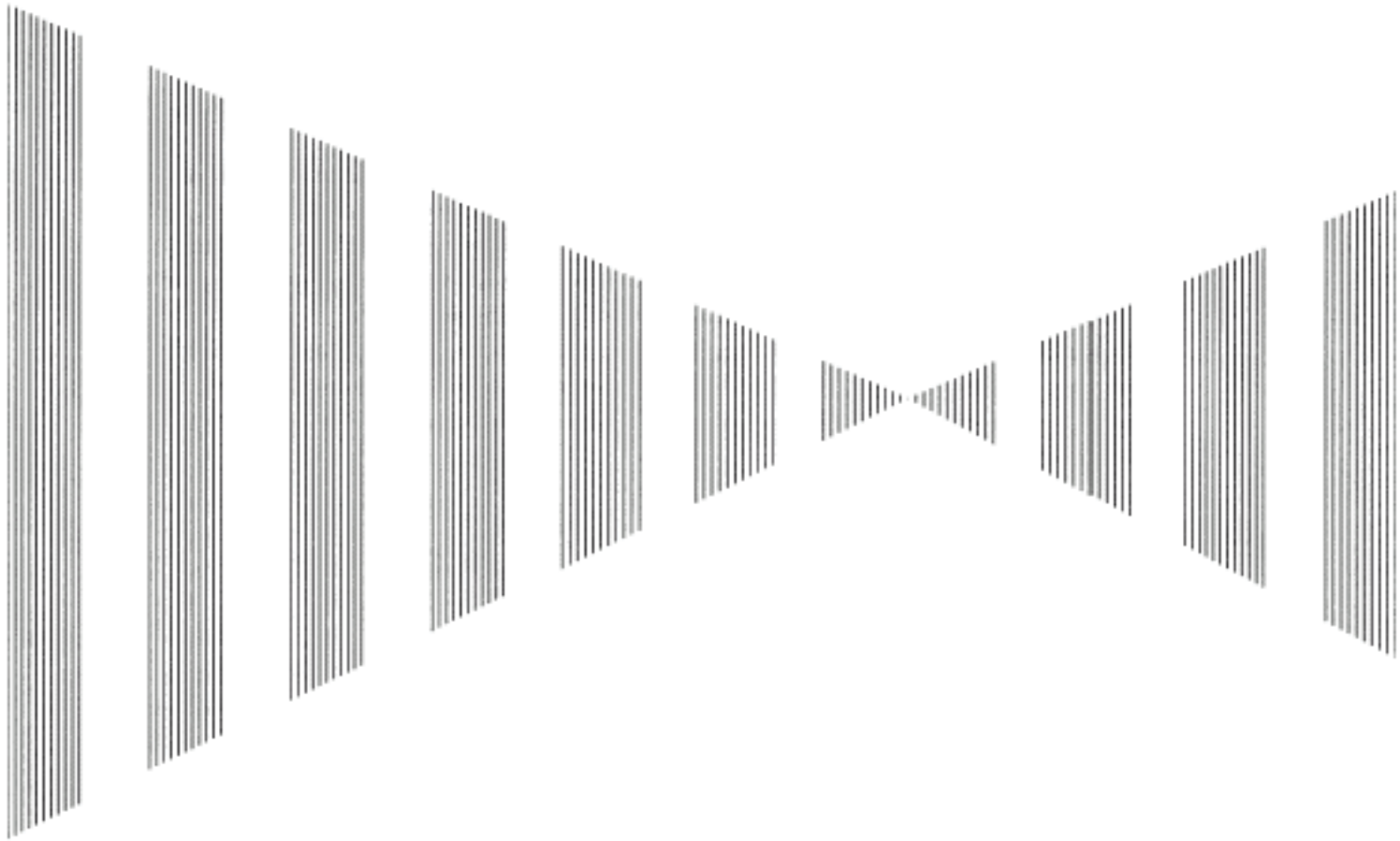


SECTION 2

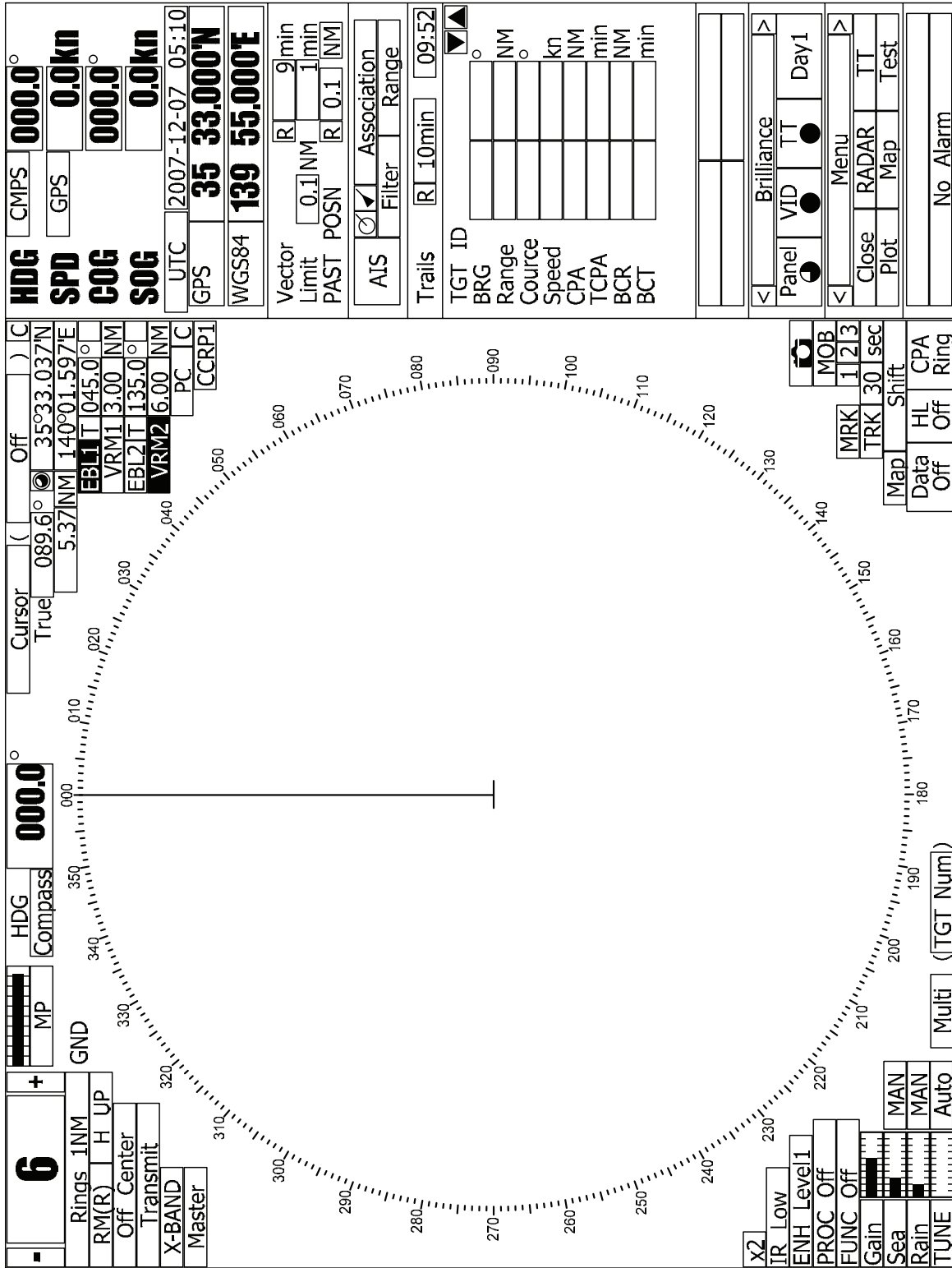
SCREEN DISPLAY AND OPERATION PANEL



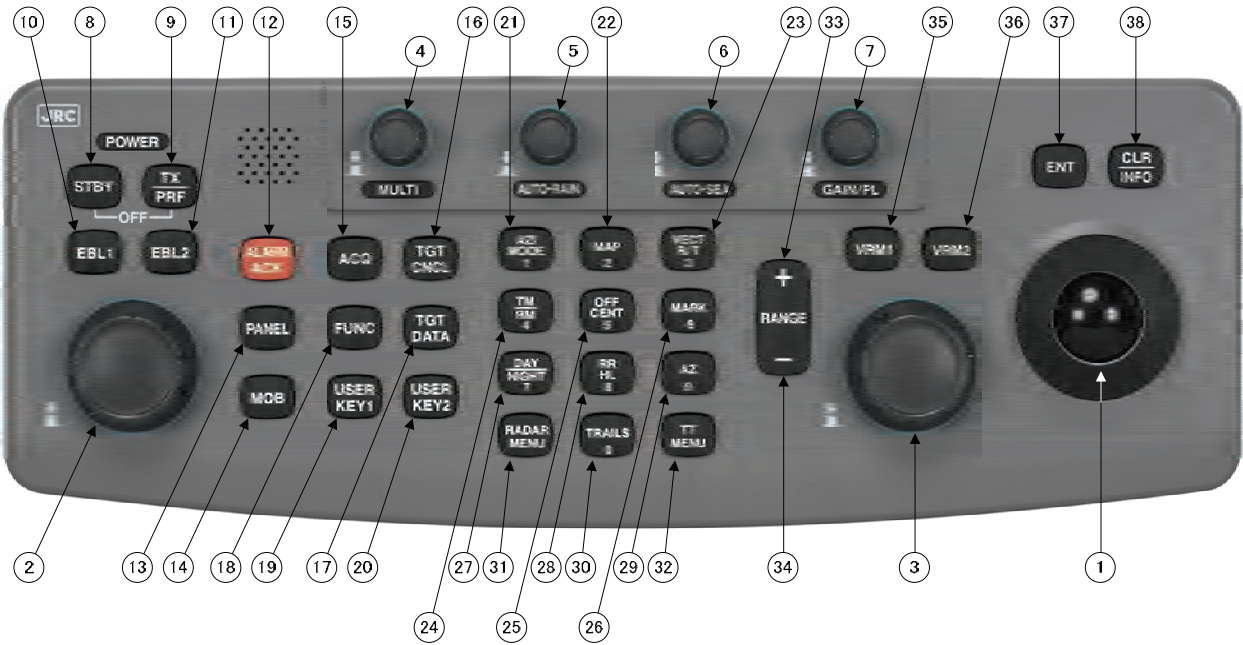
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2.1

EXAMPLE OF DISPLAY



2.2 NAMES AND FUNCTIONS OF CONTROL PANEL KEYS



The following page describe name of buttons.

① **Trackball**

Use this trackball to move the cursor mark to an arbitrary point. The trackball can be used for setting in each mode.

For example, use it to specify the center of a floating EBL or the off-center position.

→For setting cursor, see section 3.9.3.

② **[EBL] (Electric Bearing Line) Control**

Rotates the bearing of an EBL.

The selected EBL status switches back and forth between “center fixed” and “floating” each time the control is pressed.

→See section 3.5.2.

③ **[VRM] (Variable Range Marker) Control**

Changes the range of a VRM.

→See section 3.5.4.

④ **[MULTI] (Multi-function) Control**

Each time you press this control, you can change items registered in the multi-function control function.

An item to switch to is shown put in parentheses in the lower left area of the screen. Give a long press of the control to open the setup screen for registering items. Give a long press of the control button again to close this setup screen.

→See section 3.5.18.

⑤ **[AUTO-RAIN] (Rain/Snow Clutter Suppression) Control**

Suppresses the clutter echo from rain or snow.

To heighten a suppressing effect, turn the control clockwise.

The clutter suppression mode switches back and forth between MANUAL and AUTO each time the control is pressed.

→See section 3.4.7.

⑥ **[AUTO-SEA] (Sea Clutter Suppression) Control**

Suppresses the clutter echo from the sea surface.

To heighten a suppressing effect, turn the control clockwise.

The clutter suppression mode switches back and forth between MANUAL and AUTO each time the control is pressed.

→See section 3.4.6.

⑦ **[GAIN/PL] (Receiving Sensitivity/Pulse Width) Control**

Controls the radar’s receiving sensitivity.

To get higher sensitivity, turn the control clockwise.

To change the transmitter pulse width, press the control.

