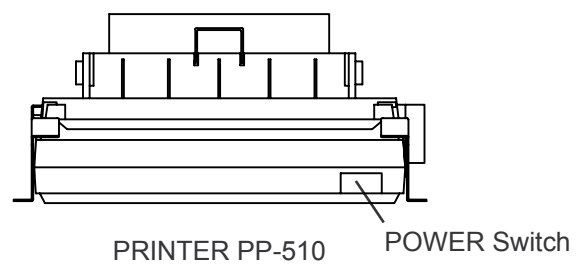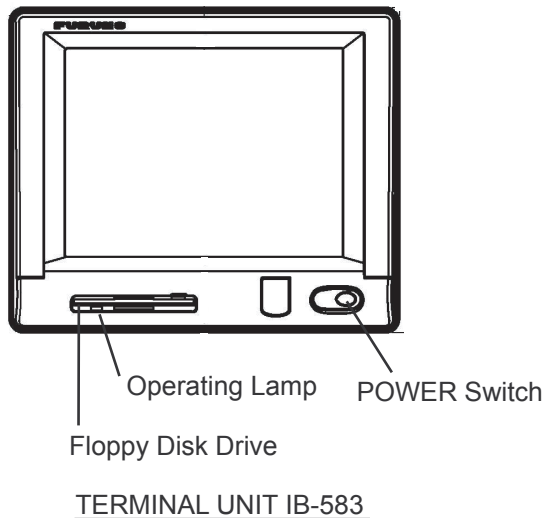
NBDP terminal unit and printer

Note 1: To power the system, turn on the control unit then turn on the NBDP terminal unit.
Note 2: The Printer PP-510 prints messages. Refer to its operator's manual for operating information.
Note 3: When the NBDP has priority, the control unit displays "OCCUPIED (NBDP)".

7.2 Description of Equipment

7.2.1 Terminal unit

The terminal unit is a visual display incorporating a floppy disk drive, which provides for storage of files on floppy disks. Two models are available, IB-585 (monochrome) and IB-583 (color). Controls for power and adjustment of display brilliance and contrast are provided on the front panel of the IB-585. To adjust the brilliance on the IB-583, press **Alt** while pressing **F6** to lower the brilliance; **F7** to raise it. (The IB-583 does not have a control for adjustment of contrast.) Eight levels of brilliance are available.

When the terminal unit is turned on, the communication status display, shown below, appears. This is where all phases of telex communications begin.

```
1:File 2:Edit 3:Operate 4:Window 5:Station 6:System 7:WRU 8:HR 9:Over 10:Break
------------------------------------------------- 2002-10-15 2:26:45 UTC ------Caps-Eng
 Station Name     :
 Frequency (T/R) :        . /      .  (kHz)   Comm Mode : AUTO
 Comm Status      :   Connect Send Lock Error
 Sending Volume   :       (%)   ARQ Error : 0   ARQ Time : 0(sec)
-------------------------------------------------------------------------------------
```

Communication status display

Features of the IB-583

The IB-583 is fitted with both English and Russian interface. Select desired interface as below:

English: Turn on the IB-583 while pressing the **E** key.
Russian: Turn on the IB-583 while pressing the **R** key.

The IB-583 has a battery (type CR2450-F2ST2L, code no. 000-144-941) on its TERM/CPU Board (16P0209) and its life is about six years. When the voltage of the battery is low, the time will be slow. When this occurs, contact your dealer about replacement of the battery.

Note: To switch between Russian and English input, press **Alt** while holding down **Shift**. (This is available in Russian mode only.)

7.2.2   Keyboard

The terminal unit is operated from the keyboard, and is almost 100% keyboard controlled. Operation is simplified by the use of menus which you access by pressing a function key, labeled F1-F10 at the top of the keyboard. The figure below shows the function menus and their corresponding function keys.
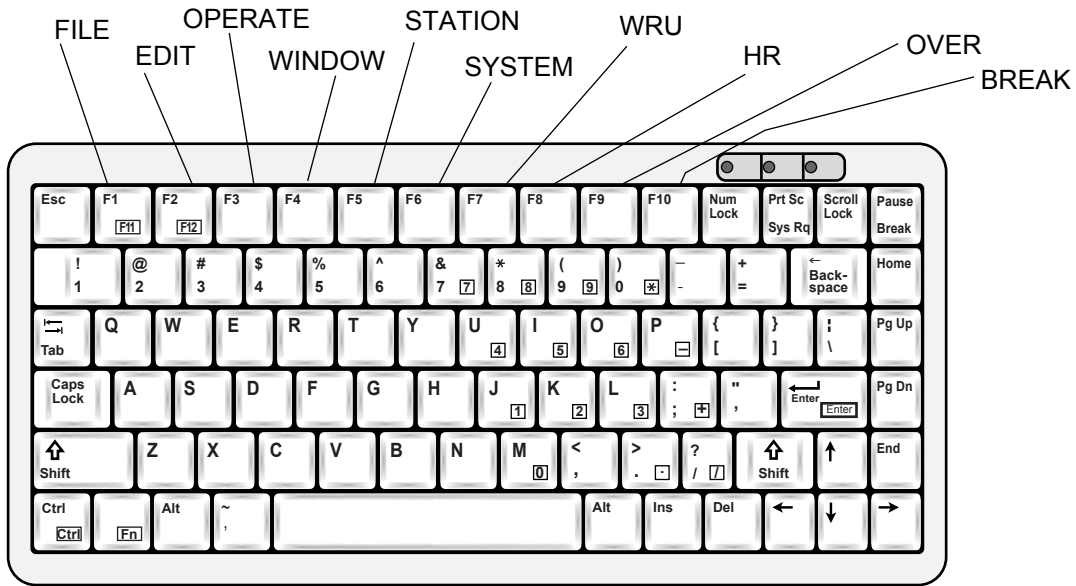
Keyboard for IB-583

7.3 Function Keys, Menu Operation

The function keys at the top of the keyboard control most operations of this unit through a menu system.

7.3.1 Menu conventions

Reverse highlighting

The menu item which you put the cursor on is displayed as white on black (monochrome display). This highlighting indicates that it is available for selection.

Underline

The underline shows current selection. In the figure below, for example, the underline is beneath "ARQ" and "Channel."

```
┌─────── Station Entry ───────────┐
│ ┌─ Station List ─┐              │
│ │                │  ┌────────┐  │
│ │                │  │ Create │  │
│ │                │  │ Change │  │
│ │                │  └────────┘  │
│ │                │              │
│ └────────────────┘              │
│                                 │
│ ┌───── Station Set Up ────────┐ │
│ │ ▐Station▌ : █               │ │
│ │ ID Code  :                  │ │
│ │ Mode     : ARQ FEC          │ │
│ │ CH/Table : Channel ScanTable│ │
│ │ Num/Table:                  │ │
│ └─────────────────────────────┘ │
└─────────────────────────────────┘
```

Reverse highlighting   Underline
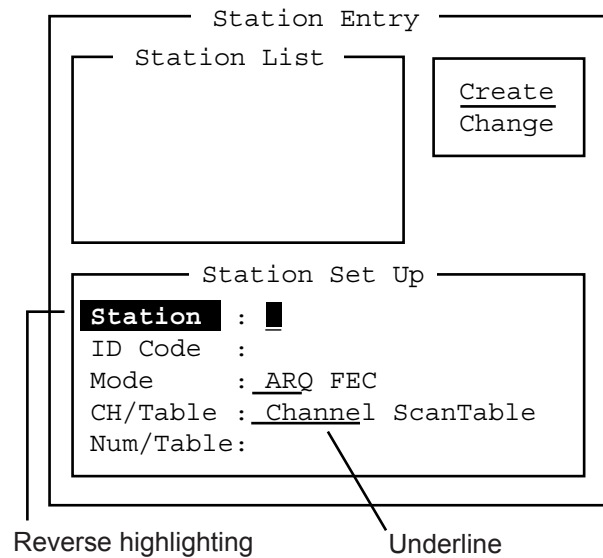
Station entry screen

7.3.2   Menu overview

Selecting menus

Press appropriate function key to open a menu. To display the File menu, for example, press the function key **F1**.

```
┌──────────── File ────────────┐
│                               │
│ 1: New                        │
│ 2: Open                       │
│ 3: Close                      │
│ ----------------------------- │
│ 4: Delete                     │
│ ----------------------------- │
│ 5: Rename                     │
│ ----------------------------- │
│ 6: Real Time Printing         │
│ 7: File to Print              │
│ 8: Cancel Printing            │
│ ----------------------------- │
│ 9: Clear Buffer               │
│ ----------------------------- │
│ 0: Floppy Disk Format         │
└───────────────────────────────┘
```

File menu

Selecting menu items and options

Menu items can be selected by pressing appropriate numeric key or selecting item desired with the arrow keys and pressing the **Enter** key. Menu options can be selected by operating the ← or → key. After selecting option desired, press the **Enter** key to register your selection and close the menu.

Closing menu

- Press the **Esc** key several times.

7.3.3 Function key description

Function key [F1]: File menu

The File menu is where you will create, open, save and print telex messages. Floppy disks are also formatted from this menu.

```
                    ┌──────── File ────────┐
                    │                      │
                    │ 1: New               │
                    │ 2: Open              │
                    │ 3: Close             │
                    │ ------------------------------------- │
                    │ 4: Delete            │
                    │ ------------------------------------- │
                    │ 5: Rename            │
                    │ ------------------------------------- │
                    │ 6: Real Time Printing│
                    │ 7: File to Print     │
                    │ 8: Cancel Printing   │
                    │ ------------------------------------- │
                    │ 9: Clear Buffer      │
                    │ ------------------------------------- │
                    │ 0: Floppy Disk Format│
                    └──────────────────────┘
```

File menu

1: New	Open a new untitled window.
2: Open	Open files saved on the floppy disks.
3: Close	Close files.
4: Delete	Delete files on the floppy disks.
5: Rename	Rename files on the floppy disks.
6: Real Time Printing	Turn real time printing on/off.
7: File to Print	Print files on the floppy disks.
8: Cancel Printing	Stop printing.
9: Clear Buffer	Clear the communications buffer.
0: Floppy Disk Format	Format a floppy disk.

Function key [F2]: Edit menu

The Edit menu provides a full line of editing features.

```
 ──────── Edit ────────

1: Undo
...........................
2: Cut
3: Copy
4: Paste
...........................
5: Select All
...........................
6: Search
7: Replace
...........................
8: Goto Top
9: Goto Bottom
0: Goto Line
...........................
A: Change Text
```

Edit menu

1: Undo   Cancel the last change (cut, copy or paste).

2: Cut   Remove the selected text and store it in the paste buffer. (Previous text in the paste buffer is cleared.)

3: Copy   Copy the selected text and store it in the paste buffer. (Previous text in the paste buffer is cleared.)

4: Paste   Insert the text stored in the paste buffer at the current location of the cursor.

5: Select All   Select the entire current file for cut or copy.

6: Search   Search a word or a character string.

7: Replace   Replace a word with a different word or character string.

8: Goto Top   Bring the cursor to the top line of the current file.

9: Goto Bottom   Bring the cursor to last line of the current file.

0: Goto Line   Move the cursor to the desired line in the current file.

A: Change Text   Switch between the display window 1 and 2.

Function key [F3]: Operate menu

The Operate menu mainly controls transmitting and receiving.

```
┌────────────── Operate ──────────────┐
│                                      │
│  1: Call Station                     │
│  2: Macro Operation                  │
│  ----------------------------------- │
│  3: File to Send                     │
│  4: Cancel Sending                   │
│  ----------------------------------- │
│  5: Scan (Start/Stop)                │
│   ---------------------------------- │
│  6: Manual Reception                 │
│  ----------------------------------- │
│  7: Timer Operation                  │
│  ----------------------------------- │
│  8: Manual Calling                   │
│  9: Set Frequency                    │
│                                      │
└──────────────────────────────────────┘
```

Operate menu

1: Call Station	Select a station from the station list.
2: Macro Operation	Enable macro operation. For details, see paragraph 10.10.
3: File to Send	Select a file (to transmit).
4: Cancel Sending	Stop sending a file.
5: Scan Start/Stop	Start/stop frequency scanning.
6: Manual Reception	Select communication mode for reception; AUTO, ARQ, FEC DIRC. **Note:** The FS-2575/5075 is not affected by this setting.
7: Timer Operation	Timer programming.
8: Manual Calling	Set TX mode and subscriber's ID number in manual calling.
9: Set Frequency	Set TX and RX frequencies in manual calling.

Function key [F4]: Window menu

The Window menu lets you display the corresponding data of the window below.

```
            ┌──────── Window ────────┐
            │                        │
            │ 1: Calendar            │
            │ ---------------------- │
            │ 2: Distress Frequency Table │
            │                        │
            └────────────────────────┘
```
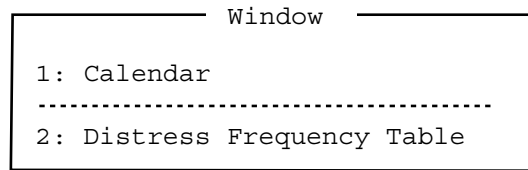
Window menu

1: Calendar Display desired calendar month and year. To change year or month, select item with ↑ or ↓ key and change setting with ← or → key.

2: Distress Frequency Table Display all distress frequencies.

```
┌──────────────────── Distress Frequencies ────────────────────┐
│  Telephone (kHz): 2182.0  4125.0  6215.0  8291.0  12290.0  16420.0 │
│ ------------------------------------------------------------- │
│  NBDP    (kHz) : 2174.5  4177.5  6268.0  8376.5  12520.0  16695.0 │
│ ------------------------------------------------------------- │
│  DSC     (kHz) : 2187.5  4207.5  6312.0  8414.5  12577.0  16804.5 │
└───────────────────────────────────────────────────────────────┘
```

Function key [F5]: Station menu

The Station menu provides for storage of stations, timer program setup, user channel setup, and entry of various ID codes.

```
          ┌──────── Station ────────┐
          │                         │
          │ 1: Station Entry        │
          │ ----------------------- │
          │ 2: Timer Operation Entry│
          │ ----------------------- │
          │ 3: Scan Entry           │
          │ ----------------------- │
          │ 4: User Channel Entry   │
          │ ----------------------- │
          │ 5: Answerback Code Entry│
          │ ----------------------- │
          │ 6: Group ID Entry (4/5 digit) │
          │ 7: Group ID Entry (9 digit)   │
          │ 8: Select ID Entry (4/5 digit)│
          │ 9: Select ID Entry (9 digit)  │
          │                         │
          └─────────────────────────┘
```
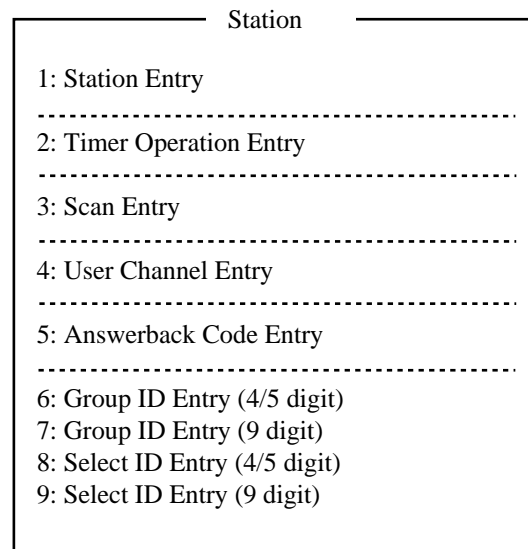
Station menu

1: Station Entry Register stations.

2: Timer Operation Entry Register timer programs.

3: Scan Entry Create scan groups for scanning.

4: User Channel Entry Register user channels.

5: Answerback Code Entry Register own ship's answerback code.

6: Group ID Entry Register own ship's group ID codes (4 or 5 digit).

7: Group ID Entry Register own ship's group ID codes (9 digit).

8: Select ID Entry Register own ship's selective ID codes (4 or 5 digit).

9: Select ID Entry Register own ship's selective ID codes (9 digit).

Function key [F6]: System menu

The System menu is mainly for use by technicians and contains diagnostic tests. To change settings, select Change from the item Setup and operate arrow keys to select item and option. Press the **Enter** key to register selection and close the menu.

```
┌───────────── System ─────────────┐
│ Setup                  Lock  Change  Default │
│ -------------------------------------------- │
│ Slave Delay            8 msec (0- 50 msec)   │
│ -------------------------------------------- │
│ TX/RX MSG Save         OFF O N               │
│ Edit Before sending    OFF O N               │
│ -------------------------------------------- │
│ Time System            OFF UTC SMT JST       │
│ Time & Date            2002/10/16  10:00:00  │
│ Window Color                                 │
│ Self Test                                    │
└──────────────────────────────────┘
```

System menu

Setup Lock, change settings; restore default system settings.

Slave Delay Set the length of the slave delay timing from the end of RX to the start of TX in the ARQ mode. The default setting is suitable in most cases. This item cannot be adjusted by the user.
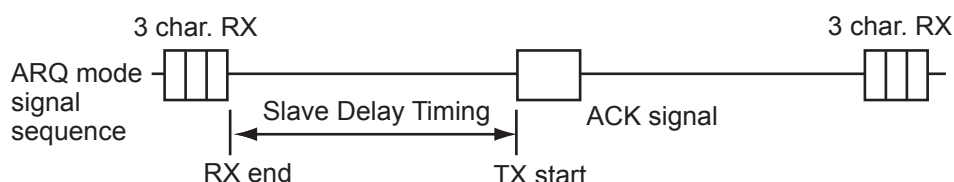
TX/RX MSG Save Turn on to automatically save incoming and outgoing messages to a floppy disk. "Log" appears at the top of the screen when on.

Edit Before sending "OFF" transmits keying operation one by one. "ON" transmits message only when the **Enter** key is pressed after confirming text typed.

Time System Select time system.
UTC: Coordinated universal time
SMT: Local time
JST: Japan standard time.

Time & Date Enter date and time manually. If a navigation device is connected, the time is automatically set when the power is turned on or whenever the time system is switched. Manual entry takes priority over automatic entry. This item cannot be adjusted when using JST or UTC.

Window Color   Select display colors. To change display colors:

1. Select Change from Setup.
2. Press the ↓ key to select Window Color and then press the **Enter** key.

```
┌─── Window Color Change ───┐
│ ███████████████████████   │
│ Window Color Setup        │
│ Default Color             │
│ ------------------------- │
│ To Change: ENTER  To quit: ESC │
└───────────────────────────┘
```
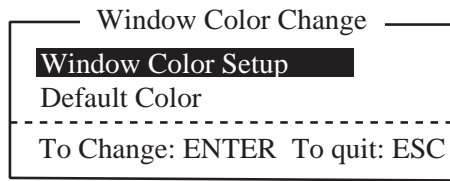
3. The cursor is selecting Window Color Setup; press the **Enter** key.

```
┌─── Window Color Setup ───┐
│ Window    : [BASE WINDOW ] │
│ Fore Color : [L-WHITE     ] │
│ Back Color : [BLUE        ] │
│ ------------------------- │
│ To Change: ENTER   To Change Value: L<=>R │
└──────────────────────────┘
```
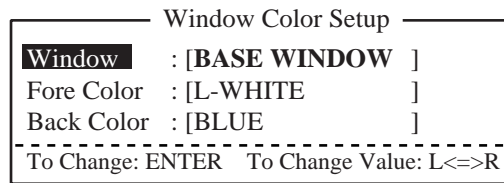
4. Press the → key to select the item to change: BASE WINDOW, BACK SCROLL, EDIT 1-2, FUNCTION, SUB MENU 1-3, MESSAGE.
5. Press the ↓ key to select Fore Color.
6. Press the → key to select color: L-WHITE, BLACK, BLUE, GREEN, CYAN, RED, MAGENTA, BROWN, WHITE, GRAY, L-BLUE, L-GREEN, L-CYAN, L-RED, L-MAGENTA, YELLOW.
7. Press the ↓ key to select Back Color.
8. Press the → key to select color.
9. Press the ↑ key to select Window.
10. Repeat the step 4 to 9 to set other colors.
11. Press the **Enter** key followed by the **Esc** key.

Self Test: Start diagnostic test.

Function key [F7]: WRU (Who Are You?): In the ARQ mode, request other station's answerback code.

Function key [F8]: HR (Here Is): In the ARQ mode, send your ship's answerback code.

Function key [F9]: OVER: In the ARQ mode, switch the direction of traffic; the information receiving station becomes the information sending station, the information sending station becomes the information receiving station.

Function key [F10]: Break: Disconnect the line.

8. NBDP PREPARATIONS

This chapter provides the procedures necessary for preparing the NBDP Terminal Unit for transmitting and receiving. For automatic telex, you need to register the following:

- Your ship's ID and answerback codes
- Stations
- Timer programs
- Scan channel groups
- User channels

8.1 Registering Answerback Code & ID Codes

Enter your ship's answerback code and ID codes as shown below.

Note: The answerback and ID codes cannot be changed once entered; be sure to enter the codes correctly.

8.1.1 Registering answerback code

1. Press the function key **F5** and then the **5** key to open the Answerback Code Entry screen.

```
┌──────── Answerback Code Entry ────────┐
│ Answerback Code                       │
│                                       │
│                                       │
│ ▮                                     │
│                                       │
│                                       │
└───────────────────────────────────────┘
```
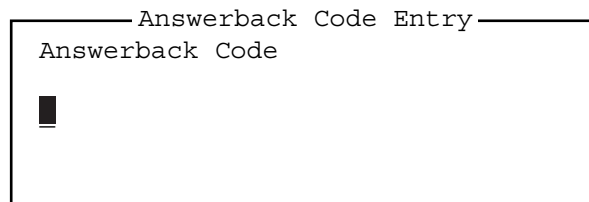
Answerback Code Entry screen

2. Enter your ship's answerback code (max. 20 characters, including spaces) and press the **Enter** key. The prompt "OK/Cancel" asks for verification of data.

   Example of answerback code: 123456789 FURU X.

