FURUNO

OPERATOR'S MANUAL

CLASS A AIS

Model **FA-170**

PRODUCT NAME: U-AIS TRANSPONDER

FURUNO ELECTRIC CO., LTD.

ECF

(Elemental Chlorine Free)

The paper used in this manual
is elemental chlorine free.

FURUNO ELECTRIC CO., LTD.

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(GREG) FA-170

IMPORTANT NOTICES

General

- The operator of this equipment must read and follow the descriptions in this manual. Wrong operation or maintenance can cancel the warranty or cause injury.
- Do not copy any part of this manual without written permission from FURUNO.
- If this manual is lost or worn, contact your dealer about replacement.
- The contents of this manual and equipment specifications can change without notice.
- The example screens (or illustrations) shown in this manual can be different from the screens you see on your display. The screens you see depend on your system configuration and equipment settings.
- Save this manual for future reference.
- Any modification of the equipment (including software) by persons not authorized by FURUNO will cancel the warranty.
- All brand and product names are trademarks, registered trademarks or service marks of their respective holders.

How to discard this product

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

How to discard a used battery

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

In the European Union

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

Cd
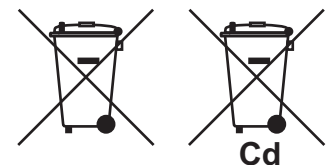
In the USA

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

Ni-Cd   **Pb**
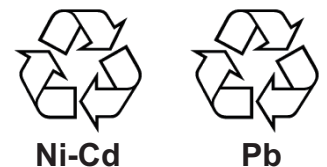
In the other countries

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

⚠ SAFETY INSTRUCTIONS

The operator must read the safety instructions before attempting to operate this equipment

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

⚠ Warning, Caution	🚫 Prohibitive Action	❗ Mandatory Action

⚠ WARNING

ELECTRICAL SHOCK HAZARD
Do not open the equipment.

Only qualified personnel should work inside the equipment.

Do not approach the antenna closer than listed below when it is transmitting.
The antenna emits radio waves that can be harmful to the human body.

RF power density on antenna aperture	Distance
100 W/m^2	N/A
10 W/m^2	0.04 m
2 W/m^2	0.09 m

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

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

Do not disassemble or modify the equipment.

Fire, electrical shock or serious injury can result.

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

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

Use the proper fuse.

Use of the wrong fuse can cause fire or permanent damage to the equipment.

⚠ WARNING

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

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

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

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

Do not operate the equipment with wet hands.

Electrical shock can result.

The glass of an LCD panel breaks easily. Handle the LCD carefully.

Injury can result if the glass breaks.

WARNING LABEL
A warning label is attached to the AC-DC power supply. Do not remove the label.
If the label is missing or damaged, contact a FURUNO agent or dealer about replacement.

⚠ WARNING ⚠
To avoid electrical shock, do not remove cover. No user-serviceable parts inside.
⚠   ⚠

Unit: PR-240 Power Supply
Name: Warning Label (1)
Type: 86-003-1011-3
CodeNo.: 100-263-233-10

About the TFT LCD

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

SYSTEM OVERVIEW

System overview

The Automatic Identification System (AIS) was originally developed to aid the Vessel Traffic Services (VTS) by use of a VHF transponder working on Digital Selective Call (DSC) at VHF CH70, and is still in use along the UK coastal areas and others. Some time later the IMO developed a Universal AIS using the new sophisticated technology called Self-Organized Time Division Multiple Access (SOTDMA) based on a VHF Data Link (VDL).

The system operates in three modes – autonomous (continuous operation in all areas), assigned (data transmission interval remotely controlled by authority in traffic monitoring service) and polled (in response to interrogation from a ship or authority). It is synchronized with GPS time to avoid conflict among multiple users (IMO minimum 2000 reports per minute and IEC requires 4500 reports on two channels). The VHF channels 87B and 88B are commonly used and in addition there are local AIS frequencies. Shipborne AIS transponders exchange various data as specified by the IMO and ITU on either frequency automatically set up by the frequency management telecommand received by the DSC receiver on ship.

Other ship1	
Transmits and receives static/dynamic data*	Own ship
	Own ship transmits static/dynamic data* → VTS Center
	← VTS Center sends various information including weather conditions and frequency assignments.
Other ship2	
Transmits and receives static/dynamic data*	

*: Static data - MMSI, Name, etc.
   Dynamic data - Position, bearing, COG, etc.
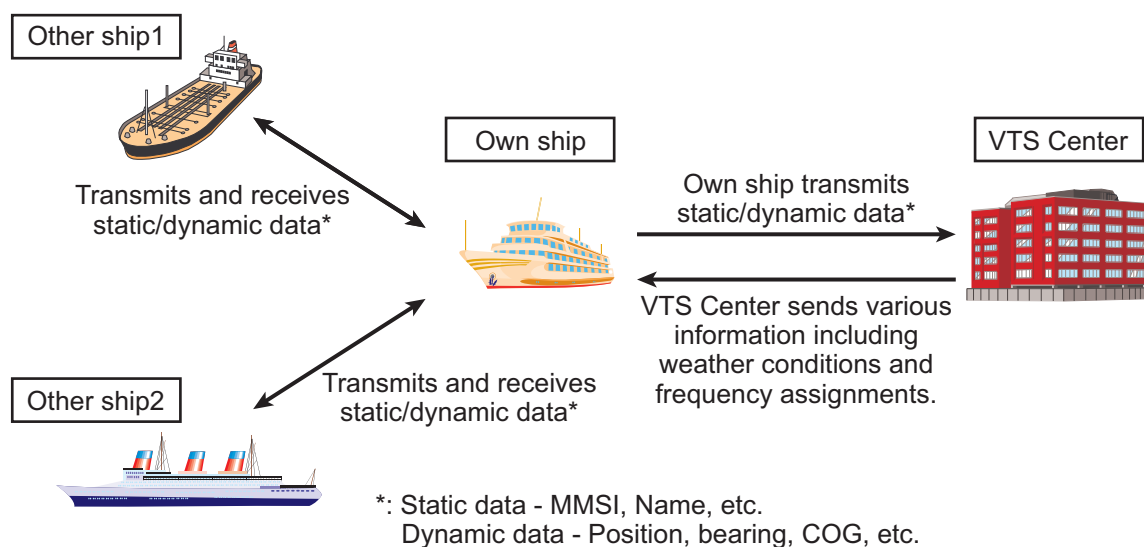
AIS system

Not all ships carry AIS

The Officer of the Watch (OOW) should always be aware that other ships, and in particular leisure craft, fishing boats and warships, and some coastal shore stations (including Vessel Traffic Service centers) might not be fitted with AIS.

The OOW should also be aware that AIS fitted on other ships as a mandatory carriage requirement might be switched off by the master if its use might compromise the security of the vessel. Thus, users are therefore cautioned to always bear in mind that information provided by AIS may not be giving a complete or correct "picture" of shipping traffic in their vicinity.

Use of AIS in collision avoidance

As an anti-collision aid, the AIS has the following advantages over radar:

- Information provided in near real-time
- Capable of instant presentation of target course alterations
- Not subject to target swap
- Not subject to target loss in clutter
- Not subject to target loss due to abrupt maneuvers
- Able to "detect" ships within VHF/FM coverage, including in some circumstances, around bends and behind islands.

When using the AIS for anti-collision purposes it is important to remember that the AIS is an additional source of navigation information. It does not replace other navigational systems. The AIS may not be giving a complete or correct "picture" of shipping traffic in its vicinity.

The use of the AIS does not negate the responsibility of the OOW to comply with all collision regulation requirements, especially the maintaining of a proper look-out. The prudent navigator uses all aids available to navigate the ship.

Erroneous information

Erroneous information implies a risk to other ships as well as your own. Poorly configured or improperly calibrated sensors might lead to incorrect information being transmitted. It is the user's responsibility to ensure that all information entered into the system is correct and up to date.

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FOREWORD

A Word to the Owner of the FA-170

FURUNO Electric Company thanks you for purchasing the FA-170 AIS Transponder. We are confident you will discover why the FURUNO name has become synonymous with quality and reliability.

Since 1948, FURUNO Electric Company has enjoyed an enviable reputation for quality and reliability throughout the world. This dedication to excellence is furthered by our extensive global network of agents and dealers.

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

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

Thank you for considering and purchasing FURUNO.

Features

The FA-170 is a universal AIS (Automatic Identification System) for open sea and inland waterways, capable of exchanging navigation and ship data between own ship and other ships or coastal stations.

It complies with IMO MSC.74(69) Annex 3, IMO MSC.302(87), A.694, ITU-R M.1371-5 and DSC ITU-R M.825. It also complies with IEC 61924-2, IEC 61993-2 (Type testing standard) and IEC 60945 Ed. 4 (EMC and environmental conditions).

The FA-170 consists of VHF and GPS antennas, a transponder unit, a monitor unit, and several associated units. The transponder contains a VHF transmitter, two TDMA receivers on two parallel VHF channels, a DSC channel 70 receiver, interface, communication processor, and internal GPS receiver. The internal GPS is a 12-channel all-in-view receiver with a differential capability, and provides UTC reference for system synchronization to eliminate clash among multiple users. It also gives position, COG and SOG when the external GPS fails.

The main features are:

- Safety of navigation by automatically exchanging navigational data between ships and between ship and coast
- Static data:
  - MMSI (Maritime Mobile Service Identity)
  - IMO number (where available)
  - Call sign & name
  - Length and beam
  - Type of ship
  - Location of position-fixing antenna on the ship

- Dynamic data:
  - Ship's position with accuracy indication and integrity status
  - Universal Time Coordinated (UTC)
  - Course over ground (COG)
  - Speed over ground (SOG)
  - Heading
  - Rate of turn (ROT) where available

- Voyage-related data
  - Ship's draught
  - Navigational Status (manual input)
  - Hazardous cargo (type)
  - Destination and ETA (at master's discretion)

- Short safety-related messages, free messages

- LCD panel satisfies the IMO minimum requirements plus simple plotting modes

- Interfaces for radar, ECDIS, PC for future networking expansion

- GPS/VHF combined antenna for easy installation available

- Built-in GPS receiver for UTC synchronization and backup position-fixing device

- The Inland AIS feature is based on CCNR (Vessel Tracking and Tracing Standard for Inland Navigation). Inland AIS receives and sends SOLAS AIS information, and interfaces automatic data input such as blue sign, draught (in centimeters), air draught (height from waterline), hazardous cargo blue cone indication, euro ship identifier and inland ship type. Further, the inland AIS sends ETA (Estimated Time of Arrival) to lock, bridge, terminal, etc. and displays response as RTA (Requested Time of Arrival) from the lock, bridge or terminal. Information receivable from land stations include EMMA warning, water level data, etc.

Program Numbers

Unit & PC board	Program No.	Version No.	Date of modification
Monitor Unit (MAIN: 20P8200D)	0550256	01.××	
Transponder Unit (R-MOD: 05P0892)	0550255	01.××	
Transponder Unit (GPS: 20P8211)	48504650	××	

××: Minor modification

SYSTEM CONFIGURATION

OR

GPS antenna
GPA-017S

VHF antenna

VHF antenna

GPS/VHF
combined antenna
GVA-100-T

Distributor unit
DB-1

MONITOR UNIT
FA-1702
(two units may
be connected)

TRANSPONDER UNIT
FA-1701

External display, NavNet2,
NavNet 3D, Pilot plug (FA-1703),
Sensor

Alarm system

Beacon receiver

LAN

Blue Sign

Power supply
PR-240

———— : Standard supply

-------- : Optional or local supply

100/110/115/200/
220/230 VAC
1ø, 50/60Hz

24 VDC

12-24 VDC

GPS-017S	Exposed to the weather
GVA-100-T	Exposed to the weather
FA-1701	Protected from the weather
FA-1702	Protected from the weather
DB-1	Protected from the weather
PR-240	Protected from the weather

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x

1. OPERATION

1.1 Description of Controls

No.	Key name	Function(s) when pressed
1	**BRILL** key	• Displays brilliance setting pop-up window. • Switches between Day and Night display modes.
2	**DISP** key	• Cycles through display screens. • Switches between Day and Night display modes when brilliance pop-up window is active. • Closes all active menu windows and returns to the last used display screen.
3	**MENU/ESC** key	• Opens the menu. • Goes back one layer in the menu. • Closes the settings screen, when displayed, and returns to the menu.
4	Power key ⏻	• Short press to turn the unit on. • Long press to turn the unit off.
5	**NAV STATUS** key	Opens the [NAV STATUS] settings window.
6	**ENT/ACK** key	• Confirms the currently selected item on the menu. • Confirms adjusted settings. • Acknowledge alerts.
7	Arrow keys	• Move the selection cursor. • Plotter display: ◄ or ► changes display range. • TARGET LIST display: ◄ or ► changes pages. • OWN INFORMATION display: ◄ or ► switches between information tabs. • ALERT display: ◄ or ► switches between the alert list and the alert log. ▲ or ▼ selects an alert.

Note: The nominal viewing distance is 70 cm.

This manual uses the following terminology for the sake of brevity:

Terminology	Example	Meaning
Select	Select [MSG].	Use the arrow keys to select [MSG].
◄, ▲, ►, ▼	Press ►.	Press the corresponding arrow key.

1.2 How to Turn the Power On and Off

Press the power key ⏻ to turn the equipment on. When powered, the equipment sounds a beep then proceeds in the sequence shown below.