→For sensitivity, see section 3.4.5.

→For pulse width, see section 3.5.11.

⑧ **[STBY] (Standby) Key**

Use this key to change the power-off state to the power-on state, or the transmission state to the standby state.

To turn off the power, press the **[STBY]** key and **[TX/PRF]** key together.

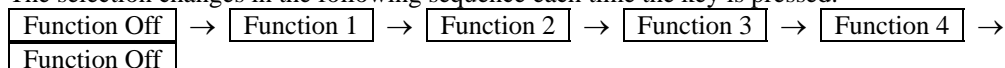
→See section 3.4.2.

- ⑨ **[TX/PRF] (Transmit/Transmitting Repetition Frequency) Key**
 [PREHEAT] at the upper left of the radar display changes to [STANDBY] about three minutes after the power is turned on.
 Then, press this key to start transmission.
 To fine-tune the transmitting repetition frequency, press the key during transmission.
 Use of this function with the interference rejection function heightens an interference suppressing effect.
 →See section 3.4.1.
- ⑩ **[EBL1] (Electric Bearing Line 1) Key**
 Use this key to display and select EBL1.
 Holding down the key for two seconds or more displays the menu for EBL1 setting.
 →See section 3.5.2.
 →For EBL1 setting, see section 3.5.3.
- ⑪ **[EBL2] (Electric Bearing Line 2) Key**
 Use this key to display and select EBL2.
 Holding down the key for two seconds or more displays the menu for EBL2 setting.
 →See section 3.5.2.
 →For EBL2 setting, see section 3.5.3.
- ⑫ **[ALARM ACK] (Alarm Acknowledgment) Key**
 Use this key to acknowledge a failure, target's approach, or collision alarm.
 Press the key to stop an audible alarm.
 If more than one alarm has occurred, the key needs to be pressed the number of times equivalent to the number of alarms.
 →See section 3.3.7.
- ⑬ **[PANEL] (Operation Panel Brilliance) Key**
 Controls the brilliance for the controls and Keys on the operation panel.
 The brilliance changes cyclically each time the key is pressed.
 →See section 3.3.3.
- ⑭ **[MOB] (Marker) Key**
 A marker is set to the latitude and longitude of the own ship's position at the point of pressing this key.
 For example, use the key to store the own ship's position at the moment when somebody falls from the ship.
 Holding down the key for two seconds or more erases the marker.
 →See section 3.5.15.
- ⑮ **[ACQ] (Manual Acquisition) Key**
 Enables the manual TT acquisition mode for the target on which the cursor sits.
 →See section 5.2.1.
- ⑯ **[TGT CNCL] (Tracking Target Cancel) Key**
 Cancels the symbol and vector of a target under tracking, and stops tracking the target.
 Holding down the key for two seconds or more erases all the acquisitions of TT.
 →See section 5.2.2.
- ⑰ **[TGT DATA] (Target Data Setup) Key**
 Use this key to view the numeric data of the TT under tracking or the currently displayed AIS.
 →See section 5.2.3.

⑱ **[FUNC] (Function Call) Key**

Calls predefined signal processing setting when pressed.

The selection changes in the following sequence each time the key is pressed:



Holding down the key for two seconds or more displays the function setting menu.

→See section 3.10.

⑲ **[USER KEY1] (User Registration 1) Key**

Directly displays a pre-registered menu position when pressed.

→See section 3.5.19.

⑳ **[USER KEY2] (User Registration 2) Key**

Directly displays a pre-registered menu position when pressed.

→See section 3.5.19.

㉑ **[AZI MODE] [1] (Bearing Mode Select/1) Key**

Selects the North-up (true bearing), Head-up (relative bearing), or Course-up bearing display mode.

This key serves as the numeric key **[1]** during menu operation.

→See section 3.5.7.

㉒ **[MAP] [2] (Map Display/2) Key**

Selects whether to display charts, shorelines or depth contours on the radar map.

This key serves as the numeric key **[2]** during menu operation.

→For displaying charts, see section 3.7.

㉓ **[VECT R/T] [3] (Vector Mode/3) Control**

Selects the TT vector display mode (true/relative).

This key serves as the numeric key **[3]** during menu operation.

→See section 5.1.7.

㉔ **[TM/RM] [4] (True Motion/Relative Motion) Key**

Switches back and forth between the TM display mode and RM display mode.

This key serves as the numeric key **[4]** during menu operation.

→See section 3.5.8.

㉕ **[OFF CENT] [5] (Off Center/5) Key**

Shifts the own ship's position within a desired direction (within 66% of the scope's radius) from the scope's center to expand the display portion.

This key serves as the numeric key **[5]** during menu operation.

→See section 3.5.9.

㉖ **[MARK] [6] (Mark/6) Key**

Displays a mark at an arbitrary position or erases the mark on the display.

This key serves as the numeric key **[6]** during menu operation.

→See section 3.5.16.

㉗ **[DAY/NIGHT] [7] (Day/Night Mode Select/7) Key**

Selects a preset color and brilliance of the display screen.

This key serves as the numeric key **[7]** during menu operation.

→See section 3.3.4.

②⑧ [RR/HL] [8] (Fixed Range Marker/Heading Line Off/8) Key

The ship's HL (heading line) is erased while this key is held down.

The fixed range marker display switches back and forth between **display** and **non-display** each time the key is pressed.

This key serves as the numeric key **[8]** during menu operation.

→For displaying Fixed Range Marker, see section 3.4.9

→For Heading Line Off, see section 3.4.10.

②⑨ [AZ/9] (Guard Zone/9) Key

Sets a guard zone on the radar display.

This key serves as the numeric key **[9]** during menu operation.

→See section 3.5.20 and section 3.5.21.

③⑩ [TRAILS] [0] (Radar Trails/0) Key

The radar trails time length is switched each time the key is pressed.

This key serves as the numeric key **[0]** during menu operation.

→See section 3.5.10.

③① [RADAR MENU] (Radar Menu) Key

Displays the radar menu when pressed.

③② [TT MENU] (TT Menu) Key

Displays the TT menu when pressed.

③③ [RANGE+] (Range Scale +) Key

Expands the observation range scale when pressed.

→See section 3.4.3.

