

FURUNO

OPERATOR'S MANUAL

INMARSAT B MOBILE EARTH STATION

FELCOM 81A...(For Class 1)

MODEL FELCOM 81B...(For Class 2)



FURUNO ELECTRIC CO., LTD.

NISHINOMIYA, JAPAN

©FURUNO ELECTRIC CO., LTD.

9-52, Ashihara-cho,
Nishinomiya, Japan

Telephone: 0798-65-2111
Telefax: 0798-65-4200

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•Your Local Agent/Dealer

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FELCOM 81A/B



DISTRESS TRANSMISSION

By Telex Distress Alert Button IB-350 — Class 1 only

1. Peel off the red seal, break the protective cover, and press and hold down the [DISTRESS] button **for about six seconds** to transmit the distress alert. The unit initially beeps intermittently and then beeps continuously. When it beeps continuously, release the button.
2. When the connection with the LES designated (Note 1) is automatically established, continuous beep stops and the (prepared) distress alert (Note 2) is automatically transmitted. The following messages appear on the terminal unit and are printed.

_____	} Message from designated LES	

343112345 FURU X	Your Ship's Answerback Code	} These are transmitted.
MARITIME		
LAT 34 00 N, LONG 136 00 E	Position	
04 05 UTC, 25 MAY.....	Date	
8	Nature of Distress (8: "Undesignated")	
180	Ship's Course	
10	Ship's Speed	

Note 1: The LES can be designated beforehand by the following key strokes:
[F4] → [6] → [4] → [Enter] → [1] → [Enter]
Then, select ocean region and LES which is to receive distress call first.

Note 2: Contents of Distress Alert (prepared beforehand)
(Press [F4], [6], [3], [Enter] to prepare distress alert message.)

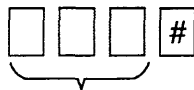
- Abbreviated Ship's Name (Enter four characters of answerback code.)
 - Ship's Course (Heading)
 - Ship's Speed
 - Nature of Distress [Default Setting: "Undesignated"]
- } Automatic input by navigation device.

3. After distress alert has been transmitted the line with LES remains connected.
Send message to LES by direct keyboard input or send a file from a floppy disk.

By Telephone Distress Button IB-360 — Class 1, Class 2

The IB-360 sets priority of the No. 1 telephone to DISTRESS.

1. Peel off the red seal, break the protective cover, and press and hold down the [DISTRESS] button **for about six seconds**. The unit initially beeps intermittently and then beeps continuously.
2. When it beeps continuously, release the button and call LES by the No. 1 telephone as shown below. (The alarm stops after connection with the LES is established.)



Enter an LES number.

Note: If the No. 1 telephone is not operated within 15 seconds after picking up its handset, the communication line is automatically connected with the LES which has been designated by the following key strokes (on the terminal unit):

[F4] → [6] → [4] → [Enter] → [1] → [Enter].

Then, select ocean region and LES which is to receive distress call.



SAFETY INSTRUCTIONS

"**DANGER**", "**WARNING**" and "**CAUTION**" notices appear throughout this manual. It is the responsibility of the operator of the equipment to read, understand and follow these notices. If you have any questions regarding these safety instructions, please contact a FURUNO agent or dealer.

The level of risk appearing in the notices is defined as follows:



DANGER

This notice indicates a potentially hazardous situation which, if not avoided, will result in death or serious injury.






WARNING


This notice indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION

This notice indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury, or property damage.

 WARNING	
	<p>Do not open the equipment.</p> <p>Hazardous voltage which can cause electrical shock, burn or serious injury exists inside the equipment. Only qualified personnel should work inside the equipment.</p>
	<p>Do not approach the radome closer than 6 meters when it is transmitting.</p> <p>The radome emits radio waves which can be harmful to the human body, particularly the eyes.</p>
<p>Leave the equipment powered while underway.</p> <p>Distress cannot be communicated unless the equipment is powered.</p>	
<p>Wait at least 30 minutes after turning off the power before entering the radome.</p> <p>The gyro motor rotates for some time after the power is turned off.</p>	
<p>Do not disassemble or modify the equipment.</p> <p>Fire, electrical shock or serious injury can result.</p>	
<p>Turn off the power immediately if water leaks into the equipment or the equipment is emitting smoke or fire.</p> <p>Continued use of the equipment can cause fire or electrical shock.</p>	
<p>Do not place liquid-filled containers on the top of the equipment.</p> <p>Fire or electrical shock can result if a liquid spills into the equipment.</p>	

 WARNING	
<p>Do not operate the equipment with wet hands.</p> <p>Electrical shock can result.</p>	
<p>Keep heater away from equipment.</p> <p>Heat can alter equipment shape and melt the power cord, which can cause fire or electrical shock.</p>	
<p>Any repair work must be done by a licensed radio technician.</p> <p>Improper repair work can cause electrical shock or fire.</p>	

 CAUTION	
<p>Use the proper fuse.</p> <p>Use of a wrong fuse can result in fire or permanent equipment damage.</p>	
<p>Do not use the equipment for other than its intended purpose.</p> <p>Personal injury can result if the equipment is used as a chair or stepping stool, for example.</p>	
<p>Do not place objects on the top of the equipment.</p> <p>The equipment can overheat or personal injury can result if the object falls.</p>	

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1. Inmarsat B System and FELCOM 81 Configuration

1.1 Inmarsat B System

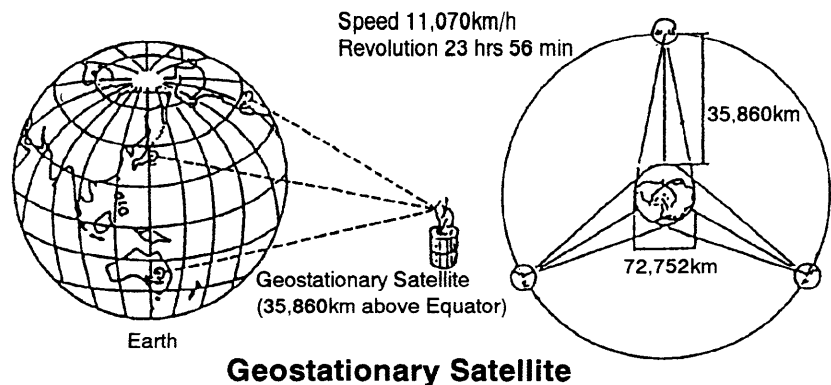
What is Inmarsat?

The International Maritime Satellite Organization (Inmarsat), founded in 1979, is the international governing body for maritime satellite communication. Its purpose is to provide global communications for ships, land mobile and aircraft, using satellites to overcome the problems that exist with conventional radio communications.

The Inmarsat system is made up of three major components: the space segment provided by Inmarsat, the Land Earth Stations (LES) provided by Inmarsat signatories, and Mobile Earth Stations (MES). The Operation Control Center (OCC), located at Inmarsat headquarters in London, controls the overall system.

Geostationary satellites

The type of satellites used for maritime communication are geostationary satellites. Four satellites, one for each of four ocean regions, are placed in nearly 36,000 km-high 24-hour circular orbits rotating in synchronous with the earth, providing mobile-to-land, land-to-mobile, and mobile-to-mobile communications. The satellites remain fixed over a given place on the earth's equator, so an Inmarsat subscriber is always within coverage of a satellite.



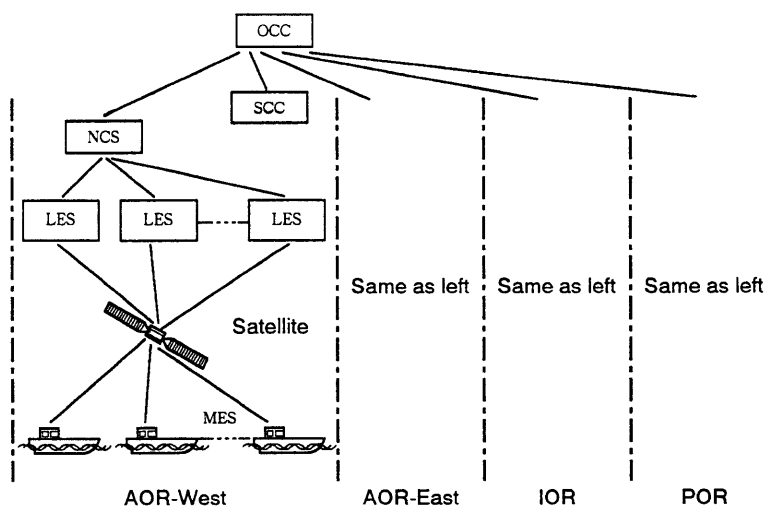
Four region service

The Inmarsat system divides the world into four regions and each region is covered by its own satellite. The regions are Atlantic Ocean Region-East (AOR-E), Atlantic Ocean Region-West (AOR-W), Pacific Ocean Region (POR), and Indian Ocean Region (IOR). The reason for two regions in the Atlantic Ocean is to solve the coverage gap problem there.

Region	Satellite	Satellite Position
AOR-West	Inmarsat-2, F4	54.0° W
AOR-East	Inmarsat-2, F2	15.5° W
IOR	Inmarsat-2, F1	64.5° E
POR	Inmarsat-2, F3	178.0° E

Description of system bodies

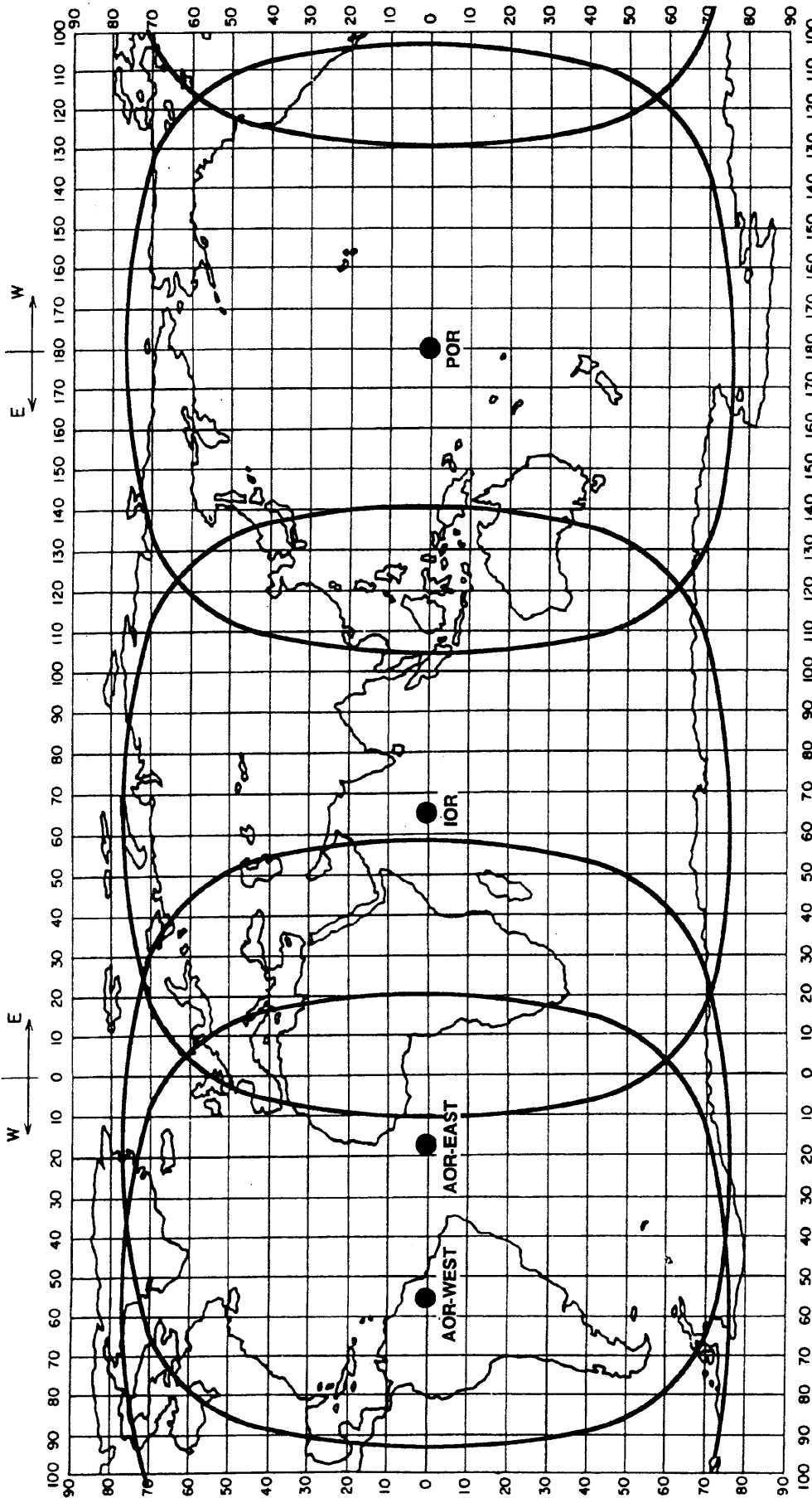
The Inmarsat system consists of the bodies shown in the figure below.



- OCC : Operation Control Center
- SCC : Satellite Control Center
- NCS : Network Coordination Station
- MES : Mobile Earth Station
- LES : Land Earth Station

The function of each body in the Inmarsat system is as shown in the table below.

Body	Function
Operation Control Center (OCC)	The OCC is the nerve center of the system and is located at Inmarsat's headquarters in London. The OCC provides continuous, 24-hours-a-day coordination for all functions in the Inmarsat system.
Satellite Control Centers (SCC)	The SCCs main function is to correct satellite rotation error.
Network Coordination Stations (NCS)	Each region has an NCS. The NCS controls the lines of communication and broadcasts information such as navigational warnings, weather reports and news.
Land Earth Stations (LES)	The LES provide the link between the MES and the terrestrial telecommunications networks via satellite.
Mobile Earth Stations (MES)	Mobile Inmarsat B stations including aircraft.



Coverage Area of Satellites

AREA	SATELLITE NAME	POSITION
POR	INMARSAT-2, F3	178° E
IOR	INMARSAT-2, F1	64.5° E
AOR-EAST	INMARSAT-2, F2	15.5° W
AOR-WEST	INMARSAT-2, F4	54.0° W

Services

The Inmarsat B maritime satellite communication system provides digital telephone, facsimile, Telex and data (9600 bps) services. Use of the latest digital technology means lower toll charges than in Inmarsat A, since high output power satellites are not required and data is transmitted at high speed.

Comparison of systems

Inmarsat provides worldwide communication services for both maritime and land subscribers, and consists of four systems: A, B, C and M. The following table shows the services available in each system.

Inmarsat system comparison

Service	Inmarsat A	Inmarsat B	Inmarsat C	Inmarsat M
Voice	○	○	×	○
Telex	○	○	○	×
Facsimile	○	○	×	○
Data	○	○	○	○

(○ : Service
× : No service)

1.2 FELCOM 81 System

Overview

The FELCOM 81 (FELCOM 81A or FELCOM 81B) is an Inmarsat B mobile earth station system. It provides, by digital technology, telephone, facsimile and Telex (class 1 only) communications and any services available from Inmarsat.

Features

The main features of the FELCOM 81 are

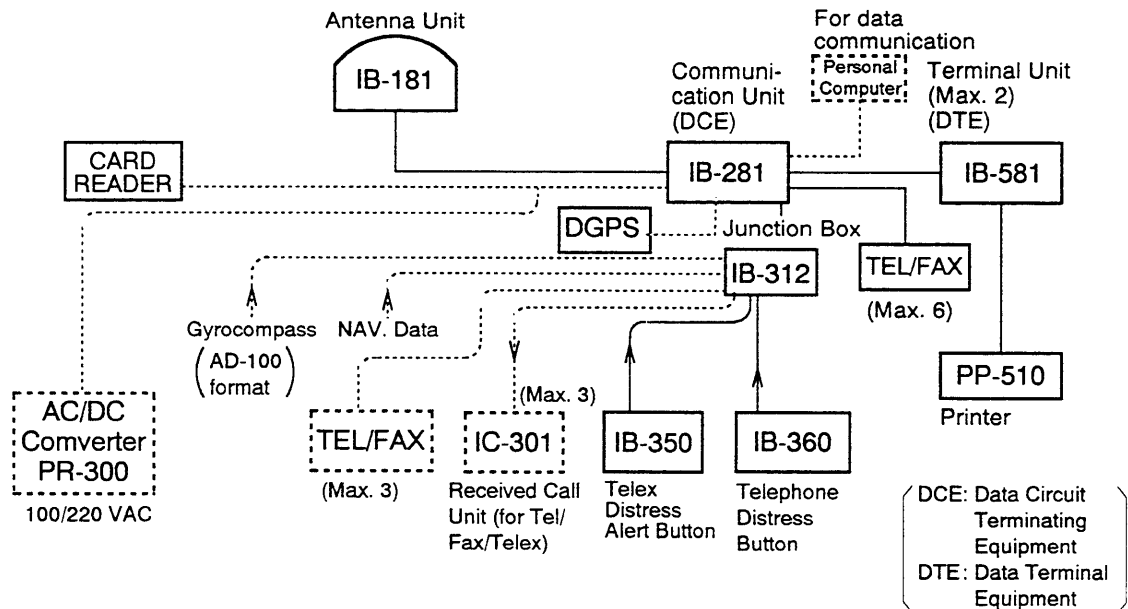
1. Non-rewinding antenna for uninterrupted communications during 360 degree course change of ship.
2. Automatic input of ship's position and heading (gyro) data to acquire satellite automatically. Simply turn on the system to acquire satellite.
3. Polling and data reporting to transmit position or specific file regularly to land subscriber.
4. Telex Distress Alert Button IB-350 automatically transmits prepared distress alert.
5. Many inputs for external equipment: six telephones, two facsimile machines, and a personal computer.
6. Digital communications means reduced toll charges — about 60 per cent lower than Inmarsat A.
7. Facsimile communication speed (9600 bit/sec) higher than that of Inmarsat A.
8. 9600 bit/sec data communication available (option).

System configuration

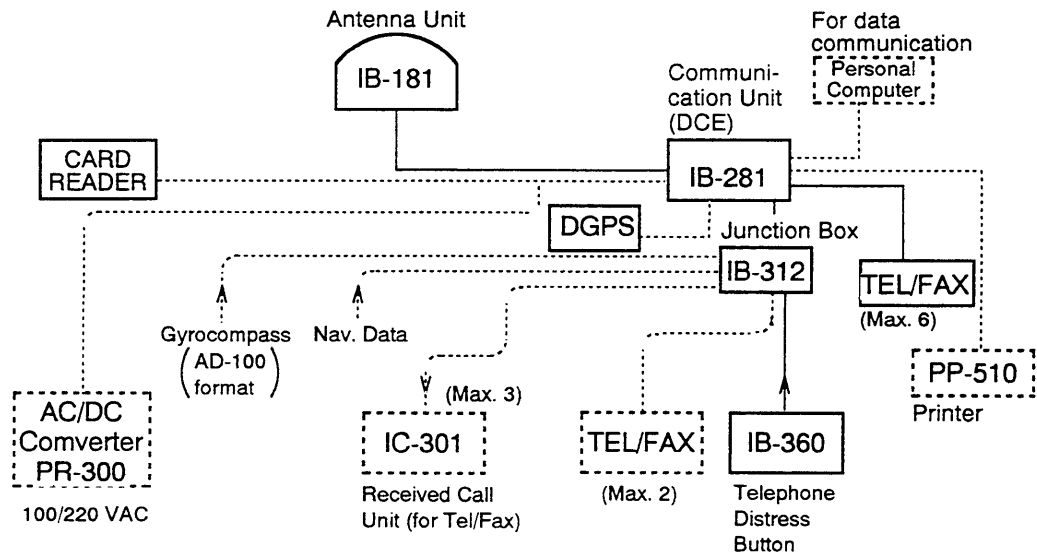
FELCOM 81 is available in two subtypes: Class 1 (FELCOM 81A) and Class 2 (FELCOM 81B). System configuration and Inmarsat services depend on subtype. The services available in each subtype are shown in the table belows.

System	Communication Services
Class 1	Telephone, Facsimile, Telex, Data
Class 2	Telephone, Facsimile, Data

Class 1 system (FELCOM 81A)



Class 2 system (FELCOM 81B)



NOTE 1: Dashed lines show optional equipment.

2. Equipment Overview

2.1 Communication Unit

What is the communication unit?

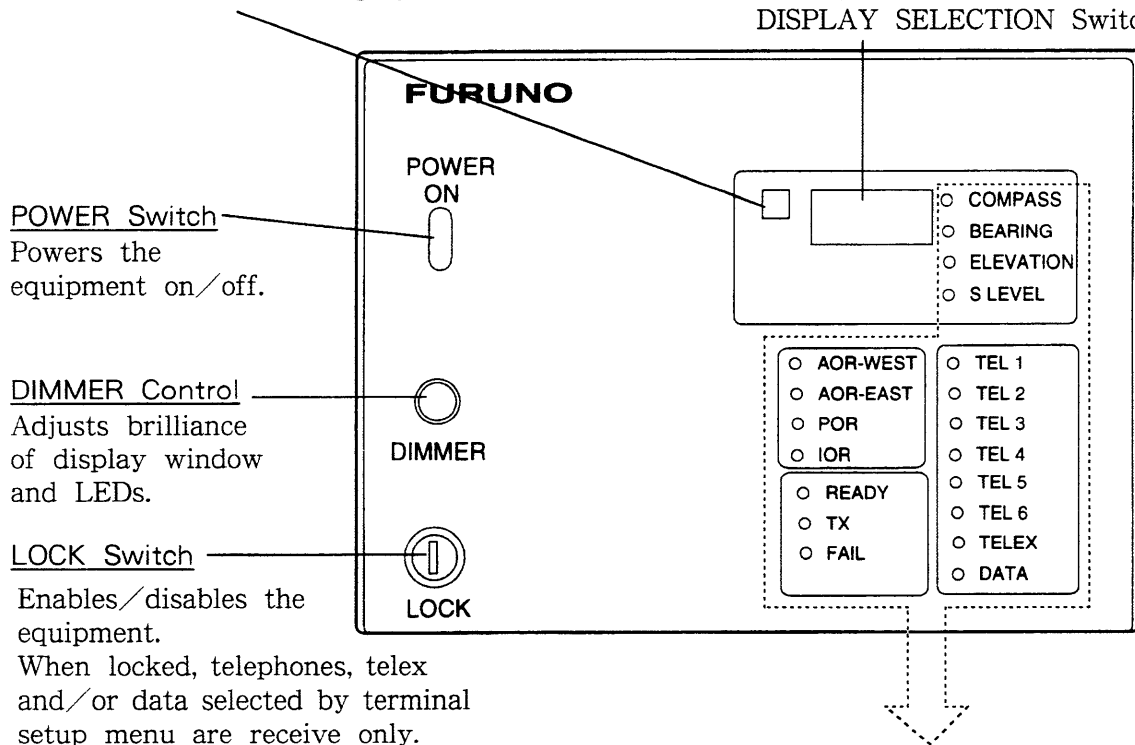
The communication unit controls communication equipment connected to it: telephone, fax, etc. A CPU coordinates transmitting and receiving.

Front panel controls and LEDs

The front panel contains the POWER switch, DIMMER control, LOCK switch, DISPLAY SELECTOR switch, display window and LEDs. The LEDs light to denote equipment state.

DISPLAY SELECTION Switch
Selects indication to display.

DISPLAY Window
Displays indication selected by DISPLAY SELECTION Switch.



POWER Switch
Powers the equipment on/off.

DIMMER Control
Adjusts brilliance of display window and LEDs.

LOCK Switch
Enables/disables the equipment.
When locked, telephones, telex and/or data selected by terminal setup menu are receive only.

LED

COMPASS
BEARING
ELEVATION
S LEVEL

AOR-WEST
AOR-EAST
POR
IOR
READY
TX
FAIL (Red)

TEL1 - TEL6
TELEX
DATA

Function

One lights to show indication being displayed in the display window : COMPASS, gyrocompass heading ; BEARING, antenna azimuth ; ELEVATION, antenna elevation ; S LEVEL, receive signal strength.