To turn the power off, press and hold the power key ⏻.
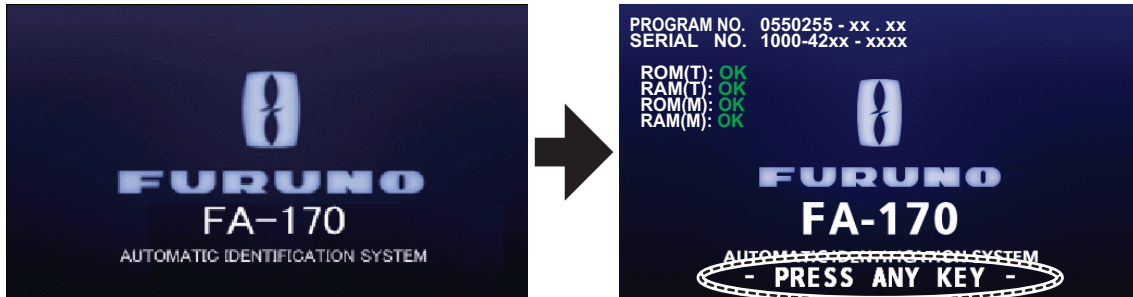
This indication flashes to show the unit is ready for use. The automatic startup test results are displayed when tests are completed.

Indication	Description
PROGRAM NUMBER	Displays the program number for this FA-170. The indication "XX.XX" is replaced with the version number.
SERIAL NUMBER	Displays the serial number for this FA-170.
ROM(T) / RAM(T)	Displays the ROM/RAM test results for the connected FA-1701.
ROM(M) / RAM(M)	Displays the ROM/RAM test results for the FA-1702.

The startup screen displays the program version number, serial number and the results of the ROM and RAM data test, showing "OK" or "NG" (No Good) as the result. The message "- PRESS ANY KEY -" flashes to indicate that the test is complete. Press any key to close the test results. If "NG" appears for any of the check results after the startup test is completed, contact your dealer for advice.

When no errors occur at startup, the plotter display is shown after the test is completed.

If there is no response from the transponder unit or AIS symbols do not appear, the message "COMMUNICATION ERROR" appears on the screen. Press any key to erase the message. Check the connection between the monitor unit and the transponder unit.

The FA-170 should be powered while underway or at anchor. The master may switch off the AIS if he believes that the continual operation of the AIS might compromise the safety or security of his ship. The AIS should be restarted when it is safe to do so.

The equipment transmits own ship static data within two minutes of start-up and it is transmitted at six-minute intervals thereafter. Static data includes MMSI number, IMO number, call sign, ship name, ship length and width, ship type and GPS antenna position.

In addition to static data, ship's dynamic data is also transmitted. This data includes position with quality indication, SOG, COG, rate of turn, heading, etc. Dynamic data is transmitted every 2 seconds to 3 minutes depending on ship's speed and course change. Voyage-related data, such as ship's draught, hazardous cargo, destination and estimated time of arrival, are also transmitted at six-minute intervals.

The FA-170 starts receiving data from AIS-equipped ships as soon as it is turned on, and those ships' locations are shown on the plotter display with the AIS symbol. (To learn more about the plotter display, see section 1.8.) With connection of a radar or ECDIS, the AIS target symbols may be overlaid on the radar or ECDIS.

Note 1: If no navigation sensor is installed or a sensor such as a gyrocompass has failed, the AIS automatically transmits "not available data" to AIS-equipped ships.

Note 2: The reporting intervals are as follows:

Ship's navigational status	Nominal reporting interval
Ship at anchor or moored or aground or not under command and not moving faster than 3 kn	3 minutes
Ship at anchor or moored or aground or not under command and moving faster than 3 kn	10 seconds
Ship speed 0-14 kn	10 seconds
Ship speed 0-14 kn and changing course	3 1/3 seconds
Ship speed 14-23 kn	6 seconds
Ship speed 14-23 kn and changing course	2 seconds
Ship speed faster than 23 kn	2 seconds
Ship speed faster than 23 kn and changing course	2 seconds

Note 3: The screen refreshes slower in low ambient temperature.

1.3   How to Adjust the Panel and Display Brilliance

The panel and display brilliance may be adjusted as follows:

1. Press the **BRILL** key to show the [BRILL LEVEL SETUP] pop up window.
    If there is no operation within five seconds, the pop up window automatically closes.
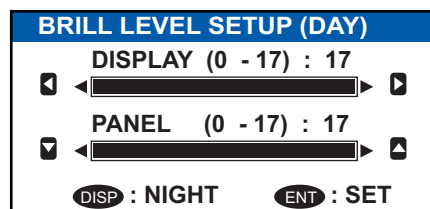
2. Press ▲ or ▼ to adjust the panel brilliance; ◄ or ► to adjust the display brilliance. The default panel and display brilliance settings are 15 and 15, respectively. To restore default settings see "How to Restore Default Settings" on page 3-10.)
    Note: The display brilliance can also be adjusted by pressing the **BRILL** key several times to cycle through brilliance levels.

3. Press the **ENT/ACK** key to close the setting screen and apply the settings.

How to switch between day and night displays

1. Press the **BRILL** key to show the [BRILL LEVEL SETUP] pop up window.

2. Press the **DISP** key while the pop up window is shown. The pop up window closes and the display settings change.

3. Repeat the procedure to reverse the settings.

1.4   Display Overview

The FA-170 display is made up of three major areas, as indicated in the Plotter display example figure below.

Status bar

Currently selected display or menu is shown in the middle section of the screen.
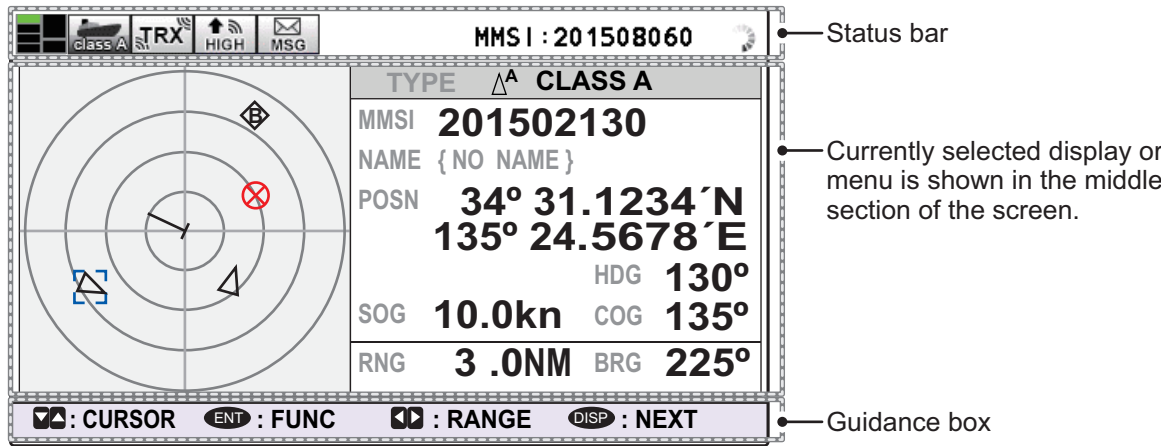
Guidance box

The guidance box contents change according to the currently selected display or menu.

The status bar shows various icons indicating the status of the equipment and shows the vessel's own MMSI. The icons which can be displayed in the status bar are listed in the table below, along with a brief description.

Icon	Icon name	Description
	Operational status	The dotted line rotates in a clockwise motion to indicate that the equipment is working normally.
	Contents mini-map	Shows the location of the currently selected menu/display, indicated as a green box in the mini-map. The figure below shows the "locations", as displayed in the mini-map.
	Class A AIS mode	Displayed when the equipment is using Class A AIS mode.
	SOLAS AIS mode	Displayed when the equipment is using SOLAS AIS mode.
	INLAND AIS mode	Displayed when the equipment is using INLAND AIS mode.
	RX (Receive)	Displayed when both A and B channel are set to receive mode (includes OFF). Shown only with CLASS A and INLAND AIS modes.
	TRX (Transmit)	Displayed when either channel A or B are set to transmit mode. Shown only with CLASS A and INLAND AIS modes.
	HIGH (power)	Displayed when the transmit power level is set to [HIGH].

Icon	Icon name	Description
LOW	LOW (power)	Displayed when the transmit power level is set to [LOW].
SEND	SEND	Displayed during message transmission. Not displayed when routine messages are transmitted.
MSG	MSG	Displayed when there are unread messages.
MMSI	MMSI	Own ship MMSI.

1.5 Menu Overview

You can access the various functions of your FA-170 from the menu. If you get lost in operation, press the **MENU/ESC** key until you return to the main menu. A complete menu tree is provided in "MENU TREE" on page AP-1.

Note: Inland AIS mode menus may differ from the menus shown in this chapter. For INLAND AIS mode, see "INLAND AIS OPERATION" on page 2-1.

1.5.1 Menu operating procedure

1. Press the **MENU/ESC** key to display the main menu.

```
MENU
1 MSG          ▶
2 STATUS       ▶
3 USER SET     ▶
4 INITIAL SET  ▶
5 CH INFO      ▶
6 DIAGNOSTICS  ▶
  SERVICE
```
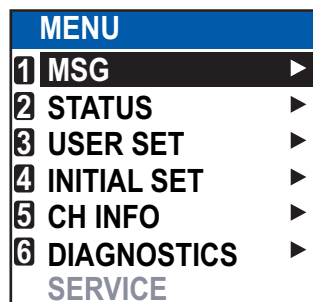
2. Select a main menu item, then press the **ENT/ACK** key.

3. Select a sub-menu then press the **ENT/ACK** key.
   There are two types of sub-menus: option selection and data input. (Some sub-menus combine both.) Below are examples of each type of sub-menu.
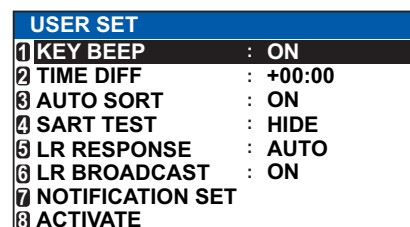
```
USER SET
1 KEY BEEP       : ON
2 TIME DIFF      : +00:00
3 AUTO SORT      : ON
4 SART TEST      : HIDE
5 LR RESPONSE    : AUTO
6 LR BROADCAST   : ON
7 NOTIFICATION SET
8 ACTIVATE
```
USER SET sub-menu (Option selection)

```
TEST TARGET MMSI
      ▲
  000000000
      ▼
```
TEST TARGET MMSI sub-menu
(Numeric input)

4. Select a menu item then press the **ENT/ACK** key.

5. Depending on the menu selected, select an option or input alphanumeric data, then press the **ENT/ACK** key.

6. Press the **DISP** key to close the menu.

1.5.2 How to select a menu option

The example below shows how to select an option from a menu.

1) A window showing the options for the item selected is overlaid on the sub-menu. For example, the options for [KEY BEEP] are as shown below.
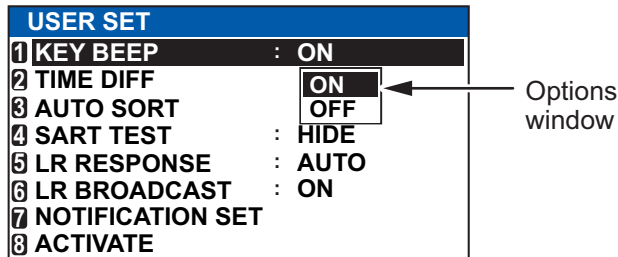
2) Press ▲ or ▼ to select option desired, then press the **ENT/ACK** key.

1.5.3 How to enter numeric data

The example below shows how to enter numeric data.
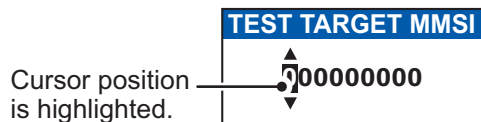
1) Select the appropriate numeric character. Press ▲ to display numeric characters cyclically in ascending order. Press ▼ to display numeric characters cyclically in descending order.

2) Press ◄ or ► to shift the cursor.

3) Repeat steps 1) and 2) to finish entering data.

4) After entering all data, press the **ENT/ACK** key to register input.

1.5.4 How to use the software keyboard for alphanumeric input

The software keyboard appears when alphanumeric input is possible. Software keyboard operation requires the use of the arrow keys and the **ENT/ACK** key.
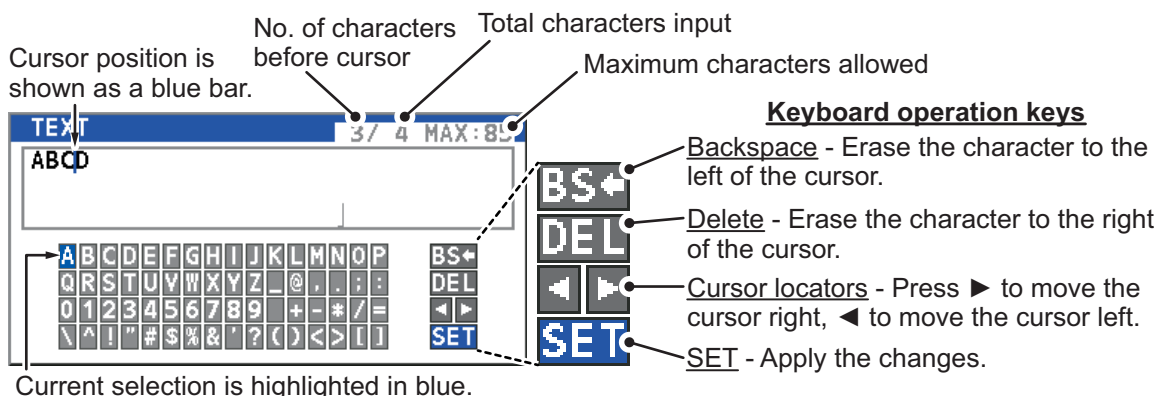
1. Referring to the figure above, press the arrow keys to select a character or keyboard operation.