③④ [RANGE-] (Range Scale -) Key

Shrinks the observation range scale when pressed.

→See section 3.4.3.

③⑤ [VRM1] (Variable Range Marker 1) Key

Use this key to display and select VRM1.

Holding down the key for two seconds or more displays the menu for VRM1 setting.

→See section 3.5.4.

③⑥ [VRM2] (Variable Range Marker 2) Key

Use this key to display and select VRM2.

Holding down the key for two seconds or more displays the menu for VRM2 setting.

→See section 3.5.4.

③⑦ [ENT] (Enter) Key

Use this key to determine menu selection or value input.

Pressing the key has the same effect as left-clicking the trackball.

③⑧ [CLR/INFO] (Clear/Information) Key

Use this key to cancel menu selection or value input.

Pressing the key has the same effect as right-clicking the trackball

2.3 FUNCTIONS OF SOFTWARE BUTTONS

This radar provides the software buttons on the display which can be used to set several important functions directly and swiftly from the display without opening the corresponding menu.

The names of buttons are described on the following pages.

By positioning the arrow cursor to a button in the figure above and then clicking the left button of the trackball, the setting can be changed as shown below.

Note : Latitude and longitude in Area 5 is the value of CCRP.

Area 1 (Top-left corner of the radar display)

Area 2 (Bottom-left corner of the radar display)

Area 3 (Top-right corner of the radar display)

Area 4 (Bottom-right corner of the radar display)

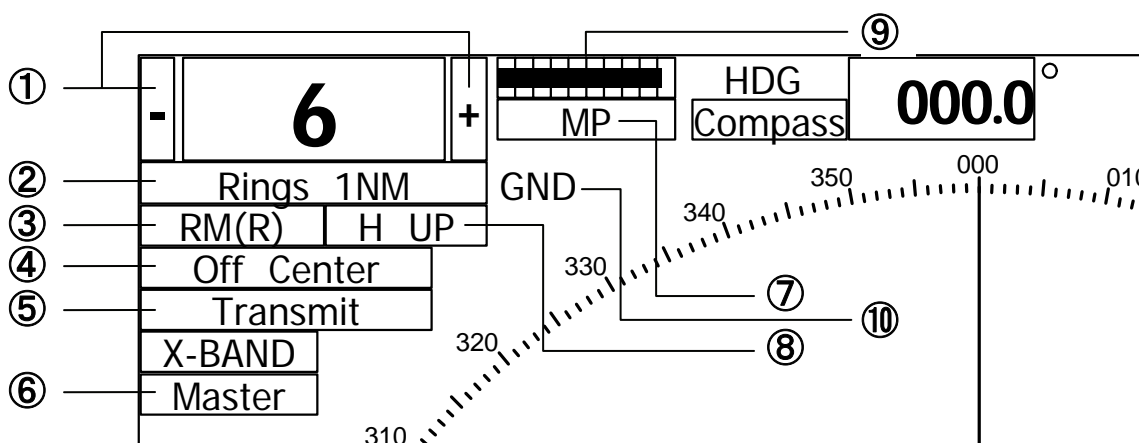
Area 5 (Own ship's information)

Area 6 (Other ship's information)

Area 7 (Panel display)

Area 8 (Operation/message)

2.3.1 Software Buttons for Area 1 (Top-Left Corner of the Radar Display)



① : Range scale switching

To increase the observation range scale (maximum 96NM), click and to reduce the range (minimum 0.125NM), click .

② : Range rings display On / Off

The display of range rings are set to On / Off whenever this button is clicked. When the display is set to On, the interval of the fixed range marker is displayed.

③ : Motion mode true / relative switching

The screen motion mode is switched whenever the button is clicked.

(true motion) ⇒ (relative motion)
⇒

indicates that the radar trails is a relative trail.

indicates that the radar trails is a true trail.

④ : Off center switching

If this button is clicked, the cursor is moved, and the [ENT] key is pressed, the ship's position can be moved to the cursor position. The moving range is within 66% of the radius.

If the button is clicked for 2 seconds, the off-center is set to Off and the ship's position is returned to the center of the screen.

⑤ : Transmission / standby switching

At expiration of the pre-heat time after the power is turned on, changes to .

: Indicates a standby state. If this button is clicked in this state, the equipment is set to a transmission state.

: Indicates a transmission state. If this button is clicked in this state, the equipment is set to a standby state.

⑥ : Interswitch connection change

This button is displayed when the interswitch is connected. This button indicates the connection status of the scanner unit that is connected to the indicator.

If the button is clicked in the transmission standby state, the menu for changing the connection state between the scanner unit and the indicator is displayed. The connection state of the scanner unit and indicator cannot be changed unless the master indicator is in a standby state.

→ Refer to the Interswitch (Optional) Instruction Manual that is attached for the setting method. This button is not displayed if the interswitch is not connected.

⑦ : Transmission pulse length switching

The transmission pulse length is switched whenever this button is clicked. Three types of pulses are available, short pulse (SP), middle pulse (MP), and long pulse (LP). The pulse length and repetition frequency vary even for the same short pulse, according to the range that is used and it is displayed as , .

⑧ : Azimuth display mode switching

The azimuth display is switched whenever this button is clicked.

(Head Up) ⇒ (North Up) ⇒
 (Course Up) ⇒

If the button is clicked for 2 seconds, the GYTO Setting menu is displayed.

⑨ : Tuning state gauge

The tuning state is indicated.

Increased gauge means better tuning, and high quality images will be displayed.