3. If the code is correct, press the **Enter** key again. For final verification of the data, the Caution shown in the illustration below appears.

```
┌──────── Answerback Code Entry ────────┐
│ Answerback Code                       │
│                        ┌─────────┐    │
│                        │  O  K   │    │
│ 123456789 FURU X       │         │    │
│                        │ Cancel  │    │
│                        └─────────┘    │
└───────────────────────────────────────┘

┌───────────────────────────────────────┐
│ Caution                               │
│ Confirm the 'CODE' before pressing ENTER key. │
│ You cannot change the CODE once it has been entered. │
└───────────────────────────────────────┘
```
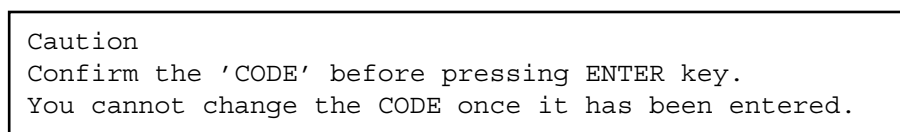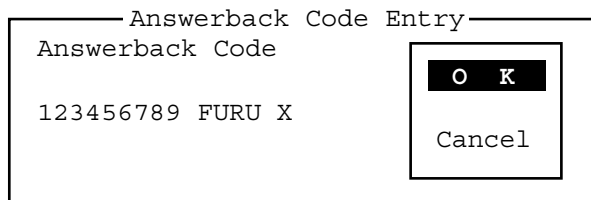
Message for confirmation of code entered

4. If the code is correct, press the **Enter** key again.

8.1.2 Registering ID codes

1. Press the function key **F5** and then the **6**, **7**, **8** or **9** key to enter the Group ID Code (4 or 5 digits), Group ID Code (9 digits), Select ID Code (4 or 5 digits) or Select ID Code (9 digits), respectively.

```
┌──────── Select ID Entry ────────┐
│ Select ID Code (4/5)            │
│                                 │
│                                 │
│ ■                               │
│                                 │
│                                 │
└─────────────────────────────────┘
```
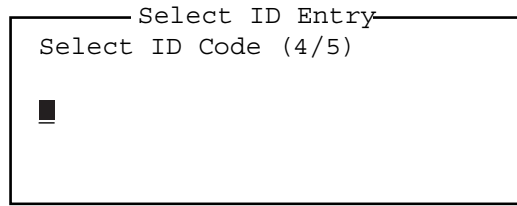
ID code entry screen

2. Enter Group ID or Select ID as appropriate and then press the **Enter** key. A prompt asks you to verify data.
3. If the ID is correct, press the **Enter** key.
   For final verification of the data, the Caution shown in the illustration below appears.

```
┌──────── Select ID Entry ────────┐
│ Select ID Code (4/5) ┌────────┐ │
│ 12345                │  O  K  │ │
│                      │        │ │
│                      │ Cancel │ │
│                      └────────┘ │
└─────────────────────────────────┘
```

```
┌─────────────────────────────────────────────────┐
│ Caution                                          │
│ Confirm the 'CODE' before pressing ENTER key.    │
│ You cannot change the CODE once it has been entered. │
└─────────────────────────────────────────────────┘
```
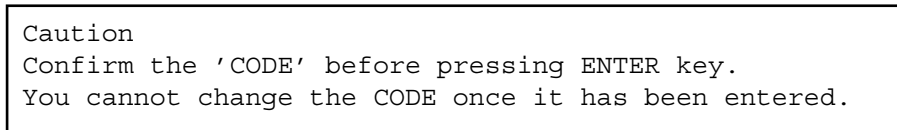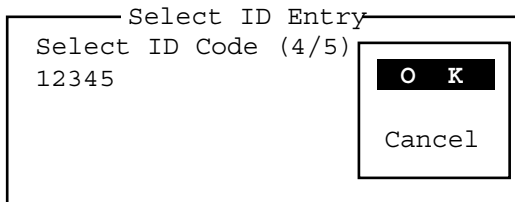
Message for confirmation of code entered

4. If the ID is correct, press the **Enter** key again.

8.2   Station List

The station list provides for storage of up to 50 stations, one frequency pair (RX and TX) per station. For stations which have more than one frequency pair, you can add a suffix to the station name to denote multiple frequency pairs. For example, station name FURUNO followed by -1, -2, -3, etc. for each frequency pair required.

8.2.1   Registering stations

1. Press the function key **F5** and then the **1** key to open the Station Entry screen.
   On the right-hand side of the screen, Create and Change are shown.

```
┌──────────── Station Entry ────────────┐
│ ┌──── Station List ────┐               │
│ │                      │    ┌────────┐ │
│ │                      │    │ Create │ │
│ │                      │    │ Change │ │
│ │                      │    └────────┘ │
│ │                      │               │
│ └──────────────────────┘               │
│ ┌────────── Station Set Up ──────────┐ │
│ │ Station  : █                       │ │
│ │ ID Code  :                         │ │
│ │ Mode     : ARQ FEC                 │ │
│ │ CH/Table : Channel ScanTable       │ │
│ │ Num/Table:                         │ │
│ └────────────────────────────────────┘ │
└─────────────────────────────────────────┘
```

Station Entry screen

2. Create should be underlined. If it is not, underline it by pressing →, ↑ and the **Enter** key.
3. The cursor is now selecting Station. Enter station name, using up to 18 characters.
4. Press the ↓ key to select ID Code. Enter station ID code.
5. Press the ↓ key to select Mode. Select communication mode with ← or → among the following:
   ARQ: Automatic Retransmission Request
   FEC: Forward Error Correction
6. Press the ↓ key to select CH/Table. Select Channel or ScanTable as appropriate.
7. Press the ↓ key to select Num/Table.
8. If you selected Channel at step 6, enter ITU channel number (see Appendix) or User channel number.
9. If you selected ScanTable at step 6, press the → key to show scan group list registered. For scan group, refer to section 8.5.
10. Select a scan group name by using the ↓ or ↑ key followed by pressing the **Enter** key.

```
┌──── Scanning Group List ────┐
│   INTREPID                  │
│   VOYAGER                   │
│ ▼ GLOBAL                    │
└─────────────────────────────┘
```

Scanning group list

11. Press the **Enter** key. The prompt OK/Cancel asks for verification of data.

```
 O   K
Cancel
```

OK/Cancel prompt

12. If the data are correct, press the **Enter** key. (To cancel entry, place the cursor on Cancel by pressing the ↓ key, and then press the **Enter** key. Data entered are erased.) The station name entered at step 3 appears at the Station List window.
13. To register other stations, press the **Enter** key twice and then repeat steps 3 through 11.
14. Press the ↓ key. Check data on the Station List for correctness. Stations displayed in reverse video on the Station List are displayed on Station Set Up.
15. Press the **Esc** key to quit.

Note 1: If you enter a station which already exists, the indication "Station by that name already exists. Press any key to escape." appears. Press any key to return to the Station List. Check the list.

Note 2: If you enter an invalid code, the message "Input Error. (ID Code) Press any key to escape." appears. Press any key and reenter ID code.

8.2.2   Editing/Deleting stations

1. Press the function key **F5** and then the **1** key.
2. Press the ↓ key to select a station name from the Station List.
3. Press the → key followed by ↓ key to select Change and press the **Enter** key.
4. Do one of the following;
   Edit station: Use ↑, ↓ and the **Backspace** key to make corrections.
   Delete station: Erase station name with the **Backspace** key.
5. Press the **Enter** key twice.
6. Press the **Esc** key.

8.3   Timer Programming

A built-in timer allows you to automatically receive and transmit files. 10 timer programs can be registered. To enable timer operation, see section 10.6.

8.3.1   Registering timer programs

1. Press the function key **F5** and the **2** key to open the Timer Operation Entry screen.

```
┌──────────────── Timer Operation Entry ─────────────────┐
│  ┌─Timer Operation List─┐                               │
│  │                      │        ┌──────────┐           │
│  │                      │        │ Create   │           │
│  │                      │        │ Change   │           │
│  │                      │        └──────────┘           │
│  └──────────────────────┘                               │
│  ┌──────────── Timer Operation Set Up ─────────────┐    │
│  │ Operation       :█                               │    │
│  │ Station      ➡  :                                │    │
│  │ Start Time      :  0: 00: 00                     │    │
│  │ Stop Time       :  0: 00: 00                     │    │
│  │ Receive/Send    : Receive Send                   │    │
│  │ File to Send ➡  :                                │    │
│  └──────────────────────────────────────────────────┘   │
└──────────────────────────────────────────────────────────┘
```

Press [→] to show station list, file list.
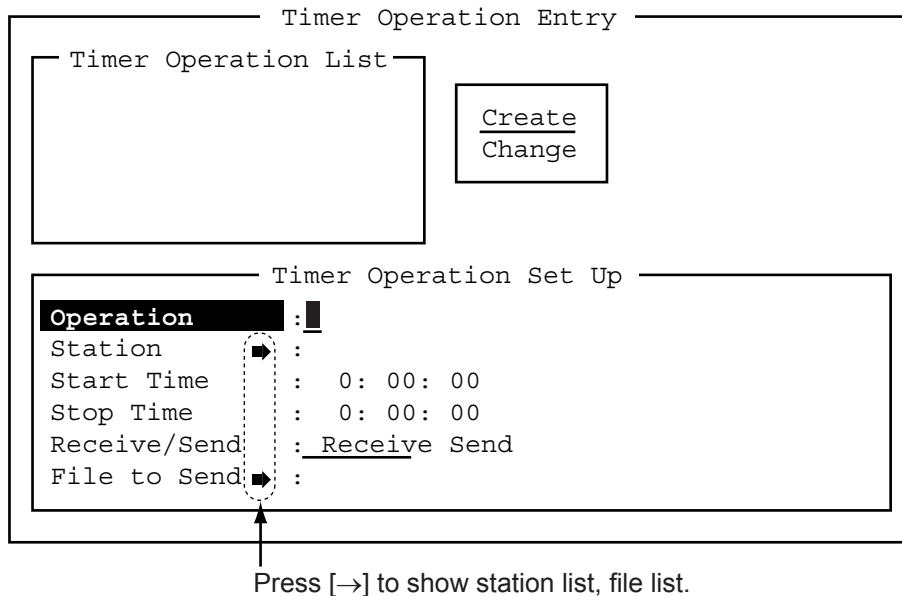
Timer Operation Entry screen

2. If Create is not underlined, press →, ↑ and the **Enter** key to underline it.
3. Operation is selected. Enter a suitable operation name on the Operation line. Any alphanumeric characters can be used.

    Note: If the operation name entered already exists, the message "Operation name already exists. Press any key to escape." Appears. Press any key and change the operation name.

4. Press the ↓ key to select Station.
5. Press the → key to display the Station List (which you registered stations in the previous paragraph).
6. Select a station with ↓ or ↑ key and press the **Enter** key.
7. Press the ↓ key to select Start Time. Enter start time, in 24-hour notation. To have the operation start at 8:35 a. m., for example, the keying sequence would be;
    0   8   3   5   0   0
8. Press the ↓ key to select Stop Time. Enter stop time, in 24-hour notation.
9. Press the ↓ key to select Receive/Send. Select operation category; Receive or Send. If you select "Send," go to step 10. For "Receive," go to step 12.
10. For send, insert the floppy disk which you want to send in the floppy drive, press the ↓ key to select File to Send.
11. Press the → key to open the TX window, select a file, and press the **Enter** key twice.
12. Press the **Enter** key.
13. Press the **Enter** key. The operation name appears in the Timer Operation List.
14. To enter another timer program, press the **Enter** key twice and repeat steps 3-11.
15. Press the **Esc** key to close the menu.

8.3.2 Editing/Deleting timer programs

1. Press the function key **F5** and the **2** key.
2. Press the ↓ key to select a timer program name from the Timer Operation List.
3. Press the → key to select Change and press the **Enter** key.
4. Do one of the following;

   Edit program: Use ↓, ↑ and the **Backspace** key to make corrections.

   Delete program: Erase operation name with the **Backspace** key.

5. Press the **Enter** key twice.
6. Press the **Esc** key.

8.4 User Channels

The user channel list provides storage for up to 100 user channels, numbered 0-99. Note that user channels can be used in channel scanning.

8.4.1 Registering user channels

1. Press the function key **F5** and then the **4** key to open the User Channel Entry screen.

```
┌──────────── User Channel Entry ────────────┐
│  ┌──────── Channel List ────────┐           │
│  │                              │  ┌──────────┐ │
│  │                              │  │ Create   │ │
│  │                              │  │ Change   │ │
│  │                              │  └──────────┘ │
│  │                              │           │
│  │                              │           │
│  │                              │           │
│  └──────────────────────────────┘           │
│     ┌──────── Channel Set Up ────────┐       │
│     │ Channel  :  █                  │       │
│     │ Tx Freq  :        0.00         │       │
│     │ Rx Freq  :        0.00         │       │
│     └────────────────────────────────┘       │
└──────────────────────────────────────────────┘
```

User Channel Entry screen

4. If Create is not underlined, press→, ↑ and the **Enter** key to underline it.
5. Channel is selected. Enter channel number.

   Note 1: 100 channels can be registered. When you attempt to register more, the message "Channel memory is full. Press any key to escape." appears. In this case delete unnecessary channels to register new ones.)

   Note 2: If the channel entered already exists, the message "Channel by that number already exists. Press any key to escape." appears. Press any key and then reenter number.

6. Press the ↓ key to select "Tx Freq". Enter TX frequency.
7. Press the ↓ key to select "Rx Freq". Enter RX frequency.
8. Press the **Enter** key. The "OK/Cancel" confirmation window appears.
9. Press the **Enter** key. Channel number entered appears in the Channel List.
10. Press the **Esc** key to close the menu.

8.4.2 Editing/Deleting user channels

1. Press the function key **F5** and then the **4** key.
2. Press the ↓ key to select channel from the Channel List.
3. Press → and ↓ keys to select Change and press the **Enter** key.
4. Do one of the following:

   Edit channel: Use ↑, ↓ and the **Backspace** key to make corrections.

   Delete channel: Erase channel number with the **Backspace** key.

5. Press the **Enter** key twice.
6. Press the **Esc** key.

8.5   Scan Channel Groups

You can store up to 10 scan groups, 20 channels per group. Note that scanning is only possible in the ARQ and FEC modes.

The NBDP Terminal Unit can control radio equipment through channel scanning. In FEC mode, the radio equipment scans a number of channels (according to your selection), stopping when an incoming signal is found. In the ARQ mode it stops when your own ID code is detected in an incoming signal. Also, in the ARQ mode, the transmitter is then tuned to the corresponding transmitter frequency, the communication link is established and the traffic is automatically exchanged. Scanning resumes once the link is disconnected.

8.5.1   Registering scan channel groups

You can register ITU and user scan channels as follows:

1. Press the function key **F5** and then the **3** key to open the Scan Entry screen.

```
┌──────────────────── Scan Entry ─────────────────────┐
│  ┌─ Scanning Group List ─┐                           │
│  │                       │    ┌──────────┐           │
│  │                       │    │ Create   │           │
│  │                       │    │ Change   │           │
│  │                       │    └──────────┘           │
│  └───────────────────────┘                           │
│                                                      │
│         ┌──────────── Scanning Set Up ───────────┐   │
│         │ Group Name    :                         │  │
│         │ Ch Dwell Time : 4.5 sec (2.7-4.5 sec)   │  │
│         │ Mode          : AUTO ARQ FEC            │  │
│         │ Auto Search   : OFF ON                  │  │
│         │ - - - - - - - - - - - - - - - - - - - - │  │
│         │ No   Channel   Rx Freq   Tx Freq  Pass/Scan│
│         │  0                                Pass/Scan│
│         │  1                                Pass/Scan│
│         │  2                                Pass/Scan│
│         │  3                                Pass/Scan│
│         │  4                                Pass/Scan│
│         │ ▼5                                       │  │
│         └─────────────────────────────────────────┘  │
└──────────────────────────────────────────────────────┘
```

Scan Entry screen

2. If Create is not underlined, press →, ↑ and the **Enter** key to underline it.

3. Group Name is selected. Enter a suitable group name. (10 group names can be entered. If you attempt to enter more, the message "Scan group memory is full. Press any key to escape." appears. Press any key and then delete unnecessary group names to enter new ones. If the group name already exists, the message "Scan group by that name already exists. Press any key to escape." appears. Press any key and change the scan group name.)
4. Press the ↓ key to select Ch Dwell Time. Enter channel dwell time in seconds. Dwell time is the time in seconds the receiver waits on each channel in a scan group before it selects the next frequency.
5. Press the ↓ key to select Mode, and then select the communication mode; AUTO, ARQ or FEC.

   Note: AUTO is used to register scanning channel group when both ARQ and FEC exist in the same Scanning Channel Group. When you select scan group by the Call Station menu, set Mode to FEC. See section 10.3.
6. Press the ↓ key to select Auto Search. Select Auto Search to ON or OFF.
   Auto Search ON: The radio stops scanning when it finds the strongest signal (highest S/N ratio). To find the strongest signal, the radio scans all channels, which can take some time. Therefore, use this setting where signal propagation is poor.
   Auto Search OFF: The radio stops scanning on the first signal it finds. We recommend that you set Auto Search to OFF when signal propagation is good.

7. Press the ↓ key to select line no. 1 in the Scanning Set Up window.
8. Enter channel number (ITU or user channels) and press the → key to select "Scan." (If you enter an invalid channel, the message "Channel by that number does not exist. Press any key to escape." appears. Press any key and reenter channel.)
9. Press the ↓ key to select line No. 2. Enter channel number.
10. Enter other channel numbers and then press the **Enter** key. A confirmation message appears.
11. Press the **Enter** key again to save the data. The group name is displayed in the Scanning Group List window.
12. To continue, press the **Enter** key twice and then repeat steps 3-11.
13. Press the **Esc** key to close the menu.

8.5.2   Editing/Deleting scan channel groups

1. Press the function key **F5** and then the **3** key.
2. Press the ↓ key to select scan group name from the Scanning Group List.
3. Press the → key to select Change and press the **Enter** key.
4. Press the ↓ key to place the cursor on the field (channel) to change.
5. Do one of the following:
   Editing channels: Press the **Backspace** key to delete the channel number and then enter new channel number.
   Adding channels: Enter channel number on a blank line.
   Deleting scan group: Delete group name with the **Backspace** key.
   Disabling channels temporarily: Press the ← key to underline Pass.

6. Press the **Enter** key twice.
7. Press the **Esc** key to close the menu.

9. NBDP FILE OPERATIONS

This chapter mainly describes how to create, save, open, edit and print files. The Edit menu provides a full lineup of editing facilities, including search and replace.

9.1 Opening and Closing Files

To create a telex message you need to make a new file, which you do with the File Open command. When you open a new file it is placed (opened) in one of two working areas. When both working areas are occupied you must close a file to open a new file. This is done with the File Close command.
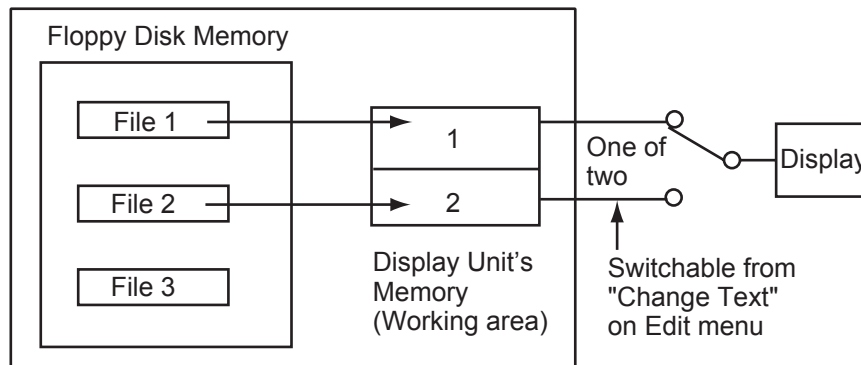
How to open a file

9.2 Creating Files

1. Press the function key **F1** to open the File menu.

```
┌──────────────── File ────────────────┐
│                                       │
│ 1: New                                │
│ 2: Open                               │
│ 3: Close                              │
│ ------------------------------------- │
│ 4: Delete                             │
│ ------------------------------------- │
│ 5: Rename                             │
│ ------------------------------------- │
│ 6: Real Time Printing                 │
│ 7: File to Print                      │
│ 8: Cancel Printing                    │
│ ------------------------------------- │
│ 9: Clear Buffer                       │
│ ------------------------------------- │
│ 0: Floppy Disk Format                 │
└───────────────────────────────────────┘
```

File menu

2. Press the **1** key to select New. The title bar shows UNTITLED 1 or UNTITLED 2. The cursor marks the location where you can type text.
3. Type your message.

Note: Do not use lower case letters, or the symbols #, &, *, $ and % in telex messages. Also, do not put "$$$" in the middle of a TX message, but at the end. The communication line is automatically disconnected when this string is detected.

9.3   Saving a File

Use only 2HD type floppy disks. Insert floppy disk with care. Rough handling can destroy the information stored inside. To eject a disk, press the **Eject** button on the left side of the floppy disk drive and then remove the disk. Do not eject a disk while the operating lamp is lit; the contents of the disk can become damaged.

Hole opened: Write protect

Write-protect Tab

Write-Protect Tab
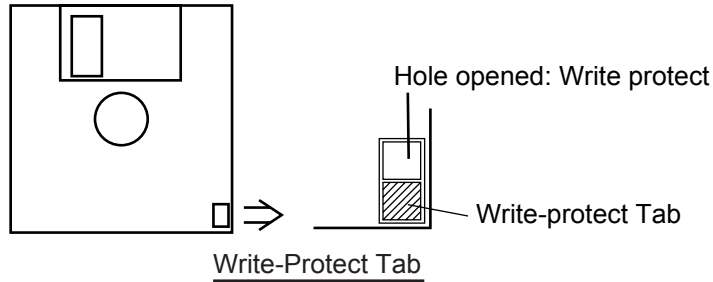
9.3.1   Formatting floppy disks

Before you save a file to a floppy disk, the disk must be formatted. Formatting prepares the disk for use in the system.

1. Press the function key **F1**.
2. Insert a new floppy disk in the floppy disk drive.
3. Press the **0** key to select Floppy Disk Format.
4. Press the ↑ key to select Yes and then press the **Enter** key. The screen shows formatting progress as below. After formatting has been completed, control is returned to the standby screen.

```
┌───── Floppy Disk Format ─────┐
          9%
  ■
└──────────────────────────────┘
```

9.3.2   Saving a file

1. Press the function key **F1** to open the File menu.
2. Press the **3** key. The Close Text window appears.

```
┌──────────── Close Text ─────────┐
  Save file ?            ┌─────────┐
                         │  Yes    │
  ( UNTITLED1   )        │         │
                         │  No     │
                         └─────────┘
└─────────────────────────────────┘
```
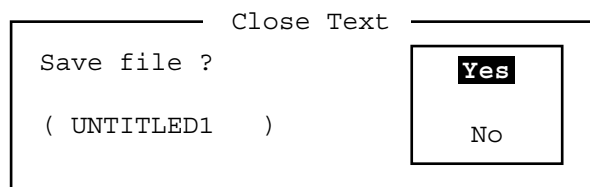
Close Text window

3. Yes is selected; press the **Enter** key.
4. Enter the file name, using up to eight characters.
   You can use any alphabet or numeric on the keyboard. But you can not use the symbols shown below. You can add an extension at the end of the file name, for example, .TXT, to

distinguish text files from macro files.