2. Press the **ENT/ACK** key to confirm your selection.

3. Repeat steps 1 and 2 to completed the alphanumeric input.

4. Select [SET], then press the **ENT/ACK** key.

1.6 How to Enter Voyage-Related Data

There are six items on the [NAV STATUS] menu that you will need to enter at the start of a voyage.

- Navigational Status
- Cargo type
- ETA(LT/UTC) (Arrival time)
- Destination
- No. of persons
- Draught

1. Press the **NAV STATUS** key to open the [NAV STATUS] menu.
   The [NAV STATUS] setting is selected by default

```
NAV STATUS
NAV STATUS      : 12  PWR-DRIVEN VESSEL PUSHING
                      AHEAD OR TOWING ALONGSIDE

DESTINATION     : KOBE
                   [DESTINATION LIST]
ETA[UTC]        : 12/MAY  12:32
CARGO TYPE      : 24  WIG
                     CARRYING DG, HS, OR, MP(OS)
DRAUGHT         : 0 . 0m
NO. OF PERSONS  : 1
▲▼: CURSOR    ENT : SELECT    ◄►: TAB
```

2. If your navigational status is different from that shown, follow the procedure below. If it is the same as shown, go to step 3.

   1) Press the **ENT/ACK** key. The [NAV STATUS] options pop up window appears.

   2) Input the appropriate status, then press the **ENT/ACK** key. Refer to the data below to select appropriate navigational status.

00: UNDERWAY USING ENGINE
01: AT ANCHOR
02: NOT UNDER COMMAND
03: RESTRICTED MANEUVERABILITY
04: CONSTRAINED BY HER DRAUGHT
05: MOORED
06: AGROUND
07: ENGAGED IN FISHING
08: UNDERWAY SAILING
09: RESERVED FOR HIGH SPEED CRAFT (HSC)[1]
10: RESERVED FOR WING IN GROUND (WIG)[2]
11: PWR-DRIVEN VESSEL TOWING ASTERN
12: PWR-DRIVEN VESSEL PUSHING AHEAD OR TOWING ALONGSIDE
13: RESERVED FOR FUTURE USE
14: AIS-SART (ACTIVE), MOB-AIS, EPIRB-AIS[3]
15: DEFAULT (ALSO USED BY SART, MOB, EPIRB UNDER TEST)

[1]: RESERVED FOR FUTURE AMENDMENT OF NAVIGATIONAL STATUS FOR SHIPS CARRYING DG, HS, OR MP, OR IMO HAZARD OR POLLUTANT CATEGORY C, HIGH SPEED CRAFT (HSC)

[2]: RESERVED FOR FUTURE AMENDMENT OF NAVIGATIONAL STATUS FOR SHIPS CARRYING DANGEROUS GOODS (DG), HARMFUL SUBSTANCES (HS) OR MARINE POLLUTANTS (MP), OR IMO HAZARD OR POLLUTANT CATEGORY A, WING IN GRAND (WIG)

[3]: Not selectable for this type of equipment.

3. Select [DESTINATION], then press the **ENT/ACK** key. The software keyboard appears for direct input.
   Enter the desired destination then press the **ENT/ACK** key. You can use up to 20 alphanumeric characters and enter up to 20 destinations.
   A list of destinations can also be accessed by selecting [DESTINATION LIST].

Operation selection bar -----
Destinations
```
DESTINATION LIST
<SET> <EDIT>                    <CUT> <COPY> <PASTE>
       DESTINATION                          01 / 20
01 : SEATTLE
02 : OSAKA
03 : SAN FRANCISCO
04 : YOKOHAMA
05 : BRISBANE
06 : ABERDEEN
07 :      = NO ENTRY =
08 :      = NO ENTRY =
▲▼: CURSOR   ENT : EXEC   ◄►: FUNC   MENU : BACK
```

Referring to operation descriptions in the table below, press ◀or ▶ to select an operation, press ▲ or ▼ to select an entry in the list, then press the **ENT/ACK** key to confirm the selection.

Operation	Description
<SET>	Set the currently selection as the destination.
<EDIT>	Rename the selected destination.
<CUT>	Cut the current selection to temporary memory, leaving the entry empty. The destination can now be pasted as a different entry.
<COPY>	Copy the current selection to temporary memory. The destination can now be pasted as a different entry.
<PASTE>	Paste the entry in temporary memory. **Note 1:** Only one entry can be stored in temporary memory at a time. If you <CUT> two entries successively, the first is deleted. **Note 2:** Entries over-written with <PASTE> cannot be restored.

4. Select [ETA (LT/UTC)], then press the **ENT/ACK** key. The settings pop up window shown below appears.

Note 1: The ETA indication appears as "ETA [LT]" when there a time offset is set from [TIME DIFF] in the [USER SET] menu. When the setting for [TIME DIFF] is not changed from the default (+00:00) setting, the ETA indication appears as "ETA [UTC]".

Note 2: Where a GPS is not connected, or the signal is lost/interrupted, the ETA indication appears as ETA [UTC]. Further, the settings pop up window displays "NOTE: INPUT THE UTC" at the bottom of the pop up window.

5. Set the ETA date and time, referring to the figure above, then press the **ENT/ACK** key.

6. Select [CARGO TYPE], then press the **ENT/ACK** key. The settings pop up window shown below appears.

7. Select type of vessel/cargo, referring to the table on the following page, then press the **ENT/ACK** key.

Note 1: Only the second digit for the type of vessel is entered here; the first digit is entered on the [INITIAL SET] menu, during installation.

Note 2: When [Tanker] is selected and the Nav status is [Moored], output power is automatically switched to 1 W when SOG is less than 3 knots. Further, in the above condition, when SOG becomes higher than 3 knots, a beep sounds. (The pop-up message "TX POWER CHANGED" also appears to notify you that the Tx power has changed). To erase the pop-up message, press the **ENT/ACK** key or reduce SOG to below 3 knots.

10	FUTURE USE	ALL SHIPS OF THIS TYPE	60	PASSENGER SHIPS	ALL SHIPS OF THIS TYPE

Content table:

#	Type	Info
10	FUTURE USE	ALL SHIPS OF THIS TYPE
11	FUTURE USE	CARRYING DG, HS, OR MP(X)
12	FUTURE USE	CARRYING DG, HS, OR MP(Y)
13	FUTURE USE	CARRYING DG, HS, OR MP(Z)
14	FUTURE USE	CARRYING DG, HS, OR MP(OS)
15	FUTURE USE	
16	FUTURE USE	
17	FUTURE USE	
18	FUTURE USE	
19	FUTURE USE	NO ADDITIONAL INFORMATION
20	WIG	ALL SHIPS OF THIS TYPE
21	WIG	CARRYING DG, HS, OR MP(X)
22	WIG	CARRYING DG, HS, OR MP(Y)
23	WIG	CARRYING DG, HS, OR MP(Z)
24	WIG	CARRYING DG, HS, OR MP(OS)
25	WIG	FUTURE USE
26	WIG	FUTURE USE
27	WIG	FUTURE USE
28	WIG	FUTURE USE
29	WIG	NO ADDITIONAL INFORMATION
30	FISHING	
31	TOWING	
32	LENGTH OF THE TOW EXCEEDS 200M OR BREADTH EXCEEDS 25M	
33	ENGAGED IN DREDGING OR UNDERWATER OPERATIONS	
34	ENGAGED IN DIVING OPERATIONS	
35	ENGAGED IN MILITARY OPERATIONS	
36	SAILING	
37	PLEASURE CRAFT	
38	FUTURE USE	
39	FUTURE USE	
40	HSC	ALL SHIPS OF THIS TYPE
41	HSC	CARRYING DG, HS, OR MP(X)
42	HSC	CARRYING DG, HS, OR MP(Y)
43	HSC	CARRYING DG, HS, OR MP(Z)
44	HSC	CARRYING DG, HS, OR MP(OS)
45	HSC	FUTURE USE
46	HSC	FUTURE USE
47	HSC	FUTURE USE
48	HSC	FUTURE USE
49	HSC	NO ADDITIONAL INFORMATION
50	PILOT VESSEL	
51	SEARCH AND RESCUE VESSELS	
52	TUGS	
53	PORT TENDERS	
54	VESSELS WITH ANTI-POLLUTION FACILITIES OR EQUIPMENT	
55	LAW ENFORCEMENT VESSELS	
56	SPARE-FOR ASSIGNMENTS TO LOCAL VESSELS	
57	SPARE-FOR ASSIGNMENTS TO LOCAL VESSELS	
58	MEDICAL TRANSPORTS	
59	SHIPS & AIRCRAFT OF STATES NOT PARTIES TO AN ARMED CONFLICT	
60	PASSENGER SHIPS	ALL SHIPS OF THIS TYPE
61	PASSENGER SHIPS	CARRYING DG, HS, OR MP(X)
62	PASSENGER SHIPS	CARRYING DG, HS, OR MP(Y)
63	PASSENGER SHIPS	CARRYING DG, HS, OR MP(Z)
64	PASSENGER SHIPS	CARRYING DG, HS, OR MP(OS)
65	PASSENGER SHIPS	FUTURE USE
66	PASSENGER SHIPS	FUTURE USE
67	PASSENGER SHIPS	FUTURE USE
68	PASSENGER SHIPS	FUTURE USE
69	PASSENGER SHIPS	NO ADDITIONAL INFORMATION
70	CARGO SHIPS	ALL SHIPS OF THIS TYPE
71	CARGO SHIPS	CARRYING DG, HS, OR MP(X)
72	CARGO SHIPS	CARRYING DG, HS, OR MP(Y)
73	CARGO SHIPS	CARRYING DG, HS, OR MP(Z)
74	CARGO SHIPS	CARRYING DG, HS, OR MP(OS)
75	CARGO SHIPS	FUTURE USE
76	CARGO SHIPS	FUTURE USE
77	CARGO SHIPS	FUTURE USE
78	CARGO SHIPS	FUTURE USE
79	CARGO SHIPS	NO ADDITIONAL INFORMATION
80	TANKER(S)	ALL SHIPS OF THIS TYPE
81	TANKER(S)	CARRYING DG, HS, OR MP(X)
82	TANKER(S)	CARRYING DG, HS, OR MP(Y)
83	TANKER(S)	CARRYING DG, HS, OR MP(Z)
84	TANKER(S)	CARRYING DG, HS, OR MP(OS)
85	TANKER(S)	FUTURE USE
86	TANKER(S)	FUTURE USE
87	TANKER(S)	FUTURE USE
88	TANKER(S)	FUTURE USE
89	TANKER(S)	NO ADDITIONAL INFORMATION
90	OTHER TYPE OF SHIP	ALL SHIPS OF THIS TYPE
91	OTHER TYPE OF SHIP	CARRYING DG, HS, OR MP(X)
92	OTHER TYPE OF SHIP	CARRYING DG, HS, OR MP(Y)
93	OTHER TYPE OF SHIP	CARRYING DG, HS, OR MP(Z)
94	OTHER TYPE OF SHIP	CARRYING DG, HS, OR MP(OS)
95	OTHER TYPE OF SHIP	FUTURE USE
96	OTHER TYPE OF SHIP	FUTURE USE
97	OTHER TYPE OF SHIP	FUTURE USE
98	OTHER TYPE OF SHIP	FUTURE USE
99	OTHER TYPE OF SHIP	NO ADDITIONAL INFORMATION

WIG: Wing in ground
HSC: High speed craft
DG: Dangerous goods
HS: Harmful substances
MP: Marine pollutants
0-9: Undefined

8. Select [DRAUGHT], then press the **ENT/ACK** key.
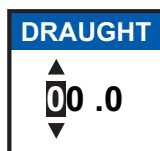
DRAUGHT
▲
00 .0
▼

9. Input the ship's draught (setting range: 0 m to 25.5 m) then press the **ENT/ACK** key.

10. Select [NO. OF PERSONS], then press the **ENT/ACK** key.
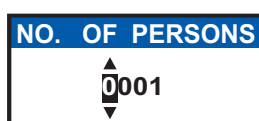
NO. OF PERSONS
▲
0001
▼

11. Input total number of persons aboard the ship (setting range: 0-8191) then press the **ENT/ACK** key. Enter 8191 for total greater than 8190.

12. Press the **DISP** key to close the menu.

1-9

1.7   How to Set the Notification

The [NOTIFICATION SET] menu is used to set the following items:

• Enable or disable the alert buzzer.

• Notifications for received [ADDRESSED] and [BROADCAST] messages.

• Notifications for collision detection.

To change the settings in the [NOTIFICATION SET] menu, do the following:

1. Press the **MENU/ESC** key to open the main menu.

2. Select [USER SET], then press the **ENT/ACK** key.

3. Select [NOTIFICATION SET], then press the **ENT/ACK** key. The [NOTIFICATION SET] screen appears.

4. Select the [BUZZER] item below [ALERT], then press the **ENT/ACK** key. The settings pop up window appears.

```
┌─────────────────────────────────────────────┐
│ NOTIFICATION SET                             │
│ [ALERT]                                      │
│   BUZZER          :  ON                      │
│ [RX MESSAGE]                                 │
│   ADDRESSED       :  POPUP                   │
│   BROADCAST       :  POPUP + BUZZER          │
│ [COLLISION DETECT ]                          │
│   INDICATION      :  POPUP                   │
│                                              │
│                                              │
│ ⬆⬇ : CURSOR   ENT : SELECT        ENT : BACK │
└─────────────────────────────────────────────┘
```

5. Select [ON] to enable the alert buzzer, or select [OFF] to disable the alert buzzer, then press the **ENT/ACK** to confirm the setting.