⑩ : Stabilization mode display

Sea : Stabilization with respect to the water

GND : Stabilization with respect to the ground

About ground and sea stabilization

- Speed sensor source is , ,

If Set/Drift Setting menu is on :

GND (Ground stabilization)

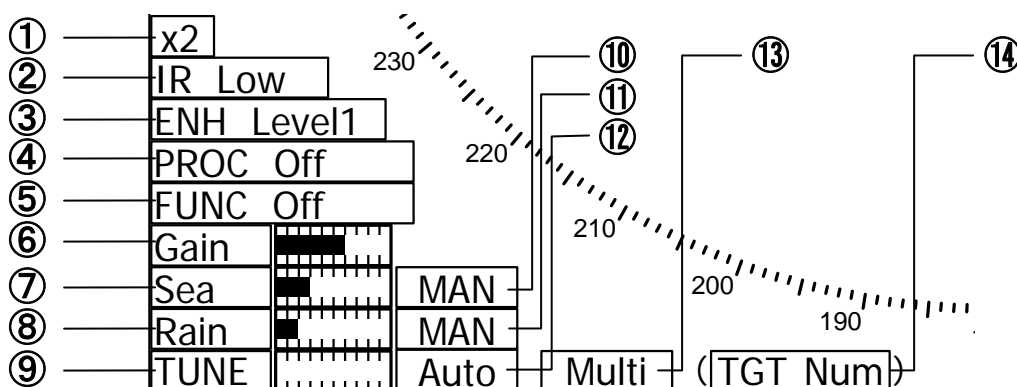
If Set/Drift Setting menu is off :

Sea (Sea stabilization)

- Speed sensor source is , :

GND (Ground stabilization)

2.3.2 Software Buttons for Area 2 (Bottom-Left Corner of the Radar Display)

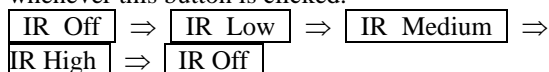


① : Double zoom switching

Use this function to enlarge to double the size the display screen of the position specified by the cursor. If this button is clicked, the zoom mode is set. When the cursor is moved to the radar screen and the [ENT] key is pressed, the screen is enlarged to double the size so that the middle of the cursor and the own ship's position is set to the center of the screen. This function cannot be used when the range is 0.125NM.

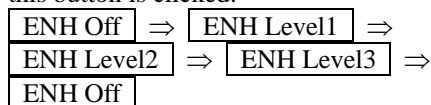
② : Interference rejection (IR) mode switching

The interference rejection mode is switched whenever this button is clicked.



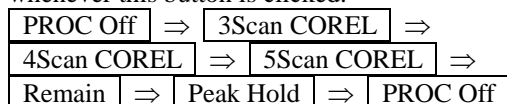
③ : Target enhance (ENH) mode switching

The target enhance mode is switched whenever this button is clicked.



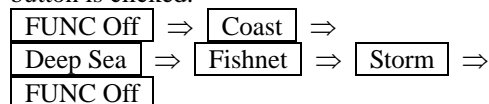
④ : Radar video processing (PROC) mode switching

The radar video processing mode is switched whenever this button is clicked.



⑤ : Function (FUNC) mode switching

The function mode is switched whenever this button is clicked.



If the button is clicked for 2 seconds, the function registration menu (User Function Setting) is opened.

⑥, ⑦, ⑧, and ⑨ : Gain, Sea clutter suppression (Sea), Rain / snow clutter suppression (Rain), Tune adjustment

Adjust the gain, sea clutter suppression, rain and snow clutter suppression and tune using the track ball.

If the button is clicked on, the adjustment value is shown at the upper-right of the cursor. Make adjustments by moving the track ball to the left and right. Determine the adjustment by pressing the [ENT] key.

⑩, ⑪, and ⑫ : Sea clutter suppression (Sea) mode, Rain / snow clutter suppression (Rain) mode, and Tune mode switching

Use these functions to switch to the manual or automatic mode of sea clutter suppression, rain / snow clutter suppression and tune. The bar on the left side indicates the position of the dial.

The mode is switched to **MAN** (manual) / **AUTO** (automatic) whenever the button is clicked. If rain / snow clutter suppression is switched to an automatic mode, sea clutter suppression is switched to an automatic mode also.

⑬ : Multi-dial mode switching

The function that is registered in the multi-dial is switched whenever the button is clicked.

Vector ⇒ Trails ⇒ TGT No. ⇒
Course ⇒ Track ⇒ Mark ⇒
⇒ Tune ⇒ Vector

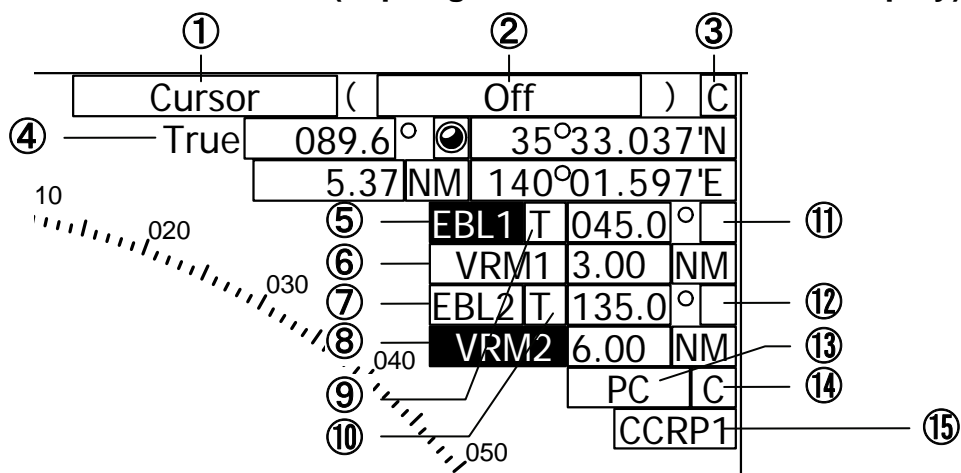
The switched function is displayed in ().

If the button is clicked for 2 seconds, the Multi Dial Setting menu is opened. If this button is clicked again for 2 seconds, this setting menu is closed.

⑭ : Multi-dial mode

The currently selected multi-dial mode described in ⑬ is displayed.

2.3.3 Software Buttons for Area 3 (Top-Right Corner of the Radar Display)

**① : Cursor mode switching**

The mode of the function that uses the cursor is switched whenever this button is pressed.

AUTO ⇒ ACQ TT ⇒ ACT AIS ⇒
 TGT DATA ⇒ CNCL TT ⇒
 DEACT AIS ⇒ CNCL Data ⇒
 (Mark) ⇒ ----- (Line) ⇒
 Property ⇒ AUTO

② : Cursor mode: mark font / line pattern switching

The currently selected cursor mode is indicated. When the cursor is in the mark or line mode, use this button to change the mark font pattern or line pattern. If this button is clicked while the cursor mode is (mark) or ----- (line), the mark font / line pattern is changed.