<center>| i : " > < ;</center>

5. Press the **Enter** key.

9.4   Editing Files

9.4.1   Cutting and pasting text

You can delete, move and copy text by using the Cut, Copy and Paste functions in the Edit menu.

```
┌──────────── Edit ────────────┐
│                              │
│ 1: Undo                      │
│ ---------------------------- │
│ 2: Cut                       │
│ 3: Copy                      │
│ 4: Paste                     │
│ ---------------------------- │
│ 5: Select All                │
│ ---------------------------- │
│ 6: Search                    │
│ 7: Replace                   │
│ ---------------------------- │
│ 8: Goto Top                  │
│ 9: Goto Bottom               │
│ 0: Goto Line                 │
│ ---------------------------- │
│ A: Change Text               │
│                              │
└──────────────────────────────┘
```

Edit menu

Cutting text

1. Place the cursor on the first character of the text to be cut.
2. Highlight the text to be cut by pressing and holding the **Shift** key while pressing the→ key. If you highlight text which you do not want to cut, press the ← key to adjust the highlight.

```
┌──────── <[1]UNTITLED1> ────────┐
│                                │
│ CONGULATULATION ON YOUR CHOICE OF DP-6 │
│ INMARSAT B MOBILE EARTH STATION.       │
│ WE ARE CONFIDENT THAT YOU WILL ENJOY MANY YEARS OF │
│ OPERATION WITH THIS FINE PIECE OF EQUIPMENT        │
```

The highlight

3. Press the function key **F2** and then the **2** key, or the **Del** key. The highlighted text is cut and the remaining text is reformatted.

If you make a mistake, you can restore the text by immediately selecting Undo from the Edit menu.

Pasting text

To paste the cut text to a new location, do the following:

1. Place the cursor at the exact spot in the message where the cut text is to start.
2. Press the function key **F2** and then the **4** key, or the **Ins** key.

9.4.2 Copying and pasting text

You can copy a portion of text and paste it elsewhere.

1. Select the text to copy. (See "Cutting text" above for the procedure.)
2. Press the function key **F2** and then the **3** key. The text selected is copied to the paste buffer memory where the cut or copied text is stored. The screen returns to the normal screen.
3. Place the cursor at the exact spot in the message where the copied text is to start.
4. Press the function key **F2** and then the **4** key.

9.4.3 Select all

The Select All feature lets you select all of the file currently displayed. This feature can be useful when you want to combine the files. The procedure below explains how to place the file loaded in working area 1 onto the end of the file loaded in working area 2.

1. Load the file to be copied from a floppy disk in working area 1.
2. Press the function key **F2** and then the **5** key. The entire file appears in inverse video.
3. Press the function key **F2** and then the **3** key. The file is placed in the paste buffer memory.
4. Load the file to be combined in working area 2.
5. Place the cursor at the exact spot in the message where the text now in the paste buffer memory is to start and press the **Ins** key.
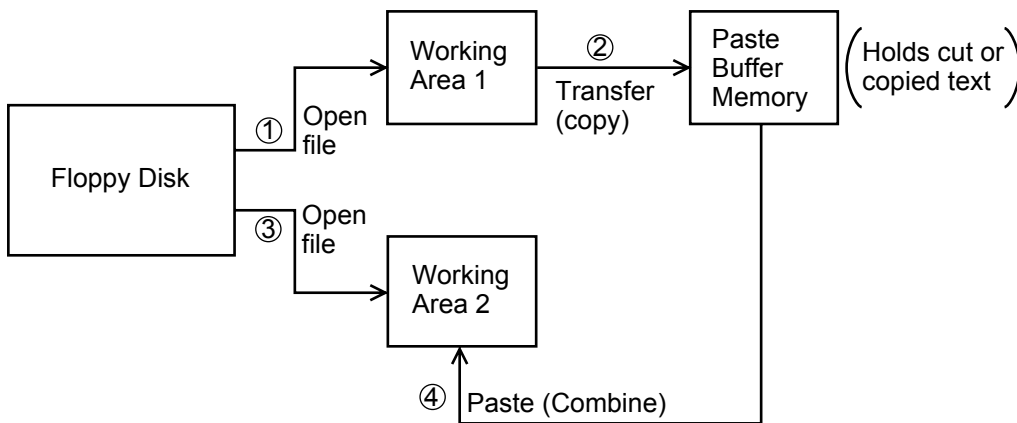
Copy and paste flow diagram

9.4.4 Searching text

The Search feature lets you search for text in a forward or backward direction.

1. Display a text and press the function key **F2** and then the **6** key. The Search window appears.

```
┌───────────── Search ──────────┌─ Dir ──┐
│                                │Forward │
│  Search string : ▉            │────────│
│                                │Backward│
│- - - - - - - - - - - - - - - -└────────┘
│              ESC: Quit          │
└─────────────────────────────────┘
```

Search window

2. Type the word you want to find.
3. Press the → key.
4. Press the ↑ or ↓ key to select Forward or Backward to search the file in a forward or backward direction respectively from the cursor position.
5. Press the **Enter** key to begin the search.

When the unit finds the word, the cursor stops at the first character of the word. Press the **Enter** key to continue the search. If the string could not be found, the message "Not Found (To quit: ESC)" appears. Press the **Esc** key to quit.

9.4.5 Replacing text

The Replace feature helps you replace every occurrence of a word or phase with another word or phase in a file.

1. Press the function key **F2** and then the **7** key. The Replace window appears.

```
┌──────────────── Replace ─┌─ Dir ──┐┌─ Mode ─┐
│                          │Forward ││ Query  │
│ Search string : ▉─ ─ ─ ─│────────││────────│
│ Replace with  :          │Backward││  All   │
│- - - - - - - - - - - - - -└────────┘└────────┘
│              To quit: ESC           │
└──────────────────────────────────┘
```

Replace window

2. Type the word you want to replace on the Search string line.
3. Press the ↓ key to select Replace with and then type the new word.
4. Press the → key.
5. Press the ↑ or ↓ key to select Forward or Backward to search the file in a forward or backward direction respectively from the cursor position.
6. Press the → key.
7. Press the ↑ or ↓ key to select whether you want to be queried or not each time the word is found.

    Query: Stop at each occurrence of word to answer yes or no to replacement.

    All: Replace every occurrence of word without stopping to confirm.

8. Press the **Enter** key to start the replacement.

9.4.6   Goto line

The Goto Line feature places the cursor at the head of a line desired.

1. Press the function key **F2** and then the **0** key. The Goto Line window appears.

```
┌─────────────── Goto Line ───────────────┐
│                                          │
│    Jump to Line No. :█_ _ _ _            │
│                                          │
└──────────────────────────────────────────┘
```
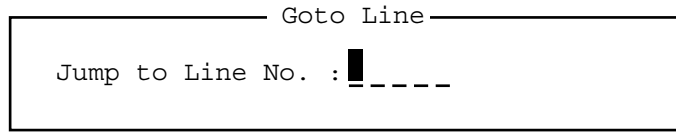
Goto Line window

2. Key in line number and press the **Enter** key. The cursor shifts to the head of the line selected.

9.4.7   Goto top, Goto bottom

You can easily go to the top or bottom line of a file. Press the function key **F2** and then the **8** key to go to the top line; press the function key **F2** and then the **9** key to go to the bottom line. Note that this feature can also be executed on the editor screen by pressing the **Home** or **End** key while pressing the **Fn** key.

9.5   Opening Files

Two working areas (called working area 1 and working area 2) are provided to which you can load a file, and one file can be displayed on the LCD.

9.5.1   Opening a file

1. Insert the floppy disk which contains the file you want to open.
2. Press the function key **F1** to open the File menu.
3. Press the **2** key. A list of files on the floppy disk appears.

```
┌──────────────── Open Text ────────────────┐
│ Load/Merge(TAB:Change)                     │
│ [A:\TEST1.                             ]   │
│ ------File name-------- Size-- Date & Time------------------│
│ LOG File          52     02-10-15 17:25    │
│ TEST1.            120    02-10-15 16:30    │
│ TEST2.            151    02-10-15  9:25    │
│ TEST3.            180    02-10-15 20:16    │
│ NBDP              169    02-10-15  6:23    │
│ [----------------- End of Directory------------------   ]  │
│                                            │
│                                            │
│                                            │
│ 4 Files exist            1454000 bytes free│
│ --------------------------------------------│
│ To select : ENTER  To view : SPACE  To quit : ESC │
└────────────────────────────────────────────┘
```
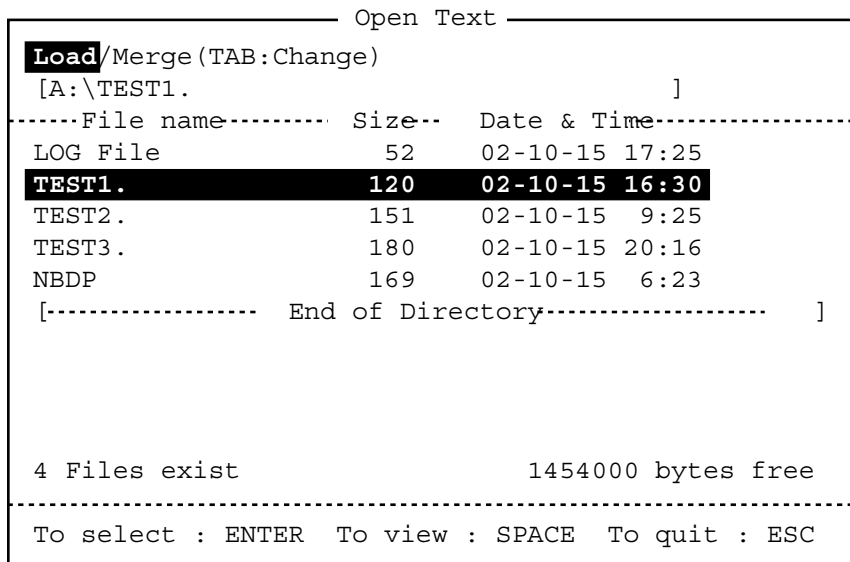
4. Press the ↑ or ↓ key to select a file.
5. Press the **Enter** key. The file appears and the title bar shows the file name. You can repeat this procedure to load another file into a working area.

Note: When two working areas have been opened, the close confirmation window appears.

In this case, select Yes or No and press the **Enter** key to close an open file in order to open another file.

9.5.2 Switching between files

Two files can be opened and one displayed on the LCD. To switch between files, do the following:

1. Press the function key **F2**.
2. Press the **A** key to switch between files.

9.6 Renaming Files

To rename a file, do the following:

1. Press the function key **F1**.
2. Press the **5** key.
3. Press the ↑ or ↓ key to select a file and press the **Enter** key.
4. Enter a new name.
5. Press the **Enter** key.

9.7 Saving a File Under a New Name

You can save a file under a new name as follows:

1. Open a file.
2. Edit the file as necessary.
3. Press the function key **F1**.
4. Press the **3** key to save the file.
5. Press the **Y** key.
6. Press the **Backspace** key to erase the original name and then enter a new name.
7. Press the **Enter** key.

9.8 Deleting Files

Insert appropriate floppy disk in the drive and do the following to delete unnecessary files.

1. Press the function key **F1**.
2. Press the **4** key.
3. Press the ↑ or ↓ key to select the file to delete and then press the **Enter** key.
4. Press the **Enter** key again. (To cancel, press the ↓ key to select NO followed by the **Enter** key.)

9.9   Real Time Printing

An incoming or outgoing message can be printed out while it is being received or transmitted.

1. Press the function key **F1** to open the File menu.
2. Press the **6** key to turn real time printing on/off.

When the real time printing is on, "Print" appears in reverse video at the top of the screen.

9.10   Printing Files

You can print files stored on floppy disks as follows:

1. Press the function key **F1**.
2. Press the **7** key.
3. Press the ↑ or ↓ key to select a file and press the **Enter** key.
4. Press the **Y** key.

To stop printing at any time, press **F1** and **8** keys.
If the file could not be printed, the message "Cannot print. Check connection between printer and terminal. Press any key to escape." is displayed.

10. NBDP TRANSMITTING, RECEIVING

This chapter mainly shows you how to transmit and receive telex messages.

10.1 Manual Calling

```
┌─────────────────────────────────┐
│          NOTICE                 │
├─────────────────────────────────┤
│ Before calling, watch the       │
│ intended TX frequency carefully │
│ to confirm that is unoccupied.  │
└─────────────────────────────────┘
```

The simplest way to communicate with a telex subscriber is manual calling. For the ARQ mode, you can display beforehand the message to send, or type your message manually.

1. Press the function key **F3** to open the Operate menu.

```
┌──────────── Operate ────────────┐
│                                 │
│ 1: Call Station                 │
│ 2: Macro Operation              │
│ ------------------------------- │
│ 3: File to Send                 │
│ 4: Cancel Sending               │
│ ------------------------------- │
│ 5: Scan (Start/Stop)            │
│  ------------------------------ │
│ 6: Manual Reception             │
│ ------------------------------- │
│ 7: Timer Operation              │
│ ------------------------------- │
│ 8: Manual Calling               │
│ 9: Set Frequency                │
│                                 │
└─────────────────────────────────┘
```

Operate menu

2. Press the **9** key to select Set Frequency.

```
┌──── Set Frequency ────┐
│ Tx Freq:      0.00    │
│ RX Freq:      0.00    │
└───────────────────────┘
```

Set Frequency window

3. Input Tx and Rx frequency pair.
4. Press the **Enter** key.

5. Press the function key **F3** again and then the **8** key to select Manual Calling. The following window appears.

```
┌──── Manual Calling ────┐
│ Mode  : ARQ FEC        │
│ ID    :                │
└────────────────────────┘
```

Manual Calling window

6. Press the ← or → key to select appropriate communication mode.
7. Press the ↓ key and input party's ID number.
8. Press the **Enter** key to connect the communication line. "Channel Busy Check" appears. If the line is free, "Connect", "Send" and "Lock" appear in highlight as below. Further, "HT" (High Tension) also appears when the line is connected.

```
1:File 2:Edit 3:Operate 4:Window 5:Station 6:System 7:WRU 8:HR 9:Over 10:Break
------------------------------------------------- 2002-09-08 2:14:28 UTC ------Caps-Eng
 Station Name    :                                        HT
 Frequency (T/R) :   8765.00 / 8965.00(kHz)   Comm Mode :ARQ
 Comm Status     :  Connect  Send  Lock  Error
 Sending Volume  :  100(%)    ARQ Error : 0    ARQ Time : 0(sec)
-------------------------------------------------------------------------------------
```

For ARQ mode, go to step 9. For FEC mode, type your message and go to step 13.

9. Press the function key **F7** (WRU). The party's answerback code appears on the screen.

    Note: Step 9 and 10 are needed for ship-to-ship calling only.

10. Press the function key **F8** (HR). Your ship's answerback code is sent to the party.
11. Press the **Enter** key and type your message.
12. If you want to receive other party's response, press the function key **F9** (Over).
13. Press the function key **F10** (Break) to disconnect the line.

10.2   ARQ Mode Operation

In ARQ operation, one station (information sending station) sends data to another block by block, then listens for the acknowledge signal between blocks from the information receiving station which requests either the next block or retransmission of the last block if there is error. The request can be repeated up to 32 times until the complete block is received free of error.

Establishing connection

1. Press the function key **F3** to open the Operate menu.
2. Press the **1** key to select Call Station.

```
 1:File 2:Edit 3:Operate 4:Window 5:Station 6:System 7:WRU 8:HR 9:Over 10:Break
-------------------------------------------------- 2002-01-15 14:41:09 UTC--- Caps-Eng
 Station Name   : CHOUSHI-8M
 Frequenc                      ─Call Station─
 Comm St    ┌───Station List──┐  ┌───Station Setup───┐
 Sending    │ ABC-4M          │  │ Station  : ABC-4M  │           ----------------
----------- │ ABC-6M          │  │ ID Code  : 45678   │
            │ ABC-12M         │  │ Mode     : ARQ FEC │
            │ ABC-8M          │  │ CH/Table : Channel Scantable │
            │ FURUNO          │  │ Num/Table:         │
            └─────────────────┘  └───────────────────┘
```

Call Station menu

3. Select a station. (Station must be registered for use in the ARQ mode).
4. Press the **Enter** key. The message "Calling Station" appears. If the message shown below appears, check both the power of the radiotelephone and the connections between the radiotelephone and the NBDP Terminal Unit.

    Message: "Station calling suspended. Check interconnections between the terminal and main units. Press any key to escape."

    When an acknowledge signal is detected, "Connect" appears in reverse video on the communication status screen.

    Note: If signal conditions are poor, connection can take a while. If the line could not be connected in one minute, the calling stops and "CALLING FAILED" appears. Try step 3 again, one minute later. Should signal conditions worsen during message transmission, "Error" appears in reverse video and 30 seconds later the line is disconnected.

5. Transmit message by one of the following methods:

Sending a file stored on a floppy disk

1. Press the function key **F7** (WRU) to receive the answerback code of the other station. Verify that the code from the station called is correct.
2. Press the function key **F8** (HR) to transmit your own identity (answerback code).
3. Press the function key **F3** and then the **3** key to open the Send File window.
4. Press the ↑ or ↓ key to select the file to send and press the **Enter** key.
5. Press the **Enter** key again.

```
┌─────────────────── Send File ───────────────────┐
│  [A:\TEST1.                                    ] │
│------File name ----------Size----- Date & Time---│
│  LOG File            52     02-10-15 17:25       │
│  TEST1.             120     02-10-10 16:30       │
│  TEST2.             151     02-10-11 09:25       │
│  TEST3.             180     02-10-11 20:16       │
│  NBDP               169     02-10-12 06:23       │
│  [------------------- End of Directory----------------- ] │
│                                                  │
│                                                  │
│  4 Files exist                    1454000 bytes free │
│                                                  │
│ ----------------------------------------------   │
│  To select : ENTER  To view : SPACE  To quit : ESC │
└──────────────────────────────────────────────────┘
```

Send File window

Sending volume (percentage of message transmitted, counts upward as the message is being transmitted), ARQ error count and ARQ transmission time appear on the screen. "Lock" appears in reverse video when the mark and space signals in the receive signal are normal. "ARQ Error" shows the number of times error was found during transmission. "ARQ Time" is the time in seconds the communication line has been established.

```
1:File 2:Edit 3:Operate 4:Window 5:Station 6:System 7:WRU 8:HR 9:Over 10:Break
------------------------------------------- 2002-09-08 2:14:28 UTC ------Caps-Eng
 Station Name     :                                   HT
 Frequency (T/R) :   8765.00 / 8965.00(kHz)  Comm Mode :ARQ
 Comm Status      :  Connect  Send  Lock  Error
 Sending Volume   :  100(%)    ARQ Error : 0   ARQ Time : 0(sec)
--------------------------------------------------------------------------------
```

Communication status screen

6. After the message is transmitted, press the function key **F10** (Break) to disconnect the line.

Type a message from the keyboard

1. After exchanging answerback code by the function key **F7** (WRU) and **F8** (HR), type your message directly from the keyboard.
2. To change the direction of traffic, press the function key **F9** (Over), or **+**, **?** in order. Then, the other station becomes the information sending station, your station becomes the information receiving station. Receive a message from the sending station.
3. After completion of communication, press the function key **F7** (WRU) to receive the answerback code of the other station and
4. Press the function key **F8** (HR) to transmit your own answerback code.
5. Press the function key **F10** (Break) to disconnect the line.

Stopping transmission

1. Press the function key **F3** and then the **4** key. The message "Send Canceled" appears on the screen. Transmission is stopped but the line is still connected.
2. To disconnect the line, press the **F10** (Break) key.

10.3   FEC Mode Operation

The FEC mode transmits the same data twice to yield less errors. Compared to the ARQ mode, the FEC mode is better at communicating with weak signals.

1. Press the function key **F3**.
2. Press the **1** key to open the Call Station menu.
3. Press the ↑ or ↓ key to select a station which is registered for the FEC mode.
4. Press the **Enter** key. "Connect" appears in reverse video.
5. Transmit a message directly from the keyboard, or do the following to transmit a message stored on a floppy disk:

    Press the function key **F3** and then the **1** key to select File to Send. Press the ↑ or ↓ key to select the file to send and then press the **Enter** key.
6. After the message is transmitted, press the function key **F10** (Break) to disconnect the line.

10.4   Selecting Receive Mode

1. Press the function key **F3** and then the **6** key.
2. Select the receive mode:

    AUTO: Automatic reception in ARQ or FEC mode
    ARQ: International radiotelex ARQ mode
    FEC: International radiotelex FEC mode
    DIRC: Receive message from teleprinter (The FS-2575/5075 is not affected by this
              setting.)

3. Press the **Enter** key. The reception mode appears on the screen.

All received (and transmitted) messages are saved to a floppy disk when TX/RX MSG Save is ON in the System menu. The file is automatically named as follows.

$$\underset{\text{Year}}{\underline{02}}\ \underset{\text{month}}{\underline{01}}\ \underset{\text{date}}{\underline{13}}\ 0\ 0.\ \underset{\text{Serial number from 000}}{X\ X\ X}$$

10.5 Communication Example

Call the coast station following the procedure in section 10.2. Then, communicate with the coast station. Below is a communication example.