One lights to indicate satellite being tracked.

Lights when equipment is in standby.
Lights when transmitting.
Lights when equipment fails.

One lights to indicate terminal in use.

Turning the power on/off

The POWER switch turns the communication unit on/off. It also powers the antenna unit on/off.

When the power is turned on the equipment checks itself for proper operation. All LEDs on the front panel light and then they blink one by one from bottom to top. If something is wrong with the equipment the FAIL LED lights.

2.2 Terminal Unit (Class 1)

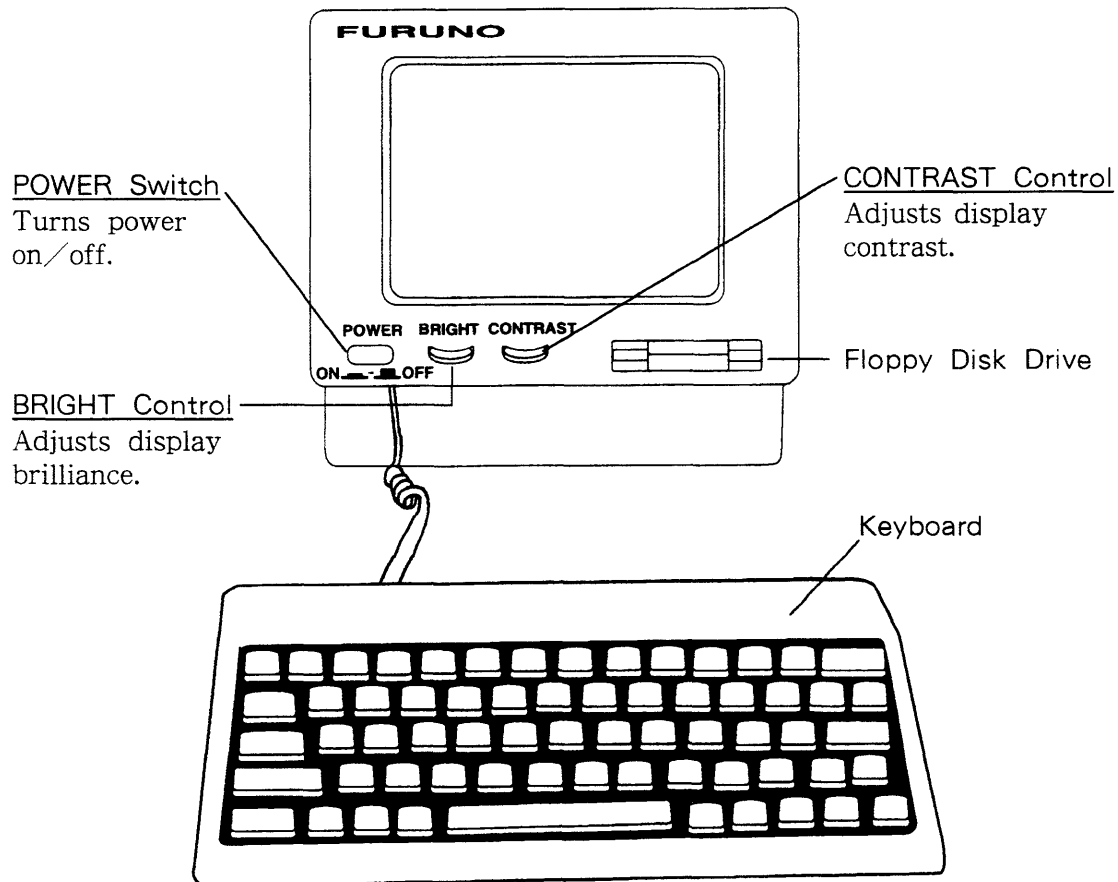
The terminal unit consists of a visual display and a keyboard. It mainly conducts all phases of Telex communication.

Visual display

The visual display consists of an 8" LED display and a floppy disk drive. Controls for power, CRT brilliance and contrast are provided on the front panel.

Keyboard

The keyboard is an ASCII keyboard with cursor controls for operating the system. The keyboard is powered from the terminal unit through the supplied connection cable. The functions keys (F1-F10) at the top of the keyboard access menus. (Menu operation is discussed in Chapter 4.)

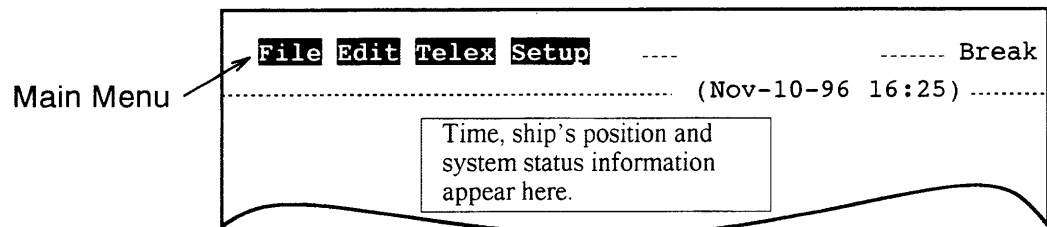


3. Setting Up the System

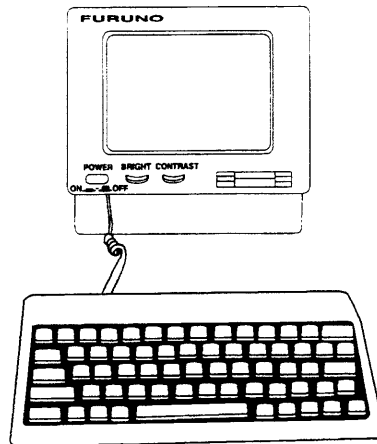
3.1 Displaying the Main Menu

Turning on the power

Turn on the terminal unit. (For PC, insert program disk in drive and turn on the PC.) The Main menu, shown below, appears shortly thereafter. If this is the first time to turn on the terminal unit, enter initial settings as shown in the procedures in this chapter.



Standby Display



3.2 System Setup Overview

Overview

The installer normally sets up the terminal unit, on the Setup Menu. For the FELCOM 81B (Class 2) the communication unit must also be setup, by the installer or user.

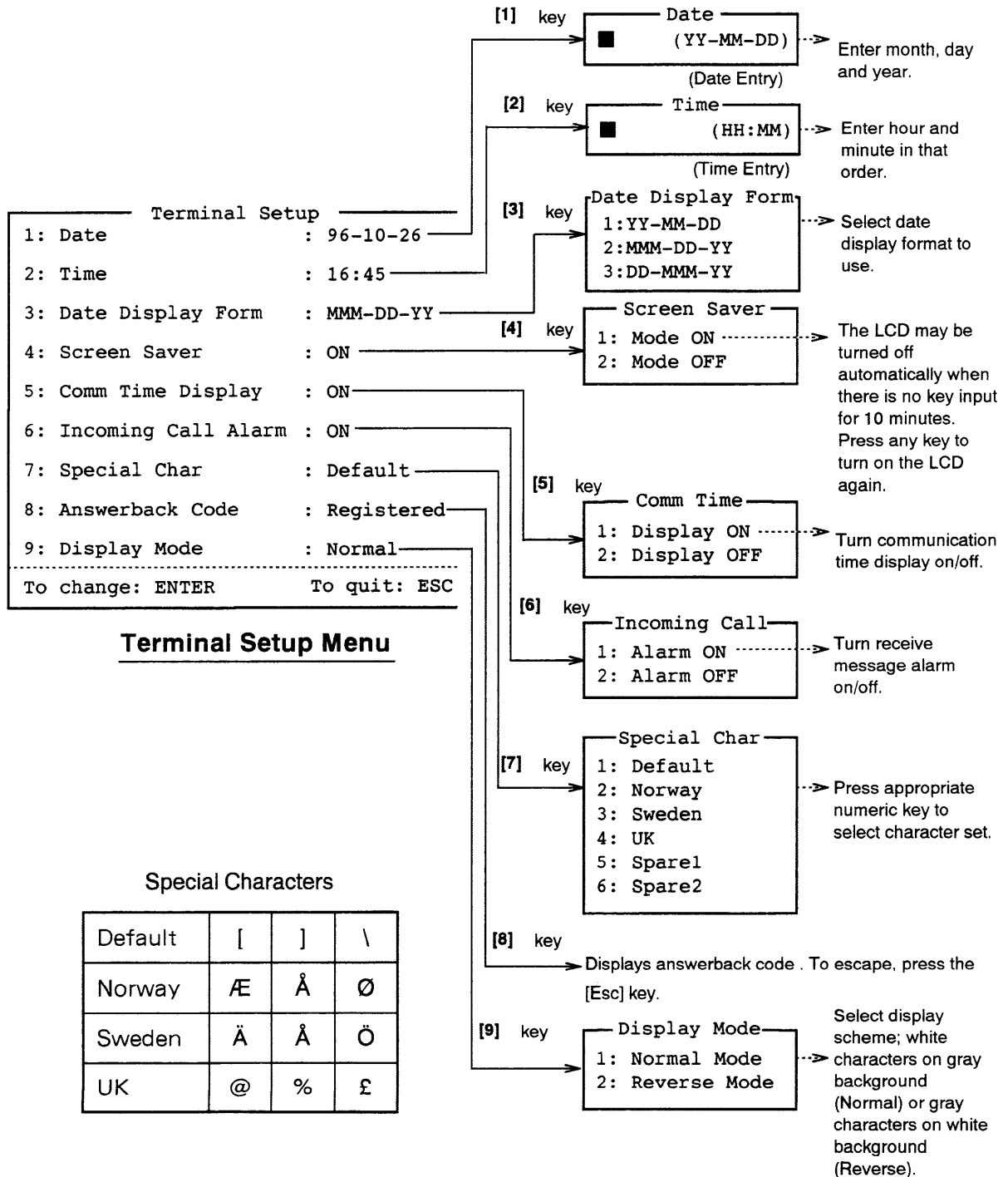
How to select menus, menu items

- Menus and menu items can be selected with the arrow keys and [Enter] key or by pressing appropriate numeric key.
- Register selections with the [Enter] key.
- The [Esc] key functions to escape from menus.

3.3 Terminal Unit Setup

Procedure

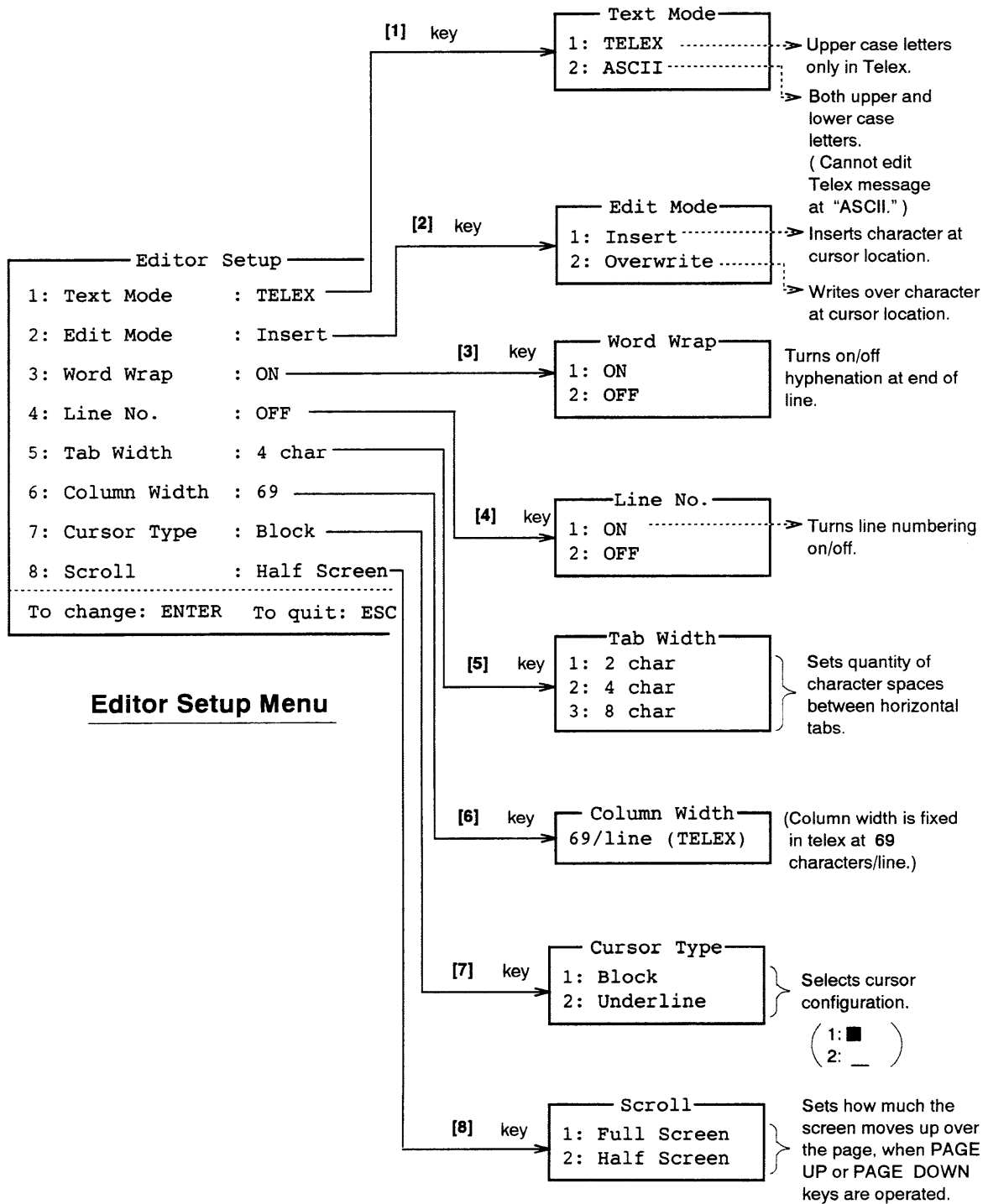
Terminal unit settings can be changed on the Terminal Setup menu. Press [F4] followed by [3]. Default settings are shown in the Terminal Setup menu in the figure below.



3.4 Editor Screen Setup

Overview

The “editor screen” is where you will create and edit files. This screen can be formatted on the Editor Setup menu. Press [F4] followed by [4]. Default settings are shown in the Editor Setup menu in the figure below.



3.5 Communication Unit Setup

Overview

Communication unit settings can be changed on the Communication Unit Setup menu. Press [F4] followed by [6].

```

Communication Unit Setup
-----
[Main Menu]
1: Ocean Region          5: Selftest
2: Terminal Setup
3: DMG Setup
4: Network Setup
Enter JOB No.:█
  
```

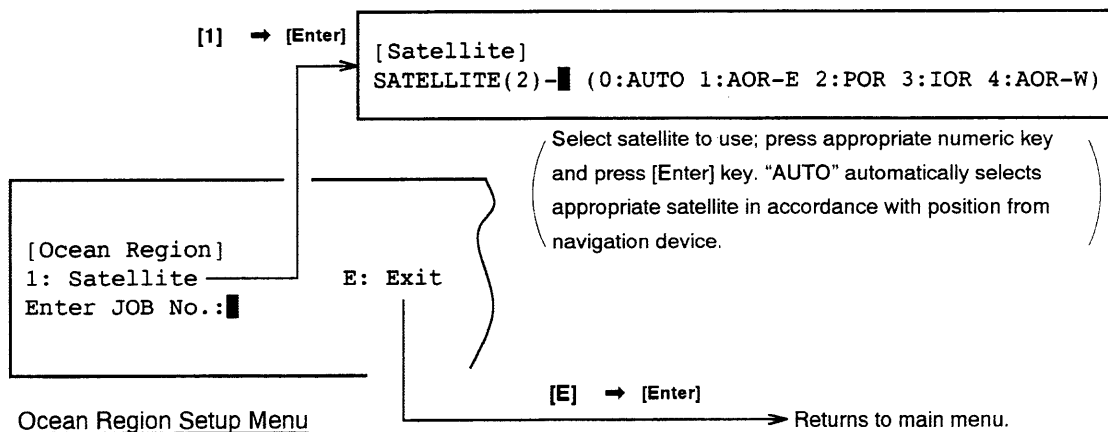
Communication Unit Setup Menu (Main Menu)

The menu consists of four communication setup items and the self-test. For the self-test, see Chapter 8.

Note: By typing HELP or ? you can display the menu tree of the Communication Unit Setup menu.

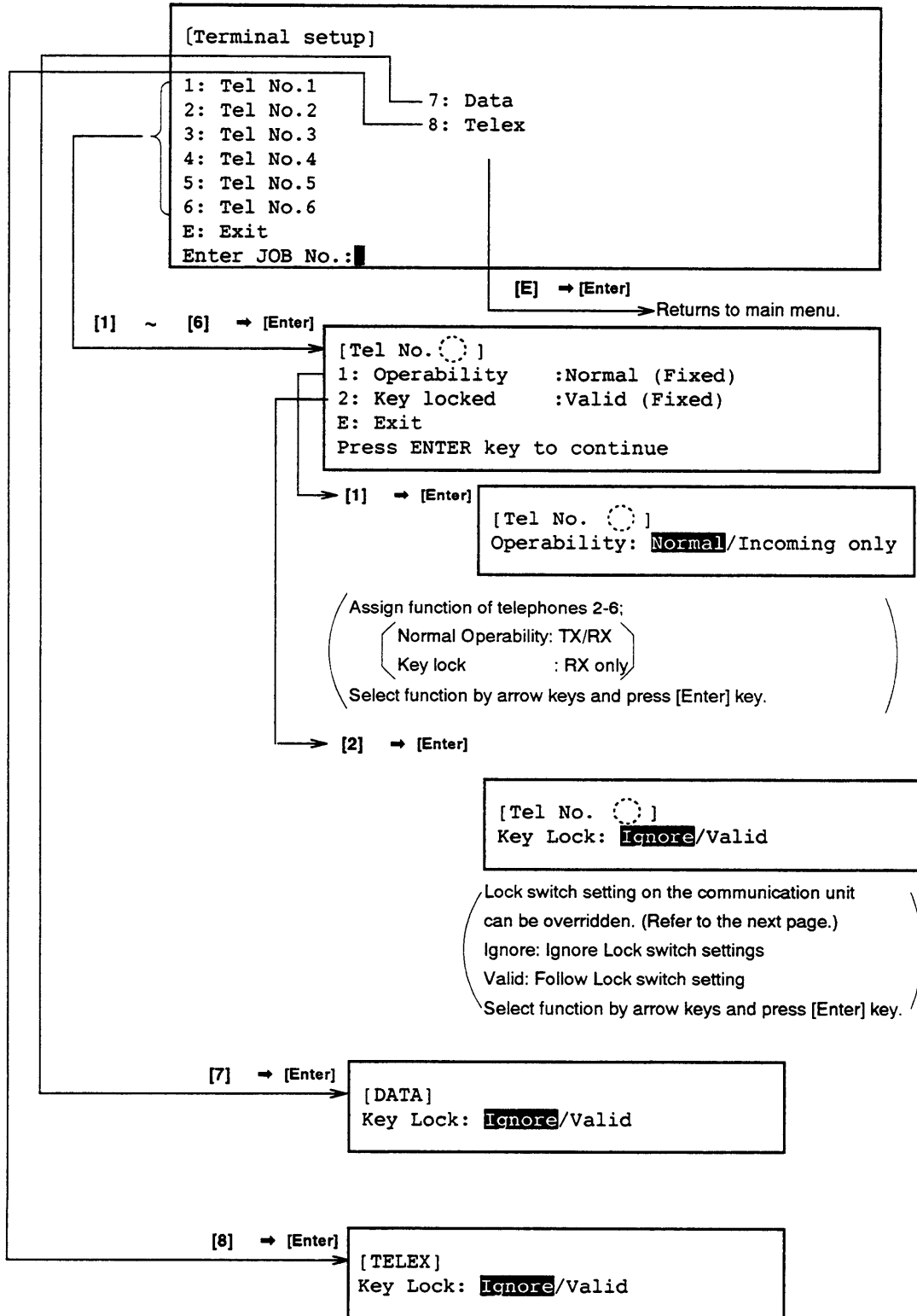
Ocean region setup

At the Communication Setup Menu, press [1] followed by the [Enter] key to display the Ocean Region Setup menu. Follow the instructions shown below to select satellite. Note that the ocean region setup can also be done through the No. 1 telephone. See page 5-4.



Terminal setup

At the Communication Setup Menu, press [2] and the [Enter] key. (Items 1-7 in the menu below only appear when the communication unit is equipped with the PHONE I/F Board.)



The LOCK switch on the communication unit enables or disables the equipment. When disabled, all terminals receive only. However, any terminal can also transmit when the LOCK switch is disabled, by doing the following:

1. Pick up the handset of the No.1 telephone.
2. Dial the following to override or follow LOCK switch "disabled" state:

[*], [6], [2], A, B, [#]

Where;

A: Terminal no. (2 - 6)

B: Override or follow LOCK switch "disabled" state

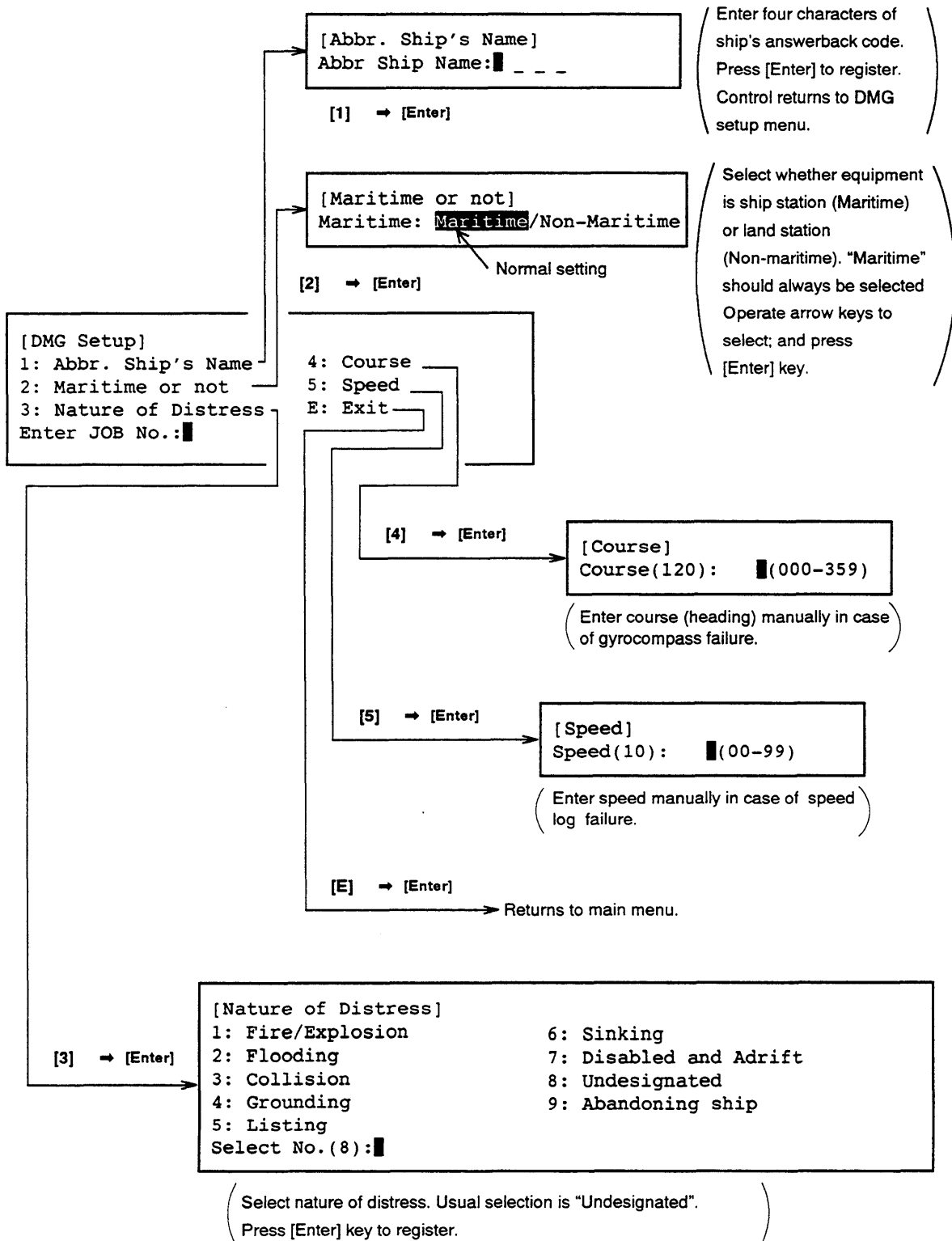
0: Override - terminal can receive and transmit.