③ : Mark color / line color switching

This function switches a mark color / line color. If this button is clicked while the cursor mode is (mark) or ----- (line), the mark color / line color is changed.

④ : Cursor bearing numeric value display true / relative switching

The bearing numeric value display T (true bearing) / R (relative bearing) of the cursor is switched whenever this button is clicked.

⑤, ⑥, ⑦, and ⑧ : EBL1 / 2 and VRM1 / 2 adjustment

These functions set the EBL1, VRM1, EBL2, and VRM2 displays to On / Off and acquire the operation right.

If the button is clicked on, the operation right is acquired. Make adjustments by moving the track ball to the left and right. Determine the adjustment by pressing the [ENT] key.

⑨ and ⑩ : EBL1, EBL2 numeric value true / relative switching

The EBL1 / 2 bearing numeric value display T (true bearing) / R (relative bearing) is switched whenever the button is clicked.

If the button is clicked for 2 seconds, the EBL / Cursor Setting menu is displayed.

⑪ and ⑫ : EBL1 / EBL2 starting point mode switching

The EBL starting point is set to CCRP or any position on the radar screen whenever this button is clicked.

⇒ C ⇒ D ⇒

: Center :The starting point is fixed to the CCRP position.

C : Screen Fix :The starting point is set to the cursor position. If the [ENT] key is pressed subsequently, the starting position is fixed to the cursor position.

D : L/L Fix :The starting point is set to the cursor position. If [ENT] key is pressed subsequently, the starting position is fixed to the latitude / longitude of the cursor. (Connection of a navigator is necessary.)
If the starting point is moved outside of the screen, the operation is reset automatically and the starting point returns to the CCRP position.

* D is enabled only when a navigator is connected.

⑬ : Parallel index line setting

This function sets the parallel index line display to On / Off and acquires the operation right.

If this button is clicked, the operation right is acquired and the menu is opened. After setting, determine the setting by pressing the [ENT] key.

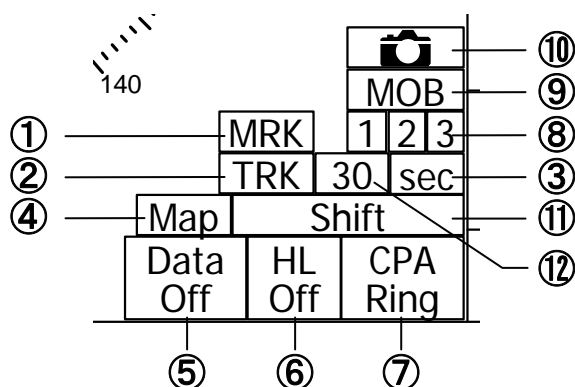
⑭ : Parallel index line starting point mode switching

The parallel index line starting point is set to CCRP or any position on the radar screen whenever this button is clicked.

In the same way as for the EBL starting point, three options are available, : Center, C : Screen Fix, and D : L/L Fix.

⑮ Consistent Common Reference Point (CCRP)

2.3.4 Software Buttons for Area 4 (Bottom-Right Corner of the Radar Display)



① : Mark color switching

The color of the mark is switched whenever this button is clicked.

If the button is clicked for 2 seconds, the Mark Setting menu is opened.

② : Own ship's track interval switching

The own ship's track interval is switched whenever this button is clicked.

③ : Own ship's track interval unit switching

The unit of the own ship's track interval is switched whenever this button is clicked.

⇒ ⇒ ⇒

④ : Map display On / Off

The map display is set to On / Off whenever this button is clicked.

Map information must be inserted in the card slot of the radar process unit in advance.

If the button is clicked for 2 seconds, the Map Setting menu is opened.

⑤ : Graphic display Off

While the button is clicked, the graphic display other than VRM, EBL, HL, a cursor, and range rings on the radar screen is cleared temporarily.

⑥ : Ship's heading line Off

The ship's heading line (HL) display is set to Off while this button is clicked.

Since the ship's heading line is cleared while the button is clicked, the target in the ship's heading bearing can be clearly seen.

⑦ : CPA ring display On / Off

The CPA ring display is switched to On / Off whenever the button is clicked.

When the target vector display mode is (true vector), the CPA ring cannot be set to On.

⑧ : Event mark input

When the event mark button is pressed, an event mark is displayed on the current location of the own ship.

To delete the event mark, set the cursor to the mark mode, move the cursor to the event mark, and press the Delete / Information key.

⑨ : Marker

Press the Marker button to place a marker at the current lat/long coordinates of the own ship.

The marker function is used to quickly memorize the location of the own ship when for example someone falls from the ship. The marker will be deleted when the button is held down for 2 seconds.

⑩ : Screenshot function

When this button is pressed, an image of the current screen can be saved as a bitmap data in the memory card.

Note: The system becomes slower while the screenshot function is in use.

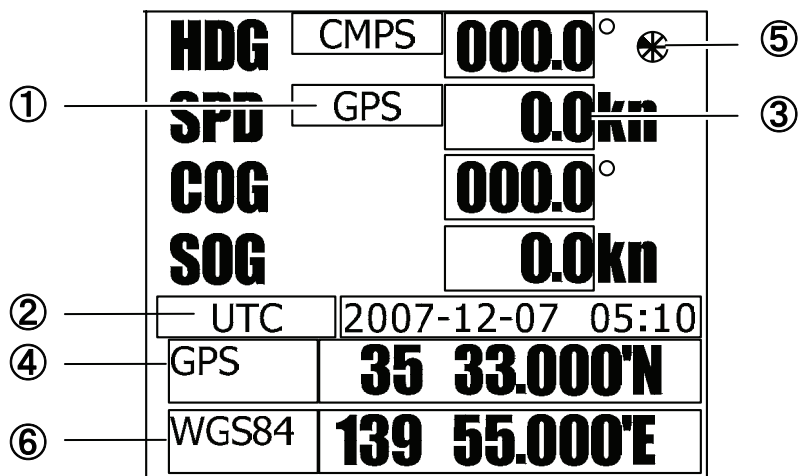
⑪ : Map location correction On / Off

Map location correction is activated or deactivated every time this button is pressed.

⑫ : Memory intervals for own ship's track display

Selects track data memory intervals for own ship. The setting changes each time the button is pressed.