Call completed, connected with coast station

To send message to ship

```
12345  KOBE X ---------------------- Own answerback code
```

Selcall No.   Ship name or call sign

If this is your first communications with a particular coast station, the coast station asks for you selcall no., ship name, call sign and AAIC (your enterprises name for which to charge to charge toll call). That registers you with the coast station. Thereafter, if your answerback code is correct, automatic transmission is possible.

```
1480 HKRDO VRX
MOM                           Automatically sent from Coast
GA+?                          station (ex. Hong Kong)

OPR+ ------------------------------- Type at your side within 30 s.
MOM                                   (Call operator manually.)
1480 HKRDO VRX
12345 KOBE X                          Message from coast station
KOBE DE HKRDO GOOD MORNING            (Wait. From HKRDO to KOBE.
NW  NIL  QRV  GA+?                    Nothing to send. Do you have
                                      anything to send?)

GM  NW   QTC1+? -------------------- Type at your side
                                      (GM=Good Morning. I have a
                                      message for you.)

QRV K     GA+? ---------------------- From coast station
                                      (Send your message.)
                                      Type at your side
TOR ---- Teleprinting Over Radio      (To send a message
          (Message TX starts.)        file, type MOM before
                                      TOR and wait awhile.)
NR 9004 ---- Msg No.
TO: TELEX 1234567   FURUNO
    JAPAN OFFICE
    INT. DEP. SEC-1 MANAGER           Receiver: Telex no.1234567
FM: KOBE MARU/12345 KOBE X                      FURUNO ELEC. CO.
TEXT: Type message.                   Sender: KOBE MARU
                                      Type message


                                      Message finished. Can you
KKKK QSL +?                           acknowledge receipt)
End message.


KOBE DE HKRDO QSL NR9004              From coast station
TKS  NW NIL +?                        From HKRD0 to KOBE.
                                      Received NR9004. Thank you.
                                      No more to send.

TKS  NW NIL BIBI +?--------------
                                   └--- Type at your ship
                                      (Thank you. I have nothing to
                                      send. Bye Bye.
TKS  SEE YOU LATER
BIBI ------------------------------
                                   └- From coast station
                                      Thank you. See you later.)
```

Coast station disconnects the line.

Communications example

Table of abbreviations

Abbreviation	Question	Answer or Advice
QRA	What is the name your station?	The name of my station is …
QRC	By what private enterprise are the accounts for charges for your station settled?	The accounts for my station are settled by the private enterprise…
QRU	Have you any thing for me?	I have nothing for you.
QRV	Are you ready?	I am ready.
QRX	When will you call me again?	I will call you again at … hours [on … kHz].
QSJ	What is the charge to be collected to … including your internal charge?	The charge to be collected to … including my internal charge is … frans …
QSL	Can you acknowledge receipt?	I can acknowledge receipt.
QSX	Will you listen to … [call sign] on … kHz?	I am listening to … [call sign] on … kHz.
QTA	Shall I cancel message number …?	Cancel message number …
QTC	How many messages have you to send?	I have … message for you.
QTU	What are the hours your station is open?	My station is open from … to … hours.

Abbreviation	Definition
BK	Signal used to interrupt a transmission progress.
CFM	Confirm
DE	"From …"
K	Invitation to transmit.
NIL	I have noting to send to you.
NW	Now
PSE	Please
R	Received
REF	Reference to …
SVC	Prefix indicating a service telegram.

Command and abbreviation

Command	Function
TGM+	To indicate that the following message is a radiotelegram.
MSG+	To indicate that the ship station needs to be connected immediately any message held.
OPR+	Call operator.
URG+	Safety, urgency and distress message.
MED+	Request medical advice.
TEST+	Request coast station to send a test message for checking the ship station.
BRK+	To clear the connection with the coast station.

Abbreviation	Function
GA+	I am ready. Transmit your command.
MOM	Wait a moment.
MSG+	Request pending messages from the shore.
KKKK or NNNN	Terminate a message.
XXXXX	Typo

10.6 Timer Operation

A built-in timer permits automatic transmission and reception of telex messages.

10.6.1 Enabling timer operation

1. Press the function key **F3** to open the Operate menu.
2. Press the **7** key to open the Timer Operation List.
3. Press the ↑ or ↓ key to select the operation (name) you want to execute.
4. Press the **Enter** key. An asterisk appears beside the operation selected and "T. Op" appears in reverse video on the communication status screen. If a file stored on a floppy disk is to be sent, be sure the floppy disk containing the file is inserted in the drive.

```
┌──── Timer Operation List ────┐
│                              │
│ *1                           │
│  2                           │
│  3                           │
│ OP4                          │
│ OP5                          │
│                              │
│                              │
└──────────────────────────────┘
```

Timer Operation List

5. Select another operation (name) if desired.
6. Press the **Esc** key.

When the predetermined time comes, the NBDP Terminal Unit automatically sends or receives the message. The results of timer operation are displayed as either OK or NG (No Good) on the Timer Operation List.

```
┌──── Timer Operation List ────┐
│                              │
│ *1                    OK     │
│  2                           │
│ *3                    OK     │
│ *OP4                  OK     │
│ *OP5                  NG     │
│                              │
└──────────────────────────────┘
```

Timer Operation List

10.6.2 Stopping timer operation

1. Press the function key **F3**.
2. Press the **7** key.
3. Press the ↑ or ↓ key to select the operation (name) which has an asterisk attached to it and then press the **Enter** key. Remove all asterisks to cancel all timer programs.

10.7 Scanning

The radio equipment scans a group of operator-selected frequencies (channels), and stops scanning when a signal is received. For registering scan group, see section 8.5.

1. Press the function key **F3** and then the **5** key to open the Scanning Group List on your screen.
   You can confirm the scan channel by pressing the ↑ or ↓ key while pressing the **Shift** key.
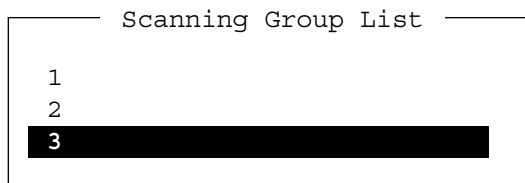
```
┌──────── Scanning Group List ────────┐
│                                      │
│   1                                  │
│   2                                  │
│   3                                  │
│                                      │
└──────────────────────────────────────┘
```
Scanning Group List

2. Press the ↑ or ↓ key to select a scan group and press the **Enter** key.
   The scanning starts and the indication "Scan" appears in reverse video. Further, the name of the scan group appears in the Station Name field.

```
1:File 2:Edit 3:Operate 4:Window 5:Station 6:System 7:WRU 8:HR 9:Over 10:Break
-------------------------------------------------- 2002-09-08 2:01:46 UTC----- Caps-Eng
 Station Name     :  SAITO-1              Scan              HT
 Frequency (T/R) :  8344.00 / 8705.00(kHz)  Comm Mode : Auto
 Comm Status      :  Connect Send Lock Error
 Sending Volume  :  100(%)    ARQ Error : 0   ARQ Time : 0(sec)
----------------------------------------------------------------------------------
```
Communication status screen

3. To stop scanning, press the function key **F3** and then the **5** key. "Scan" disappears on the communication status screen.

10.8 Communication Buffer

The communication buffer is a temporary memory which stores transmit and receive messages. To display the contents of the communication buffer, do the following:

1. Escape from the message creation screen.
2. Press the ↓ or ↑ key while pressing the **Fn** key. The contents of the communication buffer are displayed.

To print them, press the **P** key while pressing the **Ctrl** key. To erase the contents from the screen, press the ↓ key at the bottom line. To erase the contents of the buffer, press the function key **F1** and then the **9** key.

10.9 Preparing Macrofiles for Automatic Telex

10.9.1 Automatic telex overview

This section shows you how to communicate with a coast station which handles automatic telex transmission, using macrofiles. You will also need to register communication channels and stations, and prepare macrofiles.

Coast stations using automatic telex are MCI Marine Services (North America), Sydney Radio (Australia), Lyngby Radio (Denmark), and others. The procedure is mostly common to all coast stations, however refer to the coast station's traffic manual for details.

INTERNATIONAL
TELEX NETWORK
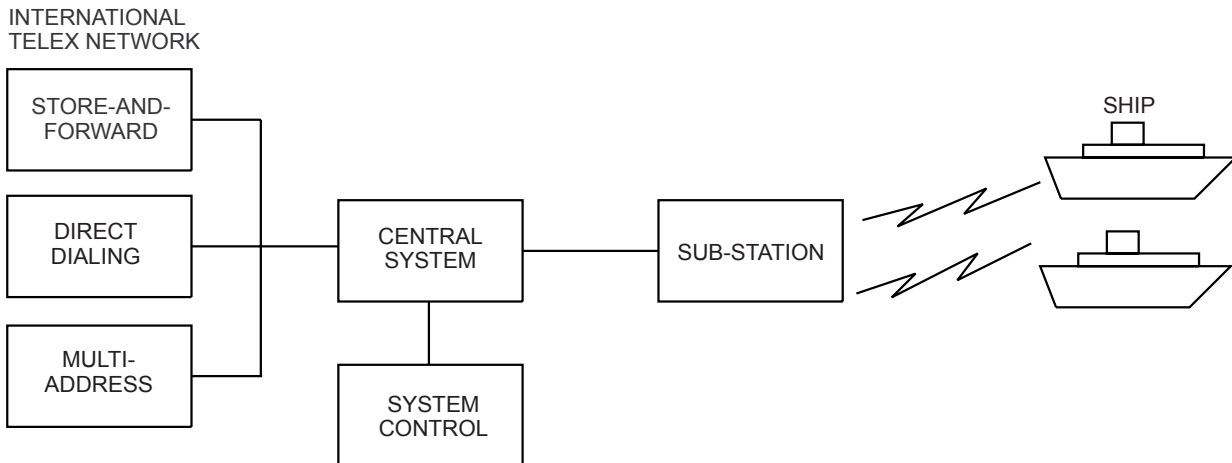
Sample automatic telex network

The service available in automatic telex are

- Message transfer between ship and coast station (store-and-forward)
- Connection with landline telex (direct dialing)
- Multi address

10.9.2 Preparations

To use automatic telex, you need to register three items:

- Answerback code

- Scan groups

- Station names

Registering answerback code

The coast station assigns a Telex number. This number functions as an answerback code. An answerback code contains the following:

OOOOO SHIP X

OOOOO: Coast station-assigned five-digit telex code
SHIP: Ship name
X: For shipboard station, normally X is entered

The procedure for registering the answerback code is the same as which appears on page 8-1. If an answerback code was registered before the commissioning of the coast station, a

10-10

new answerback code must be entered. To enter a new answerback code, contact FURUNO or an authorized FURUNO agent or dealer.

Registering scan groups

The central system emits a free-signal to indicate a coast station radio channel is in idle condition and available for ship-to-shore calls. The free-signal is detected and recognized by the shipboard equipment as a permission to start the transmission. Then, the shipboard operator initiates a call.
You can scan search for the free-signal automatically by registering coast station radio channels in scan group(s). The procedure for registering scan groups for coast station use is the same as that which appears on page 8-7.

Registering stations

The next step is to enter station name. The procedure is the same as that shown on page 8-3.

10.9.3   Commands

The following tables describe the commands for macro operation.

Command (Prefixed with @)	Parameter	Content
CALL	S: Station Name	Calling station name and ID on assigned parameter
FREE (support command for CALL)	Two digits, 0-99 min	Free-signal searching time according to assigned parameter (default setting: 10 min)
	RRR signal	Detect free signal of dot pattern
RETRY (support command for CALL)	Two digits, 0-99 min	Calling according to assigned parameter (default setting: 10 min)
CASE	Text	For receiving a message (designated by parameter) transmitted by coast station
TIMEOUT (support command for CALL)	Two digits, 0-99 min	Time allotted for reception of message by CASE command
SEND	Text	Text transmitted according to assigned parameters
	A: file name	Send a file from floppy disk
WRU HR OVER BREAK	None	Function keys F7 - F10
DISPLAY	Text	Text of message appears
INPUT	None	Waiting for keyboard input Transmit keyboard input message

Example: Commands processed by Danish coast station Lyngby

Command	Function
BRK+	Disconnection communications line
DIRTLX ……+	Direct dialing telex (receive only)
KKKK	Terminate message
LTR+	For telex letters mailed from Operations Station to destinations worldwide
MED+	Request medical advice
OPR+	Requesting operating assistance
POS+	Send position data
STA+	Status requested on a store-and-forward message
TLX ……+	Store-and-forward method

For details, see the coast station's traffic manual.

10.9.4 Store-and-forward method

The following is the sequence of events in transmission of a file by the store-and-forward method.

1. Shipboard station sends message to coast station.
2. Coast station stores message in memory buffer.
3. Shipboard station and coast station clear the radio circuit.
4. Coast station sends message to subscriber designated.

Actual procedure for store-and-forward telex

No.	Procedure	Display	Remarks
1	Call a coast station.	Connect appears in reverse video and bell sounds.	Free-signal found; radio circuit ready.
2	Transmit WRU signal.	00190 TLG DK 26XXX SHIP X GA+?	Initial identity exchange between coast station and shipboard station.
3	Key in subscriber's Telex number. Example: (Hong Kong) 12345 TLX80212345+	MSG+?	Request to start message transmission.
4	Transmit file.		Message transmission.
5	When transmission is completed, type KKKK.	26XXX SHIP X 00190 TLG DK GA+?	Transmit your answerback code. Receive other party's answerback code.
6	Transmit BREAK command to clear radio circuit.		

Procedure for preparing a macrofile for store-and-forward method

You need a macrofile to enable automatic message transmission by store-and-forward method. After preparing it, save it to a floppy disk for future use.

1. Press the function key **F1** to open the File menu.
2. Press the **1** key.
3. Prepare macrofile. Below is simple example.

```
┌──────── < [1] UNTITLED1 > ────────┐
 @FREE $RRR$ ------------------------ ①
 @CALL S:LYNGBY RADIO --------------- ②
 @WRU
 @CASE GA+?
 @SEND TLX80212345+ ----------------- ③
 @CASE MSG+?
 @SEND A: \ABC --------------------- ④
 @SEND KKKK ------------------------ ⑤
 @CASE GA+?
 @SEND BRK+
```

① Search dot pattern free signal until it is found
② Station name (Example: LYNGBY RADIO)
  Who are you?
  Station identity exchange
③ Subscriber's Telex number (in example, 802 is country code of Hong Kong) for store-and-forward method
④ Location and name of file message
  A: \ABC
⑤ Request for termination of message

Sample macrofile for store-and-forward method

4. Press the function key **F1** to open the File menu.
5. Press the **3** key. The Close Text appears on the screen.

```
┌──────── close Text ────────┐
 Save File?
 █                    ┌──────┐
                      │ Yes  │
                      │ No   │
 (UNTITLED 1)         └──────┘
```

Close Text window

6. Press the **Enter** key and enter a file name as follows:
   OOOOOOOO.MCR
       ↑   ↑
   File Name   Extension Name
   (max. 8 characters)
7. Press the **Enter** key.

DIRTLX macrofile

Sample DIRTLX macrofile

```
┌──────────── < [1] UNTITLED1 > ────────────┐
│                                            │
│  @FREE $RRR$  ───────────────────────── ①  │
│  @CALL S:LYNGBY RADIO  ───────────────── ②  │
│  @WRU                                      │
│  @CASE GA+?                                │
│  @SEND DIRTLX725644325+  ─────────────── ③  │
│  @CASE MSG+?                               │
│  @SEND A: \ABC  ──────────────────────── ④  │
│  @SEND KKKK  ─────────────────────────── ⑤  │
│  @CASE GA+?                                │
│  @SEND BRK+                                │
│                                            │
└────────────────────────────────────────────┘
```

① Search dot pattern free signal until it is found

② Station name (Example: LYNGBY RADIO)
Who are you?
Station identity exchange

③ Subscriber's Telex number (in example, 72 is country code of Japan) for direct dialing mode

④ Location and name of file message
A: \ABC

⑤ Request for termination of message

Sample DIRLTX macrofile

Procedure for DIRTLX

No.	Procedure	Display	Remarks
1	Call a coast station.	Connect appears in reverse video and bell sounds.	Free-signal found; radio circuit ready.
2	Transmit WRU signal.	00190 TLG DK 26XXX SHIP X GA+?	Initial identity exchange between coast station and shipboard station.
3	Key in subscriber's Telex number. Example: (Japan) 5644325 DIRTLX725644325+	12:20 MOM 5644325 FURUNO J MSG+	Request to start message transmission.
4	Transmit file.		Message transmission.
5	When transmission is completed, type KKKK.	26XXX SHIP X 5644325 FURUNO J 00190 TLG DK DURATION... TIME... GA+?	Transmit your answerback code. Receive other party's answerback code.
6	Transmit BREAK command to clear radio circuit.		

10.10 Automatic Telex Using Macrofile

This section describes how to transmit a telex message using a macrofile.

Basic procedure

1. Register answerback code (Telex number assigned by coast station).
2. Register coast station frequency and channel to scan group.
3. Register station name including scan group name.
4. Retrieve appropriate macrofile. Include station name and message file name. Type message and save file to memory.
5. Open macro operation menu and select a macrofile. Your message will be transmitted automatically. Below is the sequence of automatic message transmission to a coast station.

   1) Search for free-signal
   2) Call coast station on one of its radio channels
   3) After connection is established, identity exchange
   4) Transmission of service category and subscriber's address
   5) Transmission of message
   6) Transmission of termination of message signal
   7) Identity exchange
   8) Clearing of radio circuit

Actual procedure

1. Press the function key **F3** to open the Operate menu.

```
┌─────────── Operate ───────────┐
│                               │
│  1: Call Station              │
│  2: Macro Operation           │
│  --------------------------------------- │
│  3: File to Send              │
│  4: Cancel Sending            │
│  --------------------------------------- │
│  5: Scan (Start/Stop)         │
│   --------------------------------------- │
│  6: Manual Reception          │
│  --------------------------------------- │
│  7: Timer Operation           │
│  --------------------------------------- │
│  8: Manual Calling            │
│  9: Set Frequency             │
│                               │
└───────────────────────────────┘
```

Operate menu

2. Press the **2** key to open the Call Macro window.

```
┌───────────── Call Macro ─────────────┐
│  [A:\TEST1.                        ]  │
│ ------File name ------- Size ---- Date & Time ------------ │
│                                       │
│  LYNGBY1.MCR          169      02-10-13 06:23 │
│                                       │
│  [----------------- End of Directory ----------------] │
│                                       │
│                                       │
│                                       │
│  1 Files exist               1454000 bytes free │
│                                       │
│  To select : ENTER  To view : SPACE  To quit : ESC │
│ ------------------------------------------------- │
│                                       │
└───────────────────────────────────────┘
```

Call Macro window

3. Press the ↓ key to select a macrofile.
4. Press the **Enter** key.

```
┌───────────────────────────────────┐
│  Call Macro: Lyngby1.MCR           │
│                          ┌──────┐  │
│                          │ Yes  │  │
│                          └──────┘  │
│  Call OK?                   No     │
│                                    │
└───────────────────────────────────┘
```

5. Press the **Enter** key to confirm the macrofile selected. The message "Wait for Free Signal" appears. Your message will be transmitted automatically.

11. MAINTENANCE & TROUBLESHOOTING

<table>
<tr><td>⚠ WARNING</td><td>NOTICE</td></tr>
<tr><td>ELECTRICAL SHOCK HAZARD
Do not open the equipment.

Only qualified personnel
should work inside the
equipment.</td><td>Do not apply paint, anti-corrosive sealant or contact spray to plastic parts or equipment coating.

Those items contain products that can damage plastic parts and equipment coating.</td></tr>
</table>

11.1 Test

Do the following to check the radiotelephone for proper operation.

Daily test

1. Rotate the **ENTER** knob to select TEST on the MENU screen and then press the **ENTER** knob.

```
TEST
1  DAILY TEST
2  TX SELF TEST
3  TONE TEST
```
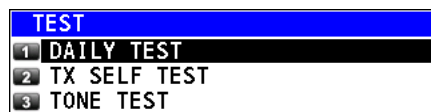
2. DAILY TEST is selected; press the **ENTER** knob to start the test. After completing the test, the audio alarm sounds and the following screen appears. The program version number appears. Also, OK or NG (No Good) appears as the test result for RX and WR1 (2). For NG, contact your dealer for advice.

```
◁))          SSB TX 2182.0/RX 2182.00 kHz
DAILY TEST
TIME       ◀ JAN/02/2011  11:42:02
SOFT       ◀ 0550243-01.01
CPLD       ◀ 0550245-0B.08
BOOT       ◀
RX         ◀ OK
WR1        ◀ OK
WR2        ◀ OK
ALARM UNIT ◀ --

4:PRINT        [CANCEL]:BACK
```
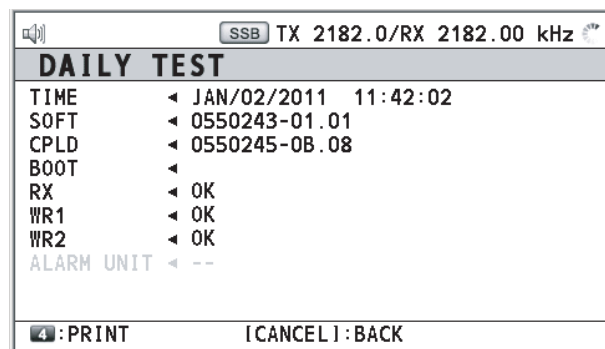
To print out the test result, press the **4** key. When the setting of DAILY TEST on PRINT in the SYSTEM menu is AUTO, the test result is printed out automatically (see section 6.6).

TX self test

1. Rotate the **ENTER** knob to select TEST on the MENU screen and then press the **ENTER** knob.
2. Rotate the **ENTER** knob to select TX SELF TEST and then press the **ENTER** knob. OK or NG (No Good) appears as the test result for each items. For NG, contact your dealer for advice.

```
🔊                    SSB TX 2182.0/RX 2182.00 kHz
TX SELF TEST
SW REG1 ◄ OK        DETAILED TEST ◄        Press the 1, 2 or
SW REG2 ◄ OK         1:TX PLL              3 key to see the
CODEC   ◄ OK         2:PA                  detailed test result
TX PLL  ◄ OK         3:TX FIL              for TX PLL, PA or
TX      ◄ OK                               TX FIL.
DRV     ◄ OK
PA      ◄ OK

TX FIL  ◄ --  ⎫                            Unexecuted items
COUPLER ◄ --  ⎭
 4:PRINT           [CANCEL]:BACK
```
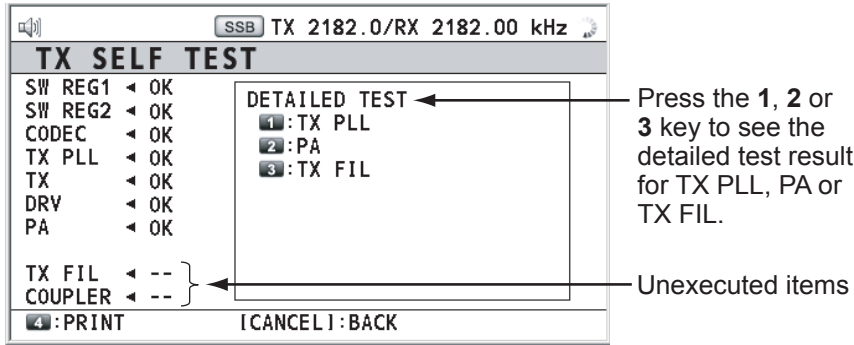
SW REG1 (2), DRV: For FS-2575/5075

COMB (DETAILED TEST for PA): For FS-5075

Others: For FS-2575/5075

Tone test

You can execute tone test with lowering transmission power.