6. Select the [ADDRESSED] item below [RX MESSAGE], then press the **ENT/ACK** key. The settings pop up window appears.

7. Select the appropriate setting, referring to the table below, then press the **ENT/ACK** key.

Setting	Description
POPUP + BUZZER	Enable both the pop up indication and the buzzer.
POPUP	Enable only the pop up indication. (No buzzer.)
OFF	Disable notifications.

8. Set the notifications for [BROADCAST] RX messages and [COLLISION DETECT] in the same manner.

9. Press the **DISP** key to close the menu.

1.8 How to Select a Display

Use the **DISP** key to select a display. Each time the key is pressed, the display changes in the sequence shown below.
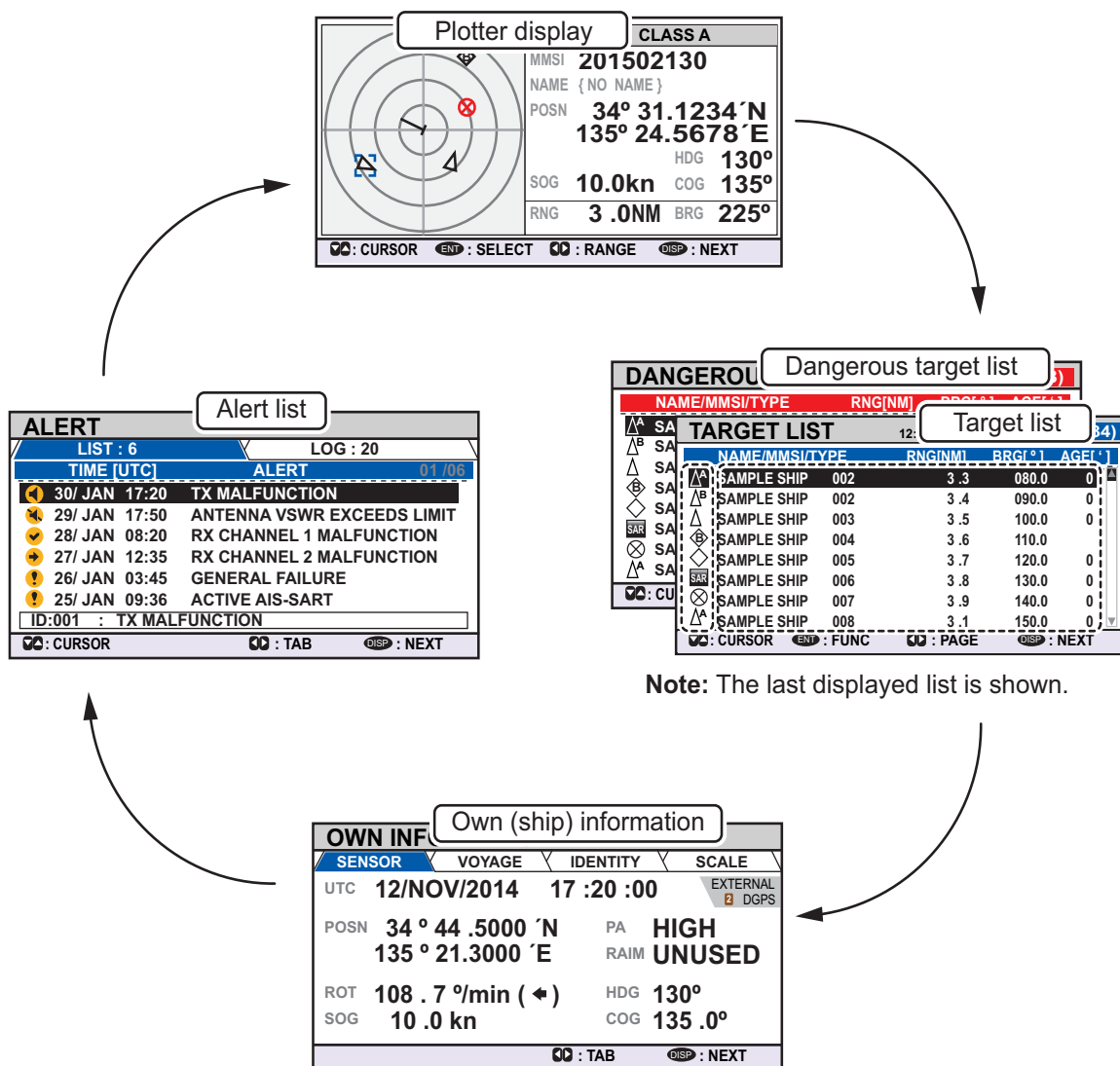
Note: The last displayed list is shown.

The [DANGEROUS LIST] and [TARGET LIST] are displayed dependent on which list was last displayed. For example, if the [DANGEROUS LIST] is viewed at any time, the [TARGET LIST] is hidden in the above cycle and can only be viewed by sorting the [DANGEROUS LIST]. See section 1.8.2 for details.

1.8.1 Plotter display

The plotter display, which automatically appears after the power-on sequence, shows various information for AIS-equipped ships, AIS-SARTs, etc. within the range selected.

Data for ship target

A target marker (hollow triangle) indicates the presence of a vessel equipped with AIS in a certain location and course. To view detailed information about a vessel, see paragraph 1.8.2.

If two or more targets occupy a similar position, the display priority order is: selected target (surrounded by a broken box, as shown in the example below) > non-selected target.

Target type
(CLASS A, CLASS B, BS, AtoN, SAR, AIS-SART, MOB-AIS, EPIRB-AIS, INLAND)

DANGER is displayed here when a target is calculated to be on a collision course with your vessel. If no signal is received from target, LOST is displayed. The target data is deleted seven minutes after the loss of signal from the target.

Key guidance bar

↘	Own Ship symbol
◿ (blue)	Selected target
⊗	AIS-SART
◿	Target (black)
⬦	Base station

For a full list of AIS icons, and their meanings, see Appendix 5, at the back of this manual.

MMSI: Target's MMSI
NAME: Target vessel's name (if available)
POSN: Target's last known position
HDG: Target's heading
SOG: Target's Speed Over Ground
COG: Target's Course Over Ground
RNG: Range to target from Own Ship
BRG: Bearing to target

How to operate the plotter display

1. Press the **DISP** key to show the plotter display.

2. Press ◀ or ▶ to select a range. The available ranges are (in nm): 0.125, 0.25, 0.5, 0.75, 1.5, 3, 6, 12, and 24.

3. Press ▲ or ▼ to select a target. The selected target is highlighted in a blue colored broken box. Further, the selected target's basic data are displayed on the right-side of the screen.

4. To view a target's detailed data, or to sort the target list, select the desired target, then press the **ENT/ACK** key. The [FUNCTION] pop up window appears.

- [SORT (NORMAL)]: Press ◀ to display and sort the [TARGET LIST] into range order.

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- [SORT (DANGER)]: Press ▶ to display and sort the [DANGEROUS TARGET LIST] in range order.
  Note: When [SORT (DANGER)] is selected, all non-dangerous targets are hidden on the plotter display and the plotter screen is surrounded by a red box, as shown in the figure below.

Plotter surrounded by red line. Only dangerous targets are displayed.
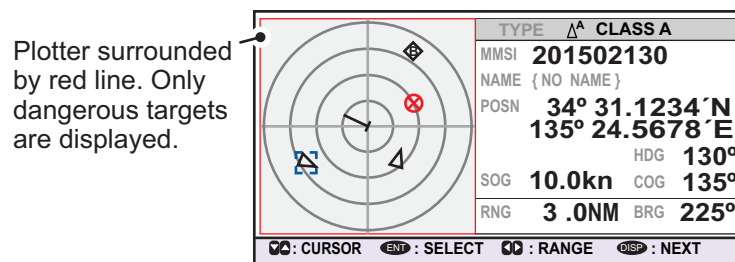
To show any targets which were hidden by this option, select [SORT (NORMAL)] from the [FUNCTION] pop up window.

- [VIEW DETAIL]: Press the **ENT/ACK** key to open the [TARGET DETAIL] screen.

- [NEW MSG]: Press ▲ to open the text input window to create an AIS message to the selected target.

- [NAME REQUEST]: Press ▼ to send a name request to the target vessel's AIS.
  Note: Name requests cannot be sent to the same target within a short period, regardless of target. If you have requested the name of a target too soon after the last request, the pop up message "CANNOT REQUEST NAME" appears. Wait a short while before requesting the name again.

Note 1: A target is declared a lost target under the conditions shown in the table below. A target is erased from the screen seven minutes (For AIS-SART, 18 minutes) after no signal is received from the target.

Ship's navigational status	Target declared as lost target after:
Class A	
Ship at anchor or moored or aground or not under command and not moving faster than 3 kn.	7 minutes
Ship at anchor or moored or aground or not under command and moving at more than 3 kn.	50 seconds
0 to 14 kn speed	50 seconds
0 to 14 kn speed with course change	50 seconds
14 to 12 kn speed	30 seconds
14 to 12 kn speed with course change	30 seconds
Speed higher than 23 kn	10 seconds
Speed higher than 23 kn with course change	10 seconds
Class B	
Speed over ground less than 2 kn	7 minutes
Speed over ground 2 kn or higher	150 seconds

Note 2: When a target is considered to be on a collision course, the audible alert sounds (if active). Take suitable measures to avoid collision.

Note 3: "DANGER" appears next to the target type when a target is considered to be on a collision course. Further, when a target becomes a lost target, "LOST" appears next to the target type.

1. OPERATION

1.8.2 Target list

The [TARGET LIST] can store up to 2048 AIS targets and AIS-SARTs being detected by the FA-170 across several pages, in the order which they are detected. The list can be sorted in range order, from closest to farthest.

Note: The last viewed list is displayed when the **DISP** key is pressed to show either the [TARGET LIST] or the [DANGEROUS LIST]. To view the [TARGET LIST] when the [DANGEROUS LIST] is displayed, follow the procedure outlined in step 3 on the following page.

1. Press the **DISP** key until the [TARGET LIST] is displayed.

Time at which the list was last sorted.⎯
Selected target is highlighted.⎯

Currently displayed target group.
Total detected targets is displayed in brackets.

Target type symbols.
See Appendix 5 of the operator's manual for a full list of AIS symbols and their meanings.

NAME/MMSI/TYPE: Target's MMSI, name or type is displayed. Where name data is available, the vessel name is displayed.
RNG[km]: Range from OS to target.
BRG[º]: Bearing to target.
AGE[']: Time (in minutes) since the target data was last updated.

The [NAME/MMSI/TYPE] column of the [TARGET LIST] displays the target vessel's type in the following formats:

Where the target type is CLASS A/CLASS B/AtoN

The name of the vessel is displayed when the name data is available. Where the name data is not available, the vessel's MMSI is displayed.

Where the target type is SAR(VESSEL/AIRCRAFT)/SART/MOB/EPIRB

The format in which data is displayed is listed in the table below.

TYPE	Display format	TYPE	Display format
SAR vessel	"SAR/VESSEL"	MOB Active	"MOB ACTIVE"
SAR aircraft	"SAR/AIRCRAFT"	MOB Test	"MOB TEST"
SART Active	"SART ACTIVE"	EPIRB Active	"EPIRB ACTIVE"
SART Test	"SART TEST"	EPIRB Test	"EPIRB TEST"

Where the target type is BASE STATION

"BS:(Base station's MMSI)" is displayed.

Note 1: If there is no data for the target selected, the fields are displayed as "=NO TARGET=".

Note 2: Targets are automatically sorted in range order (closest to furthest) when no key is operated for 30 seconds. Target order is then updated every five seconds.
Active AIS-SARTs take priority and are displayed at the top of the list.

Note 3: When [AUTO SORT] on the [USER SET] menu is [OFF], the range and bearing to a target are updated. However, target order is not updated. To manually sort targets, see step 2.

Note 4: To select a target on the plotter display, press ▲ or ▼ to select the target then press the **ENT/ACK** key. Press ▲ to cycle through targets from nearest to furthest; ▼ to cycle through targets from furthest to nearest.

2. Press ▼ or ▲ to scroll through the first 100 targets, press ◄ or ► to scroll through the targets in groups of 8 (next/previous 8 targets).
The indication "NEXT 100 TARGETS" appears at the bottom of the list if more targets are available. Select the indication, then press the **ENT/ACK** key to show the next 100 targets.
The indication "PREVIOUS 100 TARGETS" appears at the top of the list if there is one or more pages of targets before the one currently displayed. Select the indication, then press the **ENT/ACK** key to show the previous 100 targets.

3. To view target data, or to sort the target list, select the desired target, then press the **ENT/ACK** key. The target list options pop up window is displayed.

```
┌─────────────────────────────────────────┐
│ FUNCTION                                  │
│                ▲  : NEW MSG               │
│ ◄ :SORT      ENT : VIEW DETAIL    ► : SORT│
│  (NORMAL)      ▼  : NAME REQUEST   (DANGER)│
└─────────────────────────────────────────┘
```

• [SORT (NORMAL)]: Press ◄ to sort the [TARGET LIST] into range order. The closest target is displayed at the top of the list.
• [SORT (DANGER)]: Press ► to display and sort the [DANGEROUS TARGET]LIST in range order. The closest target is displayed at the top of the list.
• [VIEW DETAIL]: Press the **ENT/ACK** key to open the [TARGET DETAIL] screen.
• [NEW MSG]: Press ▲ to open the text input window to create an AIS message to the selected target.
• [NAME REQUEST]: Press ▼ to send a name request to the target vessel's AIS.
Name requests cannot be sent to the same target within a short period, regardless of target. If you have requested the name of a target too soon after the last request, or the target is out of range, or the target has set their AIS to RX only mode, the pop up message "CANNOT REQUEST NAME" is displayed. Wait a short while before requesting the name again.