1: Follow - terminal receives only (default setting).

3. Hang up the handset.

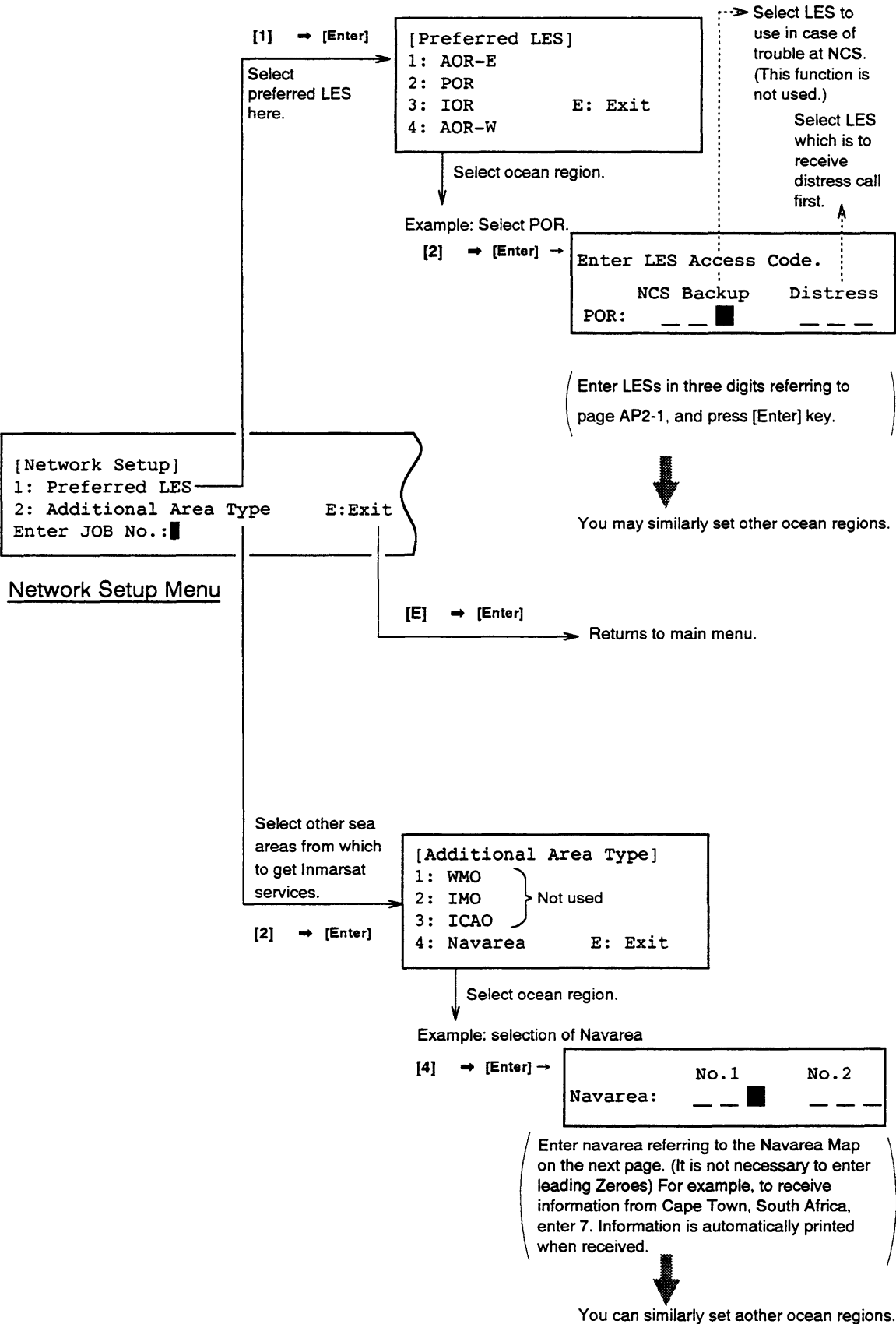
**DMG
(Distress
Message) setup
(Class 1 only)**

The DMG Setup menu is where you will create and save your ship's distress message, which along with position is automatically transmitted when the Telex Distress Alert Button (IC-350) is operated. Press [3] and the [Enter] key at the Communication Unit Setup menu.

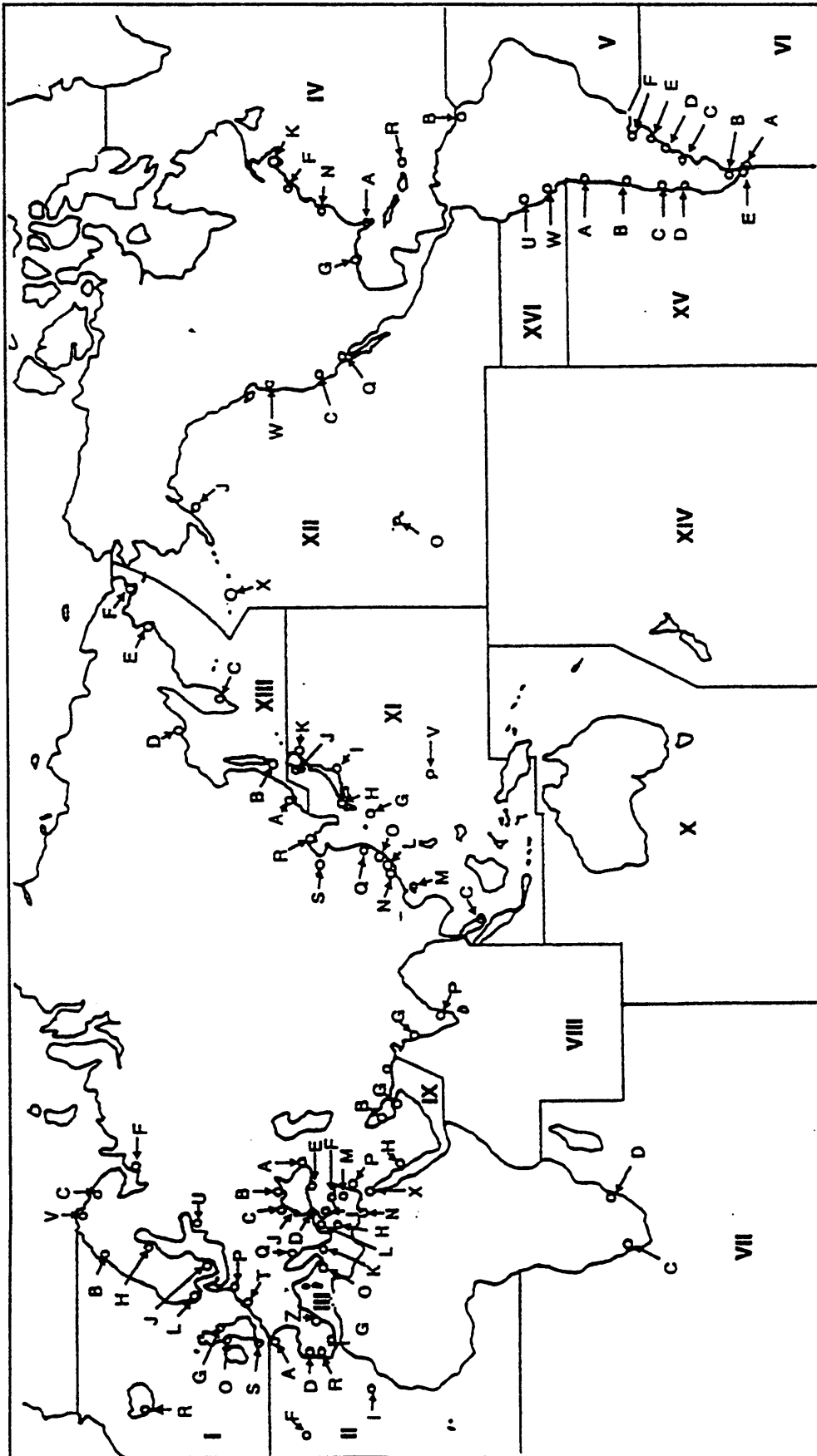


Network setup

Press [4] and the [Enter] key at the Communication Unit Setup menu to display the Network Setup menu.



Navarea Map



3.6 Manual Entry of Position and Heading

Overview

Position and heading are normally automatically input by navaid and gyrocompass, respectively. Therefore, entry is only necessary when navaid or gyrocompass fails.

Manual entry of position

At the standby display, press [F4] followed by [6] to display the Communication Unit Setup menu.

```

Communication Unit Setup
-----
[Main Menu]
1: Ocean Region      5: Selftest
2: Terminal Setup
3: DMG      Setup
4: Network Setup
Enter JOB No.:█
  
```

Communication Unit Setup Menu (Main Menu)

Type **POS** and press the [Enter] key. Enter position as shown below. (To cancel entry, press the [Bk Sp] key.)

```

[Ship Position]
LATITUDE (35N): █ N (00-90, N/S)
  
```

Enter latitude and press [Enter].
(ex. South 25° : 25S → [Enter])

```

[Ship Position]
LATITUDE (25S): 25S (00-90, N/S)
LONGITUDE (135E): █ E (000-180, E/W)
  
```

Enter longitude and press [Enter].
(ex. East 128° : 128E → [Enter])

Returns to main menu.

Manual entry of heading

At the Communication Unit Setup Menu, type **HDG** and press the [Enter] key. Enter heading as shown below.

```

[Heading]
HEADING (0): █ (000-359)
  
```

Enter heading and press [Enter] key.

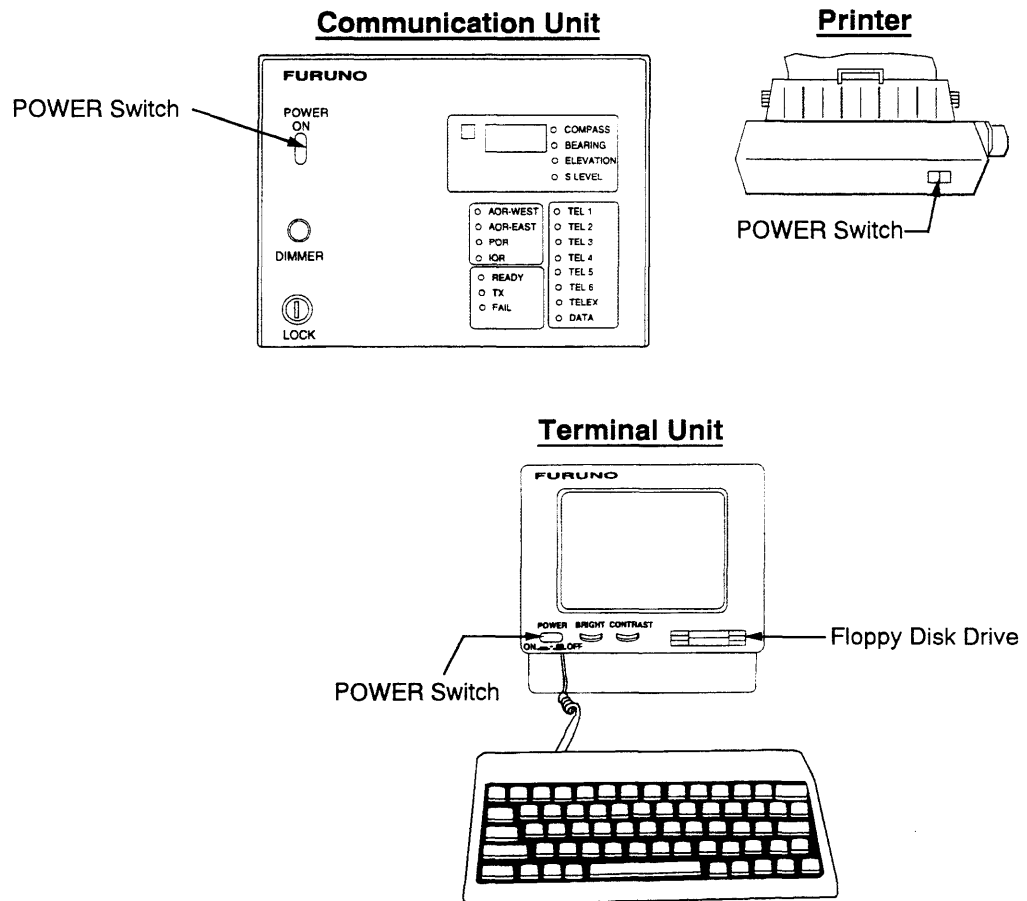
Returns to main menu.

4. Telex Communication

4.1 Powering the System

Turning on the units

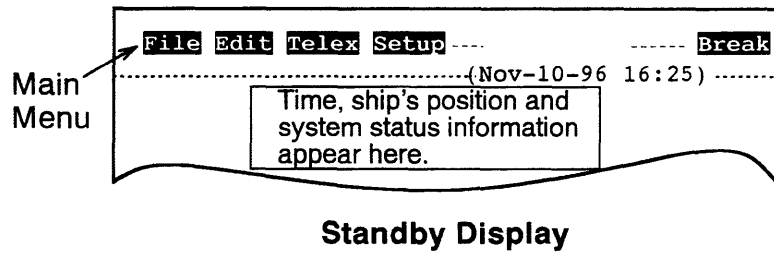
There is no particular order for turning on the equipment of the system.



When the power is applied the equipment selects an optimum satellite according to position from navigation device and heading information from gyrocompass, and orients the antenna to the satellite in azimuth and elevation. Upon acquiring an NCS common channel, the FEL-COM 81 will be in the automatic tracking mode.

4.2 Displaying the Main Menu

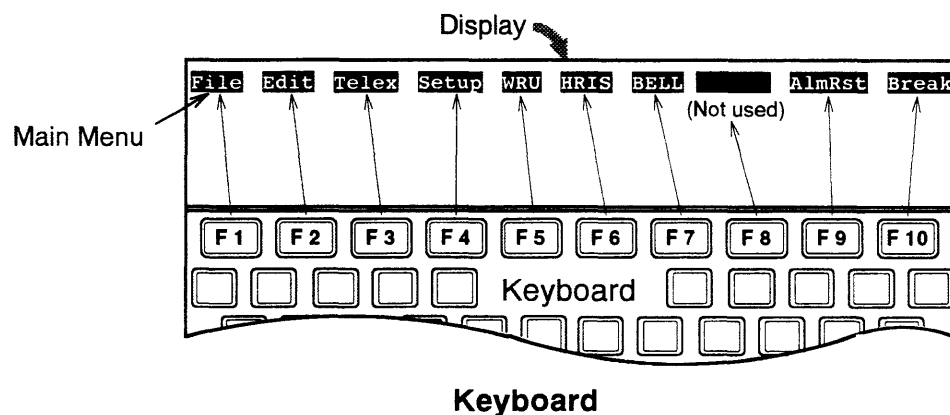
After turning on the terminal unit the Main menu, shown below, appears on the display. The main menu is where you will begin all phases of communication. We refer to this display as the “standby display”.



4.3 Displaying Menus/Selecting Items on Menus

Displaying menus

The function keys (F1-F10) at the top of the keyboard select menus.



For example, if you want to select the File menu press [F1].

1: New Text	ALT+N
2: Open Text	ALT+O
	⋮
9: Quit	

File Menu

Selecting menu items

Menu items may be selected by arrow keys and [Enter] key or pressing appropriate number key.

Using the file menu in the figure above as an example, "Open Text" can be selected by operating the arrow keys and [Enter] key or pressing the [2] key.

4.4 Menu Description

[F1] File..... The File menu, shown below, is where you will create, name and save messages (to floppy disk). You can also print messages from this menu.

1: New Text	ALT+N
2: Open Text	ALT+O
3: Close Text	ALT+Q
4: Save Text	ALT+S

5: Delete File	ALT+D
6: Rename File	
7: Print File	ALT+P

8: Clear Comm Memory	

9: Format Disk	

- | | |
|-------------------------|---|
| 1: New Text | Opens new file in a working area (page 4-14). |
| 2: Open Text | Opens file from a disk (page 4-18). |
| 3: Close Text | Removes file from a working area (page 4-17). |
| 4: Save Text | Saves file to a disk (page 4-17). |
| 5: Delete File | Deletes file from floppy disk (page 4-19). |
| 6: Rename File | Changes file name (page 4-19). |
| 7: Print File | Prints file in a disk (page 4-19). |
| 8: Clear Comm
Memory | Clears all transmitted and received routine messages from
communications memory. |
| 9: Format Disk | Formats disk for use in system. |

[F2] Edit The Edit menu provides text editing facilities. Detailed description appears in “4.18 Editing Text” on page 4-36.

1: Undo	ALT+X
2: Cut	DEL
3: Copy	ALT+C
4: Paste	INS
5: Select All	ALT+A
6: Search	ALT+F
7: Replace	ALT+R
8: Goto Top	HOME
9: Goto Bottom	END
A: Goto Line	ALT+L
B: Change Text	ALT+V

- 1: Undo Cancels the last change (cut, copy or paste).
- 2: Cut Removes the selected text and stores it in the paste buffer.
- 3: Copy Copies the selected text and stores it in the paste buffer.
- 4: Paste Inserts the text stored in the paste buffer at the current location of the cursor.
- 5: Select All Selects the entire current file for cut and copy.
- 6: Search Searches a specified word.
- 7: Replace Replaces a word with a different word or character string.
- 8: Goto Top Brings the cursor to the top line of the current file.
- 9: Goto Bottom Brings the cursor to the last line of the current file.
- A: Goto Line Moves the cursor to the desired line in the current file.
- B: Change Text Alternately displays two files.

[F3] Telex You begin all Telex communications from this menu.

1: Auto Telex	ALT+T
2: Call LES	
3: Call Station	
4: Transmit File	
5: Program Telex	
6: Confidential Msg	
7: Communication Log	
8: Change Window	ALT+W

- | | | |
|----------------------|---|------------------|
| 1: Auto Telex | Fully automatic Telex transmission. See page 4-20. | |
| 2: Call LES | Manually connects communication line with LES. | } See page 4-24. |
| 3: Call Station | Selects a station in the Station List or enters Telex number directly through keyboard. | |
| 4: Transmit File | Selects and transmits files. | |
| 5: Program Telex | Programmed telex. See page 4-26. | |
| 6: Confidential Msg | Opens confidential messages. See page 4-31. | |
| 7: Communication Log | Stores routine received messages and destination, call duration, date and time of all transmitted routine messages. The log holds 25 messages. When the log is full, the oldest message is deleted to make room for the latest. You can also print messages from this menu. | |
| 8: Change Window | Switches between the editor screen and the Telex screen. | |

[F4] Setup..... This menu is where you enter initial settings. It is also used to register LESs and subscribers.

1: Station List
2: LES List
3: Terminal Setup
4: Editor Setup
5: Polling Configuration
6: Comm Unit Setup
7: Telex Test

1: Station List	Registers receiving station. 64 stations may be registered. See page 4-11.
2: LES List	Registers LES. 246 LESs may be registered. See page 4-11.
3: Terminal Setup	Enters date, time and answerback code. See page 3-3.
4: Editor Setup	Formats editor screen. See page 3-4.
5: Polling Configuration	Selects the file to transmit when the FELCOM 81 is interrogated. See page 4-33.
6: Comm Unit Setup	Sets up communication unit. See page 3-5.
7: Telex Test	Transmits distress alert test, and is intended for use by service technicians. This test should never be conducted unnecessarily.

4.4 Menu Description

[F5] WRU	Requests other station's ID (Who are You?). (The mark ⊕ is displayed and printed.)
[F6] HRIS	Transmits your ship's answerback code.
[F7] BELL	Sounds bell at other station.
[F8] (Not used)	
[F9] Alm Rst	Silences audible alarm which sounds when a message is received.
[F10]Break	Disconnects the communication line manually.

4.5 Keyboard Shortcuts

Shortcut by [Alt] key You can control many of the FELCOM 81's functions directly from the keyboard with the [Alt] key as shown in the following table.

Key	Function Text
Alt+N	Same as New Text in File menu
Alt+O	Same as Open Text in File menu
Alt+Q	Same as Close Text in File menu
Alt+S	Same as Save Text in File menu
Alt+D	Same as Delete File in File menu
Alt+P	Same as Print File in File menu
Alt+X	Same as Undo in Edit menu
DEL	Same as Cut in Edit menu
Alt+C	Same as Copy in Edit menu
INS	Same as Paste in Edit menu
Alt+A	Same as Select All in Edit menu
Alt+F	Same as Search in Edit menu
Alt+R	Same as Replace in Edit menu
HOME	Same as Goto Top in Edit menu
END	Same as Goto Bottom in Edit menu
Alt+L	Same as Goto Line in Edit menu
Alt+V	Same as Change Text in Edit menu
Alt+B	Displays Communications Memory display, where transmitted and received messages are stored. To return to standby display, do same operation.
Alt+T	Same as Auto Telex in Telex menu
Alt+W	Same as Change Window in Telex menu
Alt+Z	Escape from editor screen or telex screen to "system status display." Press same keys again to return to previous screen.

Shortcut by [Ctrl] key

The [Ctrl] key provides the shortcut key operations shown in the table below.

Key	Function
Ctrl+E	Same as [↑] key.
Ctrl+X	Same as [↓] key.
Ctrl+S	Same as [←] key.
Ctrl+D	Same as [→] key.
Ctrl+A	Moves cursor one character leftward.
Ctrl+F	Moves cursor one character rightward.
Ctrl+G	Same as [Del] key.
Ctrl+H	Same as [Backspace] key.
Ctrl+I	Same as [Tab] key.
Ctrl+M	Same as [Enter] key.
Ctrl+C	Same as [Pg Dn] key.
Ctrl+R	Same as [Pg Up]key.
Ctrl+Z	Moves screen by one line toward the bottom.
Ctrl+W	Moves screen by one line toward the top.
Ctrl+[Same as [Esc] key.
Ctrl+V	Same as Edit Mode in Editor Setup menu of Setup menu. (Refer to page 3-4.)
Ctrl+P	Prints subscriber list, LES list, communications log, etc.

4.6 Registering LESs and Stations

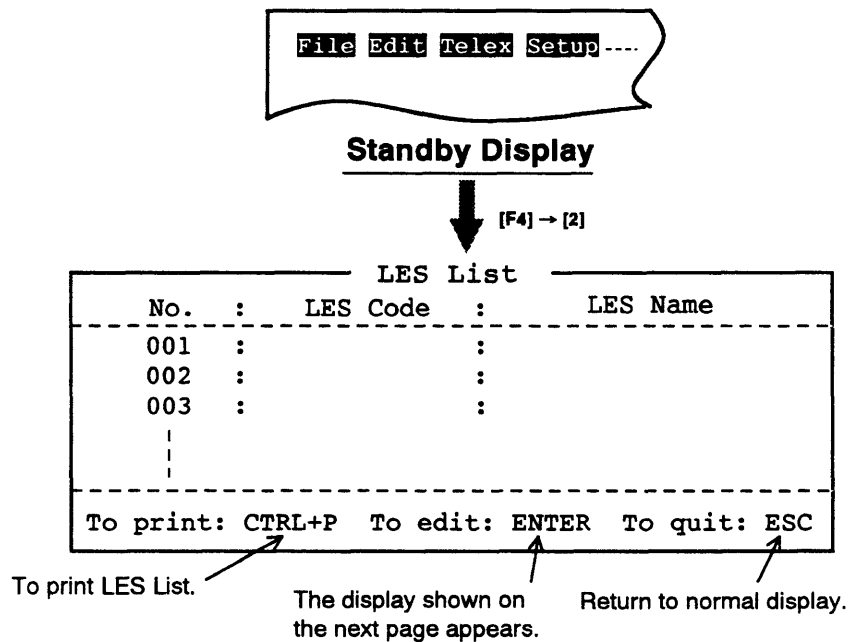
Overview

Before you can transmit a Telex message automatically or by timer program, you must first register the LES codes and Telex numbers of stations you wish to call. This is also recommended for greater convenience on manual transmission.