2.3.5 Software Buttons for Area 5 (Own Ship Information Area) (Right Side of the Radar Display)



① : Speed sensor switching

The speed sensor is switched whenever the button is clicked.

(Manual) ⇒ (Single-axis log) ⇒
 (Double-axes to water) ⇒
 (Double-axes to ground) ⇒
 ⇒

If you selected the 2AXW, the value of forward-backward direction is indicated.

If ships in shallow water, when the accuracy of the dual-axis log may be decreased.

If ships in deep sea area, when the accuracy of the dual-axis log error may be occurred.

The accuracy of GPS's COG is $\pm 3^\circ$ when own ships speed no fewer than 1kn, no more than 17kn. The accuracy of GPS's COG is $\pm 1^\circ$ when own ships speed over 17kn.

② : Time display mode switching

The time display mode UTC (universal time clock) / LMT (local mean time) is switched whenever this button is clicked.

③ : Manual own ship's speed setting

When selection of the speed sensor is set to , enter the own ship's speed manually.

If this button is clicked, the numeric value input screen is opened. After setting a value, determine the entry by clicking .

④ : Positioning system (example: GPS, DGPS)

Displays the type of the position fixing equipment that contains the own ship's information.

LRNA : LORAN A
 LRNC : LORAN C
 GPS : GPS
 DGPS : DGPS (SBAS also included)
 JG : JRC format (G)
 JC : JRC format (C)
 JN : JRC format (N)
 JZ : JRC format (Z)
 MAN : MANUAL

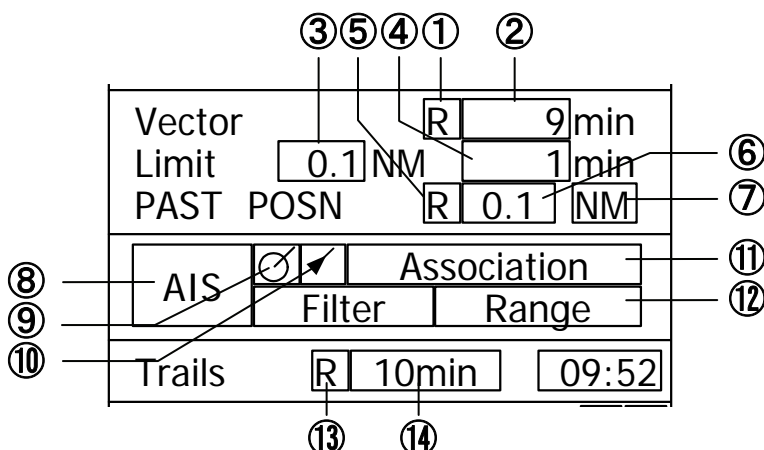
⑤ : When a picture freeze occurs, the turn of this symbol stops.

⑥ : Geodetic System

The geodetic system used with the position fixing system is displayed.

The display items on the Geodetic System List screen in 3.8.5 "Set and Display Geodetic System" are displayed.

2.3.6 Software Buttons for Area 6 (Other Ship Information Area) (Right Side of the Radar Display)



① : Target vector display true / relative switching

The tracked target / AIS target vector display is switched to T (true vector) / R (relative vector) whenever this button is clicked. This setting is switched together with the past position display true / relative switching.

② : Target vector length setting

Set a vector length of the tracked target / AIS target. If this button is clicked, the numeric value input screen is opened. After setting the length, determine the setting by clicking .

③ : CPA limit setting

Set a CPA limit. If this button is clicked, the numeric value input screen is opened. After setting the limit, determine the setting by clicking .

④ : TCPA limit setting

Set a TCPA limit. If this button is clicked, the numeric value input screen is opened. After setting the limit, determine the setting by clicking .

⑤ : Past position display true / relative switching

The tracked target / AIS target past position display is switched to T (true past position) / R (relative past position) whenever the button is clicked. This setting is switched together with the target vector display true / relative switching.

⑥ : Past position display interval switching

The past position display interval is switched whenever the button is clicked.

⑦ : Past position display interval unit switching

The past position display interval unit is switched whenever the button is clicked. ⇒ ⇒

⑧ : AIS On / Off

The AIS display is switched to On / Off whenever the button is clicked.

⑨ : Tracked target symbol display On / Off

The tracked target symbol display is switched to On / Off whenever the button is clicked. Use this function to avoid confusion with the AIS symbol.

⑩ : AIS target symbol display On / Off

The AIS target symbol display is switched to On / Off whenever the button is clicked. Use this function to avoid confusion with the tracked target symbol.

⑪ : Association On / Off

The tracked target / AIS target association is switched to On / Off whenever the button is clicked.

⑫ : AIS filter mode switching

The AIS filter is switched whenever the button is clicked. ⇒ ⇒ ⇒

⑬ : Radar trails display true / relative switching

Radar trails are switched to **T** (true motion trail) / **R** (relative motion trail) whenever this button is clicked.

This setting is restricted by the radar display motion mode.

In relative motion display mode (RM), switching to **T** / **R** is possible.

In true motion display mode (TM), only **T** can be set.

⑭ : Radar trails display time switching

The radar trails display time is switched whenever the button is clicked.

If the time does not reach the radar trails time that was set, the remaining time is displayed on the right-hand side.

If the button is clicked for 2 seconds, the RADAR Trails Setting menu is opened.