4. Press the **DISP** key to close the menu.

1.8.3 Dangerous (target) list

Dangerous targets are targets which are calculated to be on a collision course with your vessel. When a dangerous target is detected, the target and its available details can be viewed in the [DANGEROUS TARGET LIST].

Note: The operations available from the [DANGEOUS TARGET LIST] are the same as the [TARGET LIST] operations.To view the [DANGEROUS LIST] when the [TARGET LIST] is displayed, follow the procedure outlined in step 3 of section 1.8.2.

Time at which the list was last sorted.

Selected target is highlighted.

NAME/MMSI/TYPE: Target's MMSI, name or type is displayed. Where name data is available, the vessel name is displayed.
RNG[NM]: Range from OS to target.
BRG[°]: Bearing to target.
AGE[']: Time (in minutes) since the target data was last updated.

Target type symbols. See Appendix 5 for a full list of AIS symbols and their meanings.

Note: If there are no dangerous targets detected, the fields are displayed as "=NO TARGET=".

1.8.4 How to interpret the [TARGET DETAIL] screen

The [TARGET DETAIL] screen shows available detailed information about the select-ed target.

Lost and dangerous targets have the appropriate icon displayed at the top right, as indicated in the lost target example below.
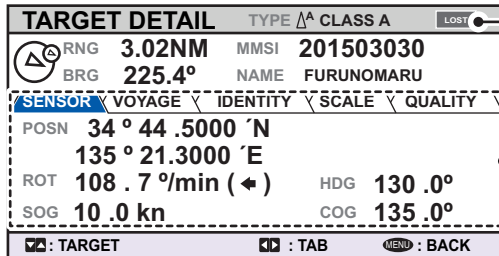
TARGET DETAIL TYPE △ᴬ **CLASS A** `LOST` ●	── The `LOST` icon is displayed for lost targets.
RNG **3.02NM** MMSI **201503030**	The `DANGER` icon is displayed
BRG **225.4°** NAME **FURUNOMARU**	for dangerous targets.
SENSOR ╲ VOYAGE ╲ IDENTITY ╲ SCALE ╲ QUALITY	
POSN **34 ° 44 .5000 ´N**	● When data input to the FA-170 is
135 ° 21.3000 ´E	interrupted or stopped, indications
ROT **108 . 7 °/min (←)** HDG **130 .0°**	for all tabs appear as "----".
SOG **10 .0 kn** COG **135 .0°**	
☑ : TARGET ◄► : TAB (MENU) : BACK	

There are five tabs available for viewing; [SENSOR], [VOYAGE], [IDENTITY], [SCALE] and [QUALITY]. Press ◄ or ► to change the tab currently displayed.

The selected target's bearing ([BRG]), range ([RNG]), [MMSI] and [NAME] are dis-played at the top of the screen regardless of the selected tab. For lost or dangerous targets, the appropriate icon is displayed at the top right of the screen.

The information displayed on each tab varies, depending on the type of target select-ed.

The tables on the following pages list each tab's contents, along with a brief descrip-tion.

SENSOR tab

Contents	Description
POSN	Target's last known position. Displayed for all target types.
ROT	Target's Rate Of Turn. Displayed only for CLASS A, SART, MOB and EPIRB target types.
ALT	Altitude. Displayed only for SAR VESSEL and SAR AIRCRAFT target types.
SOG	Target's Speed Over Ground. Displayed only for CLASS A, CLASS B, SAR VESSEL, SAR AIRCRAFT, SART, MOB and EPIB target types.
COG	Target's Course Over Ground. Displayed only for CLASS A, CLASS B, SAR VESSEL, SAR AIRCRAFT, SART, MOB and EPIB target types.
HDG	Target's last known heading. Displayed only for CLASS A, CLASS B, SART, MOB and EPIRB target types.

VOYAGE tab

The VOYAGE tab is only displayed for CLASS A target types.

Contents	Description
NAV STATUS	Target's navigational status (see section 1.6 for details).
DESTINATION	Target's destination.
ETA	Target's Estimated Time of Arrival at the above destination.

IDENTITY tab

The IDENTITY tab is only displayed for CLASS A, CLASS B, SAR VESSEL, SAR AIR-CAFT and AtoN target types.

Contents	Description
CALL SIGN	Target's call sign. Not displayed for AtoN target types.
IMO NO.	Target's International Maritime Organization registration number.
TYPE OF SHIP	Target's ship type. Displayed only for CLASS A and CLASS B target types.
REAL AtoN	Displayed as "YES" for physical aids to navigation, "NO" for virtual aids to navigation. Displayed only for AtoN target types.
TYPE OF AtoN	The type of aids to navigation. Displayed only for AtoN target types.
VENDER ID	Target's AIS maker's ID. Displayed only for CLASS B target types.

SCALE tab

The SCALE tab is only displayed for SAR VESSEL, SAR AIRCRAFT and AtoN target types.

Contents	Description
SHIP SIZE(LENGTH, BEAM)	Target's ship size (length, beam). Displayed for all above target types.
ANT POSN(X,Y)	Position of target's antenna. Displayed for all above target types.
DRAUGHT	Target ship's draught. Displayed only for CLASS A target types.
PI	Off-position indicator. Displayed only for AtoN target types.

QUALITY tab

The QUALITY tab is displayed for all target types.

Contents	Description	
PA	Position Accuracy for target ship. (HIGH: High accuracy, LOW: Low accuracy.)	
RAIM	Target's RAIM status. (USED: Using RAIM, UNUSED: Not using RAIM.).	
TIME STAMP	Time at which the target was last detected. Not displayed for AIS base stations.	
POSN QUALITY	Target's position quality. Possible position qualities are shown in the list below:	
	Quality indication	**Meaning**
	[NO POSITION]	Position data not available.
	[MANUAL POSITION]	Position data is input manually.
	[DEAD RECKONING POSITION]	Position calculated by dead reckoning.
	[OUTDATED POSITION > 200 M]	More than 200 m from last estimated position.
	[POSITION > 10 M]	Difference of more than 10 m from last estimated position.
	[POSITION WITH RAIM > 10 M]	Difference of more than 10 m from last estimated position.
	[POSITION < 10 M]	Difference of less than 10 m from last estimated position.
	[POSITION WITH RAIM < 10 M]	Difference of less than 10 m from last estimated position.
	[VALID POSN WITH NO TIME STAMP]	No time stamp available.

1.8.5 Own ship data

The [OWN INFORMATION] display shows your ship's data across four tabs. The information displayed is shown in the figure below. This data should be checked once per voyage or once per month whichever is shorter. Data may be changed only on the authority of the master.

The Officer of the Watch should periodically check position, SOG and sensor information for quality.

SENSOR tab

VOYAGE tab

Press ► or ◄ to cycle through the tabs.

SCALE tab

IDENTITY tab
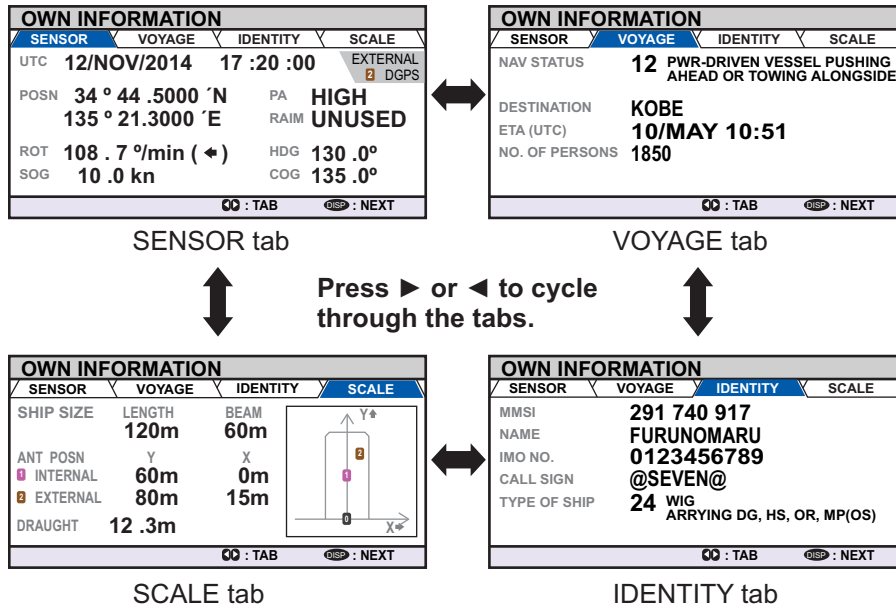
The table below list each tab's contents along with a brief description.

Tab	Item	Description
[SENSOR]	[UTC], [LT]	Date and time. [UTC]: Universal Time, Coordinated. [LT]: Local time. **Note:** For more information on these indications, see section 1.15.
	[POSN]	OS (Own Ship) position.
	[ROT]	Rate of Turn.
	[SOG]	Speed Over Ground.
	[PA]	Positioning accuracy.
	[RAIM]	RAIM status. [USED]: RAIM is currently in use. [UNUSED]: RAIM is not currently in use.
	[HDG]	Heading.
	[COG]	Course Over Ground.
	GPS status	GPS currently in use.
[VOYAGE]	[NAV STATUS]	Current navigational status.
	[DESTINATION]	Current destination.
	[ETA [UTC]], [ETA [LT]]	Estimate Time of Arrival (ETA) at the destination.
	[NO. OF PERSONS]	Number of people aboard your vessel.

Tab	Item	Description
[IDENTITY]	[MMSI]	Own Ship's MMSI.
	[NAME]	Own Ship's name.
	[IMO NO.]	Own Ship's IMO number.
	[CALL SIGN]	Own Ship's call sign.
	[TYPE OF SHIP]	Own Ship's vessel type. See section 1.6, step 7 for details.
[SCALE]	[SHIP SIZE]	Own Ship's length and beam.
	[ANT POSN]	Antenna position. [INTERNAL]: position of internal antenna. [EXTERNAL]: position of external antenna.
	[DRAUGHT]	Own Ship's draught.

1.8.6   Alert display

The alert display shows the date and time alerts were generated. For further details, see section 3.5.

1.9 Messages

You may send and receive messages via VHF channels, to a specified MMSI or all AIS-equipped ships in the area. Messages can be sent to warn of safety of navigation; for example, an iceberg sighted. Routine messages are also permitted.

Short safety-related messages are only an additional means to broadcast safety information. They do not remove the requirements of the GMDSS.

When a message is received, the equipment beeps and pop up appears, indicating the type of message received.

Sent messages are stored in the [MSG BOX] (message box) under the [OUTBOX] tab.

Received messages are stored in the [MSG BOX] under the [INBOX] tab.

The FA-170 can store up to 20 transmitted and up to 20 received messages. When the [INBOX] or [OUTBOX] becomes full, the oldest message in the box is automatically deleted to make room for the latest.

1.9.1 How to send a message

This procedure applies to Class A AIS, for Inland AIS, see section 2.6.1.

1. Press the **MENU/ESC** key to open the main menu.

2. Select [MSG], then press the **ENT/ACK** key.

```
MSG
1 NEW MSG
2 MSG BOX
```

3. [NEW MSG] is selected. Press the **ENT/ACK** key. The [NEW MSG] screen appears.

```
NEW MSG (TEXT)                    <SEND MSG>
MSG TYPE   :  ADDRESSED
TO         :  000000000
CH         :  ALTERNATE
RETRY      :  3
- - - - - - - - - - - - - - - - - - - - - - - -
TEXT       :  Use the software keyboard
   ( 0 / 85 )   to enter the message here.




  ▼▲: CURSOR    ENT : SELECT         MENU : BACK
```
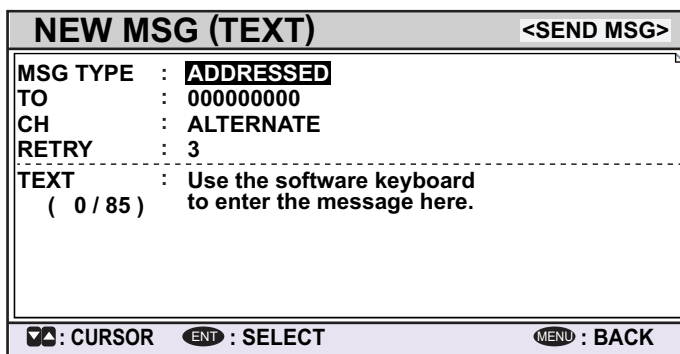
4. [MSG TYPE] is selected, press the **ENT/ACK** key to change the type of message you wish to send. The options pop up shown below appears.

5. Select the appropriate message type, then press the **ENT/ACK** key.

```
MSG TYPE
BROADCAST ←— Message to all vessels.
ADDRESSED ←— Message to specified vessel only.
```
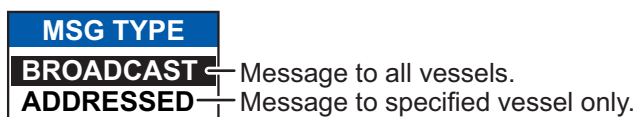
For broadcast messages, skip to step 8.

6. Select [TO], then press the **ENT/ACK** key. A numerical settings pop up appears.

7. Input the MMSI of the ship you wish to send this message to, then press the **ENT/ACK** key to close the pop up. See section 1.5 for how to input data.

8. Select [CH] (Channel), then press the **ENT/ACK** key. The channel select options pop up appears.

CH
BOTH A & B
ONLY A
ONLY B
ALTERNATE

Sends the same message to both channel A and channel B.

Sends the message to channel A only.

Sends the message to channel B only.