Registering LESs 246 LESs can be registered.

Procedure

1. At the standby display, press [F4] and [2] to display the LES List.



2. Operate the arrow keys to select desired number on the LES List and press the [Enter] key. The LES List Edit display appears.

LES List Edit	
1: LES Access Code	:
2: LES Name	:
3: Charge (Min time)	:
(Excess)	:
4: Remarks	:

See Appendix 2 for complete list of LES access codes.

3. Enter LES in three digits. For example, enter 222 for Perth, Pacific Ocean. (To change LES code, press the [Backspace] key successively, then enter LES code.)

4. Press the down arrow key and enter LES name (maximum 15 characters). For example, type PERTH for the Pacific Ocean LES.
5. Press the down arrow key. Tap the space bar to open the “Charge” menu. The “Charge” display is for denoting approximate calling charges between MES and LES.

Charge			
	Charge	Currency	Unit
Min time	_____	_____	_____
Excess	_____	_____	_____

Note: *The charge display is simply to provide a reminder of the selected LES’s charges. It is not used in the calculation of the charges for a particular call and may be left blank at the discretion of the operator.*

6. Enter approximate charge for “Min time” and press the right arrow key to set currency. After entering currency data, press the right arrow key to place the cursor on “Unit”.
7. Tap the space bar to open the list of unit time.
8. Select unit time by the arrow keys and press the [Enter] key.
9. If desired, enter excess data (additional charges) in the same manner as steps 6 to 8.
10. To return to the “LES List Edit” menu, press the [Esc] key.
11. If necessary, press the down arrow key and enter remarks (max. 25 characters).
12. Press the [Esc] or [Enter] key to finish.

Deleting LESs

Delete station name with [Backspace] key. Press the [Enter] key.

Registering stations

You may register 64 stations.

Procedure

1. At the standby display, press [F4] and [1]. The Station List appears.

Station List	
No.	: Station Name
01	:
02	:

To print: CTRL+P To edit: ENTER To quit: ESC	

2. Operate the arrow keys to select station number desired and press the [Enter] key. The Station List Edit display appears.

Station List Edit	
1: Stn Name	:
2: Telex No.	:
3: Answerback	:
4: Remarks	:

3. Enter station name.
(To change station name, press the [Backspace] key successively, then enter station name.)

See Appendix 1 for complete list of country codes.

4. Press the down arrow key and enter subscriber's telex number (max. 20 characters).

(Ex: Ship to Land → 00 720 5644325)

Auto Connection (Normally enter 00.)	Country Code	Telex Number
---	--------------	--------------

→ For ship-to-ship, type 00 and enter subscriber's sea area code and ID number.

5. Press the down arrow key. For LES other than Yamaguchi LES, enter its answerback code (max. 20 characters). If you don't know its complete answerback code, enter a part of it or subscriber's telex number.
6. If necessary, press the down arrow key and enter remarks (max. 25 characters).
7. Press the [Esc] or [Enter] key to finish.

Deleting stations

Delete station name with the [Backspace] key. Then, press the [Enter] key.

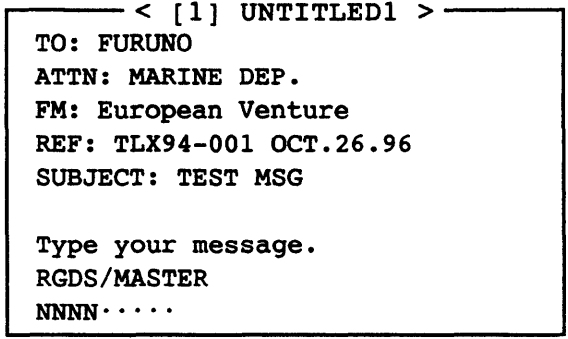
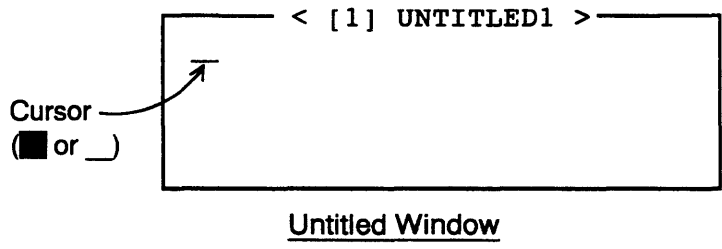
4.7 Creating Messages

Overview

There are two types of Telex messages: routine and confidential. This section shows how to create both, beginning with routine.

Routine messages

At the standby display, press [F1] and [1] (or [Alt] + [N]). Your display should look something like the one shown below.

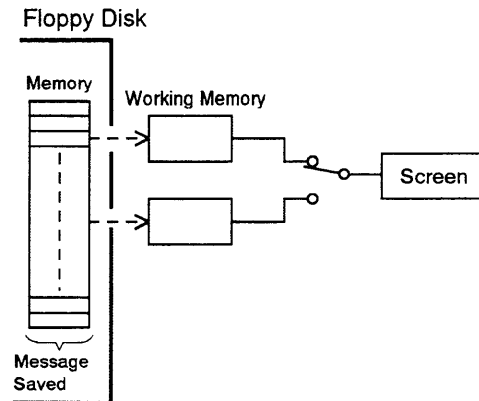


Ocean Region Code (Location of subscriber)	581 Atlantic Ocean-E
	582 Pacific Ocean
	583 Indian Ocean
	584 Atlantic Ocean-W

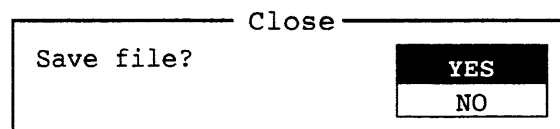
Notice that the cursor is on the far left-hand side of the first line of the display. Type your message just as you would on an ordinary word processor. At the end of the message type the characters NNNN (end of message code). By typing **five periods** after NNNN you can receive notice of call duration from the LES and have the communication line disconnected automatically after completion of call. This feature is available regardless of how the message is transmitted.

Working memories

The FELCOM 81 has two working memories to which you can load a file.



When you try to load a file into an occupied working memory, by pressing **[F1]** and **[1]**, the display asks you if you want to save the file in that memory before clearing the display.



This display asks you if you want to save current file before clearing the display.

To save, press the **[Enter]** key. If you don't need to save, press the down arrow key to select "NO" and then press the **[Enter]** key. The file is erased and then the untitled window appears.

Confidential messages

Press [F1] and [1] at the standby display. The message entry display appears.

If communicating with another FELCOM 81, you can prepare a confidential message by entering S???-addressee code (-password): in first line of message text.

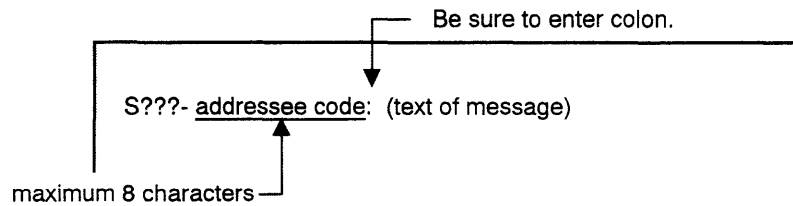
You can also receive confidential messages containing this header from a land subscriber or any other MES.

Confidential messages are neither displayed nor printed when received. You will learn how to open and print confidential messages in a later section.

There are two types of confidential messages: message with addressee code (no password) and message with both addressee code and password.

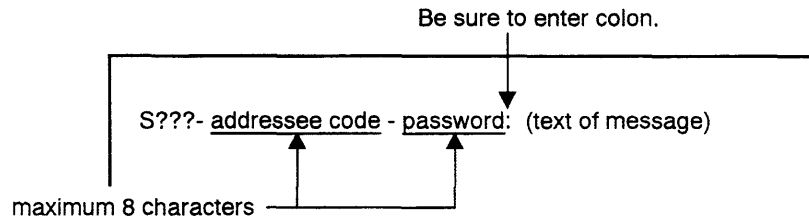
Preparing message with addressee code

To prepare, enter S, 3 question marks, hyphen, addressee code, colon and text of message.



Preparing message with both addressee code and password

To prepare, enter S, 3 question marks, hyphen, addressee code, hyphen, password, colon and text of message.



4.8 Saving Files (Messages)

You can save files to a floppy disk two ways:

- By the Save menu (files remains on the display),
or
- By the Close menu (files is saved and display is cleared).

By Save menu

Procedure

1. Press [F1] and [4]. The display should look something like the figure shown below. (If name is already entered, press the [Backspace] key successively to erase data.)

Save
Saving File Name █ (UNTITLED)

2. Enter file name (max. eight characters). Press the [Enter] key.

(ex.) FURUNO-1.TXT

→ Maximum 8 characters → Extension name (3 characters) may be entered.

By Close menu

Procedure

1. Press [F1] and [3]. The display should look something like the figure shown below.

Close			
Save file?	<table border="1"> <tr> <td>YES</td> </tr> <tr> <td>NO</td> </tr> </table>	YES	NO
YES			
NO			

2. Press the [Enter] key.

Save
Saving File Name █ (UNTITLED)

3. Enter file name and press the [Enter] key.
The message disappears from the screen.

4.9 Opening Files

Procedure

To open a file from a floppy disk;

1. At the standby display, press [F1] and [2]. The display shows a list of files stored on the disk.

```

      Open Text
-----
Load/Merge (TAB: Change)
[A:\TELEX\SAITO-1.TXT]
- File name - - Size - - Date & Time -
SAITO-1. TXT   15   93-05-18  15:05
FURUNO. TXT   20   93-06-01   09:37
      |         |         |         |
-----
To select: ENTER To view: SPACE To quit: ESC
  
```

Press space bar to view first part of file.

2. Press the [Tab] key to select Load or Merge;

Load : Open file on a "fresh" screen.

Merge : Tack file at cursor location in file currently displayed.

3. Select a file by operating the arrow keys. (To view a portion of a file, tap the space bar.)
4. Press the [Enter] key.
 - If both working memories are occupied, the following display appears.

```

      Close
-----
Save file?
      YES
      NO
  
```

Save the file in one of the working memories by pressing the [Enter] key, or select "NO" and press the [Enter] key to clear the display without saving the file.

4.10 Filing Operations

Overview

This section covers filing operations on floppy disks. All procedures in this section assume that a floppy disk is inserted in the disk drive.

Deleting files

Procedure

1. Press [F1] and [5] to display file list.
2. Press the arrow keys to select file to delete. (If you want to view the first part of the file, press the space bar.)
3. Press the [Enter] key. The display asks you if it is alright to delete the file.

Delete File:	<input checked="" type="radio"/> YES
Delete OK?	<input type="radio"/> NO

4. Press the [Enter] key.

Changing file name

Procedure

1. Press [F1] and [6].
2. Press the arrow keys to select file then press the [Enter] key.

Old name: FURUNO.TXT
New name: ■

TAB: Copy from old-name

Press Tab key to copy previous name.

3. Enter new file name and press the [Enter] key.

Printing files

Procedure

1. Press [F1] and [7].
2. Press the arrow keys to select file and press the [Enter] key.

Clearing the communications memory

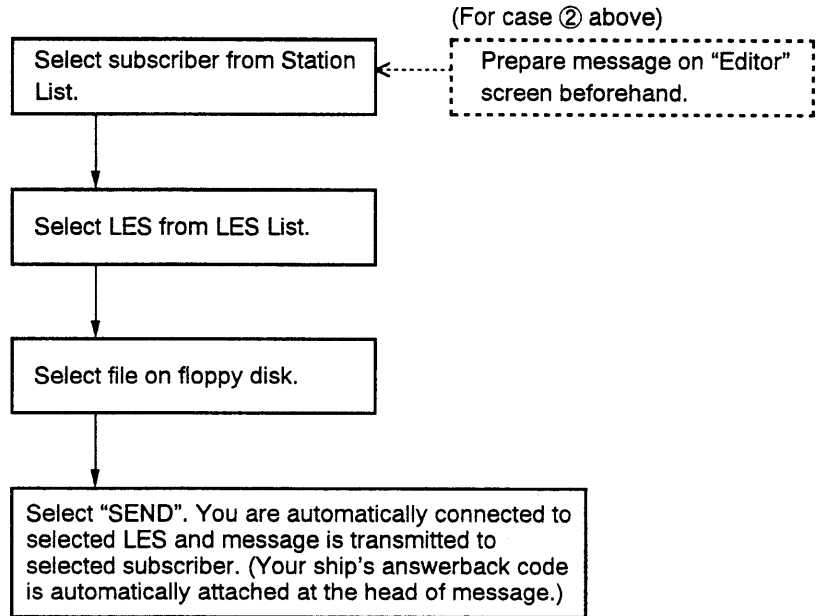
There are times you may want to clear the entire communications memory (received and transmitted routine messages). You can do this by pressing [F1] and [8].

4.11 Automatic Transmission

Basic procedure

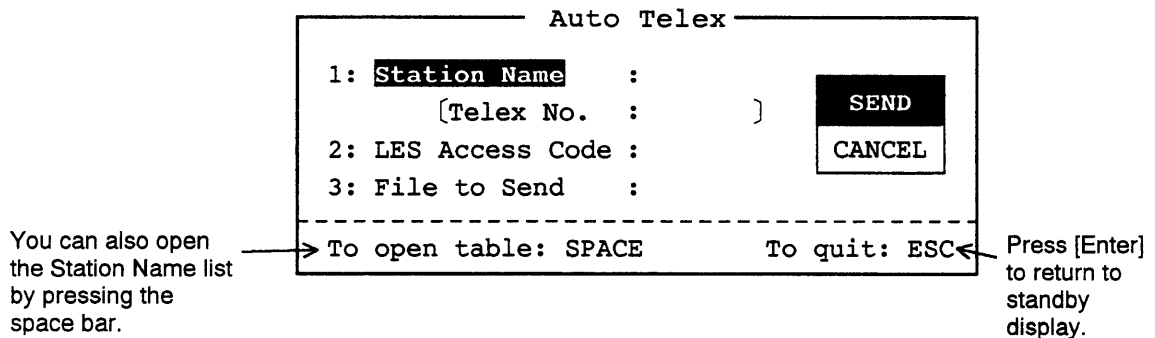
There are two ways to prepare a Telex message for automatic transmission:

- ① Select message saved in floppy disk
- ② Prepare message on the "Editor" screen



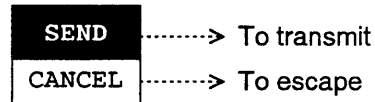
Detailed procedure

1. At the standby display (or "Editor" screen), press [F3] and [1]. The Auto Telex display appears.



2. Press [1] or the space bar to display the station name list. Operate arrow keys to select station and press the [Enter] key.
3. The Auto Telex display reappears. Press [2] to display the LES List. Operate arrow keys to select LES and press the [Enter] key.

4. Insert floppy disk which stores the message you want to transmit in the drive. Press [3] to display file list. Operate the arrow keys to select file and press the [Enter] key. (This operation is not necessary when preparing a message on the "Editor" screen.)
5. Press the right arrow key to select "SEND".



6. Press the [Enter] key to transmit.

You are automatically connected to the LES and your message is sent to station selected. After the message is transmitted, the line with the LES is automatically disconnected. If five periods are typed at the end of the message, notice of call duration appears prior to disconnection of the line.

Disconnecting line with LES manually

Press [F10] (Break). Notice of call duration does not appear.

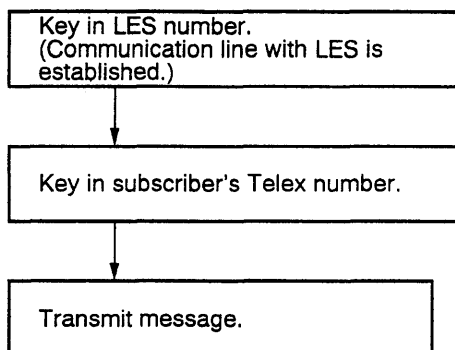
Returning to standby display

After the line with the LES is disconnected, press [Esc] key first then press [F3] and [8] (or [Alt] + [W]).

If you wish to connect newly the line with an LES, wait 30 seconds after the line has been disconnected, otherwise an error message appears, resulting in no connection.

4.12 Manual Transmission

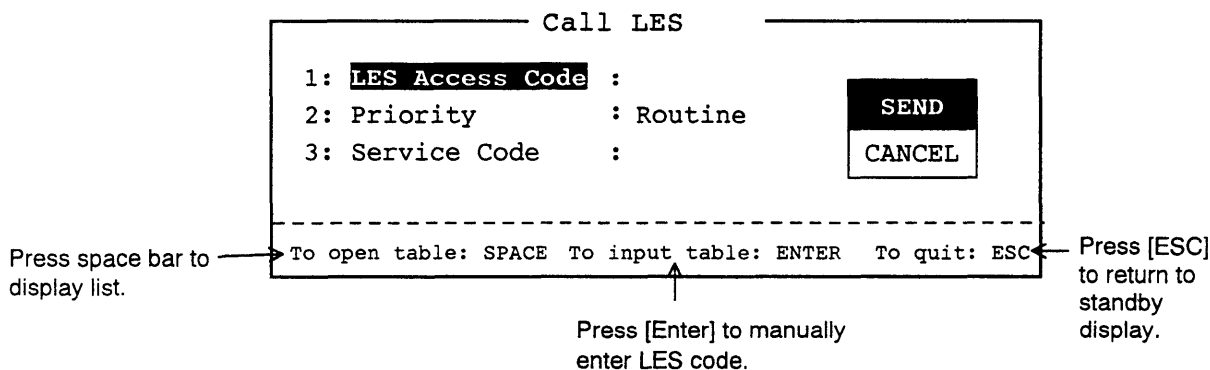
Basic procedure



Detailed procedure

Connecting with LES

1. At the standby display, press [F3] and [2]. The Call LES display appears.



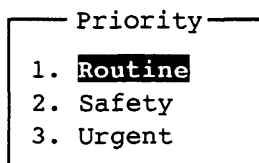
See appendix 2 for complete list of LES access codes.

2. Select appropriate LES, by one of two methods:

- ① Press the [Enter] key, key in LES number in three digits and press the [Enter] key, or
- ② Press the space bar to display the LES List. Operate the arrow keys to select LES and press the [Enter] key.

3. Press the down arrow key to select "Priority".

4. Press the space bar.

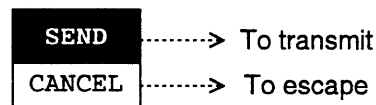


5. Enter communications priority by pressing appropriate numeric key among 1-3. (Normally, press [1] for Routine.)

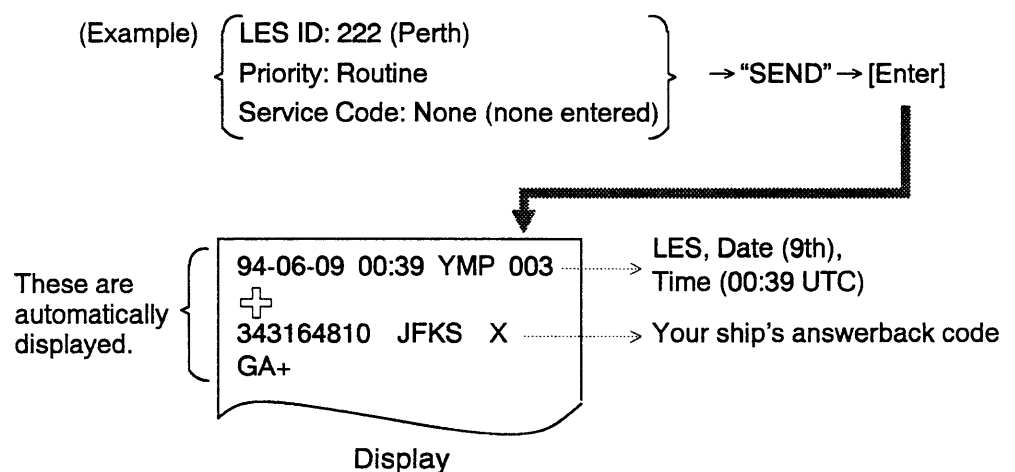
If necessary, select service code. Set the cursor on Service Code and press the space bar. Then, key in service code in two digits and press the [Enter] key. Note that some services may not be available depending on LES.

Service Code	Function
11	Operator's Assistance
12	Dial Guide
33	Technical Assistance
91	Automatic Telex Test
⋮	⋮

6. Press the right arrow key to set the cursor on "SEND".



7. Press the [Enter] key to transmit. You are now connected with LES selected. ➔ Enter subscriber's telex number immediately referring to next page.



Entering subscriber's Telex number

You must enter subscriber's Telex number within 15 seconds after "GA+" is displayed on your screen. Otherwise, the line with LES is disconnected.

8. At the standby display, press [F3] and [3]. The Call Station display appears.

Call Station	
No.	Station Name
01	FURUNO
02	KOBE

9. Operate the arrow keys to select station. Wait for "GA+" from LES.

10. After "GA+" is displayed, press the [Enter] key. Selected station's Telex number appears on the display as shown below. If the number is wrong, press [F10] to disconnect the line. Enter correct number by referring to page 4-13.

11. After other station's answerback code appears (charge calculation begins), press the [F6] (HRIS) key to send your ship's answerback code. → Transmit message right away referring to next page.

(Example)

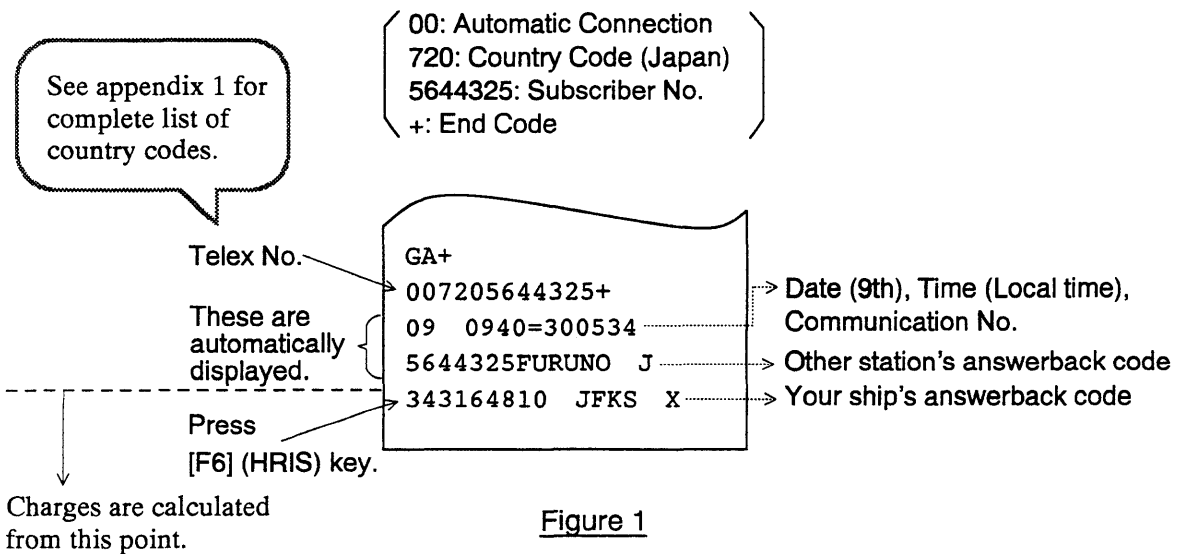


Figure 1

Preparing messages

12. You may prepare a Telex message two ways: Type message through keyboard or retrieve file from floppy disk.

To retrieve file from floppy disk;

Insert floppy disk in drive. At the standby display, press [F3] and [4] to display the Transmit File display.