1. Rotate the **ENTER** knob to select TEST on the MENU screen and then press the **ENTER** knob.
2. Rotate the **ENTER** knob to select TONE TEST and then press the **ENTER** knob.
3. Adjust the settings. The tone signal is output from the speaker. Press the **PTT** switch of the handset to output tone signal.

11.2   Maintenance

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

Item	Check point	Remedy/Remarks
Antenna	Check for physical damage and corrosion.	Replace damaged parts.
Wire antenna	Check that the antenna is properly spanned and separated sufficiently from metallic structures.	If necessary, re-span antenna.
Insulators for antenna	Check for salt water deposits on insulators. Check that connection at the lead-in insulator is tight and rust-free.	Replace damage insulators. Remove salt water deposits. Clean with fresh water, then dry. Remove rust, then tighten bolts and lock nuts. Cover metallic surface with sealing compound.

Item	Check point	Remedy/Remarks
Antenna coupler	• Check condition of antenna terminal, ground, coaxial cable and control cable. • Check that coupler lid and cable glands are firmly secure. • Check for physical damage, corrosion and salt water deposits.	• Tighten loosened connections. • Fasten lid firmly and evenly to prevent water leakage. • Replace if damaged.
Control unit	• Check ground connection, control cable, and external equipment. • Confirm that there are no objects on the top of the control unit. • Remove dust from control unit with soft cloth. **Note:** Do not use chemical cleaners to clean the control unit; they can remove paint or markings or deform the equipment.	• Tighten loosened connections; remove foreign material from connectors. • Remove any objects. • 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 will not scratch the LCD.
Transceiver unit	• Check connection at signal cable, coaxial cable, control cable, power cable, and navigator. • Confirm that there are no objects on the top of the cabinet.	• Tighten loosened connections; remove foreign material from connectors. • Remove any objects.
Power supply	• Check that the supply voltage at transmission is within the rated range (21.6 to 31.2 VDC at the power connector).	• If not within the range, check ship's mains or ship's battery. Low voltage may cause erratic operation.

11.3 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 can be off. • (DC) voltage is too high. • Battery can have discharged, or poor contact at terminals.	• Turn on the mains switchboard. • Check supply voltage. • Recharge battery and tighten battery terminals.
Display indications do not appear.	Screen brilliance is too low.	Press the **BRILL** key to adjust the screen brilliance.
Power is on but no sound from main speaker.	Main speaker is off.	Press the ⊠ key to turn on the main speaker.
Poor articulation	Wrong class of emission can be in use.	Class of emission should match that of incoming signal.
Output power reduced to LOW	Power is automatically reduced to protect against overheating due to continuous transmission.	Wait until the unit returns to normal condition.
Antenna coupler cannot tune antenna	• Antenna can be disconnected or shorted to ground. • Antenna is out of tunable length. • Poor grounding of antenna coupler. • Breaker in coupler has tripped. • Connection cable loosened or disconnected.	• Check antenna connection. • Recommended length is 10 to 18 meters. • Check coupler ground. • Checks mains voltage and polarity. If normal, reset breaker. • Check cable.

11.4　Error Messages

The table below shows error messages, their meanings, and remedies. To delete the messages, press the **CANCEL** key. If other error occurs, contact your dealer.

Error message	Meaning	Remedy
ERROR: TX PLL UNLOCK [CANCEL]: Stop alarm	TX PLL unlock. Transmission is stopped.	Contact your dealer.
ERROR: RX PLL UNLOCK [CANCEL]: Stop alarm	RX PLL unlock. Reception is stopped.	Contact your dealer.
ERROR: WR1(2) PLL UNLOCK [CANCEL]: Stop alarm	WR1(2) PLL unlock. Reception is stopped.	Contact your dealer.
ERROR: TUNE NG [CANCEL]: Stop alarm	Tuning failed. Transmission power is decreased to LOW(2). For NBDP, transmission is stopped.	Try to tune again. If unsuccessful, confirm if TUNE NG occurs on other frequencies. See "Antenna coupler cannot tune antenna" in section 11.3, or contact your dealer.
ERROR: Tx power reduced. Main AMP heated. [CANCEL]: Stop alarm	Power amplifier is too heated. Transmission power is decreased to one level lower.	
ERROR: Tx power reduced. Natural TUNE [CANCEL]: Stop alarm	Tune error occurs. Transmission power is decreased to LOW(2).	Try to tune again. If unsuccessful, confirm if TUNE NG occurs on other frequencies. See "Antenna coupler cannot tune antenna" in section 11.3, or contact your dealer.
ERROR: Tx power reduced. Ship's main failure. [CANCEL]: Stop alarm	AC power is interrupted and DC power is replaced with AC power.	Can use AC power with low transmission power. Check AC power and decrease the transmission power to the minimum.
ERROR: Communication error! [CANCEL]: Stop alarm	Communication between the transceiver unit and the control unit is lost for a certain period.	Confirm if the transceiver unit and the control unit are connected.
WARNING: GNSS error [CANCEL]: Stop alarm	Sensor information from GNSS is lost more than one minute.	Check the navigation equipment. If the navigation equipment does not work well, input the position information manually.
WARNING: Printer not ready [CANCEL]: Stop alarm	Automatic print is selected; however, printer is not powered or is disconnected.	Check the printer.
WARNING: Position data is not updated! Position was older than XH. Update it [CANCEL]: Stop alarm	Position data is older by the amount of time preset on the POSITION menu (see section 6.7).	Reenter position on the POSITION menu (see section 6.7).
System was rebooted.	Unusual working is detected. System restarts.	Can use this equipment without hitch.

11.5   Breaker PR-850A

The Power Supply Unit PR-850A, used with the equipment, has a circuit breaker. If the breaker has tripped, find the reason before resetting the breaker (upward position).
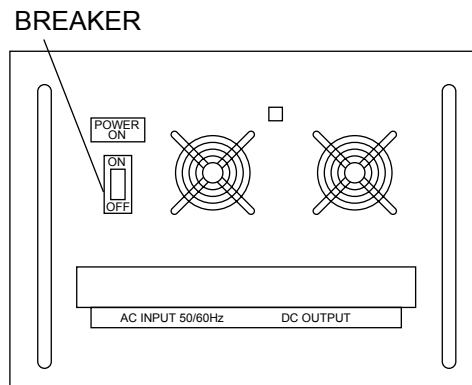
11.6   Test Call

This function sends a test signal to a coast or ship station, over one of six distress and safety frequencies. For that reason, it should not be executed unnecessarily. You can prepare a test call beforehand and send it (see paragraph 6.13.5).

1. Press the **OTHER DSC MSG** key to open the COMPOSE MSG.
2. Rotate the **ENTER** knob to select MSG TYPE and then press the **ENTER** knob.
3. Rotate the **ENTER** knob to select TEST MSG and then press the **ENTER** knob.
4. Rotate the **ENTER** knob to select TO and then press the **ENTER** knob.
5. Enter the MMSI where to send the test message with the numeric keys and then press the **ENTER** knob.
6. Rotate the **ENTER** knob to select DSC FREQ and then press the **ENTER** knob.
7. Rotate the **ENTER** knob to select DSC frequency and then press the **ENTER** knob.
8. Rotate the **ENTER** knob to select GO TO CALL and then press the **ENTER** knob to send the test message. The screen is changed to one for transmission and the message "Sending DSC MSG now " appears. After the call is sent, the equipment waits for acknowledgement of the call. The timer starts counting up the time to wait for acknowledgement.
9. Do one of the following.

Test acknowledge message received

The audio alarm sounds and the message "TEST ACK received! [CANCEL]: Stop alarm" appears. Press the **CANCEL** key to silence the alarm.

No response

Re-send call: Rotate the **ENTER** knob to select GO TO CALL and then press the **ENTER** knob.
Cancel call: Press the **CANCEL** key to return to the radiotelephone screen.

11.7 NBDP Terminal Unit Maintenance

Regular maintenance is important for good performance. A regular maintenance program should be established and should at least include the items mentioned below.

11.7.1 Cleaning the equipment

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 will not scratch the LCD. Do not use solvents such as thinner, acetone or benzene for cleaning. Also, do not use degreaser or antifog solution, as they can strip the coating from the LCD.

11.7.2 Connectors and earth connection

Periodically check the connectors for proper seating and the earth connection for rust. Remove rust to maintain a good ground system.

11.7.3 Floppy disk drive

Foreign material on the floppy disk drive head can scratch the magnetic material in the floppy, resulting in loss of data. Clean the floppy disk drive head regularly with a floppy disk drive cleaning disk to prevent erasure of information stored on disks.

11.7.4 Diagnostics

General diagnostics

1. Press the function key **F6** to open the System menu.

```
                        ─ System ─
  Setup                 Lock  Change  Default
  -----------------------------------------------
  Slave Delay            8 msec (0- 50 msec)
  -----------------------------------------------
  TX/RX MSG Save         OFF  O N
  Edit Before sending    OFF  O N
  -----------------------------------------------
  Time System            OFF UTC SMT JST
  Time & Date            2006/10/16  10:00:00
  Window Color
  Self Test
```

System menu (Example: IB-583)

2. Select Change from Setup.
3. Select Self Test at the bottom of the screen.

4. Press the **Enter** key. The results of the self test are displayed a short time later.

```
──────────── Selftest ────────────
Terminal Unit Test : ver. X.XX        :OK  ◄──── IB-583/IB-585
Main Unit Test     : ver. XX          :OK  ◄──── Main terminal soft (T-CPU board)
Modem Unit Test    : ver. XX          :OK  ◄──── NBDP modem
Radio Unit Test    : ID FS5070        :OK
DSC Unit Test      : ID FS5070        :OK
Printer Unit Test* : Print all character :OK
```

X.XX = Version No.
*: "NG" and "Printer not ready" when printer is off or is abnormal.

Self test results

The test results are shown as OK or NG (No Good). For any NG, try the self test again. If it appears again, call for service. When the test is completed, the message "Selftest Completed. Press any key to escape." appears.

Tone test

1. Select Self Test from the System menu.
2. While pressing and holding down the **Shift** key, press the ↓ key to open the Tone Test menu.

```
──────── Tone Test ────────
1: Tone Test 1 (All Char)
2: Tone Test 2 (Fox)
3: Tone Test 3 (Beta)
─────────────────────────────
4: Tone Test 4 (Mark)
5: Tone Test 5 (Space)
6: Tone Test 6 (BY)
```

3. Select a test and then press the **Enter** key.
4. You can stop a tone test at anytime by pressing the **Esc** key.

11-7

Tone test 1 (All characters)

This test checks for proper transmission of all figures, letters and codes. To conduct the test, call a station in the ARQ or FEC mode. Execute the test, confirming that all characters are transmitted correctly. "Now Testing Tone Test 1" appears during the testing. Since the test is conducted continuously, you can press the **Esc** key twice followed by the function key **F10** to stop the test and return to the tone test menu.

```
 1:File 2:Edit 3:Operate 4:Window 5:Station 6:System 7:WRU 8:HR 9:Over 10:Break
------------------------------------------            System ──────────────
 Station Name    :              │ Setup                Lock  Change   Default
 Frequency (T/R) :          /   │ ------------------------------------------------
 Comm Status     :  Connect Sen │
                                │
 --------------------------------│
                                │
```

```
    ┌────────────────────────────────────────────────────┐
    │  Now Testing Tone Test 1 (All Char).                │
    └────────────────────────────────────────────────────┘
```

```
    ABCDEFGHIJKLMNOPQRSTUVWXYZ1234567890-?:().,'=/+abcdefghijklmnopqrstuv
    wxyz

    ABCDEFGHIJKLMNOPQRSTUVWXYZ1234567890-?:().,'=/+abcdefghijklmnopqrstuv
    wxyz

    ABCDEFGHIJKLMNOPQRSTUVWXYZ
```

Tone test 2 (Fox)

This test (continuously) checks for proper transmission of the test message "THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG 0123456789". To conduct the test, call a station by using the ARQ or FEC mode.

Tone test 3 (Beta)

You can check for proper transmission of the idle signal β. Call up a station using the ARQ mode.

APPENDIX

Menu Tree

MENU key

Bold: Default setting

- TEST
  - DAILY TEST
  - TX SELF TEST
  - TONE TEST (ON, *OFF*)

- USER CH (open user channel list)

- LOG (open log data list)

- INTERCOM

- SYSTEM
  - SQ FREQ (500Hz - 2000Hz, *800Hz*)
  - KEY ASSIGN (F1, F2, F3)
  - PRINT
    - TX CALL (AUTO, *MANUAL*)
    - RX CALL (AUTO, *MANUAL*)
    - DAILY TEST (AUTO, *MANUAL*)
  - POSITION
    - SETTING
    - OLDER (*4H*, 3H, 2H, 1H, 0.5H)
  - DATE/TIME
  - TIMEOUT
    - MENU END (*10MIN*, NO TIMEOUT)
    - DSC GENERAL (*15MIN*, NO TIMEOUT)
    - RX DISTRESS (15MIN, *NO TIMEOUT*)
    - SSB (10SEC, *30SEC*, 10MIN)
    - TELEX (10SEC, 30SEC, 10MIN, *NO TIMEOUT*)
    - FAX (10SEC, 30SEC, 10MIN, *NO TIMEOUT*)
    - AM (10SEC, 30SEC, 10MIN, *NO TIMEOUT*)
  - FAX RX (ENABLE, *DISABLE*)
  - ANT SELECT (*TRX ANT*, RX ANT)
  - NETWORK

- DSC
  - ADDRESS BOOK (open address data list)
  - MSG FILE (open message file list)
  - ACK SETTINGS
    - INDIVIDUAL (*AUTO (UNABLE)*, MANUAL)
    - PSTN (*AUTO (ABLE)*, AUTO (UNABLE))
    - REASON (*NO REASON*, BUSY, EQUIP ERROR, CAN'T USE MODE, CAN'T USE CH)
    - POSITION MSG (AUTO (ABLE), AUTO (UNABLE), *MANUAL*)
    - POLLING MSG (*AUTO*, MANUAL)
    - TEST MSG (*AUTO*, MANUAL)
  - SPECIAL MSG
    - NEUTRAL (ABLE, *UNABLE*)
    - MEDICAL (ABLE, *UNABLE*)
  - ROUTINE SCAN
  - DISTRESS SCAN

- AUDIO
  - KEY CLICK (*ON*, OFF)
  - OFF HOOK SP (SP ON, *MUTE*)
  - ORDINARY ALARM
    - SAFETY (0 - 5, *5*)
    - ROUTINE (0 - 5, *5*)
  - ALARM DISTANCE (*500NM*, OFF)

- SERVICE (For serviceman)

NBDP terminal unit (telex)

F1: File
- 1: New
- 2: Open
- 3: Close
- 4: Delete
- 5: Rename
- 6: Real Time Printing
- 7: File to Print
- 8: Cancel Priniting
- 9: Clear Buffer
- 0: Floppy Disk Format

F5: Station
- 1: Station Entry
- 2: Timer Operation Entry
- 3: Scan Entry
- 4: User Channel Entry
- 5: Answerback Code Entry
- 6: Group ID Entry (4/5 digit)
- 7: Group ID Entry (9 digit)
- 8: Select ID Entry (4/5 digit)
- 9: Select ID Entry (9 digit)

Bold: Default setting

F2: Edit
- 1: Undo
- 2: Cut
- 3: Copy
- 4: Paste
- 5: Select All
- 6: Search
- 7: Replace
- 8: Goto Top
- 9: Goto Bottom
- 0: Goto Line
- A: Change Text

F6: System
- Setup (***Lock***, Change, Default)
- Slave Delay (0-50 msec, ***8***)
- TX/RX MSG Save (***OFF***, ON)
- Edit Before Sending (***OFF***, ON)
- Time System (OFF, ***UTC***, SMT, JST)
- Time & Date
- Window Color
  - Window Color Setup
    - Window — BASE WINDOW, BACK SCROLL, EDIT 1-2, FUNCTION, SUB MENU 1-3, MESSAGE
    - Fore Color ⎤
    - Back Color ⎦ — L-WHITE, YELLOW, L-MAGENTA, L-RED, L-CYAN, L-GREEN, L-BLUE, GRAY, WHITE, BROWN, MAGENTA, RED, CYAN, GREEN, BLUE, BLACK
  - Default Color
- Self Test

F3: Operate
- 1: Call Station
- 2: Macro Operation
- 3: File to Send
- 4: Cancel Sending
- 5: Scan (Start/Stop)
- 6: Manual Reception
- 7: Timer Operation
- 8: Manual Calling
- 9: Set Frequency

F4: Window
- 1: Calendar
- 2: Distress Frequency Table

F7: WRU (Who are you?)
F8: HR (Here is)
F9: Over
F10: Break

AP-2

Frequency Tables

DSC frequency table

TX (kHz)	RX (kHz)	Remarks	File Name
2187.5	2187.5	Distress and Safety Frequencies	
4207.5	4207.5		
6312.0	6312.0		
8414.5	8414.5		
12577.0	12577.0		
16804.5	16804.5		
458.5	455.5	International Frequencies	INTL-0.4M
2189.5(2177.0*)	2177.0		INTL-2M
4208.0	4219.5		INTL-4M
6312.5	6331.0		INTL-6M
8415.0	8436.5		INTL-8M
12577.5	12657.0		INTL-12M
16805.0	16903.0		INTL-16M
18898.5	19703.5		INTL-18M
22374.5	22444.0		INTL-22M
25208.5	26121.0		INTL-25M
4208.5	4220.0	Local-1 Frequencies	LOCAL1-4M
6313.0	6331.5		LOCAL1-6M
8415.5	8437.0		LOCAL1-8M
12578.0	12657.5		LOCAL1-12M
16805.5	16903.5		LOCAL1-16M
18899.0	19704.0		LOCAL1-18M
22375.0	22444.5		LOCAL1-22M
25209.0	26121.5		LOCAL1-25M
4209.0	4220.5	Local-2 Frequencies	LOCAL2-4M
6313.5	6332.0		LOCAL2-6M
8416.0	8437.5		LOCAL2-8M
12578.5	12658.0		LOCAL2-12M
16806.0	16904.0		LOCAL2-16M
18899.5	19704.5		LOCAL2-18M
22375.5	22445.0		LOCAL2-22M
25209.5	26122.0		LOCAL2-25M

*: Ship-to-ship

Custom channels (to be programmed by FURUNO dealers)

CH NO	Ship Receive (kHz)	Ship Transmit (kHz)	Remarks
AP-4			

MF band working carrier frequencies (ref. US CFR 47 Part 80.371)

Region	Ship Transmit (kHz)	Ship Receive (kHz)	Region	Ship Transmit (kHz)	Ship Receive (kHz)
East Coast	2031.5	2490.0	Gulf Coast	2009.0	2466.0
	2118.0	2514.0		2134.0	2530.0
	2126.0	2522.0		2142.0	2538.0
	2142.0	2538.0		2158.0 [1]	2550.0
	2166.0	2558.0		2166.0	2558.0
	2198.0	2590.0		2206.0	2598.0
	2366.0	2450.0		2366.0	2450.0
	2382.0	2482.0		2382.0	2482.0
	2390.0	2566.0		2430.0	2572.0
	2400.0	2400.0		2458.0	2506.0
	2406.0	2506.0	Great Lakes [2]	2118.0	2514.0
West Coast	2003.0	2450.0		2158.0	2550.0
	2009.0	2442.0		2206.0	2582.0
	2009.0	2566.0	Alaska	2131.0	2309.0
	2031.5	2566.0		2134.0	2312.0
	2126.0	2522.0		2240.0	2400.0
	2206.0	2598.0	Hawaii	2134.0	2530.0
	2382.0	2466.0	Caribbean	2009.0	2506.0
	2430.0	2482.0		2086.0 [3]	2585.0
				2134.0	2530.0
			Guam	2009.0	2506.0

Above frequencies are not programmed. Contact a FURUNO representative.

1 = Unlimited use December 15 to April 1
2 = 2206 kHz for distress only
3 = Limited to pep of 150 W.

MF band SSB working carrier frequencies

CH NO	Ship Receive (kHz)	Ship Transmit (kHz)	CH NO	Ship Receive (kHz)	Ship Transmit (kHz)
241	1635	2060	271	1725	2069
242	1638	2063	272	1728	2072
243	1641	2066	273	1731	2075
244	1644	2069	274	1734	2078
245	1647	2072	275	1737	2081
246	1650	2075	276	1740	2084
247	1653	2078	277	1743	2087
248	1656	2081	278	1746	2090
249	1659	2084	279	1749	2093
250	1662	2087	280	1752	2096
251	1665	2090	281	1755	2099
252	1668	2093	282	1758	2102
253	1671	2096	283	1761	2105
254	1674	2099	284	1764	2108
255	1677	2102	285	1767	2111
256	1680	2105	286	1770	2114
257	1683	2108	287	1773	2117
258	1686	2111	288	1776	2120
259	1689	2114	289	1779	2123
260	1692	2117	290	1782	2126
261	1695	2120	291	1785	2129
262	1698	2123	292	1788	2132
263	1701	2126	293	1791	2135
264	1704	2129	294	1794	2138
265	1707	2132	295	1797	2060
266	1710	2135			
267	1713	2138			
268	1716	2060			
269	1719	2063			
270	1722	2066			

4/6 MHz ITU SSB carrier frequencies (ITU RR Appendix 16)

4 MHz SSB (J3E)		
ITU CH NO	Ship RX	Ship TX
401	4357	4065
402	4360	4068
403	4363	4071
404	4366	4074
405	4369	4077
406	4372	4080
407	4375	4083
408	4378	4086
409	4381	4089
410	4384	4092
411	4387	4095
412	4390	4098
413	4393	4101
414	4396	4104
415	4399	4107
416	4402	4110
417	4405	4113
418	4408	4116
419	4411	4119
420	4414	4122
421	4417	4125
422	4420	4128
423	4423	4131
424	4426	4134
425	4429	4137
426	4432	4140
427	4435	4143
428	4351	4351
429	4354	4354
430	4146	4146
431	4149	4149
432 (01)	4000	4000
433 (02)	4003	4003
434 (03)	4006	4006
435 (04)	4009	4009
436 (05)	4012	4012
437 (06)	4015	4015
438 (07)	4018	4018
439 (08)	4021	4021
440 (09)	4024	4024
441 (10)	4027	4027
442 (11)	4030	4030
443 (12)	4033	4033
444 (13)	4036	4036
445 (14)	4039	4039
446 (15)	4042	4042
447 (16)	4045	4045
448 (17)	4048	4048
449 (18)	4051	4051
450 (19)	4054	4054
451 (20)	4057	4057
452 (21)	4060	4060

6 MHz SSB (J3E)		
ITU CH NO	Ship RX	Ship TX
601	6501	6200
602	6504	6203
603	6507	6206
604	6510	6209
605	6513	6212
606	6516	6215
607	6519	6218
608	6522	6221
609	6224	6224
610	6227	6227
611	6230	6230

These frequencies are factory programmed.