Sends messages on alternating channels. In other words, if the last message sent on channel A, the next message is sent on channel B.
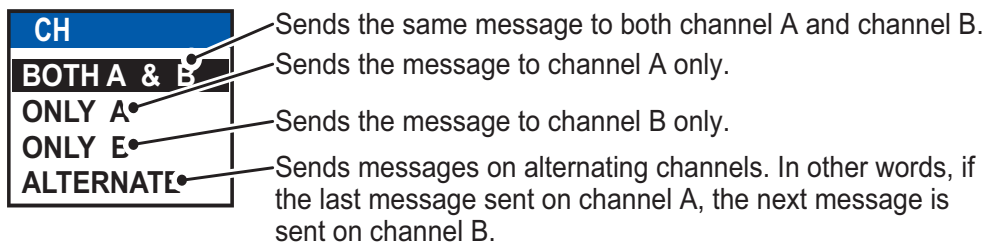
9. Select the appropriate option, then press the **ENT/ACK** key.
    For broadcast messages, skip to step 12.

10. Select [RETRY], then press the **ENT/ACK** key. The retry attempts setting pop up appears.

11. Press ▲ to increase the retry attempts, ▼ to decrease the retry attempts. The maximum setting for retries is 3. Press the **ENT/ACK** key to apply the setting and close the pop up.

12. Press ▼ to highlight the message text, then press the **ENT/ACK** to display the software keyboard.

13. Input the new message text, referring to section 1.5.4. The maximum number of characters allowed is as follows:
    - BROADCAST: 90 characters.
    - ADDRESSED: 85 characters.

14. Press ▲or ▼ to highlight [<SEND MSG>] at the top right of the screen, then press the **ENT/ACK** key. A confirmation pop up appears.

15. Select [YES] to send the message or [NO] to cancel the message, then press the **ENT/ACK** key.

Note: The following pop up messages may be displayed during sending or after the message has been sent.

Pop up message	Description
MESSAGE SENT SUCCESSFULLY.	Displayed after a message is sent successfully.
NO TEXT IN MESSAGE	Displayed when the message body is blank and <SEND MSG> is selected.
FAILED TO SEND MESSAGE. (CODE:X)	The message failed to send. The code (indicated as "X" in the example to the left) indicates the reason for the failure. "CODE:1" indicates that the message was not acknowledged by the recipient. "CODE:2" indicates that the message failed to send.

1.9.2   Receiving messages

When a message is received, the equipment beeps and a pop up message appears on the screen. The table below lists the possible messages with a brief description. To enable/disable these pop ups, see section 1.7.

Pop up message	Description
TEXT MESSAGE RECEIVED.	Displayed when a broadcast message is received.
TEXT MESSAGE RECEIVED. MMSI/NAME.	Displayed when an addressed message is received. MMSI appears by default, however, where name data is available, the vessel name is also displayed.

1.9.3   How to use the message box (MSG BOX)

How to view a received message

To view message contents, follow the procedure below.

1. Press the **ENT/ACK** to close the pop up window.

2. Press the **MENU/ESC** key to show the main menu.

3. Select [MSG], then press the **ENT/ACK** key.

4. Select [MSG BOX], then press the **ENT/ACK** key. The [OUTBOX] tab is displayed by default. Press ▶ to display the [INBOX] tab.

<table>
<tr><td colspan="2">MSG BOX (TEXT)</td></tr>
<tr><td>OUTBOX: 10</td><td>INBOX: 12</td></tr>
<tr><td>TIME [UTC]</td><td>FROM   01 / 10</td></tr>
<tr><td colspan="2">30 /MAY 17 : 20   BROADCAST
29 /MAY 16 :05   BROADCAST
28 /MAY 16 :15   ENTERPRISE
27 /MAY 17 :20   BROADCAST
26 /MAY 17 :20   NEPTUNE
25 /MAY 17 :20   BROADCAST
24 /MAY 17 :20   NAUTILUS</td></tr>
<tr><td colspan="2">⬛⬜: CURSOR   ENT : FUNC   ◀▶: TAB   MENU : BACK</td></tr>
</table>

Indication	Meaning
✉	This message has been viewed.
✍	This message is unviewed.
⤳	Broadcast message
←	Addressed message

5. Select the message you wish to view, then press the **ENT/ACK** key. The message options pop up window shown below appears.

FUNCTION
VIEW DETAIL
NEW MSG

➡

INBOX MSG DETAIL (TEXT)
MSG TYPE   ◀ ADDRESSED
TIME [UTC] ◀ 28 / MAY   16 : 15
TO   ◀ 987654321 / ENTERPRISE
TEXT   ◀ KLINGONS ON STBD BOW.
(21)
⬛⬜: MESSAGE   ◀▶: BOX   MENU: BACK

Select [VIEW DETAIL], then press the **ENT/ACK** key to display the received message's contents. The figure above shows an example of a received message. Select [NEW MSG], then press the **ENT/ACK** key to send a message back to this message's sender.

6. Press ▲ or ▼ to view other messages, press ◀ or ▶ to switch between viewing an [INBOX] message and an [OUTBOX] message.

7. Press the **DISP** key to close the menu.

How to view sent messages

1. Press the **ENT/ACK** to close the pop up window.

2. Press the **MENU/ESC** key to show the main menu.

3. Select [MSG], then press the **ENT/ACK** key.

4. Select [MSG BOX], then press the **ENT/ACK** key. The [OUTBOX] tab is displayed by default.

MSG BOX (TEXT)	
OUTBOX: 10	**INBOX: 12**
TIME [UTC]	**TO** 01 / 10
☑ ⇆ 30 /MAY 18 : 25	BROADCAST
☒ ⇆ 29 /MAY 16 :05	BROADCAST
NO → 28 /MAY 16 :15	TITANIC
☑ → 27 /MAY 17 :20	NAUTILUS
☑ ⇆ 26 /MAY 17 :20	BROADCAST
NO ⇆ 25 /MAY 17 :20	BROADCAST
☒ → 24 /MAY 17 :20	MUSASHIMARU
▲▼: CURSOR ENT : FUNC ◀▶: TAB MENU : BACK	

Indication	Meaning
☑ OK	This message was sent successfully.
☒ NG	This message was not sent.
NO ACK	Waiting for recipient to acknowledged this message.
⇆	Broadcast message
→	Addressed message

5. To view the contents of a message, highlight the message then press the **ENT/ACK** key. The message options pop up window appears.
    Select [VIEW DETAIL] to display the received message's contents. The figure below shows an example of a received message.
    Select [NEW MSG] to send another message to the recipient.

OUTBOX MSG DETAIL (TEXT)	
MSG TYPE ◀ ADDRESSED	
TIME [UTC] ◀ 28 / MAY 16 : 15	
TO ◀ 123456789 / TITANIC	
TEXT ◀ ICEBERG COORDINATES RECEIVED.	
(39 / 85) THANK YOU!	
▲▼: MESSAGE ◀▶: BOX MENU: BACK	

6. Press ▲ or ▼ to view other messages, press ◀ or ▶ to switch between viewing an [INBOX] message and an [OUTBOX] message.

7. Press the **DISP** key to close the menu.

1.10 Regional Operating Channels

AIS operates primarily on two dedicated VHF channels, CH 2087 and CH2088. Where these channels are not available regionally, the AIS is capable of being automatically switched to designated alternate channels by means of a message from a shore facility. Where no shore based AIS or GMDSS sea area A1 station is in place, the AIS should be switched manually as in paragraph 1.10.2.

A regional operating area is set with the procedure shown below. The most recent eight areas are memorized.

- Automatic setting of VHF DSC (channel 70) from shore-based AIS.
- Automatic setting by AIS message from shore-based AIS.
- Setting by shipboard system such as ECDIS.
- Manual setting

The default area is as follows:

- Tx power: 12.5 W
- Channel no. 2087, 2088
- Tx/Rx mode: Tx/Rx

1.10.1 How to view channel information

Do the following to view current channel information. To edit channel information, see paragraph 1.10.2.

1. Press the **MENU/ESC** key to open the menu.
2. Select [CH INFO]. The [CH INFO] pop up window appears.

CH INFO	
1 REGION LIST	
PWR	◄ HIGH
CH A	◄ 2087
CH B	◄ 2088
TX / RX A	◄ TXRX
TX /RX B	◄ TX

Select to display the regional channel list.

Current channel's details.
PWR: Power.
CH A: Channel used for channel A.
CH B: Channel used for channel B.
TX / RX A: Channel A TX/RX settings.
TX / RX B: Channel B TX/RX settings.

3. Press the **DISP** key to close the display.

1.10.2 How to edit/view regional channels

You may display the status of regional operating areas currently memorized in the equipment. Nine of any combination of AIS message from shore-based AIS, DSC message, manual settings and commands from ECDIS or a PC may be registered and one will be [HIGH SEA].

- AIS and DSC messages registered within last two hours cannot be edited.

- An item labeled [HIGH SEA] cannot be edited. ([HIGH SEA] are data used for international waters not controlled by shore-based AIS.)

- If two areas overlap one another the older data is deleted.

- Data older than 24 hours is deleted.

- Area data is deleted when it is more than 500 miles from the area for which it was registered.

1. Press the **MENU/ESC** key to open the menu.

2. Select [CH INFO], then press the **ENT/ACK** key.

3. Select [REGION LIST] then press the **ENT/ACK** key. The REGION LIST has four pages of data related to each region, displayed on the left-side of the screen as shown in the figure below. The right side of the screen displays your current position, current region and the selected region.
   Press ◄ or ► to change pages.

The data displayed on each page of the [REGION LIST] is described in the table below.

Data	Description
Region number	Up to eight regions can be assigned and set up. The ninth region is reserved for open seas and is displayed as "= HIGH SEA =". The region you are currently in is highlighted in blue (no. 1 in the example on the previous page).
PWR	• H: High power TX setting. • L: Low power TX setting.
CH A/CH B	Channel A/B's frequency and TX/RX settings.
AGE	Time since the channel was registered.
FROM	Cause/origin of the last change.
LAT/LON	Latitude and Longitude of the region's corners.

4. Select the desired region number. You can select a region to edit from any page in the [REGION LIST]. The selected region is highlighted in blue on the plotter screen.

5. Press the **ENT/ACK** key to show the selected region's details. The region is high-lighted in light red on the plotter screen, as shown in the figure below.
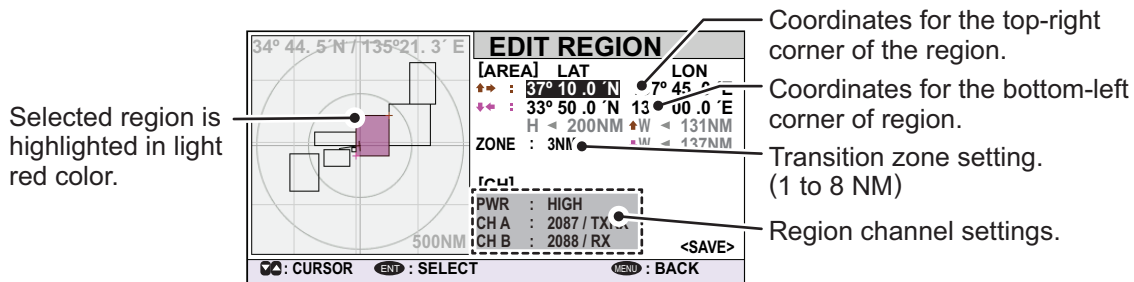
6. The [LAT] setting for the top-right corner of the region is already selected; press the **ENT/ACK** key. Input the latitude for the top-right position (northeast point) of the AIS operating area then press the **ENT/ACK** key.

7. Press ▶ to select the [LON] setting for the top-right corner, then press the **ENT/ACK** key. Input the longitude for the right-top position (northeast point) of the AIS operating area then press the **ENT/ACK** key.

8. Press ▶ to select the [LAT] setting for the bottom-left corner, then press the **ENT/ACK** key. Enter latitude for the bottom-left position (southwest point) of the AIS operating area then press the **ENT/ACK** key.

9. Press ▶ to select the [LON] setting for the bottom-left corner, then press the **ENT/ACK** key. Enter longitude for the bottom-left position (southwest point) of the AIS operating area then press the **ENT/ACK** key.
    Note: The overall area for the selected region in displayed in height (H) and width (H) values, in gray text. If the set region less than 20 nautical or more than 200 nautical miles long/wide, the height and width values are displayed in red text. Adjust the dimensions so the length/width of the region is more than 20 nautical miles and less than 200 nautical miles.

10. Press ▶ to select the setting for [ZONE], then press the **ENT/ACK** key. A numerical input pop up window appears. The transition zone works as a buffer between your current region and the regions immediately adjacent to your current region. When any vessel enters the transition zone, messages sent from the adjacent region channel A are received via your region's channel B. This helps to locate vessels in adjacent regions.

```
TRANS ZONE
    ▲
    5
    ▼
 [ 1,  8 ]
```
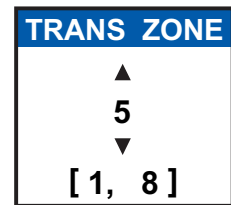
11. Input the size of the transition zone for this region, then press the **ENT/ACK** key.

12. Press ▶ to select [PWR], then press the **ENT/ACK** key to show the channel power options.

```
PWR
HIGH
LOW
```

13. Select [HIGH] or [LOW] power desired then press the **ENT/ACK** key.

14. Select the channel indication for [CH A], then press the **ENT/ACK** key. A numerical input pop up window appears.

```
CH A
  ▲
2087
  ▼
```

15. Input the channel number for [CH A] then press the **ENT/ACK** key.

16. Press ▶ to select the transmit/receive settings, then press the **ENT/ACK** key. An options pop up window appears.
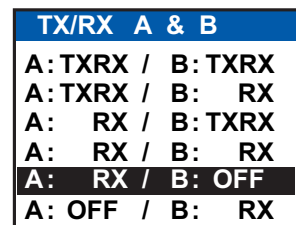
17. Select the appropriate setting, then press the **ENT/ACK** key.
    [TXRX]: Transmit and receive.
    [RX]: Receive only.
    [OFF]: Disable the channel.

```
TX/RX  A & B
A : TXRX /  B : TXRX
A : TXRX /  B :    RX
A :    RX /  B : TXRX
A :    RX /  B :    RX
A :    RX /  B :  OFF
A :  OFF  /  B :    RX
```

18. Press ▶ to select [<SAVE>], then press the **ENT/ACK** key. A confirmation pop up window appears.
    Select [YES] to apply the new settings and return to the [REGION LIST], [NO] to cancel the new settings and return to editing the region.
    Note: If you enter invalid data, a pop up message stating the reason for the error appears. The table on the following page lists the pop up messages for these errors and the recommended action for each error.