Transmit File			
— File name —	— Size —	— Date &	Time —
SAITO-1	<DIR>	93-03-20	09:18
⋮	⋮	⋮	⋮

Operate the arrow keep to select file. (To display the first part of the file, press the space bar.)

Transmitting messages

13. Press the [Enter] key to transmit the file. (Transmit messages appear at the bottom of the display.)
14. After the message is transmitted, Press [F10] to disconnect the line.

NOTE: *The line can be disconnected automatically by typing five periods at the end of the message. For further details see page 4-14.*

Returning to standby display

After the line with the LES is disconnected, press [Esc], [F3] and [8] (or [Alt] + [W]).

If you wish to connect newly the line with an LES, wait for 30 seconds after the line has been disconnected, otherwise an error message appears, resulting in no connection.

4.13 Programmed Transmission

Overview

The FELCOM 81 can be programmed to automatically send a Telex message at a specific time or at regular intervals. Eight programs can be entered.

You do not need to worry if your communication line is busy when the programmed time arrives: The FELCOM 81 waits for the line to become free and then automatically sends the message two minutes afterward.

Programming

Displaying the program telex display

1. Press [F3] and [5]. The Program Telex display appears. If there are no programs entered, the display looks like the one shown below.

Program Telex

No.	LES	Destination	File Name	Mode	Status
<hr/>					
01	<<<	No data	>>>		
02	<<<	No data	>>>		
...					
08	<<<	No data	>>>		
<hr/>					
		To change status:ENTER		To edit:SPACE	
			To quit:ESC		

Press [Enter] key to
enable or disable
program selected.

Press Space bar to
edit program
selected.

Press [Esc] key to
quit.

2. Press the space bar to enable entry of program data.

Edit (No.1)

1: Station Name : _____
 [Telex No. : _____]

2: LES Access Code :

3: File to Send : POSITION. RPT [default] ENTRY

4: Program Mode : _____ [DELETE]

To open table:SPACE To quit:ESC

Selecting station

3. Press [1] (or tap the space bar) to display the Station List.

Station List	
No. :	Station Name
1 :	FURUNO
2 :	KOBE
.....

4. Operate the arrow keys to select station and then press the [Enter] key.

Selecting LES

5. At the Edit display (shown on the previous page), press [2].

LES List			
No. :	LES Code:	LES Name	
001 :	001 :	Santa Paula	
002 :	222 :	Perth	
.....	

6. Operate the arrow keys to select LES and then press the [Enter] key.

Selecting file

7. Set floppy disk containing file you want to send into the disk drive. At the Edit display, press [3] to display file list.

NOTE: *If file is not specified, the file "POSITION RPT" (ship's position) is automatically selected and sent when the time specified arrives.*

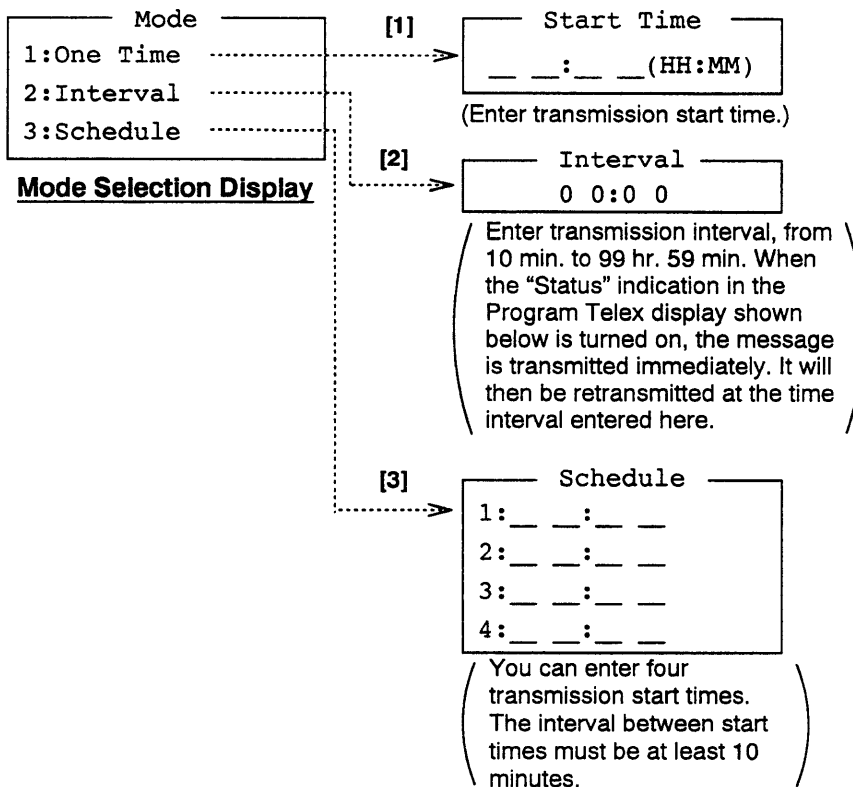
LAT 32:08:35N LON 140:56:87E

Sample "POSITION RPT" file

8. Operate the arrow keys to select file and then press the [Enter] key.

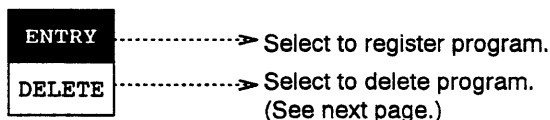
Selecting program mode, entering time data

9. At the Edit display, press [4]. The Mode selection screen appears. Select desired mode, enter transmission start and stop times (or transmission interval) and then press the [Enter] and [Esc] keys.

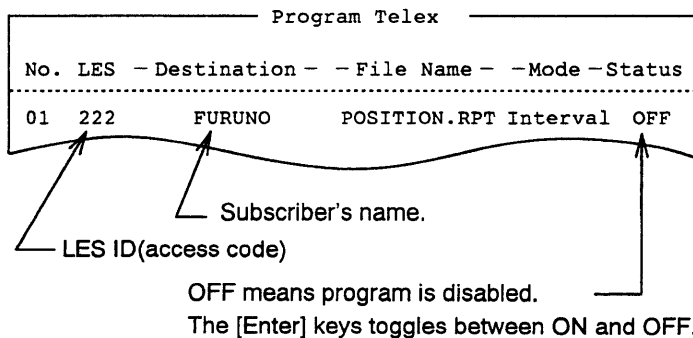


Registering program

10. Press the right arrow key to select "ENTRY".



11. Press the [Enter] key to register program.



12. To enable program, press the [Enter] key.

To return to the standby display, press the [Esc] key twice.

Deleting programs

Procedure

1. At the standby display, press [F3] and [5].

Program Telex					
No.	LES	Destination	File Name	Mode	Status
01	222	FURUNO	POSITION.RPT	Interval	OFF

LES ID(access code) Subscriber's name.

OFF means program is disabled.
The [Enter] keys toggles between ON and OFF.

2. Operate the arrow keys to select program to erase and tap the space bar.

Edit (No.1)	
1: Station Name	: _____
	[Telex No. : _____]
2: LES Access Code	:
3: File to Send	: POSITION. RPT [default] <input type="button" value="ENTRY"/>
4: Program Mode	: _____ [<input type="button" value="DELETE"/>]

To open table:SPACE	To quit:ESC

3. Press the right arrow key and then press the down arrow key to select "DELETE".

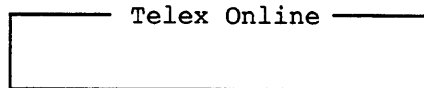
<input type="button" value="ENTRY"/>
<input type="button" value="DELETE"/>

4. Press the [Enter] key to delete program.

4.14 Receiving Routine Messages

Overview

When you receive a routine message the audible alarm normally sounds. (The alarm does not sound when it is disabled on the alarm menu; press [F4], [3] and [5]. See page 3-3.) The receive message fills the “Telex Online” display shown below and is printed. You can silence the alarm by pressing [F9].



To return to the standby display immediately after receiving a message, press the [Esc] key and then press the [W] key while pressing and holding down the [Alt] key.

Communications memory

All received routine messages are stored in the communications memory (16K byte capacity). To see a message in the communications memory, press the [B] key while pressing and holding down the [Alt] key. You can scroll the screen (log) by the [Pg Up] and [PG Dn] keys (or up and down arrow keys).

If you want to retrieve and print a routine message in the communications memory, see page 4-32.

Note: *When the terminal unit is turned off all contents of the communications memory (transmitted and received routine messages) are cleared.*

4.15 Receiving Confidential Messages

Overview

When you receive a confidential message the audible alarm normally sounds. (The alarm does not sound when it is disabled on the alarm menu; press [F4], [3] and [5]. See page 3-3.) To silence the alarm, press [F9].

The display shows "Confidential message received". Confidential messages are neither displayed nor printed, however they are stored in the confidential message memory (capacity: 16K bytes). When the memory is full, the oldest message is deleted to make room for the latest.

Opening confidential messages

Procedure

1. At the standby display, press [F3] and [6]. The Confidential Message display appears.

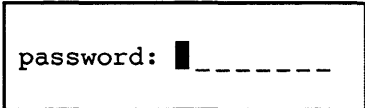
Confidential Message

No.	Addressee	Prty	- RX Time -	Duration	Size
1	FURUNO	Rou	93-11-23 17:30	00:03'00	235
2*	SAITO	Rou	93-12-01 15:25	00:02'17	149
<<< End of Message >>>					
To print:CTRL+P To view:ENTER To delete:DEL To quit:ESC					

*: File with password.

Press [Ctrl] + [P] to print selected file. Press [Enter] to view part of selected file. Press [Del] to delete selected file.

2. Operate the arrow keys to select the message you want to retrieve. (When a message which contains a password is selected, the display shown below appears. Enter password. Password is not displayed during or after entry. Messages marked with an asterisk in the Confidential Message display contain a password.)



3. Press the [Enter] key to retrieve the message.

Printing

Procedure

1. Press [F3] and [6] to display the Confidential Message display.
2. Operate the arrow keys to select file.
3. Press [Ctrl] + [P]. If the message contains a password enter it before pressing those keys.

Deleting

Procedure

1. Press [F3] and [6] to display the Confidential Message display.
2. Operate the arrow keys to select message to delete. Press the [Del] key. (If the message contains a password, enter it before pressing the [Del] key.)
3. Select "YES" and then press the [Enter] key.

4.16 Polling

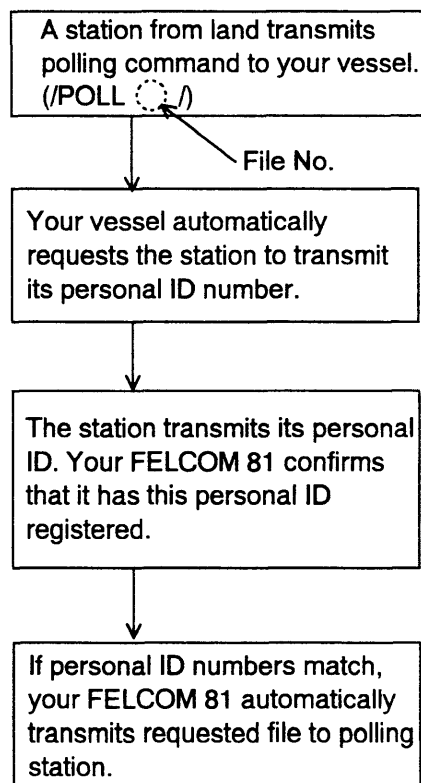
Overview

Polling means one station (the polling station) interrogating another or others (the polled station or group of stations). The polling station may be a ship station (MES) or a shore subscriber, while the polled station is always an MES.

When a polled MES finds the polling command in the received message, it requests the station sending the polling command to transmit its ID number. In this way, the authenticity of the polling station is confirmed. The polled MES then responds automatically in a predetermined manner, either with a data reporting message or by initiating a ship-to-shore or ship-to-ship message transfer.

Basic Procedure

The basic polling response procedure is as follows.



Personal ID number

A personal ID number consists of up to eight digits. Eight sets of IDs may be entered corresponding to eight different stations. The ID number can be any combination of numbers or letters and should be agreed on by both the polled and polling stations beforehand.

Procedure

1. At the standby display, press [F4] and [5]. The Polling Configuration display appears.

```

Polling Configu
-----
Polling Response File
1: POSITION. RPT (Position Report)
2: _____ (User defined A)
3: _____ (User defined B)
4: _____ (User defined C)
5: _____ (User defined D)
6: Personal ID Entry
      1* 2 3 4 5 6 7 8
-----
To open table: SPACE          To quit: ESC
  
```

Press space bar to display file list.

Asterisk appears when registered.

Press [Esc] to quit this display.

2. Press [6].

```

Personal ID
-----
1:
2:
:
8:
  
```

3. Place the cursor on appropriate number using the arrow keys.
4. Enter personal ID number (maximum eight characters) followed by the [Enter] key.

Setting up polling response file

Procedure

1. Insert floppy disk in disk drive. At the Polling Configuration display, press one of the keys 1 to 5 to select polling response file number. (You can also select it by operating the arrow keys followed by the space bar.)

```

Response File
-----
- File name - - Size - - Date & Time -
-----
To select: ENTER To view: SPACE To quit: ESC
  
```

2. Operate the arrow keys to select file on floppy disk. (To display the first part of the file, tap the space bar.)

3. Press the [Enter] key.

File number 1 is reserved for position information. When a subscriber requests this information, your position, input by navaid, is sent to the subscriber.

Transmitting the polling command

Your ship transmits the polling command to retrieve a file from other station.

- **Automatic transmission**

For automatic transmission, type the polling command (/POLL [file no.]/) at the beginning of the file and save file to a floppy disk. For automatic transmission, retrieve the file containing the polling command and transmit it.

- **Manual transmission**

After you are connected with an LES, type the polling command, an example of which is shown below.

Example: /POLL2/

└─ You request station to send
file no. 2.

The other station requests you to transmit your personal ID number. Type it in, then the other station will automatically transmit information requested.

4.17 Distress Alert Transmission

Transmitting the distress alert from IB-350

The distress alert prepared in the DMG Setup menu (page 3-7) can be transmitted by operating the Telex Distress Alert Button IB-350.

Procedure

1. When your vessel is in distress, peel off the red seal, break the protective cover, and press and hold down the [DISTRESS] button **for six seconds**.
2. The distress alert is transmitted to the LES designated in the Network setup menu.

Distress communication

After the distress alert has been transmitted, the LES connection remains in place. Manually type a distress message or transmit a file from a floppy disk.

4.18 Editing Text

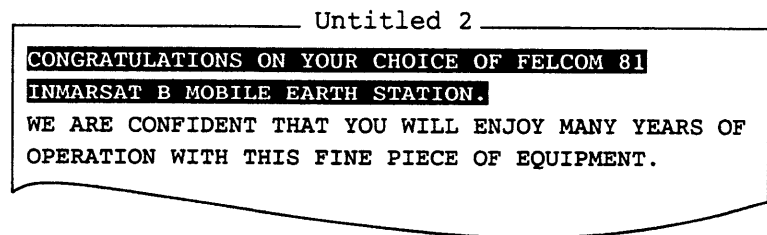
Overview

This section discusses how to edit text, using the Edit menu ([F2]).

1: Undo	ALT+X
2: Cut	DEL
3: Copy	ALT+C
4: Paste	INS
5: Select All	ALT+A
6: Search	ALT+F
7: Replace	ALT+R
8: Goto Top	HOME
9: Goto Bottom	END
A: Goto Line	ALT+L
B: Change Text	ALT+V

Cutting text**Procedure**

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 right arrow key (or down arrow key). If you highlight text which you do not want to cut, press the left arrow key to adjust the highlight.



3. Press [F2] and [2]. The highlighted text is cut and the remaining text is reformatted.

If a mistake is made, you can restore the text by immediately selecting Undo in the Edit menu.

Pasting text**Procedure**

To paste the cut text to a new location;

1. Place the cursor at the exact spot in the message where the cut text is to start.
2. Press [F2] and [4] (or the [Ins] key).

Copying and pasting text

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

Procedure

1. Select the text to copy.
2. Press [F2] and [3] (or [Alt] and [C]).

The text selected is copied in the paste buffer memory. The display returns to the standby screen.

3. Place the cursor at the exact spot in the message where the copied text is to start.
4. Press [F2] and [4] (or the [Ins] key).

Undo

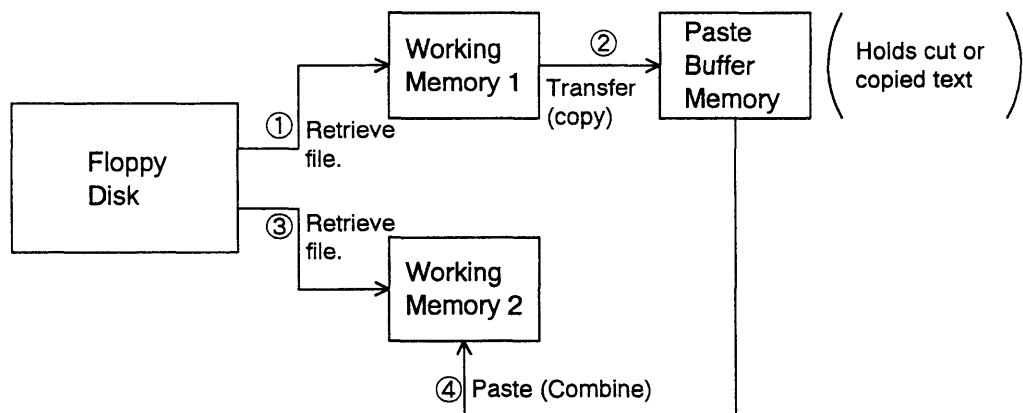
Use the Undo feature to return the file to its most recent state. For example, you have cut text but want to restore it. Then, you would select Undo in the Edit menu to restore the text to its most recent location. (Note that [Alt] + [X] are shortcut keys for the Undo function.)

Select All

The Select All feature lets you select an entire file. This feature can be useful when you want to combine files. The procedure below explains how to tack the file loaded in working memory 1 onto the end of the file loaded in working memory 2.

Procedure

1. Load floppy disk which contains file to copy. Suppose it is loaded in working memory 1.
2. Press [F2] and [5] (or [Alt] + [A]). The entire file appears in inverse video.
3. Press [F2] and [3] (or [Alt] + [C]). The file is placed in the paste buffer memory.
4. Load another file in working memory 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.



Searching text

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

Procedure

1. Display text and press [F2] and [6] (or [Alt] + [F]). The Search display appears.

Search		Dir
Search string : █		Forward
-----		Backward
To quit: ESC		

2. Type the word you want to find. Select Forward or Backward to search the file in a forward or backward direction respectively from the cursor position. Press the [Enter] key to begin the search.

When the word is found, the cursor stops at the first character of the word. Press the [Enter] key to continue the search.

Replacing text

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

Procedure

1. Press [F2] and [7] (or [Alt] + [R]). The Replace display appears.

Replace		Dir	Mode
Search string : █		Forward	Query
Replace with :		Backward	All
----- To quit: ESC			

2. Type the word you want to replace on the "Search string" line.
3. Press the down arrow key to select "Replace with". Type the new word.

4. Select Forward or Backward to search the file in a forward or backward direction respectively from the cursor position.
5. 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.

6. Press the [Enter] key to start the replacement.

Goto line

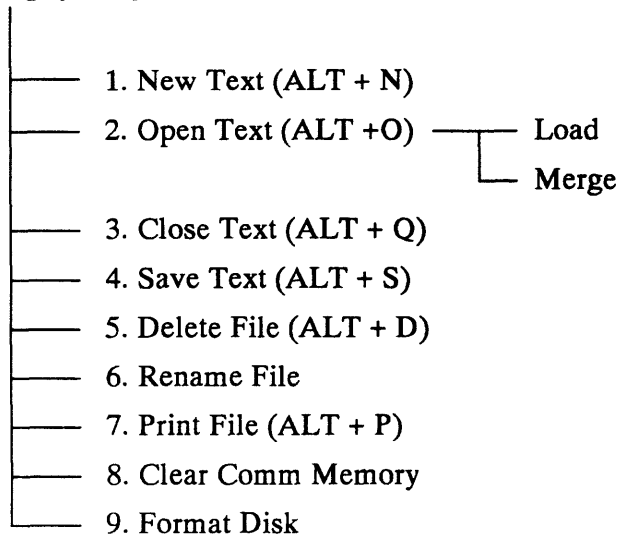
This feature places the cursor at the head of a line desired. Press [F2] and [A] (or [Alt] + [L]). The following display appears.

```
      Goto Line
-----
Jump to Line No. : -----
```

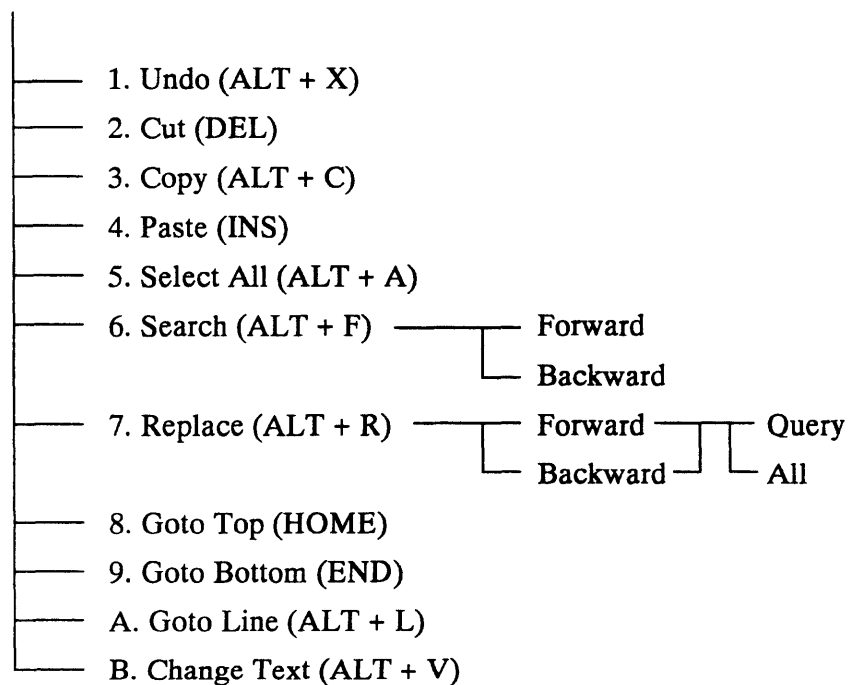
Key in line number and press the [Enter] key. The cursor shifts to the head of the line selected.