CH NOs in ( ) are ITU NOs (RR Section C-1).

8 MHz ITU SSB carrier frequencies (ITU RR Appendix 16)

8 MHz SSB (J3E) - Duplex		
ITU CH NO	Ship RX	Ship TX
801	8719	8195
802	8722	8198
803	8725	8201
804	8728	8204
805	8731	8207
806	8734	8210
807	8737	8213
808	8740	8216
809	8743	8219
810	8746	8222
811	8749	8225
812	8752	8228
813	8755	8231
814	8758	8234
815	8761	8237
816	8764	8240
817	8767	8243
818	8770	8246
819	8773	8249
820	8776	8252
821	8779	8255
822	8782	8258
823	8785	8261
824	8788	8264
825	8791	8267
826	8794	8270
827	8797	8273
828	8800	8276
829	8803	8279
830	8806	8282
831	8809	8285
832	8812	8288
833	8291	8291
834	8707	8707
835	8710	8710
836	8713	8713
837	8716	8716
838	8294	8294
839	8297	8297

8 MHz SSB (J3E) - Simplex		
(ITU CH NO)	Ship RX	Ship TX
840 (01)	8101	8101
841 (02)	8104	8104
842 (03)	8107	8107
843 (04)	8110	8110
844 (05)	8113	8113
845 (06)	8116	8116
846 (07)	8119	8119
847 (08)	8122	8122
848 (09)	8125	8125
849 (10)	8128	8128
850 (11)	8131	8131
851 (12)	8134	8134
852 (13)	8137	8137
853 (14)	8140	8140
854 (15)	8143	8143
855 (16)	8146	8146
856 (17)	8149	8149
857 (18)	8152	8152
858 (19)	8155	8155
859 (20)	8158	8158
860 (21)	8161	8161
861 (22)	8164	8164
862 (23)	8167	8167
863 (24)	8170	8170
864 (25)	8173	8173
865 (26)	8176	8176
866 (27)	8179	8179
867 (28)	8182	8182
868 (29)	8185	8185
869 (30)	8188	8188
870 (31)	8191	8191

CH NOs in ( ) are ITU NOs (RR Section C-1).

12/16 ITU SSB carrier frequencies (ITU RR Appendix 16)

12 MHz SSB (J3E)			16 MHz SSB (J3E)			16 MHz SSB (J3E)		
CH NO.	SHIP RX	SHIP TX	CH NO.	SHIP RX	SHIP TX	CH NO.	SHIP RX	SHIP TX
1201	13077	12230	1601	17242	16360	1651	17392	16510
1202	13080	12233	1602	17245	16363	1652	17395	16513
1203	13083	12236	1603	17248	16366	1653	17398	16516
1204	13086	12239	1604	17251	16369	1654	17401	16519
1205	13089	12242	1605	17254	16372	1655	17404	16522
1206	13092	12245	1606	17257	16375	1656	17407	16525
1207	13095	12248	1607	17260	16378	1657	16528	16528
1208	13098	12251	1608	17263	16381	1658	16531	16531
1209	13101	12254	1609	17266	16384	1659	16534	16534
1210	13104	12257	1610	17269	16387	1660	16537	16537
1211	13107	12260	1611	17272	16390	1661	16540	16540
1212	13110	12263	1612	17275	16393	1662	16543	16543
1213	13113	12266	1613	17278	16396	1663	16546	16546
1214	13116	12269	1614	17281	16399			
1215	13119	12272	1615	17284	16402			
1216	13122	12275	1616	17287	16405			
1217	13125	12278	1617	17290	16408			
1218	13128	12281	1618	17293	16411			
1219	13131	12284	1619	17296	16414			
1220	13134	12287	1620	17299	16417			
1221	13137	12290	1621	17302	16420			
1222	13140	12293	1622	17305	16423			
1223	13143	12296	1623	17308	16426			
1224	13146	12299	1624	17311	16429			
1225	13149	12302	1625	17314	16432			
1226	13152	12305	1626	17317	16435			
1227	13155	12308	1627	17320	16438			
1228	13158	12311	1628	17323	16441			
1229	13161	12314	1629	17326	16444			
1230	13164	12317	1630	17329	16447			
1231	13167	12320	1631	17332	16450			
1232	13170	12323	1632	17335	16453			
1233	13173	12326	1633	17338	16456			
1234	13176	12329	1634	17341	16459			
1235	13179	12332	1635	17344	16462			
1236	13182	12335	1636	17347	16465			
1237	13185	12338	1637	17350	16468			
1238	13188	12341	1638	17353	16471			
1239	13191	12344	1639	17356	16474			
1240	13194	12347	1640	17359	16477			
1241	13197	12350	1641	17362	16480			
1242	12353	12353	1642	17365	16483			
1243	12356	12356	1643	17368	16486			
1244	12359	12359	1644	17371	16489			
1245	12362	12362	1645	17374	16492			
1246	12365	12365	1646	17377	16495			
			1647	17380	16498			
			1648	17383	16501			
			1649	17386	16504			
			1650	17389	16507			

Above is factory programmed.

18/19, 22, 25/26 ITU SSB carrier frequencies (ITU RR Appendix 16)

18/19 MHz SSB (J3E)		
CH NO.	SHIP RX	SHIP TX
1801	19755	18780
1802	19758	18783
1803	19761	18786
1804	19764	18789
1805	19767	18792
1806	19770	18795
1807	19773	18798
1808	19776	18801
1809	19779	18804
1810	19782	18807
1811	19785	18810
1812	19788	18813
1813	19791	18816
1814	19794	18819
1815	19797	18822
1816	18825	18825
1817	18828	18828
1818	18831	18831
1819	18834	18834
1820	18837	18837
1821	18840	18840
1822	18843	18843

22 MHz SSB (J3E)		
CH NO.	SHIP RX	SHIP TX
2201	22696	22000
2202	22699	22003
2203	22702	22006
2204	22705	22009
2205	22708	22012
2206	22711	22015
2207	22714	22018
2208	22717	22021
2209	22720	22024
2210	22723	22027
2211	22726	22030
2212	22729	22033
2213	22732	22036
2214	22735	22039
2215	22738	22042
2216	22741	22045
2217	22744	22048
2218	22747	22051
2219	22750	22054
2220	22753	22057
2221	22756	22060
2222	22759	22063
2223	22762	22066
2224	22765	22069
2225	22768	22072
2226	22771	22075
2227	22774	22078
2228	22777	22081
2229	22780	22084
2230	22783	22087
2231	22786	22090
2232	22789	22093
2233	22792	22096
2234	22795	22099
2235	22798	22102
2236	22801	22105
2237	22804	22108
2238	22807	22111
2239	22810	22114
2240	22813	22117
2241	22816	22120
2242	22819	22123
2243	22822	22126
2244	22825	22129
2245	22828	22132
2246	22831	22135
2247	22834	22138
2248	22837	22141
2249	22840	22144
2250	22843	22147

22 MHz SSB (J3E)		
CH NO.	SHIP RX	SHIP TX
2251	22846	22150
2252	22849	22153
2253	22852	22156
2254	22159	22159
2255	22162	22162
2256	22165	22165
2257	22168	22168
2258	22171	22171
2259	22174	22174
2260	22177	22177

25/26 MHz SSB (J3E)		
CH NO	Ship RX	Ship TX
2501	26145	25070
2502	26148	25073
2503	26151	25076
2504	26154	25079
2505	26157	25082
2506	26160	25085
2507	26163	25088
2508	26166	25091
2509	26169	25094
2510	26172	25097
2511	25100	25100
2512	25103	25103
2513	25106	25106
2514	25109	25109
2515	25112	25112
2516	25115	25115
2517	25118	25118

MF band telex frequency table

CH NO.	Ship Transmit (NBDP, DSC)	Ship Receive (NBDP, DSC)	
2001	2142.0	1607.0	
2002	2142.5	1607.5	
2003	2143.0	1608.0	
2004	2143.5	1608.5	
2005	2144.0	1609.0	
2006	2144.5	1609.5	
2007	2145.0	1610.0	
2008	2145.5	1610.5	
2009	2146.0	1611.0	
2010	2146.5	1611.5	
2011	2147.0	1612.0	
2012	2147.5	1612.5	
2013	2148.0	1613.0	
2014	2148.5	1613.5	
2015	2149.0	1614.0	NBDP/DSC
2016	2149.5	1614.5	
2017	2150.0	1615.0	
2018	2150.5	1615.5	
2019	2151.0	1616.0	
2020	2151.5	1616.5	
2021	2152.0	1617.0	
2022	2152.5	1617.5	
2023	2153.0	1618.0	
2024	2153.5	1618.5	
2025	2154.0	1619.0	
2026	2154.5	1619.5	
2027	2155.0	1620.0	
2028	2155.5	1620.5	
2029	2156.0	1621.0	
2030	2156.5	1621.5	
2031	2157.0	1622.0	
2032	2157.5	1622.5	DSC
2033	2158.0	1623.0	
2034	2158.5	1623.5	
2035	2159.0	1624.0	
2036	2159.5	1624.5	

ITU Telex frequency table (1/4)

ITU TELEX FREQUENCY TABLE (1/4) — FURUNO

4 MHz BAND

No.	TX	RX
4001	4172.5	4210.5
4002	4173.0	4211.0
4003	4173.5	4211.5
4004	4174.0	4212.0
4005	4174.5	4212.5
4006	4175.0	4213.0
4007	4175.5	4213.5
4008	4176.0	4214.0
4009	4176.5	4214.5
4010	4177.0	4215.0
4011	4177.5	4215.5
4012	4178.0	4216.0
4013	4178.5	4216.5
4014	4179.0	4217.0
4015	4179.5	4217.5
4016	4180.0	4218.0
4017	4180.5	4218.5
4018	4181.0	4219.0
4019	4181.5	4219.5
4020	4202.5	4203.0
4021	4203.0	4203.5
4022	4203.5	4204.0
4023	4204.0	4204.5
4024	4204.5	4205.0
4025	4205.0	4205.5
4026	4205.5	4206.0
4027	4206.0	4206.5
4028	4206.5	4207.0
4029	4207.0	4207.5
4030	4207.5	4219.5
4031	4208.0	4220.0
4032	4208.5	4220.5
4033	4209.0	

6 MHz BAND

No.	TX	RX
6001	6263.0	6314.5
6002	6263.5	6315.0
6003	6264.0	6315.5
6004	6264.5	6316.0
6005	6265.0	6316.5
6006	6265.5	6317.0
6007	6266.0	6317.5
6008	6266.5	6318.0
6009	6267.0	6318.5
6010	6267.5	6319.0
6011	6268.0	6268.0
6012	6268.5	6268.5
6013	6269.0	6319.5
6014	6269.5	6320.0
6015	6270.0	6320.5
6016	6270.5	6321.0
6017	6271.0	6321.5
6018	6271.5	6322.0
6019	6272.0	6322.5
6020	6272.5	6323.0
6021	6273.0	6323.5
6022	6273.5	6324.0
6023	6274.0	6324.5
6024	6274.5	6325.0
6025	6275.0	6325.5
6026	6275.5	6326.0
6027	6281.0	6326.5
6028	6281.5	6327.0
6029	6282.0	6327.5
6030	6282.5	6328.0
6031	6283.0	6328.5
6032	6283.5	6329.0
6033	6284.0	6329.5
6034	6284.5	6330.0
6035	6300.5	6330.5
6036	6301.0	6301.0
6037	6301.5	6301.5
6038	6302.0	6302.0
6039	6302.5	6302.5
6040	6303.0	6303.0
6041	6303.5	6303.5
6042	6304.0	6304.0
6043	6304.5	6304.5
6044	6305.0	6305.0
6045	6305.5	6305.5
6046	6306.0	6306.0
6047	6306.5	6306.5
6048	6307.0	6307.0
6049	6307.5	6307.5
6050	6308.0	6308.0
6051	6308.5	6308.5
6052	6309.0	6309.0
6053	6309.5	6309.5
6054	6310.0	6310.0
6055	6310.5	6310.5
6056	6311.0	6311.0
6057	6311.5	6311.5
6058	6312.0	6312.0
6059	6312.5	6331.0
6060	6313.0	6331.5
6061	6313.5	6332.0

8 MHz BAND

No.	TX	RX
8001	8376.5	8416.5
8002	8377.0	8417.0
8003	8377.5	8417.5
8004	8378.0	8418.0
8005	8378.5	8418.5
8006	8379.0	8419.0
8007	8379.5	8419.5
8008	8380.0	8420.0
8009	8380.5	8420.5
8010	8381.0	8421.0
8011	8381.5	8421.5
8012	8382.0	8422.0
8013	8382.5	8422.5
8014	8383.0	8423.0
8015	8383.5	8423.5
8016	8384.0	8424.0
8017	8384.5	8424.5
8018	8385.0	8425.0
8019	8385.5	8425.5
8020	8386.0	8426.0
8021	8386.5	8426.5
8022	8387.0	8427.0
8023	8387.5	8427.5
8024	8388.0	8428.0
8025	8388.5	8428.5
8026	8389.0	8429.0
8027	8389.5	8429.5
8028	8390.0	8430.0
8029	8390.5	8430.5
8030	8391.0	8431.0
8031	8391.5	8431.5
8032	8392.0	8432.0
8033	8392.5	8432.5
8034	8393.0	8433.0
8035	8393.5	8433.5
8036	8394.0	8434.0
8037	8394.5	8434.5
8038	8395.0	8435.0
8039	8395.5	8435.5
8040	8396.0	8436.0
8041	8396.5	8396.5
8042	8397.0	8397.0
8043	8397.5	8397.5
8044	8398.0	8398.0
8045	8398.5	8398.5
8046	8399.0	8399.0
8047	8399.5	8399.5
8048	8400.0	8400.0
8049	8400.5	8400.5
8050	8401.0	8401.0
8051	8401.5	8401.5
8052	8402.0	8402.0
8053	8402.5	8402.5
8054	8403.0	8403.0
8055	8403.5	8403.5
8056	8404.0	8404.0
8057	8404.5	8404.5
8058	8405.0	8405.0
8059	8405.5	8405.5
8060	8406.0	8406.0
8061	8406.5	8406.5
8062	8407.0	8407.0
8063	8407.5	8407.5
8064	8408.0	8408.0
8065	8408.5	8408.5

12 MHz BAND

No.	TX	RX
12001	12477.0	12579.5
12002	12477.5	12580.0
12003	12478.0	12580.5
12004	12478.5	12581.0
12005	12479.0	12581.5
12006	12479.5	12582.0
12007	12480.0	12582.5
12008	12480.5	12583.0
12009	12481.0	12583.5
12010	12481.5	12584.0
12011	12482.0	12584.5
12012	12482.5	12585.0
12013	12483.0	12585.5
12014	12483.5	12586.0
12015	12484.0	12586.5
12016	12484.5	12587.0
12017	12485.0	12587.5
12018	12485.5	12588.0
12019	12486.0	12588.5
12020	12486.5	12589.0
12021	12487.0	12589.5
12022	12487.5	12590.0
12023	12488.0	12590.5
12024	12488.5	12591.0
12025	12489.0	12591.5
12026	12489.5	12592.0
12027	12490.0	12592.5
12028	12490.5	12593.0
12029	12491.0	12593.5
12030	12491.5	12594.0
12031	12492.0	12594.5
12032	12492.5	12595.0
12033	12493.0	12595.5
12034	12493.5	12596.0
12035	12494.0	12596.5
12036	12494.5	12597.0
12037	12495.0	12597.5
12038	12495.5	12598.0
12039	12496.0	12598.5
12040	12496.5	12599.0
12041	12497.0	12599.5
12042	12497.5	12600.0
12043	12498.0	12600.5
12044	12498.5	12601.0
12045	12499.0	12601.5
12046	12499.5	12602.0
12047	12500.0	12602.5
12048	12500.5	12603.0
12049	12501.0	12603.5
12050	12501.5	12604.0
12051	12502.0	12604.5
12052	12502.5	12605.0
12053	12503.0	12605.5
12054	12503.5	12606.0
12055	12504.0	12606.5
12056	12504.5	12607.0
12057	12505.0	12607.5
12058	12505.5	12608.0
12059	12506.0	12608.5
12060	12506.5	12609.0
12061	12507.0	12609.5
12062	12507.5	12610.0
12063	12508.0	12610.5
12064	12508.5	12611.0
12065	12509.0	12611.5

16 MHz BAND

No.	TX	RX
16001	16683.5	16807.0
16002	16684.0	16807.5
16003	16684.5	16808.0
16004	16685.0	16808.5
16005	16685.5	16809.0
16006	16686.0	16809.5
16007	16686.5	16810.0
16008	16687.0	16810.5
16009	16687.5	16811.0
16010	16688.0	16811.5
16011	16688.5	16812.0
16012	16689.0	16812.5
16013	16689.5	16813.0
16014	16690.0	16813.5
16015	16690.5	16814.0
16016	16691.0	16814.5
16017	16691.5	16815.0
16018	16692.0	16815.5
16019	16692.5	16816.0
16020	16693.0	16816.5
16021	16693.5	16817.0
16022	16694.0	16817.5
16023	16694.5	16818.0
16024	16695.0	16695.0
16025	16695.5	16818.5
16026	16696.0	16819.0
16027	16696.5	16819.5
16028	16697.0	16820.0
16029	16697.5	16820.5
16030	16698.0	16821.0
16031	16698.5	16821.5
16032	16699.0	16822.0
16033	16699.5	16822.5
16034	16700.0	16695.5
16035	16700.5	16823.0
16036	16701.0	16823.5
16037	16701.5	16824.0
16038	16702.0	16824.5
16039	16702.5	16825.0
16040	16703.0	16825.5
16041	16703.5	16826.0
16042	16704.0	16826.5
16043	16704.5	16827.0
16044	16705.0	16827.5
16045	16705.5	16828.0
16046	16706.0	16828.5
16047	16706.5	16829.0
16048	16707.0	16829.5
16049	16707.5	16830.0
16050	16708.0	16830.5
16051	16708.5	16831.0
16052	16709.0	16831.5
16053	16709.5	16832.0
16054	16710.0	16832.5
16055	16710.5	16833.0
16056	16711.0	16833.5
16057	16711.5	16834.0
16058	16712.0	16834.5
16059	16712.5	16835.0
16060	16713.0	16835.5
16061	16713.5	16836.0
16062	16714.0	16836.5
16063	16714.5	16837.0
16064	16715.0	16837.5
16065	16715.5	16838.5

18/19 MHz BAND

No.	TX	RX
18001	18870.5	19681.0
18002	18871.0	19681.5
18003	18871.5	19682.0
18004	18872.0	19682.5
18005	18872.5	19683.0
18006	18873.0	19683.5
18007	18873.5	19684.0
18008	18874.0	19684.5
18009	18874.5	19685.0
18010	18875.0	19685.5
18011	18875.5	19686.0
18012	18876.0	19686.5
18013	18876.5	19687.0
18014	18877.0	19687.5
18015	18877.5	19688.0
18016	18878.0	19688.5
18017	18878.5	19689.0
18018	18879.0	19689.5
18019	18879.5	19690.0
18020	18880.0	19690.5
18021	18880.5	19691.0
18022	18881.0	19691.5
18023	18881.5	19692.0
18024	18882.0	19692.5
18025	18882.5	19693.0
18026	18883.0	19693.5
18027	18883.5	19694.0
18028	18884.0	19694.5
18029	18884.5	19695.0
18030	18885.0	19695.5
18031	18885.5	19696.0
18032	18886.0	19696.5
18033	18886.5	19697.0
18034	18887.0	19697.5
18035	18887.5	19698.0
18036	18888.0	19698.5
18037	18888.5	19699.0
18038	18889.0	19699.5
18039	18889.5	19700.0
18040	18890.0	19700.5
18041	18890.5	19701.0
18042	18891.0	19701.5
18043	18891.5	19702.0
18044	18892.0	19702.5
18045	18892.5	19703.0
18046	18893.0	19703.5
18047	18893.5	19704.0
18048	18894.0	19704.5
18049	18894.5	
18050	18895.0	
18051	18895.5	
18052	18896.0	
18053	18896.5	
18054	18897.0	
18055	18897.5	
18056	18898.0	
18057	18898.5	
18058	18899.0	
18059	18899.5	

22 MHz BAND

No.	TX	RX
22001	22284.5	22376.5
22002	22285.0	22377.0
22003	22285.5	22377.5
22004	22286.0	22378.0
22005	22286.5	22378.5
22006	22287.0	22379.0
22007	22287.5	22379.5
22008	22288.0	22380.0
22009	22288.5	22380.5
22010	22289.0	22381.0
22011	22289.5	22381.5
22012	22290.0	22382.0
22013	22290.5	22382.5
22014	22291.0	22383.0
22015	22291.5	22383.5
22016	22292.0	22384.0
22017	22292.5	22384.5
22018	22293.0	22385.0
22019	22293.5	22385.5
22020	22294.0	22386.0
22021	22294.5	22386.5
22022	22295.0	22387.0
22023	22295.5	22387.5
22024	22296.0	22388.0
22025	22296.5	22388.5
22026	22297.0	22389.0
22027	22297.5	22389.5
22028	22298.0	22390.0
22029	22298.5	22390.5
22030	22299.0	22391.0
22031	22299.5	22391.5
22032	22300.0	22392.0
22033	22300.5	22392.5
22034	22301.0	22393.0
22035	22301.5	22393.5
22036	22302.0	22394.0
22037	22302.5	22394.5
22038	22303.0	22395.0
22039	22303.5	22395.5
22040	22304.0	22396.0
22041	22304.5	22396.5
22042	22305.0	22397.0
22043	22305.5	22397.5
22044	22306.0	22398.0
22045	22306.5	22398.5
22046	22307.0	22399.0
22047	22307.5	22399.5
22048	22308.0	22400.0
22049	22308.5	22400.5
22050	22309.0	22401.0
22051	22309.5	22401.5
22052	22310.0	22402.0
22053	22310.5	22402.5
22054	22311.0	22403.0
22055	22311.5	22403.5
22056	22312.0	22404.0
22057	22312.5	22404.5
22058	22313.0	22405.0
22059	22313.5	22405.5
22060	22314.0	22406.0
22061	22314.5	22406.5
22062	22315.0	22407.0
22063	22315.5	22407.5
22064	22316.0	22408.0
22065	22316.5	22408.5