Pop up error message	Recommended action
INVALID CHANNEL	Check the channel setting, re-input the settings.
INVALID REGION SIZE.	Check the region size is less than 200 NM and more than 20 NM. Adjust your region size.
INVALID REGION. ADJUST SIZE OR LOCATION.	Check your region size and location, there is at least one other region overlapping. Resize or relocate your region.
INVALID OPERATION: REGION CANNOT BE OVERWRITTEN.	Check the overlapping regions. Adjust your region size or location.

1.11   How to Enable/Disable the Key Beep

You can turn off the beep, which sounds for valid key input.

1. Press the **MENU/ESC** key to open the menu.

2. Select [USER SET], then press the **ENT/ACK** key.

```
 USER SET
❶ KEY BEEP       :  ON
❷ TIME DIFF          ON
❸ AUTO SORT          OFF
❹ SART TEST      :  HIDE
❺ LR RESPONSE    :  AUTO
❻ LR BROADCAST   :  ON
❼ NOTIFICATION SET
❽ ACTIVATE
```
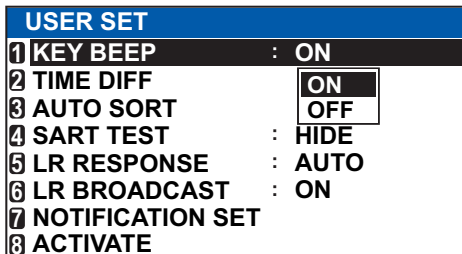
3. [KEY BEEP] is already selected, press the **ENT/ACK** key.

4. Select [ON] or [OFF] as appropriate then press the **ENT/ACK** key.

5. Press the **DISP** key to close the menu.

1.12   Long Range

The long range function sets how to reply to a request for own ship data from a distant station (for example, an Inmarsat C station) and whether to transmit your ship's position to a satellite via the AIS VHF communication link or not.

1.12.1   How to set up long range response

The long range response sets how to reply to a request for own ship data from a distant station, for example, an Inmarsat C station. You may reply automatically or manually.

1. Press the **MENU/ESC** key to open the menu.

2. Select [USER SET], then press the **ENT/ACK** key.

3. Select [LR RESPONSE] then press the **ENT/ACK** key. The options pop up window appears.

```
 USER SET
❶ KEY BEEP       :  ON
❷ TIME DIFF      :  +00 : 00
❸ AUTO SORT      :  ON
❹ SART TEST      :  HIDE
❺ LR RESPONSE    :  AUTO        ➡    AUTO
❻ LR BROADCAST   :  ON               MANUAL
❼ NOTIFICATION SET
❽ ACTIVATE
```
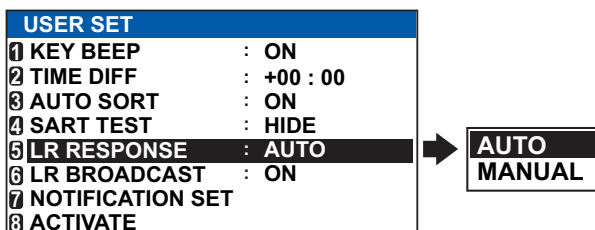
4. Select [AUTO] (auto reply) or [MANUAL] (manual reply) as appropriate then press the **ENT/ACK** key.

5. Press the **DISP** key to close the menu.

Manual reply

For manual reply, the requesting ship's MMSI, name and information requested appear.Select [REFUSE], then press the **ENT/ACK** key to send no data, or select [REPLY], then press the **ENT/ACK** to send data. The screen then changes according to your selection.w

```
  INFORMATION
NAME: HMSS TITANIC ●──────────────── Name of requesting station or
[LONG RANGE REQUEST DETAILS]          vessel.
NAME/CALL SIGN/IMO NO.    DATE  TIME
DESTINATION               LENGTH/BEAM ●── Information requested by the long
POSN                      COG             range station is displayed here.
SOG                       DRAUGHT
TYPE OF SHIP              NO. OF PERSONS
      REPLY            REFUSE
```

Automatic reply

For automatic reply, the pop up message shown below appears when an automatic reply is sent. Requested data is automatically transmitted. Press the **ENT/ACK** key to close the message.

```
  INFORMATION
NAME: HMSS TITANIC ●──────────────── Name of requesting station or
[LONG RANGE RESPONSE DETAILS]         vessel.
NAME/CALL SIGN/IMO NO.    DATE  TIME
DESTINATION               LENGTH/BEAM ●── Information sent to the long
POSN                      COG             range station is displayed here.
SOG                       DRAUGHT
TYPE OF SHIP              NO. OF PERSONS
         ENT : CLOSE WINDOW
```

1.12.2 How to broadcast own ship data

You can broadcast own ship data to a satellite via the AIS VHF communication link.

1. Press the **MENU/ESC** key to open the menu.

2. Select [USER SET] then press the **ENT/ACK** key.

3. Select [LR BROADCAST] then press the **ENT/ACK** key.

4. Select [ON] or [OFF] as appropriate then press the **ENT/ACK** key.
   [ON] sends your ship's position to a satellite via the AIS VHF communication link.

5. Press the **DISP** key to close the menu.

Note: The availability of this function depends of equipment specifications. The menu is not shown unless so equipped.

1.13 Pilot Plug (FA-1703, option)

A pilot plug, which is connected between the AIS and a PC, is required to feed AIS information to a PC. The plug is required for the ships passing through the Panama Canal and the Saint Lawrence Seaway. The specifications for the pilot plug are as shown below.

| Item	Specifications
Baud rate	38400 bps **Note:** The following setting is required for the FA-170. If the pilot does not function, check these the following items. • COM port settings: [INITIAL SET] menu → [I/O PORT]. The selected port for the pilot plug must be set to [EXT DISPLAY]. • Check the pilot plug connection at both the FA-170 and the connected PC.
Type	AMP 206486-1 (9-pin, male)
Signal connection	TX-A: Pin 1 TX-B: Pin 4 RX-A: Pin 5 RX-B: Pin 6 SHIELD: Pin 9

Connector for AIS	Connector for PC
206486-1	206485-1
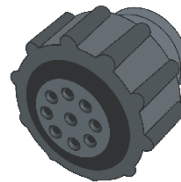
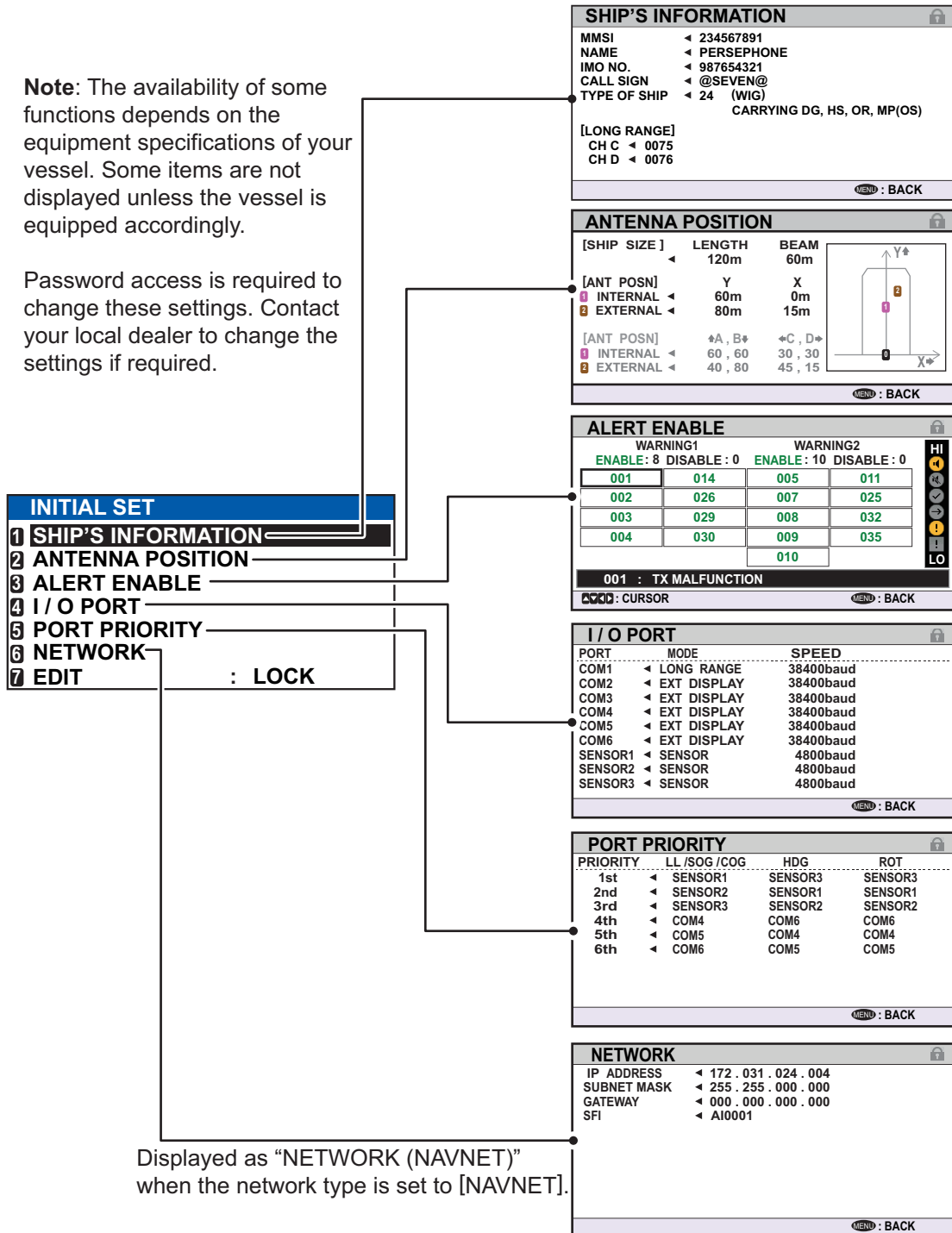

Pilot Plug connectors for FA-1703

1.14 Viewing Initial Settings

The [INITIAL SET] menu, which is locked with a password to prevent accidental changes to the ship's details, is where the installer enters ship's MMSI, internal and external antenna positions, ship type, I/O port settings and network settings. You can view the settings on this menu as follows.

1. Press the **MENU/ESC** to open the menu.

2. Select [INITIAL SET], then Press the **ENT/ACK** key.

3. Select item to view then press the **ENT/ACK** key.

Note: The availability of some functions depends on the equipment specifications of your vessel. Some items are not displayed unless the vessel is equipped accordingly.

Password access is required to change these settings. Contact your local dealer to change the settings if required.

SHIP'S INFORMATION 🔒

MMSI	◄ 234567891
NAME	◄ PERSEPHONE
IMO NO.	◄ 987654321
CALL SIGN	◄ @SEVEN@
TYPE OF SHIP	◄ 24 (WIG)
	CARRYING DG, HS, OR, MP(OS)

[LONG RANGE]
CH C ◄ 0075
CH D ◄ 0076

MENU : BACK

ANTENNA POSITION 🔒

[SHIP SIZE]	LENGTH	BEAM
◄	120m	60m

[ANT POSN]	Y	X
1 INTERNAL ◄	60m	0m
2 EXTERNAL ◄	80m	15m

[ANT POSN]	↑A , B↓	↞C , D↠
1 INTERNAL ◄	60 , 60	30 , 30
2 EXTERNAL ◄	40 , 80	45 , 15

MENU : BACK

ALERT ENABLE 🔒

WARNING1   WARNING2
ENABLE: 8 DISABLE : 0   ENABLE: 10 DISABLE : 0

001	014	005	011
002	026	007	025
003	029	008	032
004	030	009	035
		010	

001 : TX MALFUNCTION

◄►▲▼ : CURSOR   MENU : BACK

INITIAL SET
1 SHIP'S INFORMATION
2 ANTENNA POSITION
3 ALERT ENABLE
4 I / O PORT
5 PORT PRIORITY
6 NETWORK
7 EDIT   : LOCK

I / O PORT 🔒

PORT	MODE	SPEED
COM1	◄ LONG RANGE	38400baud
COM2	◄ EXT DISPLAY	38400baud
COM3	◄ EXT DISPLAY	38400baud
COM4	◄ EXT DISPLAY	38400baud
COM5	◄ EXT DISPLAY	38400baud
COM6	◄ EXT DISPLAY	38400baud
SENSOR1	◄ SENSOR	4800baud
SENSOR2	◄ SENSOR	4800baud
SENSOR3	◄ SENSOR	4800baud

MENU : BACK

PORT PRIORITY 🔒

PRIORITY	LL /SOG /COG	HDG	ROT
1st	◄ SENSOR1	SENSOR3	SENSOR3
2nd	◄ SENSOR2	SENSOR1	SENSOR1
3rd	◄ SENSOR3	SENSOR2	SENSOR2
4th	◄ COM4	COM6	COM6
5th	◄ COM5	COM4	COM4
6th	◄ COM6	COM5	COM5

MENU : BACK

Displayed as "NETWORK (NAVNET)" when the network type is set to [NAVNET].