4.19 Menu Tree

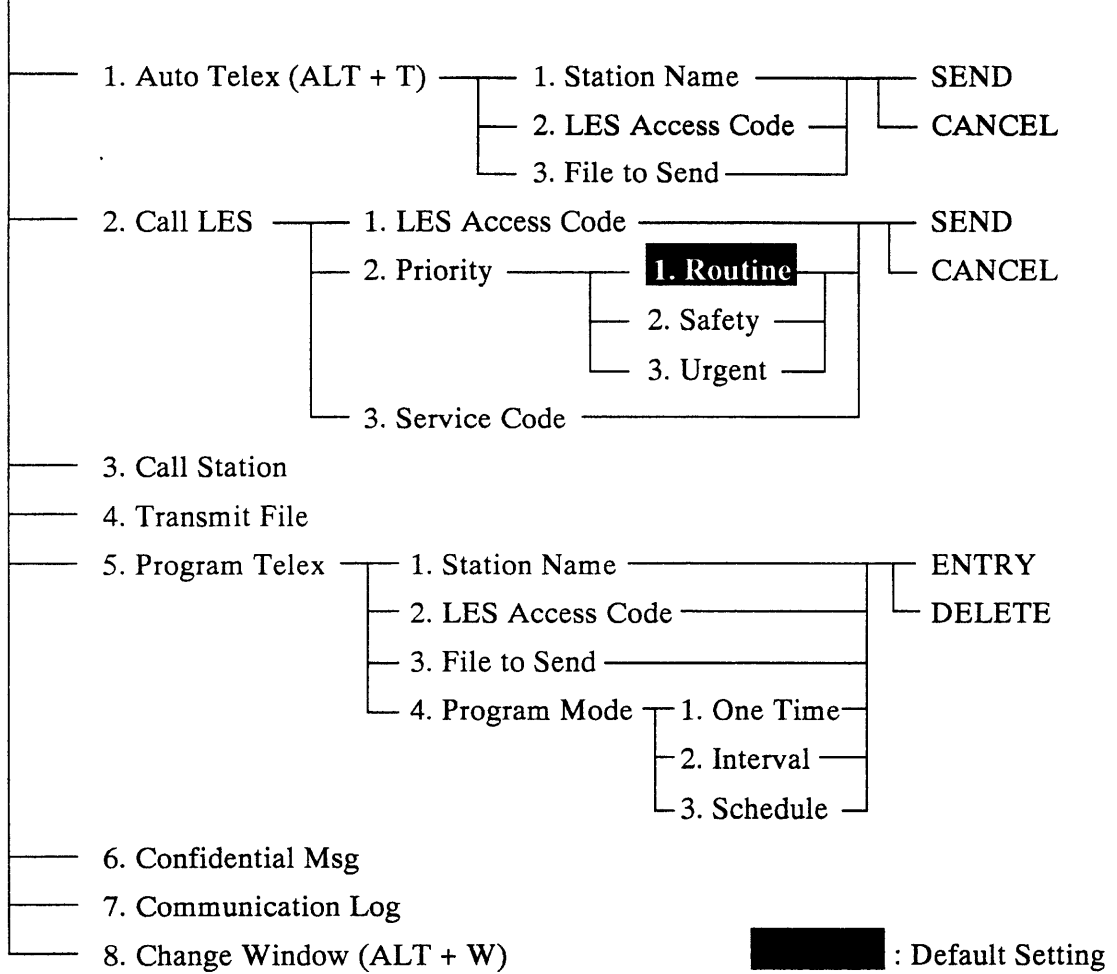
[F1] (File) Refer to page 4-4.



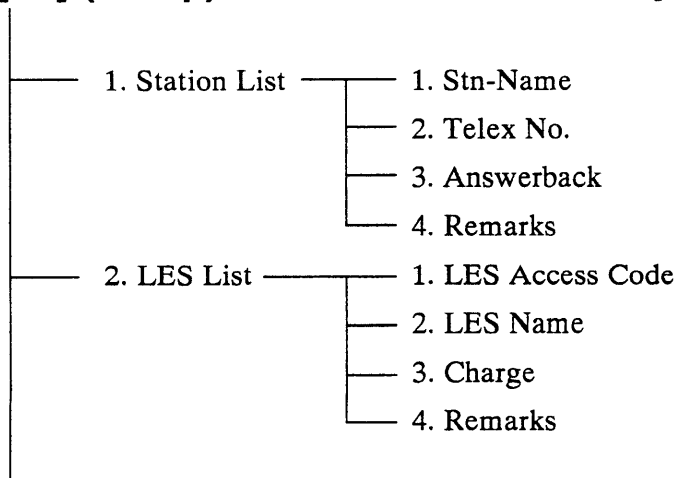
[F2] (Edit) Refer to page 4-36.



[F3] (Telex) Refer to page 4-6.

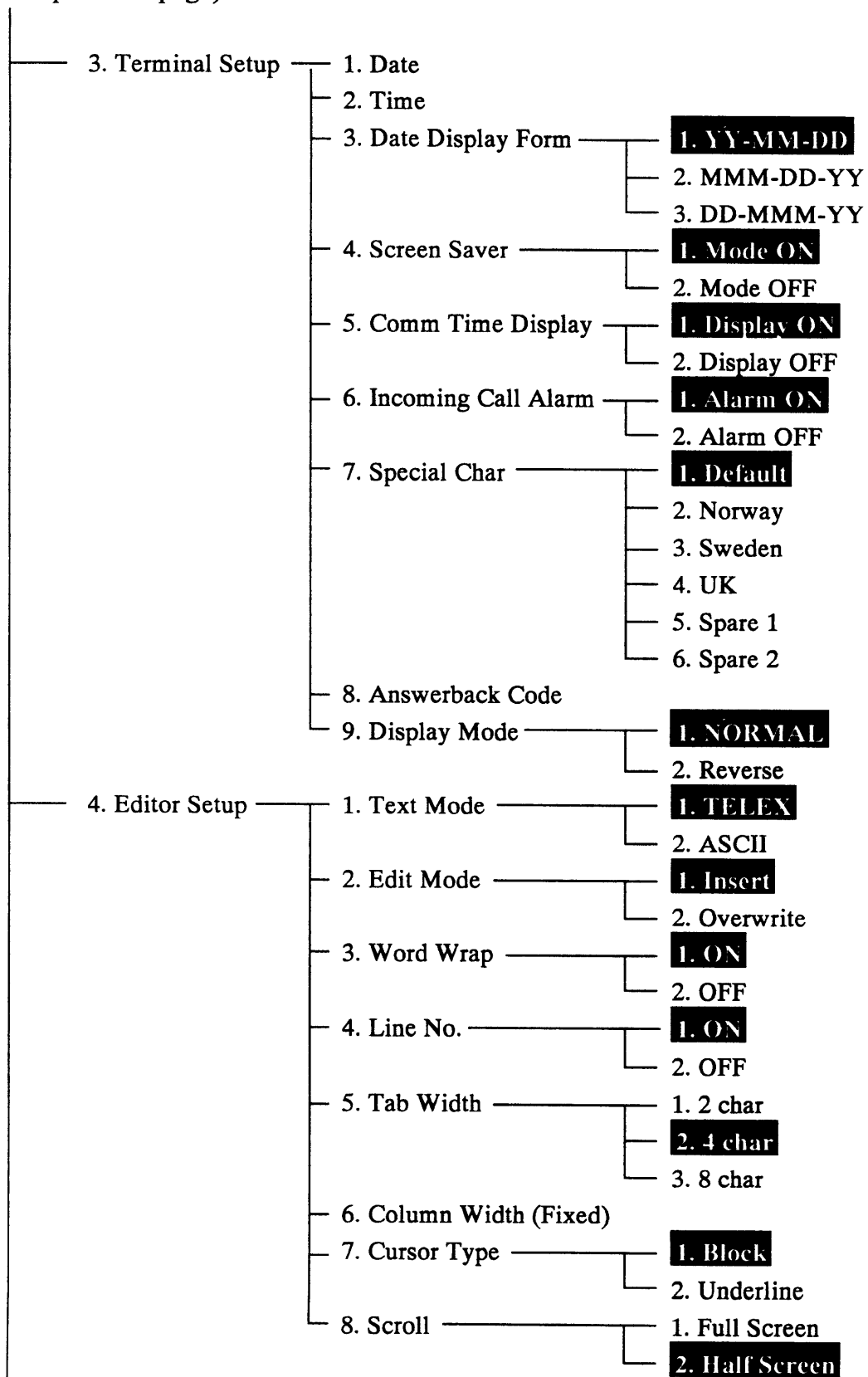


[F4] (Setup) Refer to page 4-7.



(Continued on next page)

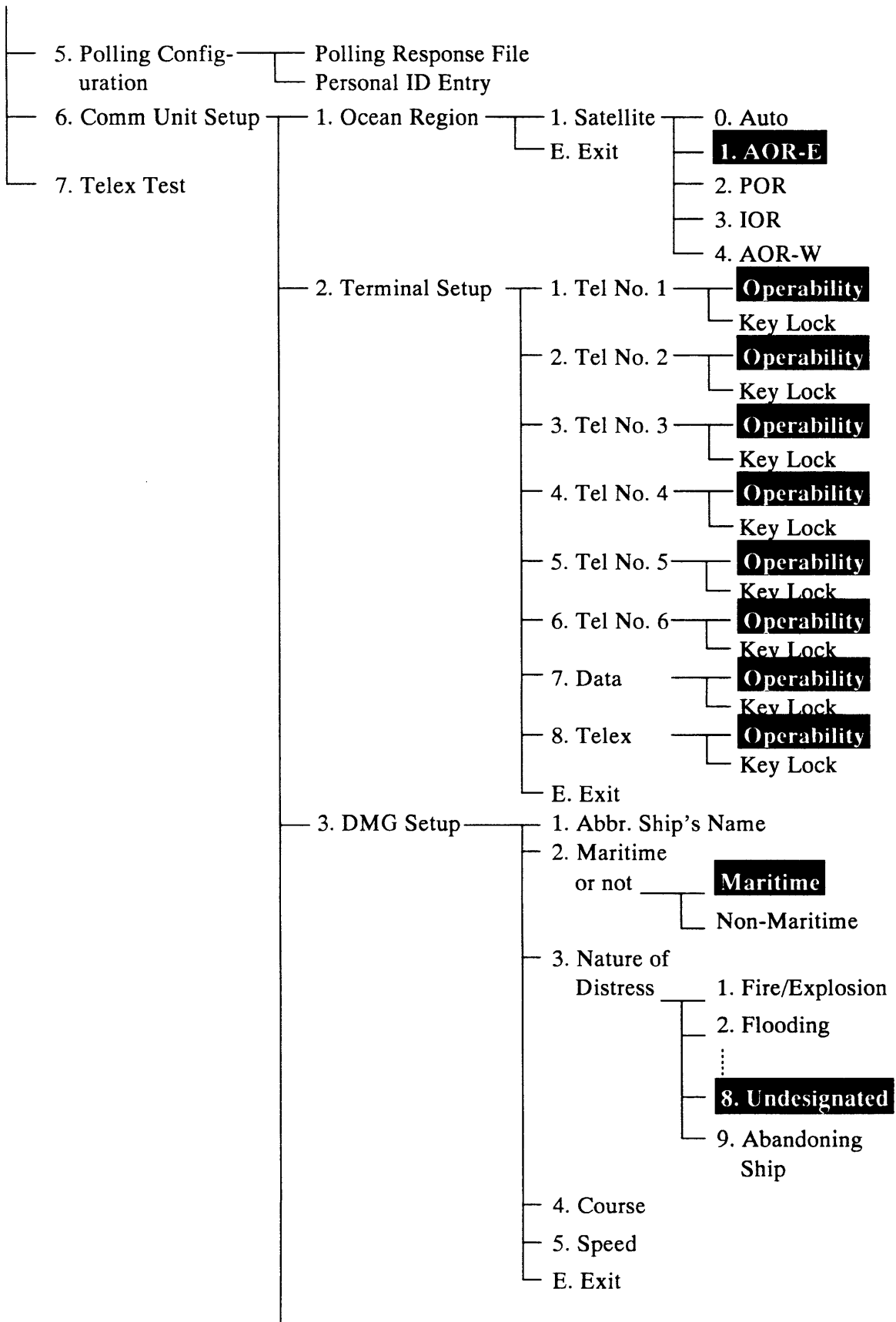
(From previous page)



(Continued on next page)

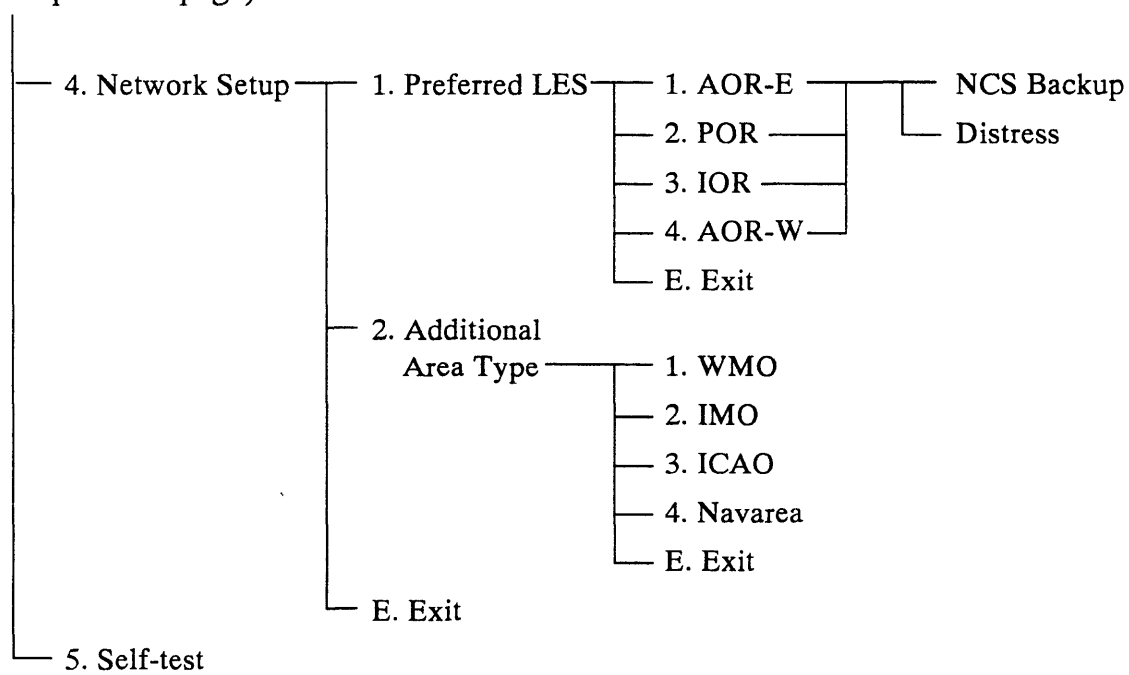
: Default Setting

(From previous page)



(Continued on next page)

(From previous page)

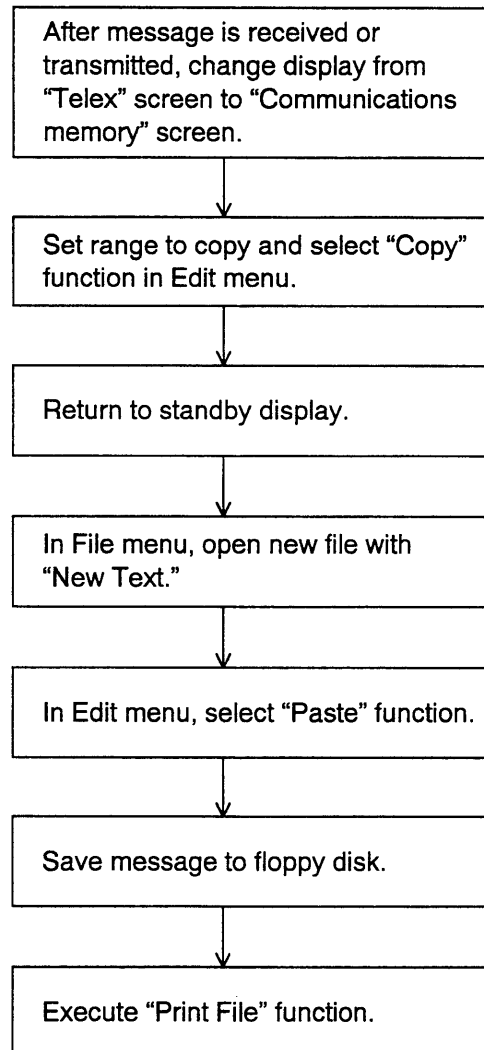


4.20 Printing Transmitted/Received Routine Messages

General

All transmitted and received routine messages are stored in the communications memory (capacity 16K bytes). Note that the contents of the communications memory are cleared when the terminal unit is turned off.

Basic procedure



Detailed procedure

1. After message is received (or transmitted), press [B] while pressing and holding down [Alt] to change the display from "Telex" screen to "Communications memory" screen.
2. Place the cursor on the first character of the text to copy and highlight the text to copy by pressing and holding down [Shift] while pressing [→] (or [↓]).

```

THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG 1234567890
THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG 1234567890
THE QUICK BROWN FOX JUMPS OVER THE LAZY DOG 1234567890

```

Communications Memory

3. Press [F2] and [3] (Copy). ("Cut" function not available.)
4. Return to standby display by pressing [B] while pressing and holding down [Alt].
5. Press [F1] and [1] (New). The untitled window display appears.

```

          <1: Untitled1>
Cursor → ■

```

6. Press [F2] and [4] (Paste). The copy text selected in step 3 is pasted in the untitled window.
7. Press [F1] and [4] (Save Text).

```

          Save
Saving File Name
■
(UNTITLED)

```

8. To save, enter file name and press [Enter].
9. Press [F1] and [7] (Print File). The display shows a list of files stored on the disk.
10. Select file to print with the arrow keys and press [Enter]. To stop printing, press [Esc].

5. Telephone Communication

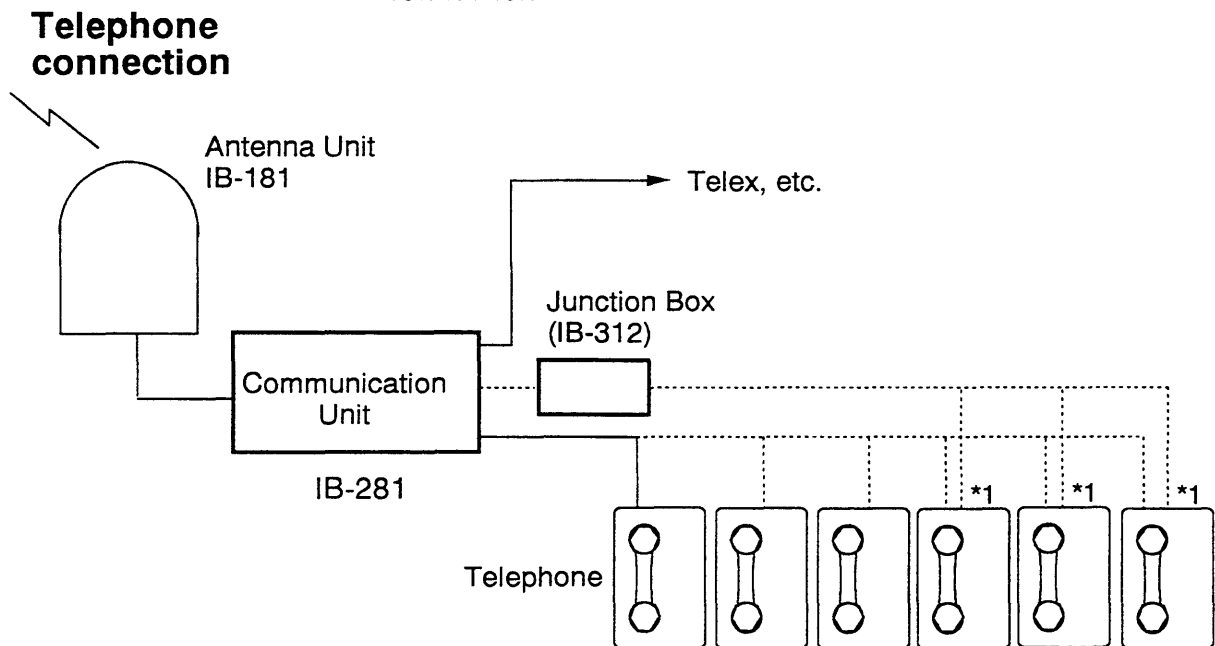
5.1 Telephone Communication Overview

This chapter describes the procedures necessary for telephone communications in the Inmarsat B system. Six telephones can be connected via Junction Box IB-312.

Telephones have the following functions:

- Communicating with land or maritime subscribers
- Forwarding a call to other telephones on board
- Intercommunicating with other telephone sets in the MES network on board the vessel
- Dialing a subscriber's number in two digits (abbreviated dialing)
- Dialing previous number (redialing)
- Distress communication

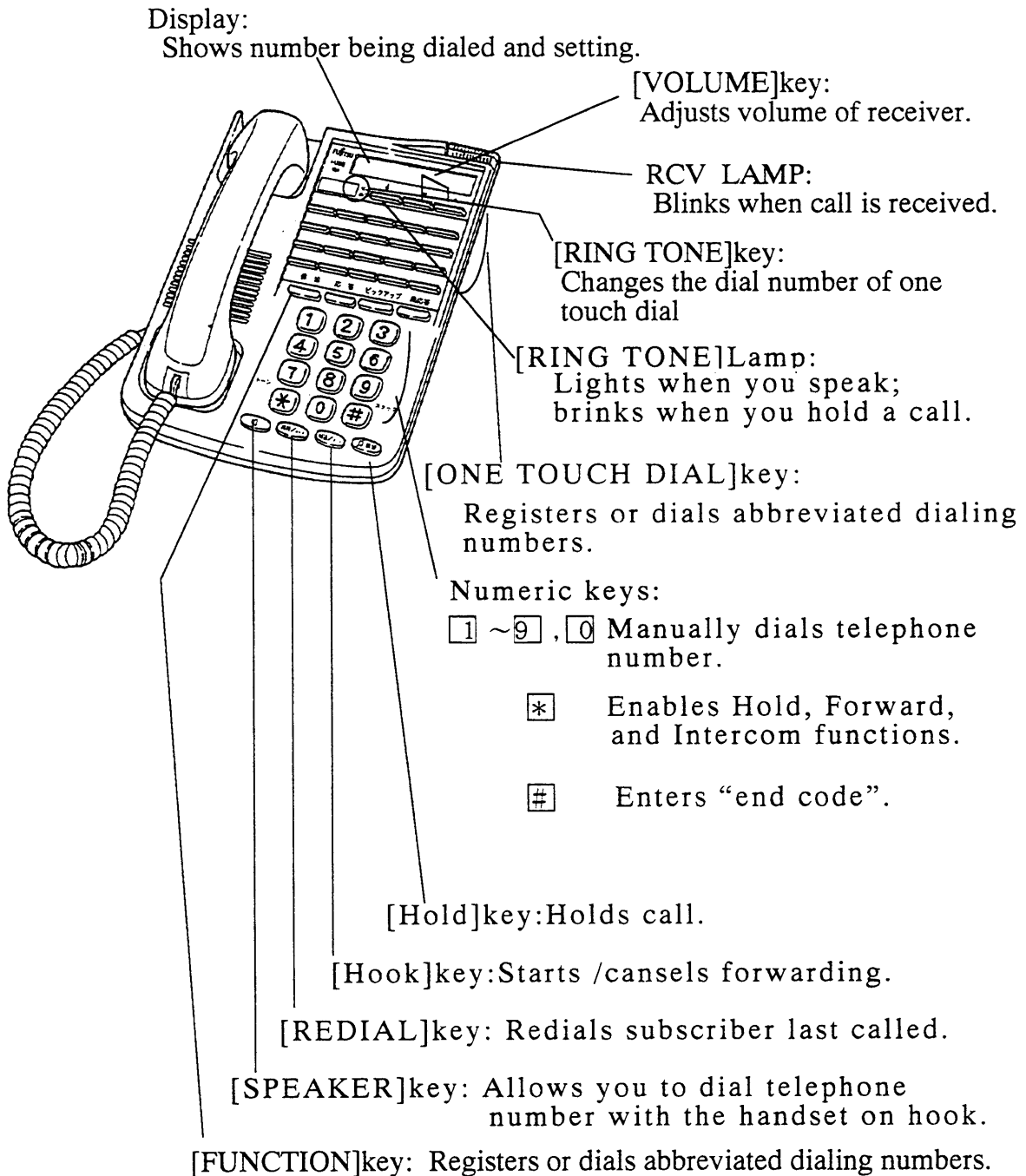
NOTE: *If you wish to connect newly the line with an LES, wait for 15 seconds after the line has been disconnected, otherwise the error message appears, resulting in no connection.*



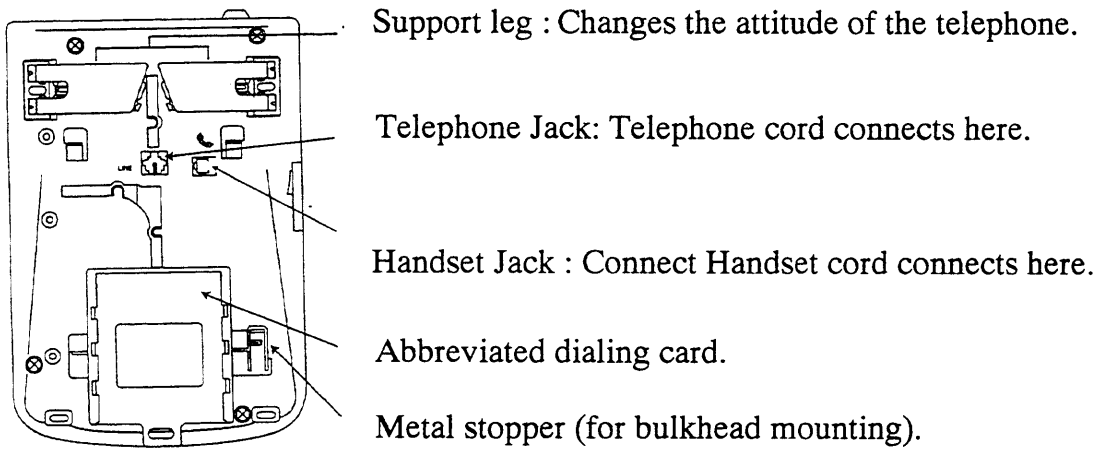
*1: Telephone or facsimile can be connected by Junction Box.