25/26 MHz BAND

No.	TX	RX
25001	25173.0	26101.0
25002	25173.5	26101.5
25003	25174.0	26102.0
25004	25174.5	26102.5
25005	25175.0	26103.0
25006	25175.5	26103.5
25007	25176.0	26104.0
25008	25176.5	26104.5
25009	25177.0	26105.0
25010	25177.5	26105.5
25011	25178.0	26106.0
25012	25178.5	26106.5
25013	25179.0	26107.0
25014	25179.5	26107.5
25015	25180.0	26108.0
25016	25180.5	26108.5
25017	25181.0	26109.0
25018	25181.5	26109.5
25019	25182.0	26110.0
25020	25182.5	26110.5
25021	25183.0	26111.0
25022	25183.5	26111.5
25023	25184.0	26112.0
25024	25184.5	26112.5
25025	25185.0	26113.0
25026	25185.5	26113.5
25027	25186.0	26114.0
25028	25186.5	26114.5
25029	25187.0	26115.0
25030	25187.5	26115.5
25031	25188.0	26116.0
25032	25188.5	26116.5
25033	25189.0	26117.0
25034	25189.5	26117.5
25035	25190.0	26118.0
25036	25190.5	26118.5
25037	25191.0	26119.0
25038	25191.5	26119.5
25039	25192.0	26120.0
25040	25192.5	26120.5
25041	25193.0	25193.0
25042	25193.5	25193.5
25043	25194.0	25194.0
25044	25194.5	25194.5
25045	25195.0	25195.0
25046	25195.5	25195.5
25047	25196.0	25196.0
25048	25196.5	25196.5
25049	25197.0	25197.0
25050	25197.5	25197.5
25051	25198.0	25198.0
25052	25198.5	25198.5
25053	25199.0	25199.0
25054	25199.5	25199.5
25055	25200.0	25200.0
25056	25200.5	25200.5
25057	25201.0	25201.0
25058	25201.5	25201.5
25059	25202.0	25202.0
25060	25202.5	25202.5
25061	25203.0	25203.0
25062	25203.5	25203.5
25063	25204.0	25204.0
25064	25204.5	25204.5
25065	25205.0	25205.0

ITU Telex frequency table (2/4)

ITU TELEX FREQUENCY TABLE (2/4)

FURUNO

4 MHz BAND No.	TX	RX	6 MHz BAND No.	TX	RX	8 MHz BAND No.	TX	RX	12 MHz BAND No.	TX	RX	16 MHz BAND No.	TX	RX	18/19 MHz BAND No.	TX	RX	22 MHz BAND No.	TX	RX	25/26 MHz BAND No.	TX	RX
						8066	8409.0	8409.0	12066	12509.5	12612.0	16066	16716.0	16839.0				22066	22317.0	22409.0	25066	25205.5	25205.5
						8067	8409.5	8409.5	12067	12510.0	12612.5	16067	16716.5	16839.5				22067	22317.5	22409.5	25067	25206.0	25206.0
						8068	8410.0	8410.0	12068	12510.5	12613.0	16068	16717.0	16840.0				22068	22318.0	22410.0	25068	25206.5	25206.5
						8069	8410.5	8410.5	12069	12511.0	12613.5	16069	16717.5	16840.5				22069	22318.5	22410.5	25069	25207.0	25207.0
						8070	8411.0	8411.0	12070	12511.5	12614.0	16070	16718.0	16841.0				22070	22319.0	22411.0	25070	25207.5	25207.5
						8071	8411.5	8411.5	12071	12512.0	12614.5	16071	16718.5	16841.5				22071	22319.5	22411.5	25071	25208.0	25208.0
						8072	8412.0	8412.0	12072	12512.5	12615.0	16072	16719.0	16842.0				22072	22320.0	22412.0	25072	25208.5	26121.0
						8073	8412.5	8412.5	12073	12513.0	12615.5	16073	16719.5	16842.5				22073	22320.5	22412.5	25073	25209.0	26121.5
						7074	8413.0	8413.0	12074	12513.5	12616.0	16074	16720.0	16843.0				22074	22321.0	22413.0	25074	25209.5	26122.0
						8075	8413.5	8413.5	12075	12514.0	12616.5	16075	16720.5	16843.5				22075	22321.5	22413.5			
						8076	8414.0	8414.0	12076	12514.5	12617.0	16076	16721.0	16844.0				22076	22322.0	22414.0			
						8077	8414.5	8414.5	12077	12515.0	12617.5	16077	16721.5	16844.5				22077	22322.5	22414.5			
						8078	8415.0	8436.5	12078	12515.5	12618.0	16078	16722.0	16845.0				22078	22323.0	22415.0			
						8079	8415.5	8437.0	12079	12516.0	12618.5	16079	16722.5	16845.5				22079	22323.5	22415.5			
						8080	8416.0	8437.5	12080	12516.5	12619.0	16080	16723.0	16846.0				22080	22324.0	22416.0			
									12081	12517.0	12619.5	16081	16723.5	16846.5				22081	22324.5	22416.5			
									12082	12517.5	12620.0	16082	16724.0	16847.0				22082	22325.0	22417.0			
									12083	12518.0	12620.5	16083	16724.5	16847.5				22083	22325.5	22417.5			
									12084	12518.5	12621.0	16084	16725.0	16848.0				22084	22326.0	22418.0			
									12085	12519.0	12621.5	16085	16725.5	16848.5				22085	22326.5	22418.5			
									12086	12519.5	12622.0	16086	16726.0	16849.0				22086	22327.0	22419.0			
									12087	12520.0	12622.5	16087	16726.5	16849.5				22087	22327.5	22419.5			
									12088	12520.5	12623.0	16088	16727.0	16850.0				22088	22328.0	22420.0			
									12089	12521.0	12623.5	16089	16727.5	16850.5				22089	22328.5	22420.5			
									12090	12521.5	12624.0	16090	16728.0	16851.0				22090	22329.0	22421.0			
									12091	12522.0	12624.5	16091	16728.5	16851.5				22091	22329.5	22421.5			
									12092	12522.5	12625.0	16092	16729.0	16852.0				22092	22330.0	22422.0			
									12093	12523.0	12625.5	16093	16729.5	16852.5				22093	22330.5	22422.5			
									12094	12523.5	12626.0	16094	16730.0	16853.0				22094	22331.0	22423.0			
									12095	12524.0	12626.5	16095	16730.5	16853.5				22095	22331.5	22423.5			
									12096	12524.5	12627.0	16096	16731.0	16854.0				22096	22332.0	22424.0			
									12097	12525.0	12627.5	16097	16731.5	16854.5				22097	22332.5	22424.5			
									12098	12525.5	12628.0	16098	16732.0	16855.0				22098	22333.0	22425.0			
									12099	12526.0	12628.5	16099	16732.5	16855.5				22099	22333.5	22425.5			
									12100	12526.5	12629.0	16100	16733.0	16856.0				22100	22334.0	22426.0			
									12101	12527.0	12629.5	16101	16733.5	16856.5				22101	22334.5	22426.5			
									12102	12527.5	12630.0	16102	16739.0	16857.0				22102	22335.0	22427.0			
									12103	12528.0	12630.5	16103	16739.5	16857.5				22103	22335.5	22427.5			
									12104	12528.5	12631.0	16104	16740.0	16858.0				22104	22336.0	22428.0			
									12105	12529.0	12631.5	16105	16740.5	16858.5				22105	22336.5	22428.5			
									12106	12529.5	12632.0	16106	16741.0	16859.0				22106	22337.0	22429.0			
									12107	12530.0	12632.5	16107	16741.5	16859.5				22107	22337.5	22429.5			
									12108	12530.5	12633.0	16108	16742.0	16860.0				22108	22338.0	22430.0			
									12109	12531.0	12633.5	16109	16742.5	16860.5				22109	22338.5	22430.5			
									12110	12531.5	12634.0	16110	16743.0	16861.0				22110	22339.0	22431.0			
									12111	12532.0	12634.5	16111	16743.5	16861.5				22111	22339.5	22431.5			
									12112	12532.5	12635.0	16112	16744.0	16862.0				22112	22340.0	22432.0			
									12113	12533.0	12635.5	16113	16744.5	16862.5				22113	22340.5	22432.5			
									12114	12533.5	12636.0	16114	16745.0	16863.0				22114	22341.0	22433.0			
									12115	12534.0	12636.5	16115	16745.5	16863.5				22115	22341.5	22433.5			
									12116	12534.5	12637.0	16116	16746.0	16864.0				22116	22342.0	22434.0			
									12117	12535.0	12637.5	16117	16746.5	16864.5				22117	22342.5	22434.5			
									12118	12535.5	12638.0	16118	16747.0	16865.0				22118	22343.0	22435.0			
									12119	12536.0	12638.5	16119	16747.5	16865.5				22119	22343.5	22435.5			
									12120	12536.5	12639.0	16120	16748.0	16866.0				22120	22344.0	22436.0			
									12121	12537.0	12639.5	16121	16748.5	16866.5				22121	22344.5	22436.5			
									12122	12537.5	12640.0	16122	16749.0	16867.0				22122	22345.0	22437.0			
									12123	12538.0	12640.5	16123	16749.5	16867.5				22123	22345.5	22437.5			
									12124	12538.5	12641.0	16124	16750.0	16868.0				22124	22346.0	22438.0			
									12125	12539.0	12641.5	16125	16750.5	16868.5				22125	22346.5	22438.5			
									12126	12539.5	12642.0	16126	16751.0	16869.0				22126	22347.0	22439.0			
									12127	12540.0	12642.5	16127	16751.5	16869.5				22127	22347.5	22439.5			
									12128	12540.5	12643.0	16128	16752.0	16870.0				22128	22348.0	22440.0			
									12129	12541.0	12643.5	16129	16752.5	16870.5				22129	22348.5	22440.5			
									12130	12541.5	12644.0	16130	16753.0	16871.0				22130	22349.0	22441.0			

ITU Telex frequency table (3/4)

ITU TELEX FREQUENCY TABLE (3/4) — FURUNO

The **4 MHz**, **6 MHz**, **8 MHz**, **18/19 MHz**, and **25/26 MHz** bands (No./TX/RX columns) are blank on this page.

12 MHz BAND

No.	TX	RX
12131	12542.0	12644.0
12132	12542.5	12644.5
12133	12543.0	12645.0
12134	12543.5	12645.5
12135	12544.0	12646.0
12136	12544.5	12646.5
12137	12545.0	12647.0
12138	12545.5	12647.5
12139	12546.0	12648.0
12140	12546.5	12648.5
12141	12547.0	12649.0
12142	12547.5	12649.5
12143	12548.0	12650.0
12144	12548.5	12650.5
12145	12549.0	12651.0
12146	12549.5	12651.5
12147	12555.0	12652.0
12148	12555.5	12652.5
12149	12556.0	12653.0
12150	12556.5	12653.5
12151	12557.0	12654.0
12152	12557.5	12654.5
12153	12558.0	12655.0
12154	12558.5	12655.5
12155	12559.0	12656.0
12156	12559.5	12656.5
12157	12560.0	12657.0
12158	12560.5	12657.5
12159	12561.0	12658.0
12160	12561.5	12658.5
12161	12562.0	12659.0
12162	12562.5	12659.5
12163	12563.0	12660.0
12164	12563.5	12660.5
12165	12564.0	12661.0
12166	12564.5	12661.5
12167	12565.0	12662.0
12168	12565.5	12662.5
12169	12566.0	12663.0
12170	12566.5	12663.5
12171	12567.0	12664.0
12172	12567.5	12664.5
12173	12568.0	12665.0
12174	12568.5	12665.5
12175	12569.0	12666.0
12176	12569.5	12666.5
12177	12570.0	12667.0
12178	12570.5	12667.5
12179	12571.0	12668.0
12180	12571.5	12668.5
12181	12572.0	12669.0
12182	12572.5	12669.5
12183	12573.0	12670.0
12184	12573.5	12670.5
12185	12574.0	12671.0
12186	12574.5	12671.5
12187	12575.0	12672.0
12188	12575.5	12672.5
12189	12576.0	12673.0
12190	12576.5	12673.5
12191	12577.0	12674.0
12192	12577.5	12674.5
12193	12578.0	12675.0
12194	12578.5	12675.5

16 MHz BAND

No.	TX	RX
16131	16753.5	16871.5
16132	16754.0	16872.0
16133	16754.5	16872.5
16134	16755.0	16873.0
16135	16755.5	16873.5
16136	16756.0	16874.0
16137	16756.5	16874.5
16138	16757.0	16875.0
16139	16757.5	16875.5
16140	16758.0	16876.0
16141	16758.5	16876.5
16142	16759.0	16877.0
16143	16759.5	16877.5
16144	16760.0	16878.0
16145	16760.5	16878.5
16146	16761.0	16879.0
16147	16761.5	16879.5
16148	16762.0	16880.0
16149	16762.5	16880.5
16150	16763.0	16881.0
16151	16763.5	16881.5
16152	16764.0	16882.0
16153	16764.5	16882.5
16154	16765.0	16883.0
16155	16765.5	16883.5
16156	16766.0	16884.0
16157	16766.5	16884.5
16158	16767.0	16885.0
16159	16767.5	16885.5
16160	16768.0	16886.0
16161	16768.5	16886.5
16162	16769.0	16887.0
16163	16769.5	16887.5
16164	16770.0	16888.0
16165	16770.5	16888.5
16166	16771.0	16889.0
16167	16771.5	16889.5
16168	16772.0	16890.0
16169	16772.5	16890.5
16170	16773.0	16891.0
16171	16773.5	16891.5
16172	16774.0	16892.0
16173	16774.5	16892.5
16174	16775.0	16893.0
16175	16775.5	16893.5
16176	16776.0	16894.0
16177	16776.5	16894.5
16178	16777.0	16895.0
16179	16777.5	16895.5
16180	16778.0	16896.0
16181	16778.5	16896.5
16182	16779.0	16897.0
16183	16779.5	16897.5
16184	16780.0	16898.0
16185	16780.5	16898.5
16186	16781.0	16899.0
16187	16781.5	16899.5
16188	16782.0	16900.0
16189	16782.5	16900.5
16190	16783.0	16901.0
16191	16783.5	16901.5
16192	16784.0	16902.0
16193	16784.5	16902.5
16194	16785.0	16903.0
16195	16785.5	16903.5

22 MHz BAND

No.	TX	RX
22131	22349.5	22441.5
22132	22350.0	22442.0
22133	22350.5	22442.5
22134	22351.0	22443.0
22135	22351.5	22443.5
22136	22352.0	22352.5
22137	22352.5	22353.0
22138	22353.0	22353.5
22139	22353.5	22354.0
22140	22354.0	22354.5
22141	22354.5	22355.0
22142	22355.0	22355.5
22143	22355.5	22356.0
22144	22356.0	22356.5
22145	22356.5	22357.0
22146	22357.0	22357.5
22147	22357.5	22358.0
22148	22358.0	22358.5
22149	22358.5	22359.0
22150	22359.0	22359.5
22151	22359.5	22360.0
22152	22360.0	22360.5
22153	22360.5	22361.0
22154	22361.0	22361.5
22155	22361.5	22362.0
22156	22362.0	22362.5
22157	22362.5	22363.0
22158	22363.0	22363.5
22159	22363.5	22364.0
22160	22364.0	22364.5
22161	22364.5	22365.0
22162	22365.0	22365.5
22163	22365.5	22366.0
22164	22366.0	22366.5
22165	22366.5	22367.0
22166	22367.0	22367.5
22167	22367.5	22368.0
22168	22368.0	22368.5
22169	22368.5	22369.0
22170	22369.0	22369.5
22171	22369.5	22370.0
22172	22370.0	22370.5
22173	22370.5	22371.0
22174	22371.0	22371.5
22175	22371.5	22372.0
22176	22372.0	22372.5
22177	22372.5	22373.0
22178	22373.0	22373.5
22179	22373.5	22374.0
22180	22374.0	22374.5
22181	22374.5	22375.0
22182	22375.0	22444.5
22183	22375.5	22445.0

ITU Telex frequency table (4/4)

ITU TELEX FREQUENCY TABLE (4/4)

4 MHz BAND			6 MHz BAND			8 MHz BAND			12 MHz BAND			16 MHz BAND			18/19 MHz BAND			22 MHz BAND			25/26 MHz BAND		
No.	TX	RX	No.	TX	RX	No.	TX	RX	No.	TX	RX	No.	TX	RX	No.	TX	RX	No.	TX	RX	No.	TX	RX
												16196	16786.0	16786.0									
												16197	16786.5	16786.5									
												16198	16787.0	16787.0									
												16199	16787.5	16787.5									
												16200	16788.0	16788.0									
												16201	16788.5	16788.5									
												16202	16789.0	16789.0									
												16203	16789.5	16789.5									
												16204	16790.0	16790.0									
												16205	16790.5	16790.5									
												16206	16791.0	16791.0									
												16207	16791.5	16791.5									
												16208	16792.0	16792.0									
												16209	16792.5	16792.5									
												16210	16793.0	16793.0									
												16211	16793.5	16793.5									
												16212	16794.0	16794.0									
												16213	16794.5	16794.5									
												16214	16795.0	16795.0									
												16215	16795.5	16795.5									
												16216	16796.0	16796.0									
												16217	16796.5	16796.5									
												16218	16797.0	16797.0									
												16219	16797.5	16797.5									
												19220	16798.0	16798.0									
												16221	16798.5	16798.5									
												16222	16799.0	16799.0									
												16223	16799.5	16799.5									
												16224	16800.0	16800.0									
												16225	16800.5	16800.5									
												16226	16801.0	16801.0									
												16227	16801.5	16801.5									
												16228	16802.0	16802.0									
												16229	16802.5	16802.5									
												16230	16803.0	16803.0									
												16231	16803.5	16803.5									
												16232	16804.0	16804.0									
												16233	16804.5	16804.5									
												16234	16805.0	16903.0									
												16235	16805.5	16903.5									
												16236	16806.0	16904.0									

FURUNO

Telex Abbreviations

Abbreviation	Meaning
ADV	Advise
ACK	Acknowledge
AGN	Again
BI (GS)	Good bye
BK	I cut off.
CFM	Confirm
COL	Collation
CRV	How do you receive?
DER	Out of order
DWN	Down
EEE	Error
FM	From
GA	Go ahead.
MNS	Minutes
MOM	Wait (Waiting)
MUTI	Mutilated
NA	Correspondence to this subscriber is not admitted.
NC	No circuits
NCH	Subscriber's number has been changed.
NP	The called party is not or no longer is a subscriber.
NR	Indicate your call number.
OCC	Subscriber is engaged.
OK	Agreed.
P (or 0)	Stop your transmission.
PLS (PSE)	Please
PPR	Paper
R (RCD)	Received
RAP	I will call you again.
RD	Read
RE	Referrring to
RPT	Repeat
SRY	Sorry
SVP	Please
TAX	What is the charge?
TEST MSG	Please send a test message?
THRU	You are in communication with telex position
TKS (TNX)	Thanks
TLX	Telex

Digital Interface (IEC 61162-1)
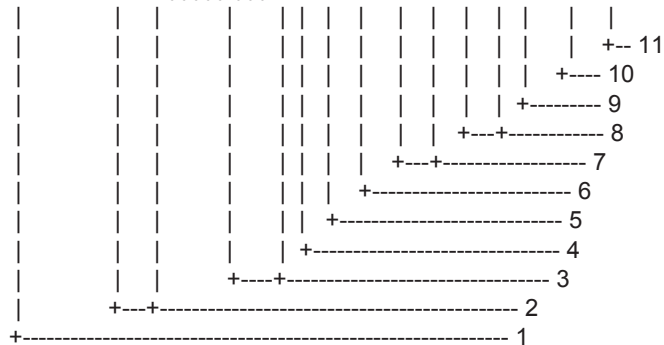
I/O Sentences

Input sentences (IEC 61162-1)

RMA, RMC, GLL, GGA, ZDA

Input sentence description
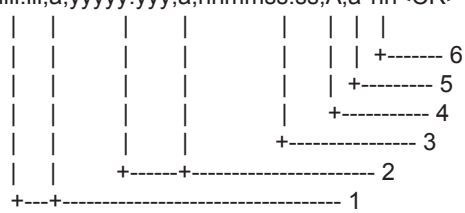
GGA – Global positioning system(GPS) fix data

```
$--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>
          |     |   |      |     | | | |  |   |   |   |   |   |   |  |
          |     |   |      |     | | | |  |   |   |   |   |   |  |  +-- 11
          |     |   |      |     | | | |  |   |   |   |   |  +---- 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
5. Number of satllite in use,00-12, may be different from the number in view
6. Horizontal dilution of precision
7. Antenna altitude above/below mean sealevel, m
8. Geoidal separation, m
9. Age of differential GPS data
10. Differential reference station ID, 0000-1023
11. Checksum

GLL – Geographic position – latitude/longitude

```
$--GLL,llll.lll,a,yyyyy.yyy,a,hhmmss.ss,A,a*hh<CR><LF>
         |  |      |     |        |   | | |
         |  |      |     |        |   | | +------- 6
         |  |      |     |        |   | +--------- 5
         |  |      |     |        |   +---------- 4
         |  |      |     |        +--------------- 3
         |  |      +------+--------------------- 2
         +---+----------------------------------- 1
```

1. Latitude, N/S
2. Longitude, E/W
3. UTC of position
4. Status: A=data valid, V=data invalid
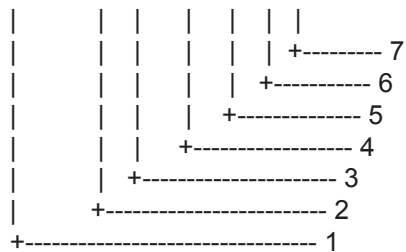5. Mode indicator(see note)
6. Checksum

NOTE Positioning system Mode indicator:
    A = Autonomous
    D = Differential
    E = Estimated (dead reckoning)
    M = Manual input
    S = Simulator
    N = Data not valid

The Mode indicator field supplements the Status field. The Status field shall be set to V=invalid for all values of Operating Mode except for A=Autonomous and D=Differential. The positioning system Mode indicator and Status field shall not be null fields.
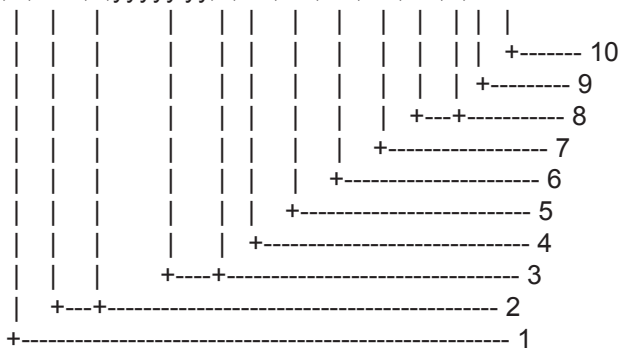
ZDA – Time and date