NETWORK 🔒

IP ADDRESS	◄ 172 . 031 . 024 . 004
SUBNET MASK	◄ 255 . 255 . 000 . 000
GATEWAY	◄ 000 . 000 . 000 . 000
SFI	◄ AI0001

MENU : BACK

4. Press the **DISP** key to close the menu.

1.15 Setting for Time Difference

You can set the time differences from UTC (Coordinated Universal Time) to show the local time.

1. Press the **MENU/ESC** key to open the menu.
2. Select [USER SET] then press the **ENT/ACK** key.

```
USER  SET
① KEY BEEP          :  ON
② TIME  DIFF        :  +00 : 00
③ AUTO SORT         :  ON
④ SART TEST         :  HIDE
⑤ LR RESPONSE       :  AUTO
⑥ LR BROADCAST      :  ON
⑦ NOTIFICATION SET
⑧ ACTIVATE
```

3. Select [TIME DIFF], then press the **ENT/ACK** key. The settings pop up window is displayed.

```
        ▲
      ⊞ 00:00
        ▼
[ -14 : 00 ,  14 : 00 ]
```
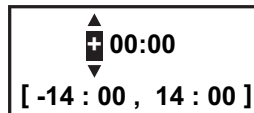
4. Select the desired time difference then press the **ENT/ACK** key. You can change the value with ▲ or ▼, the digit with ▶ or ◀ The setting range is -14:00 to +14:00.

5. Press the **DISP** key to close the menu.

Note: When a UTC time offset is set, the time display indication for messages and NAV STATUS screen is indicated as "LT" (Local Time). When there is no offset, the time display indication for messages and the NAV STATUS screen is indicated as "UTC" (Coordinated Universal Time).

2. INLAND AIS OPERATION

This section provides the operating procedures for the Inland AIS feature, which allows use of the AIS transponder on inland waterways or the open sea. Only those procedures that are different from the Class A AIS transponder are presented.

Ships with Inland AIS transponders on board autonomously determine their actual position using the Global Positioning System (GPS), which is part of the AIS transponder. Furthermore they broadcast their ID and position to other ships over a distance of 10 to 30 kilometers (depending on the geographical environment). Other ships in the area receive this information and are able to display their own position and that of other ships. Inland AIS helps the skipper in his direct nautical decisions, especially in critical situations, like the approach of a bend or a constriction.

Further, authorities have the possibility to allow electronic submission of cargo lists e.g. for transports of dangerous cargo. The standard for "Electronic Reporting" (ERI) allows the digital, language independent submission of cargo or passenger reports from ships or agencies to authorities. In combination with electronic data exchange between the authorities of different countries this results in less reporting for the skippers. On the other hand all cargo information is available to authorities in case of an accident.

2.1 How to Activate the Inland AIS

Input your key number (received from dealer) to activate the Inland AIS. (If the key was input during the installation, activation key input is not necessary.)

1. Press the **MENU/ESC** key to open the menu.
2. Select [USER SET] then press the **ENT/ACK** key.
3. Select [ACTIVATE] then press the **ENT/ACK** key.

```
ACTIVATE
DEVICE ID      ◄ AB-12-C3-ZD-AA-N4
ACTIVATE KEY   : _-_-_-_-_-_-_-_    INACTIVATED




          ENT : SELECT              MENU : BACK
```

4. Press the **ENT/ACK** key to display the alphanumeric pop up window. The selected digit cycles through digits in the following order when ▲ is pressed: 1, 2 ... 9, 0, A, B, C ... X, Y, Z, 1, 2... press ▼ to cycle through digits in the opposite direction. Press ► or ◄ to move the selection cursor.
5. Input the activation key, then press the **ENT/ACK** key.

If you entered the activation key correctly, the indication "ACTIVATED!" appears then the system is automatically restarted. The FA-170 starts up with the SOLAS mode active.

2.2   Selecting AIS Mode

The Inland AIS has two operating modes: Inland (inland waterways) and SOLAS (SO-LAS compliant class A AIS transponder). Select desired mode as follows:

1. Press the **NAV STATUS** key to open the [NAV STATUS] menu.

2. Press ▼ to select [AIS MODE] then press the **ENT/ACK** key. The mode selection pop up window appears.

3. Select [SOLAS] or [INLAND] as appropriate then press the **ENT/ACK** key. The AIS mode icon at the top of the screen changes to display the selected mode.

Inland mode active   SOLAS mode active

You are asked if you are sure to reboot the system. Select [YES] then press the **ENT/ACK** key to reboot the unit.

Notes on Inland AIS operation

• IMO NO. is transmitted with all zeros.

• The draught used in Inland AIS is "Inland draught".

2.3 How to Enter Voyage-Related Data

Before you embark on a voyage using Inland AIS, set the various related data (see the list below) on the [NAV STATUS] menu.

- Navigational status
- Destination
- Arrival time
- AIS mode currently in use
- Rate at which your vessel's dynamic information is transmitted

- ERI code
- No. of blue cones (for hazardous cargo)
- Cargo status
- No. of persons
- Length and beam of ship
- Draught

1. Press the **NAV STATUS** key.
   The [NAV STATUS] setting is selected by default.

```
NAV STATUS
  VOYAGE        SHIP'S  INFO          SCALE
NAV STATUS    :  12   PWR-DRIVEN VESSEL PUSHING
                      AHEAD OR TOWING ALONGSIDE

DESTINATION   :  KOBE
                   [SOLAS  LIST ]
                   [INLAND  LIST ]

ETA (UTC)     :  10 / MAY 10 : 51
AIS MODE      :  SOLAS
DYNAMIC INFO RATE  :  AUTO

  ▼▲ : CURSOR     ENT : SELECT    ◀▶ : TAB
```

2. If your navigational status is different from that shown, follow the procedure below. If it is the same as shown, go to step 3.

   1) Press the **ENT/ACK** key. The [NAV STATUS] options pop up window appears.

   2) Input the appropriate status, then press the **ENT/ACK** key. Refer to the data below to select appropriate navigational status.

00: UNDERWAY USING ENGINE
01: AT ANCHOR
02: NOT UNDER COMMAND
03: RESTRICTED MANEUVERABILITY
04: CONSTRAINED BY HER DRAUGHT
05: MOORED
06: AGROUND
07: ENGAGED IN FISHING
08: UNDERWAY SAILING
09: RESERVED FOR HIGH SPEED CRAFT (HSC)[*1]
10: RESERVED FOR WING IN GROUND (WIG)[*2]
11: PWR-DRIVEN VESSEL TOWING ASTERN
12: PWR-DRIVEN VESSEL PUSHING AHEAD OR TOWING ALONGSIDE
13: RESERVED FOR FUTURE USE
14: AIS-SART (ACTIVE), MOB-AIS, EPIRB-AIS[*3]
15: DEFAULT (ALSO USED BY SART, MOB, EPIRB UNDER TEST)

*1: RESERVED FOR FUTURE AMENDMENT OF NAVIGATIONAL STATUS FOR SHIPS CARRYING DG, HS, OR MP, OR IMO HAZARD OR POLLUTANT CATEGORY C, HIGH SPEED CRAFT (HSC)
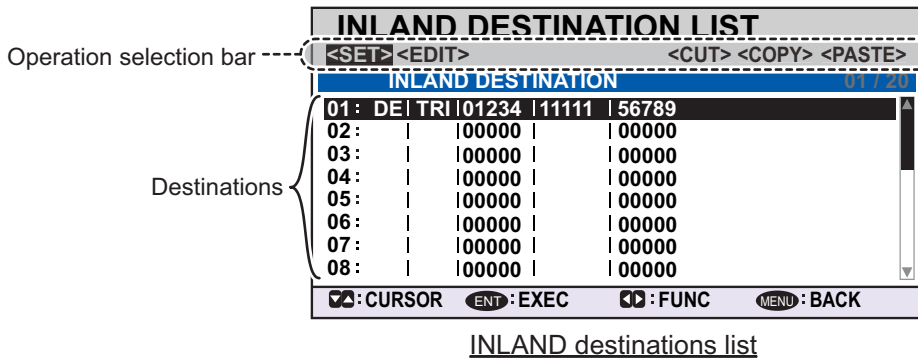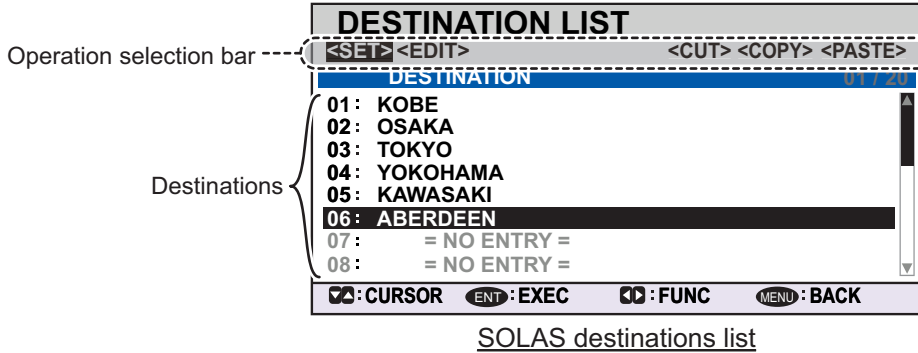
*2: RESERVED FOR FUTURE AMENDMENT OF NAVIGATIONAL STATUS FOR SHIPS CARRYING DANGEROUS GOODS (DG), HARMFUL SUBSTANCES (HS) OR MARINE POLLUTANTS (MP), OR IMO HAZARD OR POLLUTANT CATEGORY A, WING IN GRAND (WIG)

*3: Not selectable.

3. Select [DESTINATION], then press the **ENT/ACK** key. The software keyboard appears for direct input. See section 1.5.4 for how to use the software keyboard. Enter the desired destination then press the **ENT/ACK** key. You can use up to 20 alphanumeric characters and enter up to 20 destinations.

A list of destinations can also be accessed by selecting [SOLAS LIST] (displayed as DESTINATION LIST once accessed, as shown in the figure below) or [INLAND LIST] as appropriate for your AIS mode.

SOLAS destinations list

INLAND destinations list

Referring to operation descriptions in the table below, press ◄or ► to select an operation, press ▲ or ▼ to select an entry in the list, then press the **ENT/ACK** key to confirm the selection.

Operation	Description
<SET>	Set the currently selection as the destination.
<EDIT>	Rename the selected destination. The software keyboard appears when <EDIT> is selected. See section 1.5.4 for how to use the software keyboard.
<CUT>	Cut the current selection to temporary memory, leaving the entry empty. The destination can now be pasted as a different entry. **Note:** Only one entry can be stored in temporary memory at a time. If you <CUT> two entries successively, the first is deleted.
<COPY>	Copy the current selection to temporary memory. The destination can now be pasted as a different entry.
<PASTE>	Paste the entry stored in temporary memory to the selected destination number. **Note:** Entries over-written with <PASTE> cannot be restored.

4. Select [ETA (LT/UTC)], then press the **ENT/ACK** key. The settings pop up window shown below appears.

Note 1: The ETA indication appears as "ETA [UTC]" when there a time offset is set from [TIME DIFF] in the [USER SET] menu. When the setting for [TIME DIFF]

is not changed from the default (+00:00) setting, the ETA indication appears as "ETA [LT]".

Note 2: Where a GPS is not connected, or the signal is lost/interrupted, the ETA indication appears as ETA [UTC]. Further, the settings pop up window displays "NOTE: INPUT THE UTC" at the bottom of the pop up window.

5. Set the ETA date and time, referring to the figure on the previous page, then press the **ENT/ACK** key.

6. Confirm that the AIS mode selected is correct for this voyage. If a mode change is necessary, change the mode (See section 2.2), then repeat this procedure after the system restarts. If no change is required, go to step 6.

7. Select [DYNAMIC INFO RATE], then press the **ENT/ACK** key. The settings pop up window shown below appears.

   If the report rate from a base station is used, this setting is ignored. For that reason, this setting is not always the same as the actual report rate.

DYNAMIC INFO RATE
AUTO
10 sec
5 sec
2 sec

8. Select the appropriate interval to send dynamic information, then press the **ENT/ACK** key.
   Note 1: This setting is fixed to [AUTO] when [AIS MODE] is set to [SOLAS].
   Note 2: The new setting take effect after approximately 8 minutes. In the meantime, the [AUTO] setting is used, regardless of the on-screen indication.

9. Press ▶ to display the [SHIP'S INFO] tab.

   NAV STATUS

VOYAGE	SHIP'S INFO	SCALE

   ERI CODE   : **8160** TANKBARGE

   BLUE CONES   : UNKNOWN
   UN/LOADED   : - - - - - - - -
   CREW   : 254
   PASSENGER   : 8190
   PERSONNEL   : 254
   NO. OF PERSONS   : 8191

   ▲▼ : CURSOR   ENT : SELECT   ◀▶ : TAB

10. [ERI CODE] is selected. Press the **ENT/ACK** key to edit the ERI code type for this voyage.
    For [SOLAS] mode, the [ERI CODE] item is replaced with [CARGO TYPE].

11. Input the ERI code, referring to "ERI Codes" on page AP-12, then press the **ENT/ACK** key.
    Note: When [Tanker] is selected and the Nav status is [Moored], output power is automatically switched to 1 W when SOG is less than 3 knots. Further, in the above condition, when SOG becomes higher than 3 knots, a beep sounds. (The pop-up message "TX POWER CHANGED" also appears to notify you that the Tx power has changed). To erase the pop-up message, press the **ENT/ACK** key or reduce SOG to below 3 knots.
    For SOLAS mode, input the cargo type, referring to step 7 of section 1.6.