5.2 Telephone Control

Front panel



Rear panel



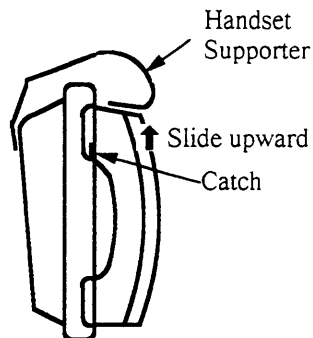
Remarks on usage

Confirming dial tone

Detach the handset from the hanger and confirm the dial tone. If a call cannot be made, the level of the dial tone is lower.

Remarks for detaching handset

Slide the handset upward to release it from the catch and then pull it forward.



5.3 Calling

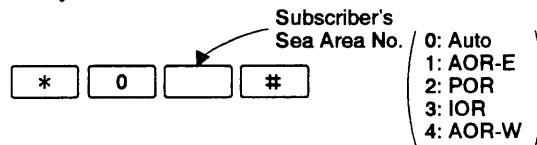
Overview

The Inmarsat B system provides telephone services for both land and maritime subscribers. For multiple telephone connection in an MES network, you may place a call from any telephone. The telephone operated or answered first takes priority.

Selecting sea area

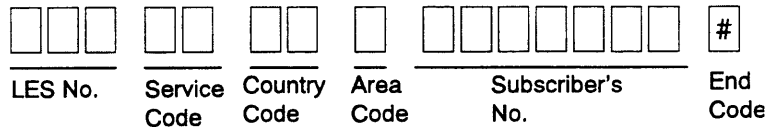
For class 2, sea area can be specified by telephone (telephone no. 1 only). This is the same function as mentioned on page 3-5.

1. Pick up the handset.
2. Confirm the dial tone.
3. Press keys as follows.



4. Hang up the handset.

Calling a land subscriber



(Example) Automatic call to subscriber no. 12345678 in Tokyo (03) via Pacific Ocean LES (Perth)

222 00 81 3 12345678 #

LES No.	001 Santa Paula (POR) 003 Yamaguchi (POR/IOR) 001 Southbury (AOR-E/W) 002 Goonhilly (AOR-E/W)	}	Refer to page AP2-1.
Service Code	00 Automatic Call 34 Person-to-person Call 35 Collect Call 36 Credit Card Call 37 Time and Charges Call	}	Available only for USA
	Other services (Some services may not be available depending on LES.)		
	11 International Operator 12 International Information Service (Only for Yamaguchi LES, you can ask about call duration and charge after automatic call (00) is completed.) 13 National Operator Tests 14 National Information Service 32 Medical Advice		33 Technical Assistance 38 Medical Assistance 91 Loop Around Test 92 LES Commissioning

Operator-assisted call

1. #
- LES No. Service Code
- 11: International Call
34: Person-to-person Call
35: Collect Call

2. When the operator answers, give the following information.
- your ship's name or MES ID
 - whether the call is operator-assisted or collect call (national, area code or Maritime Country Code)
 - if person-to-person call, name of subscriber

Note: *If you are connected to a wrong subscriber, hang up the handset, re-call the operator and request reconnection.*

Calling an MES

Sea Area No. (Select subscriber's sea area.)	871: AOR-E 872: POR 873: IOR 874: AOR-W
---	--

• **Ship (Inmarsat B) → Ship (Inmarsat B)**

#

LES No. Service Code Sea Area No. Vessel ID No. End Code

(ex.) 222 00 872 343112210 #

(Perth) (Automatic call) POR (Subscriber's sea area)

• **Ship (Inmarsat B) → Ship (Inmarsat A)**

----- #

LES No. Service Code Sea Area No. Vessel ID (Inmarsat A) No.

When land subscriber calls an MES

Example: Japan

001 872 343112210 #

KDD POR Vessel ID No.

(This depends on country.)

Using telephone mode of facsimile

To use telephone mode of facsimile, dial [*][8][0][*] before call number.

* 8 0 * ----- #

Call number

Detailed procedure

1. Pick up the handset. (Dial within 20 seconds.)
2. Dial LES and subscriber's numbers referring to procedure shown above. (If you misdial, hang up the handset and dial again.) Do not interrupt dialing for more than 5 seconds at any point, otherwise control is returned to the standby mode.
3. Press [#].
4. Wait for call from LES and then talk with subscriber. (If line with LES cannot be connected, tone signal sounds in the handset to denote reason why you could not be connected. See the table below.)
5. Hang up the handset upon completion of call.

Reason why connection is not established	Interval of Tone Signal from LES
BUSY	
CONGESTION	
No Service	

Note that the reason of no connection is printed out.

Redialing

The redialing feature automatically redials number last dialed.

Procedure

1. Pick up the handset.
2. Press the [REDIAL] key.

5.4 Credit Card Reader (option)

The credit card reader permits automatic payment of fax and telephone calls by credit card. Credit card payment is only available for routine calls.

1. Pick up the handset.
2. Confirm that the LED on the credit card reader is lit.
3. Pass credit card through credit card reader. (If card could not be read, the LED on the card reader blinks. Try to read card again.)
Note: *A card reader cleaning card is supplied with the card reader. Use it to clean the card reader when consecutive read error occurs.*
4. Dial subscriber's complete number (see page 5-4 for procedure), own PIN number and finally [#] (end code).
5. Communicate with subscriber.

Credit card use and the redial function

The redial function may cause release of credit card number or PIN number. For this reason, clear the redial function after making a credit card call. FURUNO will assume no responsibility for the trouble resulting from the wrongful use of credit cards.

Clearing redial

1. Pick up the receiver.
2. Press any numeric key.
3. Hang up the receiver.

5.5 Receiving

Receiving a telephone call in the Inmarsat system is exactly the same as with a conventional telephone: simply pick up the handset and talk with party. If plural telephones are assigned the same ID number, they all ring when receiving a call. Pick up any handset to answer call.

Procedure

1. When a telephone rings, pick up the handset and talk.
2. Hang up the handset upon completion of call.

Ringer format and type of call

Ringer format depends on type of call as shown in the following table.

Type	Ringing time (sec)	Stop time (sec)
Distress	4	1
Urgent	Beep Beep Long Beep	1
Safety	Beep Long Beep	1.6
Routine	1	2

5.6 Intercom

Overview

In the MES network on board the vessel you can communicate with another telephone by dialing its intercom number.

Procedure

1. Pick up the handset and confirm the dial tone.
2. Press [*], dial intercom number and then press [#].
(If you dial an invalid number, you will hear the "busy tone". Hang up the handset and dial again.)
3. Talk with party.
4. Hang up the handset upon completion of call.

When receiving a call during intercom use

When you receive a call from an LES while talking via the intercom, you will hear two beeps, intermission, repeat. Conclude communications and hang up the handset, then pick it up again to talk with LES.

5.7 Forwarding/Holding a Call

Holding a call

1. Press the [HOLD] key.
2. Hang up the handset. (See note.)
3. Pick up the handset to talk.

Note: *If you don't hang up the handset, press the [HOLD] key again to talk.*

Forwarding a call

You can forward a call to another telephone in the MES network on board the ship by dialing its intercom number.

1. When you receive a call which is for another telephone, press [*], dial intercom number and then press [#].
2. After confirming connection, hang up the handset. (If you dial an invalid intercom number, you will hear the "busy tone". Press the [HOOK] key and repeat steps 1 and 2. If there is no answer, press the [HOOK] key to cancel forwarding.

5.8 Abbreviated Dialing

Overview

The abbreviated dialing feature lets you dial a subscriber's number in just two digits. You may register 44 abbreviated dialing telephone numbers.

Notes on registration

- Press keys within ten second of each other, otherwise key input is cancelled.
- You may write over unnecessary telephone numbers.

Registering numbers

1. Press the [SPEAKER] key.
2. Press the [ENTRY] key.
Remove one touch dialing card.
3. Press the [RING TONE] key.
4. Press one of the [ONE TOUTH DIAL] keys.
5. Enter telephone number to register.
To register another abbreviated telephone dialing number, repeat step 3 to 5.
6. Press the [ENTRY] key to confirm the registration.
7. Press the [SPEAKER] key.

Deleting abbreviated dialing numbers

1. Press the [SPEAKER] key.
2. Press the [ENTRY] key.
Remove one touch dialing card.
3. Press the [RING TONE] key.
4. Press the [ONE TOUCH DIAL] key to confirm the one touch dial.
5. Press the [ONE TOUCH DIAL] key twice to enter abbreviated dialing number to delete.
6. Press the [ENTRY] key.
7. Press the [SPEAKER] key.

Abbreviated dialing procedure

1. Press the [SPEAKER] key.
2. Press the [RING TONE] key.
3. Press one of the [ONE TOUCH DIAL] key.
4. Pick up the handset.

Function button

The function button keys can be used an abbreviated dial key.

Regisetering numbers

1. Press the [SPEAKER] key.
2. Press the [ENTRY] key.
Remove the one touch dialing card.
3. Press one of the [Function] keys.
4. Enter abbreviated dialing number to register.
5. Press the [ENTRY] key.
To register another abbreviated dialing number, repeat steps 3 to 5.
6. Press the [SPEAKER] key.

Deleting function key

1. Press the [SPEAKER] key.
2. Press the [ENTRY] key.
Remove the one touch dialing card.
3. Press the [Function] key to delete.
To delete another abbreviated dialing number of the function key, repeat step 3.
4. Press the [ENTRY] key.
5. Press the [SPEAKER] key.

5.9 Urgent/Safety Communication

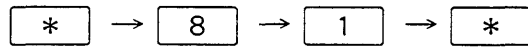
General Urgent or safety communication is possible by setting the type of call before calling.

Priority Before you call a subscriber, you can set the priority. When hanging up the handset upon completion of call, the priority automatically becomes “ROUTINE”.

↑ Higher priority	<u>Type of call</u>	<u>Key operation</u>
	Urgent	* 8 2 *
	Safety	* 8 1 *

Procedure

1. Pick up the handset.
2. Set the type of call.
(Example) Safety



Tone signal can be heard. See the table shown on the next page.

3. Call an LES. (#)
 LES No.

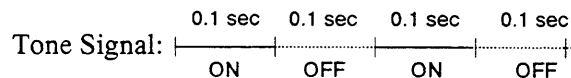
4. Talk with LES.
5. Hang up the handset upon completion of call.

Type of Call	Tone Signal Interval
Routine	
Safety	
Urgent	

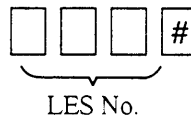
5.10 Distress Communication

Procedure

1. Peel off the red seal, break the protective cover, and press and hold down the [DISTRESS] button on the Telephone Distress Button IB-360 for six seconds. (The priority of No. 1 telephone automatically becomes "DISTRESS".)
2. Pick up the handset of the No. 1 telephone. (See note.)



3. Dial an LES number and press the [#] key to connect the line with the LES.



4. Commence voice (distress) communication.

Note: *If handset is not operated wrthin 15 seconds after picking it up the line is automatically connected with the LES designated in the Network setup menu.*

5.11 Restricting Telephone Call Length

You may restrict telephone call length (except the no. 1 telephone). The default setting is no time limit. 30 seconds before the time limit is to arrive, an audible warning sounds in the handset to alert the user.

1. Pick up the handset of the no. 1 telephone.
2. Dial [*] [6] [a] [b] and;
 - a) No. of telephone (2-6)
 - b) Time limit in two digits;
 - 00 : Telephone functions as receive-only telephone
 - 01-98 : Time limit in minutes
 - 99 : No time limit (default)
3. Dial [#].

For example to restrict call length on the no. 2 telephone to 30 minutes, dial [*] [6] [2] [3] [0] [#]

5.12 Abbreviated Dialing Number

One abbreviated dialing number can be registered, and automatically dialed from any telephone or fax. This number will allow you to shorten dialing time by automatically dialing as many as the first ten digits of a telephone or fax number for you. For example, you might want to register an LES number or a service code as the abbreviated dialing number.

Registration or deletion can only be done at the No.1 telephone.

Registering the abbreviated dialing number

1. Pick up the handset of the No.1 telephone.
2. Confirm the dial tone.
3. Dial [*], [9], [5], [*].
4. Dial abbreviated dialing number (max. 10 digits).
5. Dial [#].
6. Hang up the handset.

Deleting the abbreviated dialing number

1. Pick up the handset of the No.1 telephone.
2. Confirm the dial tone.
3. Dial [*], [9], [5], [*], [#].
4. Hang up the handset.

Printing the abbreviated dialing number

1. Pick up the handset of the No.1 telephone.
2. Confirm the dial tone.
3. Dial [*], [9], [6], [#].

The printer prints the abbreviated dialing number in the "PREfix" section of the printout.

How to dial a number using the abbreviated dialing number

Dial telephone or fax number excluding the abbreviated dialing number. For example, suppose that the abbreviated dialing number is 001. Then, to call 001 00 81 798631153, for example, dial 00 81 798631153#.

To call without using the abbreviated dialing number, dial [*], complete telephone or fax number, [#].

5. 13 Printing the Communications Log

The communications log stores details about the latest 50 Rx and Tx calls, and you may print it as below. Note that each time you make a call its details are printed.

1. Pick up the handset of the No.1 telephone.
2. Press [*], [9], [7], [#] to print the log.

COMMUNICATIONS LOG

No.	T/R	Destination	Type	Prt	DATE	Time	Duration
01	T	003-00872343165510	TEL1	Rou	96-04-05	01:51	00:00'43"
02	T	003-0081798668851	TEL1	Crd	96-04-04	11:52	00:01'16"
03	T	003-0081798668851	TEL1	Crd	96-04-04	11:50	00:00'23"
04	T	003-0081798668851	TEL1	Rou	96-04-04	11:49	00:00'06"
05	T	003-0081798668851	TEL1	Crd	96-04-04	11:20	00:00'06"
06	T	003-0081798668851	TEL1	Rou	96-04-04	11:16	00:00'07"
07	T	003-0081798668851	TEL1	Rou	96-04-04	11:16	00:00'07"
08	T	003-0081798668851	TEL1	Rou	96-04-04	08:54	00:00'12"
09	T	003-0081798668851	TEL1	Rou	96-04-04	08:50	00:00'16"
10	T	003-0081798668851	TEL1	Crd	96-04-04	08:18	00:00'23"
11	T	003-0081798668851	TEL1	Rou	96-04-04	08:17	00:00'32"
12	T	003-91	TEL1	Rou	96-04-04	07:43	00:00'07"
13	T	003-91	TEL1	Rou	96-04-04	07:41	00:00'10"
14	T	003-0081798668851	TEL1	Crd	96-04-04	07:37	00:00'09"
15	T	003-0081798668851	TEL1	Rou	96-04-04	07:34	00:00'08"

LES

Credit card call

3. Hang up the handset.

6. Facsimile Communication

6.1 Facsimile Communication Overview

Type of fax machine

The Inmarsat B system uses the G3 type fax.

6.2 Dialing Subscribers

Example: direct dialing

- Ship (FELCOM 81) → Land

TEL/DIAL	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	#
	LES No.		Service Code	Country Code	Fax No.					

(Service Code normally use "00" automatic call.)

- Ship (FELCOM 81) → Ship (Inmarsat B)

TEL/DIAL	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	#
	LES No.		Service Code	Sea Area No.	Vessel ID No.				

(Service Code normally use "00" automatic call.)

- Ship (FELCOM 81) → Ship (Inmarsat A)

TEL/DIAL	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	81	<input type="text"/>	<input type="text"/>	#
	LES No.		Service Code	Sea Area No.	(At any time)		Vessel ID (Inmarsat A) No.			

(Service Code normally use "00" automatic call.)

- Land → Ship (FELCOM 81)

Example: Japan

001	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	--->	In Inmarsat A system, "81" should be entered before "Vessel ID No." Inmarsat B system does not need it as shown left.
International Code of Japan	Sea Area No.		Vessel ID No.				

(Number changes with country.)

NOTE: If you wish to connect newly the line with an LES, wait for 30 seconds after the line has been disconnected, otherwise the error message appears, resulting in no connection.

**For further
details**

Refer to owner's manual for respective facsimile.

7. Operation of Other Equipment

7.1 Telex Distress Alert Button IB-350 (Class 1 only)

The IB-350 transmits the distress alert prepared in the DMG Setup menu (page 3-7). Since the IB-350 is physically identical to the Telephone Distress Button (IB-360), please take care not to mistake the IB-350 for the IB-360.

1. When your vessel is in distress, peel off the red seal, break the protective cover, and press and hold down the [DISTRESS] button **for six seconds** to transmit the alert to the LES designated in the Network Setup menu.
2. After the distress alert has been transmitted, the LES connection remains in place. Send distress messages to the LES through the terminal unit.

7.2 Telephone Distress Button IB-360

The IB-360 sets the priority of the No.1 telephone to DISTRESS.

1. When your vessels is in distress, peel off the red seal, break the protective cover, and press and hold down the [DISTRESS] button **for six seconds**.
2. Then call an LES with the No. 1 telephone as follows.

□ □ □ #

⏟

Enter LES number.

Note: *If the No. 1 telephone is not operated within 30 seconds after picking up its handset, the line is automatically connected with the LES designated in the Network Setup menu.*

7.3 Received Call Unit IC-301 (option)

Overview

The IC-301 sounds an audible alarm when Telex, telephone or facsimile message is received. To silence the audible alarm, press the [RESET] button on the IC-301.

Ringer format depends on the call received as shown in table which follows.

Call	Ringer Format (Interval)
Telex	
Telephone (2400 bps Fax)	
Facsimile (9600 bps Fax)	

Receiving a telex message

The alarm will automatically shut itself off one minute after Telex message is received.

Receiving a telephone call

The alarm will automatically shut itself off when the handset of the ringing telephone is picked up.

Disabling the IC-301

The IC-301 (all IC-301s if connected) can be disabled (no alarm when a message is received) through the terminal unit as follows.

1. Press [F4] and [6] at the standby display to display the Communication Setup menu.

```

Communication Unit Setup
-----
[Main Menu]
1: Ocean Region      5: Selftest
2: Terminal Setup
3: DMG      Setup
4: Network Setup
Enter JOB No.:█

```

Communication Unit Setup Menu

2. Type ALMEXT and press [Enter].

```
<External1>  
External1: ON / OFF
```

3. Press [→] to select OFF and press [Enter].

4. Press [Esc] twice to return to the standby display.

8. Maintenance



WARNING



Do not open the equipment.

Hazardous voltage which can cause electrical shock, burn or serious injury exists inside the equipment. Only qualified personnel should work inside the equipment.

8.1 Regular Checks

This section presents simple maintenance procedures.

Cleaning the terminal unit and communication unit

These units can be cleaned with a soft, dry cloth. **DO NOT** use commercial cleaners. They may remove paint and markings.

Checking connectors and earth terminal

The connectors and earth terminal on the rear panel of the communication unit should be checked periodically for tightness and cleaned if necessary.

8.2 System Status Monitor

From terminal unit (class 1 only)

The system status monitor display appears at the center of the standby display when turning on the power. If “NG” appears on this display, request service.

Date	23-OCT-96				
Time	06 : 16 (UTC)				
* (a) {	Current Satellite	POR	* (e) {	Tx EIRP Level	0000
	Channel Status	SYNC		Tx RF Level	001
	MES Status	Ready		Rx Signal Level	082
	Key Lock SW	Tx Enable		Rx IF AGC Level	069
* (b) {	Heading	055 DEG	* (f) {	Rx SYN	OK
	Antenna Bearing	000 DEG		Tx SYN	OK
	Antenna Azimuth	000 DEG		RF CON. LOCAL	OK
	Antenna Elevation	00 DEG		2nd LOCAL (HSD)	OK(Note)
* (c) {	Position	LAT 35 : 00. 00N	*		REMOTE
		LON 135: 00. 00E	* (g) {	Antenna Status	OK
* (d) {	NAV DATA	NONE		EI AXIS	OK
				Az AXIS	OK
				Cross EI AXIS	OK
			* (h) {	Rx Channel	11292
				Tx Channel	10000

* See next page for description.

Note: Displayed when HSD terminal IB-681 is connected.

System Status Monitor Display

To print screen

Press the [Prt Sc] (Print Screen) key.

From no. 1 telephone

Using the No. 1 telephone, you can check system status and print out the results by doing the following. (Note that this can be done on Both class 1 and Class 2)

Procedure

1. Pick up the handset of the No. 1 telephone.
2. Press [*], [9], [7] and [#] in this order to print.

A sample printout is shown on the next page.

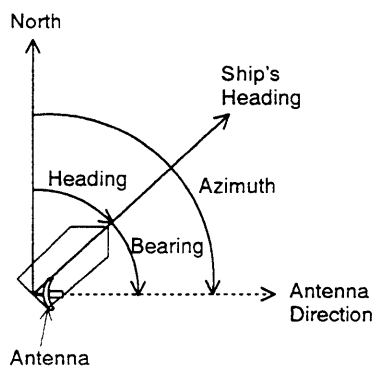
```

----- Status Print 23-OCT-96 06:17 (UTC) -----
Satellite: (POR SYNC)           MES Status: (Ready)       Key Lock: (Tx Enable)
Tx EIRP Level: (000)           Tx RF Level: (001)       NAV Data: (NONE)
Rx Signal Level: (084)         Rx AGC Level: (070)
Position LAT: (35:00.00N)      Heading: (055 DEG)       Bearing: (000 DEG)
                               LON: (135:00.00E)      Azimuth: (000 DEG)      Elevation: (000 DEG)
Antenna Status: (REMOTE)       El AXIS: (OK)           Az AXIS: (OK)
RX SYN: (OK)                   Tx SYN: (OK)           RF CON. LO: (OK)
-----

```

System status printout by No. 1 telephone

Status monitor display description



- Ⓐ : Displays the satellite being tracked and synchro status, The MES Status display should be “Ready,” to seransmit a message.
- Ⓑ : Displays antenna status (bearing, angle).
- Ⓒ : Ship’s position from navigational device.
- Ⓓ : Input format of navigation data.
- Ⓔ : Check of transmitter and receiver sections.
 - TX EIRP Level...Monitors output power from the Antenna Unit. (HPA Board check: Normal value is 31 or more at transmission.)
 - TX RF Level...Monitors output power from the Communication Unit. (TX/RX IF Board checking: Normal value is 90 or more at transmission.)
 - RX Signal Level (60 or more)
 - RX IF AGC Level (About 110 to 140)
 } ... Checks the receiver in the TX/RX IF Board in the communication unit.
- Ⓕ : Check sections of transmitter and receiver sections
 - Rx SYN ... Rx synthesizer
 - Tx SYN ... Tx synthesizer
 - RF CON LOCAL ... RX converter
- Ⓖ : Check of antenna status
 - El AXIS ... Elevation axis
 - Az AXIS ... Azimuth axis
 - Cross El AXIS ... Antenna orientation
- Ⓗ : Displays Received channel and Transmission channel.