```
$--ZDA,hhmmss.ss,xx,xx,xxxx,xx,xx*hh<CR><LF>
         |          |  |    |   |  | |
         |          |  |    |   |  | +--------- 7
         |          |  |    |   |  +----------- 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
   as local hours
7. Checksum

RMA – Recommended minimum specific LORAN-C data

```
$--RMA,A,llll.lll,a,yyyyy.yy,a,x.x,x.x,x.x,x.x,x.x,a,a*hh<CR><LF>
        |  |  |    |    |   |   |   |   |   |   |  | | |
        |  |  |    |    |   |   |   |   |   |   |  | | +------- 10
        |  |  |    |    |   |   |   |   |   |   |  | +--------- 9
        |  |  |    |    |   |   |   |   |   |   +---+---------- 8
        |  |  |    |    |   |   |   |   |   +----------------- 7
        |  |  |    |    |   |   |   |   +-------------------- 6
        |  |  |    |    |   |   |   +----------------------- 5
        |  |  |    |    |   |   +-------------------------- 4
        |  |  |    +----+-------------------------------- 3
        |  +---+---------------------------------------- 2
        +--------------------------------------------------- 1
```

1. Status: A=data valid, V=blink, cycle or SNR warning
2. Latitude, degrees N/S
3. Longitude, degrees E/W
4. Time difference A, microseconds
5. Time difference B, microseconds
6. Speed over ground, knots
7. Course over ground, degrees true
8. Magnetic variation(see note 1),degree E/W
9. Mode indicator(see note 2)
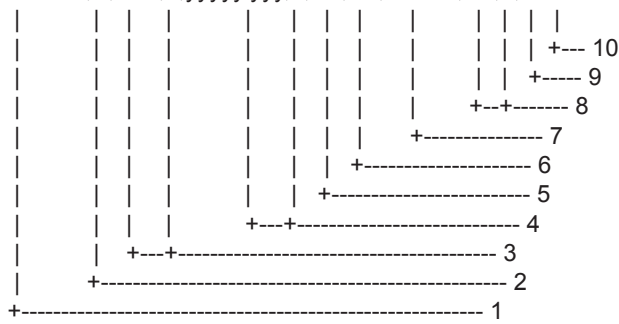10. Checksum

NOTE 1 - Easterly variation(E) subtracts from true course
      Westerly variation(W) adds to true course

NOTE 2 Positioning system Mode indicator
     A = Autonomous
     D = Differential
     E = Estimated (dead reckoning)
     M = Manual input
     S = Simulator
     N = Data not valid

The Mode indicator field supplements the Status field. The Status field
shall be set to V=invalid for all values of Operating Mode except for
A=Autonomous and D=Differential. The positioning system Mode indicator
and Status field shall not be null fields.

RMC – Recommended minimum specific GPS/TRANSIT data

```
$--RMC,hhmmss.ss,A,llll.lll,a,yyyyy.yyy,a,x.x,x.x,xxxxxx,x.x,a,a*hh<CR><LF>
           |     |  |   |    |   |    | | |   |   | | | |
           |     |  |   |    |   |    | | |   |   | | | +--- 10
           |     |  |   |    |   |    | | |   |   | | +----- 9
           |     |  |   |    |   |    | | |   |   +--+------- 8
           |     |  |   |    |   |    | | |   +-------------- 7
           |     |  |   |    |   |    | | +-------------------- 6
           |     |  |   |    |   |    | +----------------------- 5
           |     |  |   |    |   +---+------------------------- 4
           |     |  +---+------------------------------------- 3
           |     +------------------------------------------- 2
           +----------------------------------------------- 1
```
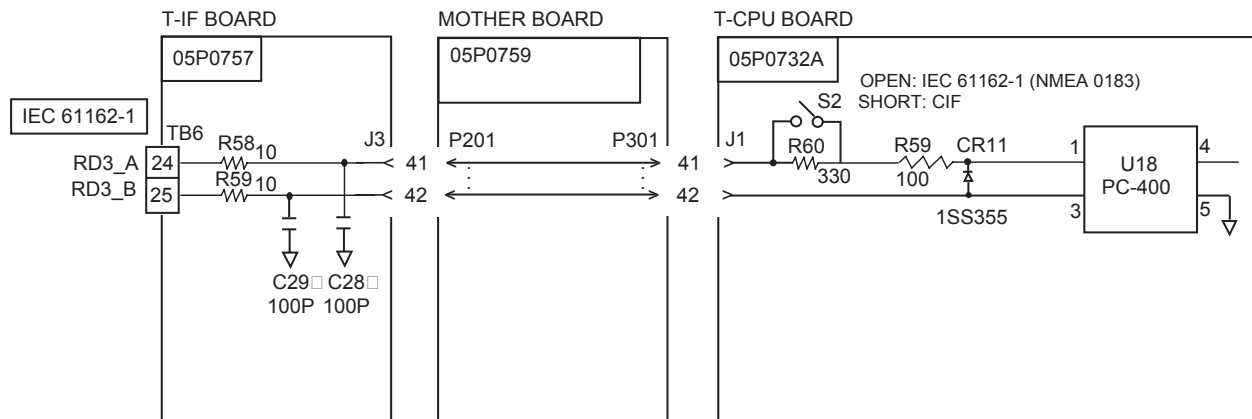
1. UTC of position fix
2. Status: A=data valid, V=navigation receiver warning
3. Latitude, N/S
4. Longitude, E/W
5. Speed over ground, knots
6. Course over ground, degrees true
7. Date: dd/mm/yy
8. Magnetic variation, degrees E/W
9. Mode indicator(see note)
10. Checksum

NOTE Positioning system Mode indicator:

   A = Autonomous
   D = Differential
   E = Estimated (dead reckoning)
   M = Manual input
   S = Simulator
   N = Data not valid

The Mode indicator field supplements the Status field. The Status field
shall be set to V=invalid for all values of Operating Mode except for
A=Autonomous and D=Differential. The positioning system Mode indicator
and Status field shall not be null fields.

Schematic diagram

T-IF BOARD	MOTHER BOARD	T-CPU BOARD
05P0757	05P0759	05P0732A

OPEN: IEC 61162-1 (NMEA 0183)
SHORT: CIF

IEC 61162-1

TB6
RD3_A 24 — R58 10 — J3 41 — P201 ⋮ P301 41 — J1 S2 R60 330 R59 100 CR11 1 — U18 PC-400 4
RD3_B 25 — R59 10 — 42 — 42 — 1SS355 3 — 5

C29 100P C28 100P

Load requirements as a listener
Isolation: Optocoupler
Input impedance: 450Ω
Max. voltage: ±15 V
Threshold: 4 mA

Parts List

This equipment contains complex modules in which fault diagnosis and repair down to component level are not practical (IMO A.694(17)/8.3.1). Only some discrete components are used. FURUNO Electric Co., Ltd. Believes identifying these components is of no value for shipboard maintenance; therefore, they are not listed in this manual. Major modules can be located on the parts location photos on pages AP-24 thru AP-26.

Transceiver unit FS-2575T

ELECTRICAL PARTS LIST		
	Model	FS-2575T
	Unit	Transceiver Unit FS-2575T
PRINTED CIRCUIT BOARD	**Code No.**	
05P0867, PA	—	
05P0874, PWR	—	
05P0866B, DRV	—	
05P0873, SW-REG	—	
05P0871, P-SW	—	
05P0864, PA-IF	—	
05P0847A, WR1	—	
05P0847B, WR2	—	
05P0856, TX	—	
05P0842, RX	—	
05P0862B, RX-FIL	—	
05P0870, TX-FIL	—	
05P0861, T-IF	—	
05P0860, MOT	—	
05P0859, T-CPU	—	

Transceiver unit FS-5075T

| ELECTRICAL PARTS LIST | Model | FS-5075T |
| | Unit | Transceiver Unit FS-5075T |

PRINTED CIRCUIT BOARD	Code No.
05P0866A, DRV	—
05P0873, SW-REG	—
05P0869, COMB	—
05P0872, FET	—
05P0871, P-SW	—
05P0867, PA	—
05P0874, PWR	—
05P0864, PA-IF	—
05P0847A, WR1	—
05P0847B, WR2	—
05P0856, TX	—
05P0842, RX	—
05P0863, DUP-FIL	—
05P0862A, RX-FIL	—
05P0870, TX-FIL	—
05P0861, T-IF	—
05P0860, MOT	—
05P0859, T-CPU	—

Control unit FS-2575C

| ELECTRICAL PARTS LIST | Model | FS-2575C |
| | Unit | Control Unit FS-2575C |

PRINTED CIRCUIT BOARD	Code No.
05P0844, PANEL	—
05P0853, C-IF	—
05P0852, C-CPU	—

Antenna Coupler AT-5075

| ELECTRICAL PARTS LIST | Model | AT-5075 |
| | Unit | Antenna Coupler AT-5075 |

PRINTED CIRCUIT BOARD	Code No.
05P0875, COUP	—

Parts Location

Transceiver unit FS-2575T
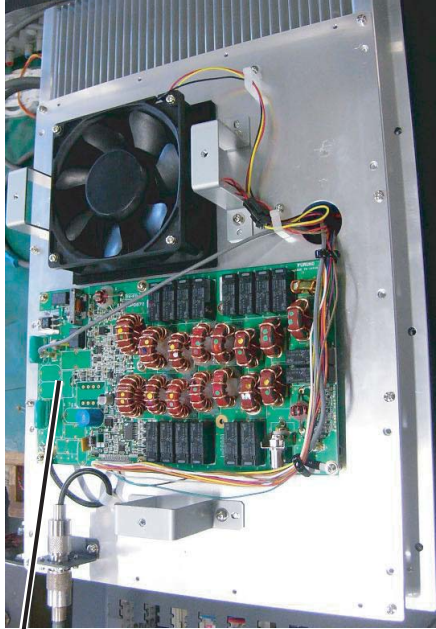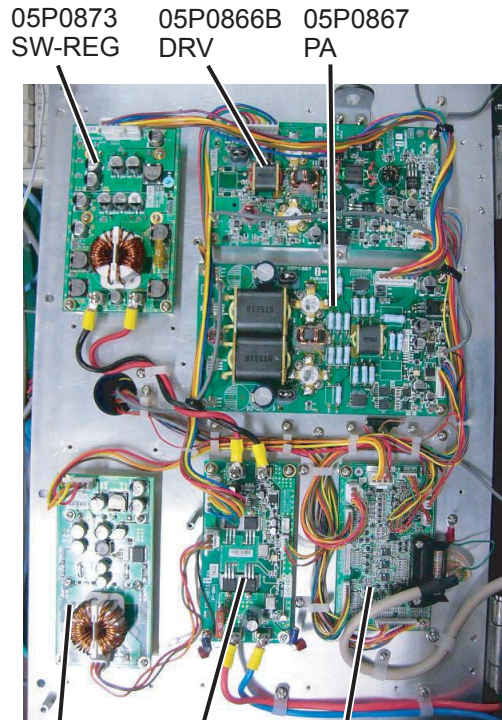
05P0873
SW-REG

05P0866B
DRV

05P0867
PA

05P0870
TX-FIL

05P0874
PWR

05P0871
P-SW

05P0864
PA-IF

05P0847B
WR2

05P0847A
WR1

05P0856
TX

Rear side

05P0860
MOT

05P0859
T-CPU

05P0842
RX

05P0862B
RX-FIL

05P0861
T-IF
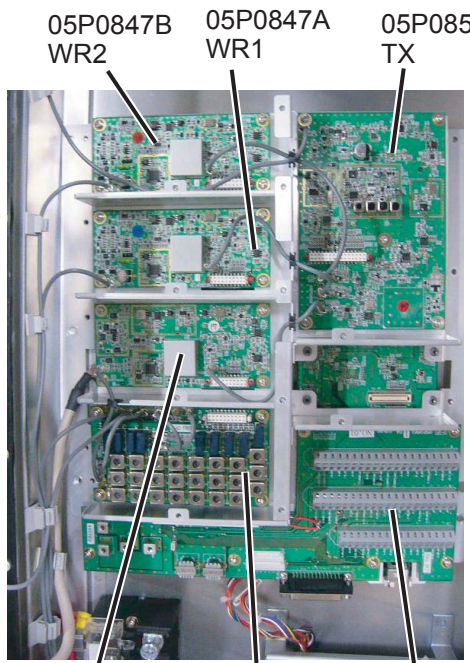
Transceiver unit FS-5075T

05P0870
TX-FIL

05P0874
PWR

05P0867
PA

05P0866A
DRV

05P0867
PA

05P0873
SW-REG

05P0869
COMB
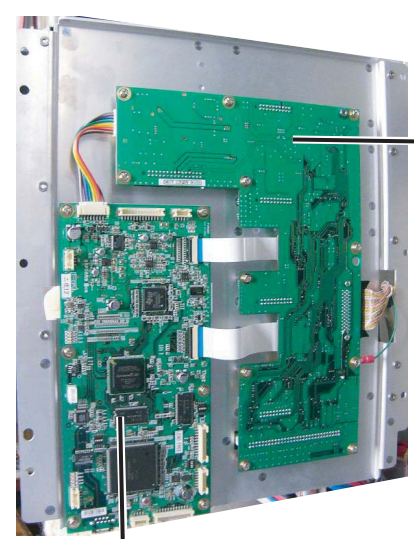
05P0873
SW-REG

05P0872
FET

05P0871
P-SW

05P0864
PA-IF

05P0847B
WR2

05P0847A
WR1

05P0856
TX

Rear side

05P0860
MOT

05P0842
RX

- 05P0863
DUP-FIL
- 05P0862A
RX-FIL
(underneath
DUP-FIL Board)
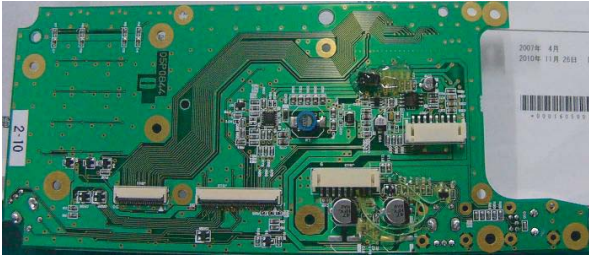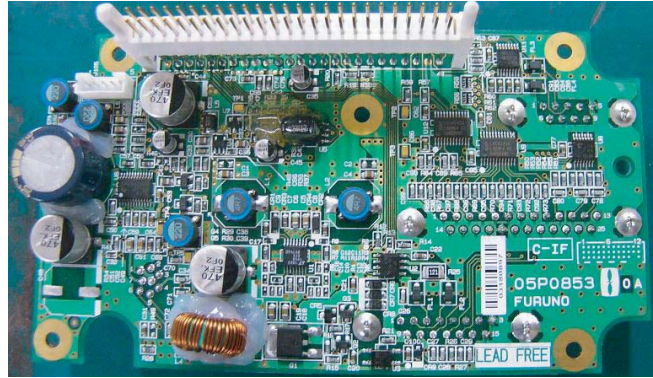
05P0861
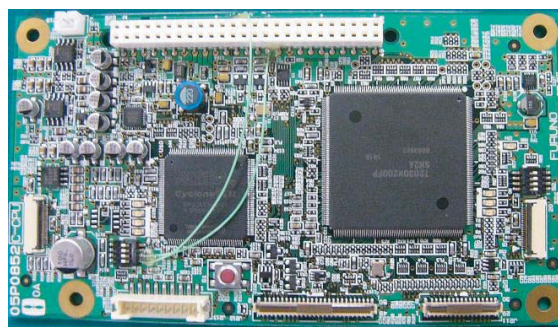T-IF

05P0859
T-CPU

Control unit FS-2575C

05P0844 (PANEL)

05P0853 (C-IF)

05P0852 (C-CPU)

Antenna Coupler AT-5075

05P0875
COUP

AP-26

SPECIFICATIONS OF SSB RADIOTELEPHONE
FS-2575/5075

1   MF/HF DIGITAL RADIOTELEPHONE

1.1   GENERAL

1.1.1   Communication system

    FS-2575   Semi-duplex or simplex

    FS-5075   Full-duplex (option required), semi-duplex or simplex

1.1.2   Class of emission   J3E: Telephone

                                         F1B (J2B): DSC and NBDP

                                         H3E: reception only

                                         A1A, F3C: requires settings for communications

1.1.3   Number of channel   User programmable: 256 TX/RX pairs

                                         All ITU channels incorporated (include DSC/NBDP), SSB, TLX, CW

1.1.4   Warming up   1 minute approx. (oven 15 minutes approx.)

1.2   TRANSMITTER

1.2.1   Frequency range   1,605 kHz to 27.5 MHz (100 Hz step)

1.2.2   RF output power

    FS-2575   MF/HF: 250 Wpep

    FS-5075   MF: 400 Wpep, HF: 500 Wpep

1.2.3   Frequency stability   ±10 Hz

1.2.4   MIC in sensitivity   1 kHz, 94 dBA maximum power: -9 dB to -3 dB

1.2.5   Line in sensitivity   1 kHz, -16 dBm maximum power: -9 dB to -3 dB

1.2.6   Audio frequency range 350 Hz to 2.7 kHz (within 6dB)

1.3   RECEIVER

1.3.1   Receiving system   Double-conversion superheterodyne

1.3.2   Frequency range   100 kHz-29,999.99 kHz (10 Hz step)

1.3.3   Sensitivity (SINAD 20 dB)

Frequency Range	J3E
100 kHz to 300 kHz	35 dBμV
300 kHz to 1.6 MHz	25 dBμV
1.6 MHz to 4.0 MHz	13 dBμV
4.0 MHz to 30 MHz	7 dBμV

1.4   Intermediate frequency 1st: 53.964 kHz, 2nd: 36 kHz

1.5   Spurious response   Better than 60 dB

1.6   Audio output power   Speaker: 3 W/4 ohm

                                         Handset: 10 mW/150 ohm

                                         Line output: 0 dBm/600 ohm

1.7   Standard features   AGC, Noise blanker, Voice-activated squelch, Noise reduction

2   DSC/WATCH KEEPING RECEIVER

2.1   DIGITAL SELECTIVE CALLING

2.1.1   Frequency shift   Mark: F-85Hz, Space: F+85 Hz (F: assigned frequency)

2.1.2   Baud rate   100 bps ± 30 x 10^{-6}

2.1.3   Protocol   Complies with ITU-R Rec.493-13, 541-9

2.1.4   Modulation   FSK

2.2   DSC/WATCH RECEIVER (DISTRESS)

2.2.1   Frequency range   2187.5/ 8414.5 and 4207.5/ 6312/12577/16804.5 kHz

2.2.2   Class of emission   F1B (J2B)

2.2.3   Antenna impedance   50 ohm

2.2.4   Sensitivity   0 dBμ or less

2.2.5   Intermediate frequency 1st: 35.964 MHz, 2nd: 36 kHz

2.2.6   Frequency stability   ±10 Hz

2.2.7   Output power for preamp   12VDC: 0.15A max.

2.2.8   Spurious response   Better than 60 dB

2.3   DSC/WATCH RECEIVER (GENERAL FREQUENCY, OPTION)

2.3.1   Frequency range   1605 kHz to 27.5 MHz

2.3.2   Class of emission   F1B (J2B)

2.3.3   Antenna impedance   50 ohm

2.3.4   Sensitivity   0 dBμ or less

2.3.5   Intermediate frequency 1st: 44.964 MHz, 2nd: 36 kHz

2.3.6   Output power for preamp   12VDC: 0.15A max.

2.3.7   Spurious response   Better than 60 dB

3   NBDP FUNCTION (OPTION)

3.1   Communication mode   ARQ, FEC

3.2   Protocol   ITU-R M625-3, M476-5, M490, M491-1, M492-6

3.3   Modulation   FSK

4   DISPLAY UNIT

4.1   Display system   4.3-inch color dot matrix

4.2   Pixel   480 x 272 dots

4.3   Brilliance   16 steps (off to maximum brightness)

4.4   Built-in speaker   4 ohms

4.5   Alarm volume   80 to 85 dB(A)

5   ANTENNA COUPLER

5.1   Tuning system   CPU controlled fully automatic tuning system

5.2   Frequency range   1605 kHz to 27.5 MHz

5.3   Input impedance   50 ohm

5.4   Antenna   10 m to 18 m wire or 10 m whip, or

                               8 m whip + horizontal feeder 2m or more

5.5   Tuning time   Within 15 seconds

6   TERMINAL UNIT (IB-583, OPTION)
6.1   Display   10.4" color TFT LCD, 640 x 480 dots
6.2   Memory   Flash ROM: 1 MB, S-RAM: 256 KB
6.3   Keyboard   IBM PS/2

7   INTERFACE
7.1   Input data sentences   IEC 61162-1
       Ship's Position (L/L)   GGA, GLL, GNS, RMC
       Time   ZDA
7.2   LAN   Ethernet 10Base-T/100Base-TX

8   POWER SUPPLY
8.1   Transceiver/control unit
       FS-2575   24 VDC: 5A (RX), 40A max. (TX)
       FS-5075   24 VDC: 5A (RX), 60A max. (TX)
8.2   Terminal unit (IB-583)   24 VDC: 0.6 A
8.3   Printer (PP-510, option) 24 VDC: 1.5 A
8.4   AC/DC power supply unit 100/110/120/200/220/240VAC, 1 phase, 50/60 Hz

9   ENVIRONMENTAL CONDITION
9.1   Ambient temperature
       Antenna coupler   -25°C to +55°C
       Indoor units   -15°C to +55°C
9.2   Relative humidity   93% or less at 40°C
9.3   Degree of protection
       Antenna coupler   IP56
       Transceiver/terminal unit IP22 (bulkhead mount only)
       Control unit   IP22
9.4   Vibration   IEC60945 Ed.4

10   COATING COLOR
10.1   Transceiver/control unit N2.5
10.2   Antenna coupler   N9.5 (white)