8.3. Self-Test

Self-test by terminal unit (Class 1 only)

Self-test for the communication unit and the antenna unit can be conducted at the terminal unit.

Note that you cannot establish the communication line with an LES during testing, and further the self-test cannot be conducted while communicating with an LES.

If something appears to be wrong, request service.

Procedure

1. At the standby display, press [F4] and [6] to display the Communication Unit Setup menu.

```

Communication Unit Setup
-----
[Main Menu]
1: Ocean Region      5: Selftest
2: Terminal Setup
3: DMG      Setup
4: Network Setup
Enter JOB No.:█

```

Setup Menu Display

2. Press [5] and [Enter] to start the test. The display shows program number.

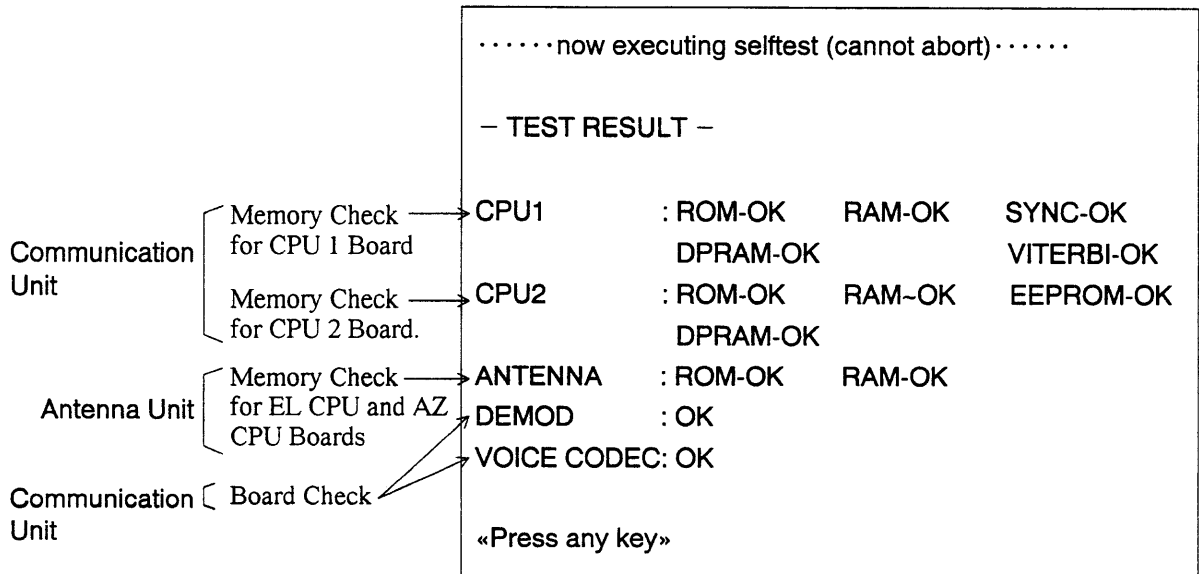
```

«Program No.»
CPU1 (TX)165-0104-1**      (RX)165-0103-1**
CPU2 (SYS CPU)165-0105-1** (I/O)165-0108-1**
ANTENNA      165-0102-1**c
VOICE CODEC 165-0096-x**
Start selftest OK? <Y/N>

```

** : ROM version No.

3. Press [Y] and [Enter].

Self-test Result

To print the self-test results, press the [Prt Sc] (Print Screen) key.

4. To escape from the self-test screen, press any key. Control is returned to the Communication Unit Setup menu.

Self-test by no. 1 telephone

The communication unit and the antenna unit can be checked by the No. 1 telephone. (This can be done on both Class 1 and Class 2.)

Procedure

1. Pick up the handset of the No. 1 telephone.
2. Press [*], [9], [0] and [#]. The self-test results are printed out.

8.4 Error Messages

Error messages appear to alert you to possible equipment trouble.

Contact a FURUNO agent for service when an error messages appears.

(Ex.) “ALARM: ADE RF Abnormality-No TX power detected”

Note: *When call fails or communication error occurs, wait for more than 30 seconds and try to call an LES again.*

8.5 Fuse Replacement on Communication Unit

The 15A fuse on the rear panel of the communication unit protects the equipment from overcurrent and reverse polarity. If power cannot be supplied when turning on the POWER switch, check the fuse. If the fuse has blown find out the cause before replacing it. Use only a 15A fuse. Use of a wrong fuse can cause permanent damage to the unit and void the warranty.

If the fuse blows again after replacement, request service. Do not attempt to check inside the unit.

8.6 Breaker on Terminal Unit

The terminal unit has a (red) breaker switch on its rear panel. If power cannot be supplied, press the breaker switch to restore normal operation.

9. Specifications

Communication

(1) Tx Frequency	1626.5 to 1646.5MHz
(2) Rx Frequency	1525.0 to 1545.0MHz
(3) Tuning Steps	10kHz(TDM), 20k(other than TDM)
(4) G/T	Better than -4dB/K
(5) EIRP	33 dBW (Reducing automatically with elevation to 29 or 25 dBW)
(6) Modulation	- Voice 24Kbit/s filtered O- QPSK - 9.6 Kb/s Data 24Kbit/s filtered O- QPSK - Telex TX 24Kbit/s filtered O- QPSK - Telex RX 6Kbit/s filtered BPSK - TDM 6Kbit/s filtered BPSK
(7) Coding	- Voice Convolutional; Rate 3/4, K=7 (punctured) - 9.6 Kb/s Data Convolutional; Rate 1/2, K=7 - Telex Convolutional; Rate 1/2, K=7
(8) Decoding	8- level soft-decision Viterbi
(9) Voice Coding Method	16 Kbit/s APC- MLQ

Antenna Section

(1) Antenna Type	0.9m diameter parabola
(2) Gain	Greater than 22.0dBi, ϕ 1.0m
(3) Axial Ratio	Less than 2dB
(4) Antenna Beamwidth	15 deg. approx. (at - 3dB)
(5) Stabilization	Triple- axis Active Control type
(6) Positioning	AZ: 360° free-rewind EL: 5 to 90° (- 27.5 to 122.5°)
(7) Positioning Accuracy	AZ: Better than \pm 3 deg. EL: Better than \pm 3 deg.
(8) Tracking	Step- tracking system

Environmental Conditions

(1) Ambient Temperature	- ADE (Above Deck Equipment) - 25 to +55° C (Inmarsat requirement.) Max. operating temperature; - 30 to 70° C - BDE (Below Deck Equipment) - 15 to +55° C Max. operating temperature; - 20 to 60° C
(2) Relative Humidity	95% max. (at +40° C)
(3) Water Resistance	- ADE (Antenna) IPX6 - BDE (Comms./Terminal) IPX2 (Others) IPX0
(4) Ice Build UP (ADE)	25mm maximum
(5) Rain (ADE)	100mm/hour
(6) Vibration	- ADE SDM - BDE SDM
(7) Motion	a) Roll: $\pm 30^\circ / 8s$ b) Pitch: $\pm 10^\circ / 6s$ c) Yaw: $\pm 8^\circ / 50$ d) Surge: ± 0.2 e) Sway: $\pm 0.2G$ f) Heave: $\pm 0.5G$ g) Rotation: $\pm 6^\circ / s$ h) Speed: 30 knot

Power Supply and Consumption

24VDC, Class1: 270W (at transmission)
Class2: 254W (at transmission)
Printer (PP-510): 36W
Fax (PFX-50, option): 50W

Coating Color

(1) Antenna Unit	Munsell N9.5
(2) Comms. Unit	Panel : Munsell N3.0 Cover : Munsell 2.5GY5/1.5 Newtone No.5 (Standard)
(3) Terminal Unit	Panel : Munsell N3.0 Cover : Munsell 2.5GY5/1.5 Newtone No.5 (Standard) Hanger: Munsell 2.5GY5/1.5 Newtone No.5 (Standard)

Rectifier PR-300

1. GENERAL

(1) Rated Input Voltage	100/110/200/220 VAC $\pm 10\%$ 24 VDC (+30%,-10%)
(2) Input Frequency	47 to 63 Hz
(3) Input Current	2 A or less(with rated AC input) 3.1 A or less(with rated DC input)
(4) Rush Current	80 A or less
(5) Rated Output Voltage	24 VDC $\pm 10\%$
(6) Rated Output Current	7.5 A
(7) Peak Output Current	20 A (10 A output within 2H or 20A within 15 min.)
(8) Ripple Voltage	100 V p-p or less
(9) Insulation Resistance	500 VDC 50 M Ω or more between AC input and chassis

2. Environmental Condition

(1) Ambient Temperature	-10° to +60°
(2) Relative Humidity	95% max.

APPENDIX 1

International Telex/Telephone Country Code List

Area and Country	Telephone Country Code	Telex Country Code	Remarks for Telex Code
Afghanistan	93	79	
Alaska	1	200	
Albania	355	604	
Algeria	21	408	
American Samoa	684	770	
American Virgin Is.	1	208	Telex calls to former WUI subscribers, insert the figure "9" after the destination code "208".
Andorra	33	590	
Angola	244	991	
Anguilla	1	391	
Antigua & Barbuda	2	393	
Argentina	54	33	Disregard the figure "0" at head of subscriber number.
Armenia	7	684	
Aruba	297	303	Subscriber numbers are 2XXX or 5XXX
Ascension	247	939	Manual calls 3XXX
Australia	61	71	
Australian External Territories	672	766	
Austria	43	47	
Azerbaijani	994	784	
Azores Is.	351	404	Destination code is the same as for Portugal.
Bahamas	1	297	
Bahrain	973	490	
Bangladesh	880	780	
Barbados	1	392	
Belarus	7	681	
Belgium	32	46	
Belize	501	371	
Benin	229	972	
Bermuda	1	290	
Bhutan	975	890	
Bolivia (Rep. of)	591	371	
Bolivia (ENTAL)		309	
Bosnia-Herzegovina	387	600	
Botswana	267	962	
Brazil	55	38	Disregard the figure "0" at head of subscriber number.
British Virgin Is.	1	292	
Brunei Darussalam	673	809	
Bulgaria	359	67	
Burkina Faso	226	978	
Burundi	257	903	

Telex/Telephone Country Code List

Area and Country	Telephone Country Code	Telex Country Code	Remarks for Telex Code
Cambodia	855	807	Kampuchea Rep.
Cameroon	237	970	
Canada	1	{ 21	Disregard the figure "0" at head of subscriber number.
		{ 26	
Canary Is.	34	52	Destination code is the same as for Spain.
Cape Verde	238	993	
Cayman Is.	1	293	
Central Africa Rep.	236	971	
Chad	235	976	
Chile	56	34	{ TCH subscribers 2XXXXX ENTEL subscribers 5XXXXX TRA subscribers 3XXXXX TECOM subscribers 6XXXXX VTR CM subscribers 4XXXXX
China	86	85	
Christmas Is. (Aus)	672	766	
CIS (formerly USSR)	7	64	
Cocos-Keeling Is.	672	766	
Colombia	57	35	Disregard the figure "0" at head of subscriber number.
Comoros	269	994	Manual calls
Congo	242	981	
Cook Is.	682	772	
Costa Rica	506	376	
Cote d' Ivoire	225	983	Ivory Coast
Croatia	385	599	
Cuba	53	28	
Cyprus	357	605	
Czechoslovakia	42	66	
Denmark	45	55	
Diego Garcia	246	938	
Djibouti	253	979	
Dominica	1	394	
Dominican Rep.	1	{ 201	RCA subscribers 4XXXXX
		{ 202	For subscriber number beginning with 346, disregard "346" at head of subscriber number.
		{ 241	AGEM IR subscribers 61XX
Ecuador	593	308	
Egypt	20	91	
El Salvador	503	373	
Estonia (formerly USSR)	372	537	
Ethiopia	251	980	
Falkland Is. (Malvinas)	500	306	
Faroe Is.	298	502	
Fiji	679	701	
Finland	358	57	

Telex/Telephone Country Code List

Area and Country	Telephone Country Code	Telex Country Code	Remarks for Telex Code
France	33	42	
French Guiana	594	300	
French Polynesia	689	702	
Gabon	241	973	
Gambia	220	996	
Georgia	7	683	
Germany (Fed. Rep. of)	49	{ 69	formerly East Germany
	49	{ 41	formerly West Germany
Ghana	233	94	
Gibraltar	350	405	
Greece	30	601	
Greenland	299	503	
Grenada	1	395	
Guadeloupe	590	299	
Guam (RCA)	671	700	
Guatemala	502	372	
Guiana	594	300	
Guinea Conakry	224	995	Manual calls
Guinea Bissau	245	969	
Guyana	592	295	
Haiti	509	203	RCA subscribers 9XXX
		{ 704	RCA subscribers 8XXX or 2968XX
		{ 705	ITT subscribers 743XXX
Hawaii	1	{ 708	WUI subscribers 63XXX or 63XXXX
		{ 709	WUH subscribers 39XXXX
		{ (773)	Telex calls to HTC subscribers can be made using Semi-automatic calls.
Honduras	504	374	
Hong Kong	852	802	
Hungary	36	61	
Iceland	354	501	
India	91	81	
Indonesia	62	73	Disregard the figure "0" at head of subscriber number.
Iran	98	88	
Iraq	964	491	
Ireland	353	500	
Israel	972	606	Disregard the figure "0" at head of subscriber number.
Italy	39	43	
Jamaica	1	291	
Japan		72	KDD (for 5 digits)
	81	720	NTT
Jordan	962	493	

Telex/Telephone Country Code List

Area and Country	Telephone Country Code	Telex Country Code	Remarks for Telex Code
Kazakhstan	7	785	
Kenya	254	987	
Kiribati	686	761	Subscriber numbers are 770XX
Korea (Demo, People's Rep. of)	850	(899)	
Korea (Rep. of)	82	801	
Kuwait	965	496	
Kyrgyzstan	7	788	
Lao	856	804	
Latvia (formerly USSR)	371	538	
Lebanon	961	494	
Lesotho	266	963	
Liberia	231	997	
Libya	21	901	
Liechtenstein	41	45	
Lithuania (formerly USSR)	370	539	
Luxembourg	352	402	
Macao	853	808	
Macedonia	389	597	
Madagascar	261	986	Subscriber number beginning with 4, 5, 7, 8 and 9 can be reached by Manual Calls.
Madeira Is.	351	404	Destination code is the same as for Portugal.
Malawi	265	904	
Malaysia	60	84	
Maldives Is.	960	896	
Mali	223	985	
Malta	356	{ 406 403	Subscriber number beginning with 11XX can be reached by Semi-automatic calls.
Mariana Is.	671	760	
Marshall Is.	692	765	
Martinique	596	298	
Mauritania	222	974	
Mauritius	230	966	
Mexico	52	22	Disregard the figure "0" at head of subscriber number.
Micronesia	691	764	
Moldova	373	682	
Monaco	33	42	Destination code is the same as for France.
Mongolia	976	800	
Montserrat	1	396	
Morocco	21	407	
Mozambique	258	992	
Myanmar (formerly Burma)	95	83	
Namibia	264	908	
Nauru	674	775	

Telex/Telephone Country Code List

Area and Country	Telephone Country Code	Telex Country Code	Remarks for Telex Code
Nepal	977	891	
Netherlands	31	44	
Netherlands Antilles	599	390	
New Caledonia	687	706	
New Zealand	64	74	
Nicaragua	505	375	
Niger	227	975	2XXXX other numbers are for Semi-automatic calls.
Nigeria	234	905	
Niue Is.	683	776	
Northern Mariana Is.	670		
Norfolk Is.	672	766	
Norway	47	56	
Oman	968	498	
Pakistan	92	82	
Palau	680	763	
Panama	507	377	TRT subscribers
		378	AACR subscribers
		379	INTEL subscribers
Papua New Guinea	675	703	
Paraguay	595	305	
Peru	51	36	
Philippines	63	75	PHILCOM subscribers 2XXXX
			RCPI subscribers 7XXXX
			GMCR subscribers 4XXXX
			ETPI subscribers 6XXXX
			CAPWIRE subscribers 1XXXX
			For PTT subscribers, insert the figure "8" after the destination code "75".
Poland	48	63	Disregard the figure "0" at head of subscriber number.
Portugal	351	404	
Puerto Rico	1	205	RCA subscribers 2XXX
		206	ITT subscribers 345XXX
		207	C&W, WUI subscribers
		209	ACPR (PRCA) subscribers
Qatar	974	497	
Reunion	262	961	Subscriber numbers are 916XXX
Romania	40	65	Disregard the figure "0" at head of subscriber number.
Russian Federation	7	64	
Rwanda	250	909	
Saipan	670	760	
San Marino	378	505	
Sao Tome & Principe	239	967	Manual calls

Telex/Telephone Country Code List

Area and Country	Telephone Country Code	Telex Country Code	Remarks for Telex Code
Saudi Arabia	966	495	
Senegal	221	906	
Seychelles	248	965	
Sierra Leone	232	998	
Singapore	65	87	
Slovak	42	66	
Slovenia	386	598	
Solomon Is.	677	778	
Somalia	252	900	
South Africa	27	95	{ Cape Town subscribers XXXXXX Bophuthatswana subscribers 08XXXX Transkei subscribers 09XXXX
Spain	34	52	
Spanish North Africa	34	52	
Sri Lanka	94	803	
St. Helena	290	(960)	Manual calls 4XXX
St. Kitts & Nevis	1	397	
St. Lucia	1	398	
St. Pierre & Miquelon	508	204	
St. Vincent & the Grenadines	1	399	
Sudan	249	984	
Suriname	597	304	
Swaziland	268	964	
Sweden	46	54	
Switzerland	41	45	
Syria	963	492	
Tajikistan	7	787	
Taiwan	886	769	
Tanzania	255	989	
Thailand	66	86	
Togo	228	977	
Tokelau	690	762	
Tonga	676	777	
Trinidad & Tobago	296	294	
Tunisia	21	409	
Turkey	90	607	
Turkmenistan	7	789	
Turks & Caicos Is.	1	296	
Tuvalu	688	774	
U. A. E.	971	893	
Abu Dhabi			2XXXX, 3XXXX, 5XXXX
Ajman			695XX
Dubai			4XXXX
Fujairah			8XXXX
Ras Al Khaimah			9XXXX

Telex/Telephone Country Code List

Area and Country	Telephone Country Code	Telex Country Code	Remarks for Telex Code
Sharjah			68XXX
Umm Al Qaiwain			697XX
Uganda	256	988	
Ukraine	7	680	
United Kingdom	44	51	
United Arab Emirates	971	893	
Upper Volta	226	978	Same as "Burkina Faso".
Uruguay	598	32	
Uzbekistan	7	786	
U. S. A.	1	23	CCI subscribers 7XXXXXX ITT subscribers 4XXXXX, 4XXXXXX, 4XXXXXXXXXX RCA subscribers 2XXXXX WUI subscribers 6XXXX, 6XXXXX, 6XXXXXX TRT subscribers 1XXXXX, 1XXXXXXXXXX FTCC subscribers 8XXXX, 8XXXXX GRPHNET subscribers 36XXXXX, 37XXXXX For WUT subscribers, insert the figure "0" after the destination code "23".
U. S. A. (Mainland)		23	
		25	
U. S. S. R. (Former)	7	640	Russian Federation
Vanuatu	678	771	
Vatican	379	504	
Venezuela	58	31	
Viet Nam	84	805	Subscriber number beginning with 561XXX can be made using manual calls
Wallis & Futuna Is.	681	707	
Western Samoa	685	779	
Yemen	969	806	Formerly Yemen (P. D. Rep. of)
(Rep. of)	967	895	Formerly Yemen (Arab Rep.)
Yugoslavia (Former)	381	62	
Zaire	243	982	Telex calls to places other than Kinshasa Subscriber beginning with 2XXXX can be made as Semi-automatic calls.
Zambia	260	902	
Zanzibar	259	990	
Zimbabwe	263	907	
Ocean Area	Telephone Ocean Region Access Code	Telex Ocean Region Access	Remarks
AOR - W	874	584	Atlantic Ocean-W
AOR - E	871	581	Atlantic Ocean-E
POR	872	582	Pacific Ocean
IOR	873	583	Indian Ocean

LES Access Code List

(Information from Inmarsat)

(*1) (*2) (*3) (*4): Operational as of Aug. '95. See note below.

LES Name	AOR-E	POR	IOR	AOR-W	Remarks
Southbury (*2)(*5)	001			001	USA
Santa Paula (*3)		001			USA
Goonhilly (*3)	002			002	UK
Yamaguchi (*3)		003	003		Japan
Eik (*3)			004		Norway
Aussaguel (*3)	011		011		France
Burum (*3)	012		012		Netherland
Laurentides (*3)	013			013	Canada
Cape d'Aguilar (*3)		118	118		Hong Kong
Kuantan (*2)			060		Malaysia
Sentosa (*3)		210	210		Singapore
Perth (*3)		222	222		Australia
Comsat Eurasia (*2)(*5)			001		
Brunei (*1)		888	888		
UAE (*3)			123		

Note: (*1) TEL (Voice) service only
 (*2) TEL & B-FAX service available
 (*3) TEL, TLX, B-FAX service available
 (*4) TEL & TLX service available
 (*5) High Speed Data service available

Reference

NCS List

Sea Area	NCS Name	Operator
AOR-W	Southbury	Comsat
AOR-E	Southbury	Comsat
IOR	Thermopylae	OTE SA
POR	Santa Paula	Comsat

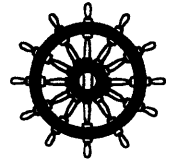
FURUNO®**FURUNO ELECTRIC CO., LTD.**

9-52 Ashihara-Cho, Nishinomiya City, 662-8580, Hyogo, Japan

Tel: +81 798-65-2111 Fax: +81 798-65-4200

Pub NO. DOC-235

Declaration of conformity to type

We **FURUNO ELECTRIC CO., LTD.**-----
(Manufacturer)

9-52 Ashihara-Cho, Nishinomiya City, 662-8580, Hyogo, Japan

(Address)

hereby declare under our sole responsibility that the product

Inmarsat-B satellite earth station models FELCOM 81A (Class 1) and FELCOM 81B (Class 2) consisting of Communication unit IB-281, Terminal unit IB-581, Antenna unit IB-181, Printer PP-510, Telephone PC622SL1, Junction box IB-312, Telex distress alert button IB-350, Telephone distress button IB-360, Receive call unit IC-301 and Credit card reader* MCT-1540-55

(Model names, type numbers)

to which this declaration relates conforms to the following standard(s) or normative document(s)

EN 60945: January 1997 (IEC 60945 Third edition: 1996-11)

IEC 61097-10: February 1999

(title and/or number and date of issue of the standard(s) or other normative document(s))

For assessment, see EC type-examination certificate N° KCS/99212009/AA/00 of 28 June 1999 issued by KCS Certification, Arnhem, The Netherlands

(* Item marked asterisks is not on the Certificate N° KCS/9921012/AA/00, but it was really tested with successful results.)

This declaration is issued according to the provisions of European Council Directive 96/98/EC on marine equipment modified by Commission Directive 98/85/EC.

On behalf of Furuno Electric Co., Ltd.

Hiroaki Komatsu
Manager,
International Rules and Regulations

Nishinomiya City, Japan
July 9, 1999

(Place and date of issue)-----
(name and signature or equivalent marking of authorized person)