2.3.7 Software Buttons for Area 7 (Panel Display Area) (Right Side of the Radar Display)



AIS ID	<input type="text"/>	<input type="button" value="◀"/>	<input type="button" value="▼"/>	<input type="button" value="▲"/>	<input type="button" value="▶"/>
DEST	<input type="text"/>				
ETA	<input type="text"/>				
POSN	<input type="text"/>				
EPFS	<input type="text"/>				
RAIM	<input type="text"/>				
POSN Accuracy	<input type="text"/>				

AIS ID	<input type="text"/>	<input type="button" value="◀"/>	<input type="button" value="▼"/>	<input type="button" value="▲"/>	<input type="button" value="▶"/>
BRG	<input type="text"/>	<input type="button" value="°"/>			
Range	<input type="text"/>	<input type="button" value="NM"/>			
COG	<input type="text"/>	<input type="button" value="°"/>			
SOG	<input type="text"/>	<input type="button" value="kn"/>			
CPA	<input type="text"/>	<input type="button" value="NM"/>			
TCPA	<input type="text"/>	<input type="button" value="min"/>			
HDG	<input type="text"/>	<input type="button" value="°"/>			
ROT	<input type="text"/>	<input type="button" value="°/min"/>			

AIS ID	<input type="text"/>	<input type="button" value="◀"/>	<input type="button" value="▼"/>	<input type="button" value="▲"/>	<input type="button" value="▶"/>
Name	<input type="text"/>				
Call SIGN	<input type="text"/>				
MMSI	<input type="text"/>				
IMO Number	<input type="text"/>				
NAV Status	<input type="text"/>				

AIS ID	<input type="text"/>	<input type="button" value="◀"/>	<input type="button" value="▼"/>	<input type="button" value="▲"/>	<input type="button" value="▶"/>
AtoN Real/Virtual	<input type="text"/>				
AtoN Type	<input type="text"/>				

AIS target information

Information of the selected AIS target can be shown in numerical values.
 Only one ship can be selected as an AIS target.
 4-page AIS target information is provided.

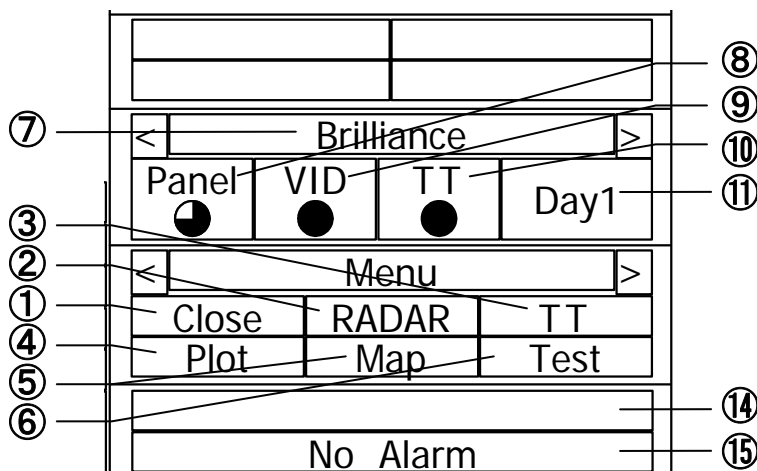
2.3.8 Software Buttons for Area 7 (Panel Display Area) (Right Side of the Radar Display)

TT ID			▼▲
BRG			○
Range			NM
Course			○
Speed			kn
CPA			NM
TCPA			min
BCR			NM
BCT			min
BCR			NM
BCT			min

Tracked target information

Information of the selected tracked target can be shown in numerical values.
Two ships can be selected as tracked targets.

2.3.9 Software Buttons for Area 8 (Operation and Message Area) (Right Side of the Radar Display)



2

① : Exit button

Click this button to exit the menu screen.

② : Main menu / Radar menu

Single-click this button to call up Main Menu.
Double-click this button to call up Radar Menu.

③ : TT menu (target menu)

Click this button to call up TT Menu.

④ : Plotter menu

Click this button to call up Plot (Plotter) Menu.

⑤ : Map menu

Click this button to call up Map Setting.

⑥ : Test menu

Click this button to call up Test Menu.

⑦ : Screen switch

Click this button to switch the screen between the brilliance adjustment screen and the screen information setting screen.

⑧ : Panel brightness setting

Brightness of the operation panel can be changed.
Click this button to adjust brightness. It can be set in 5 levels.

⑨ : Radar image brightness setting

Brightness of the radar image (echo) can be adjusted.
Click this button to change brightness. It can be set in 4 levels.

**⑩ : Tracked target / AIS target
brightness setting**

Brightness of the tracked target / AIS target can be adjusted.

Click this button to adjust brightness. It can be set in 5 levels.

⑪ : Day/Night mode switch

Click this button to change the day/night mode in the following order:

Day1 ⇒ Day2 ⇒ Dusk ⇒ Night ⇒ Day1

⑫ : User map menu

Click this button to call up a menu screen for loading a map created by a user.

⑬ : User setting menu

Click this button to call up a menu screen for loading the user setting.

⑭ : Alarm display

Click this button to stop the alarm buzzer and the flashing of the alarm display.

When multiple alarms go off simultaneously, the alarm that must be acknowledged first is indicated.

The top line shows an alarm to be acknowledged by clicking.

The bottom line shows the current alarms one by one.

⑮ : Alarm indication

The system alarm indicated in red.

Other information indicated in blue or yellow.



SECTION 3

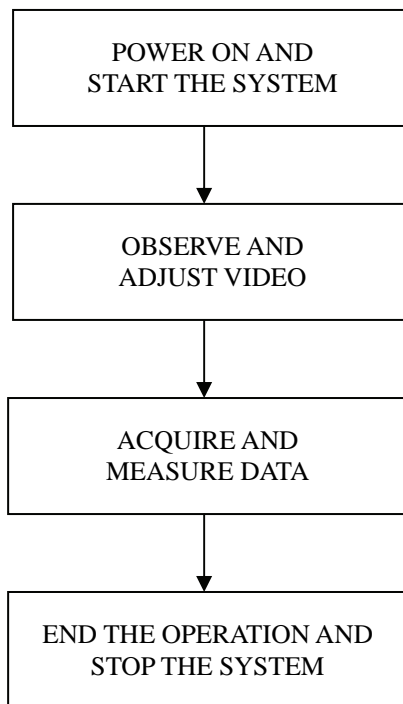
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3.1 FLOW OPERATION

Attention

- **Do not put anything on the operation panel.
If you put anything hot on it, it may be deformed.**
- **Do not give any impact to the operation panel,
trackball, or controls.
Otherwise, any failure or damage may result.**



Each operation is described in detail below.

3.1.1 Power ON and Start the System



Caution



A malfunction may occur if the power in the ship is instantaneously interrupted during operation of the radar. In this case, the power should be turned on again.

3

Attention

- Wait for about 2 seconds before turning on the power again.
- Immediately after the radar is installed, at start of the system after it has not been used for a long time, or after the magnetron is replaced, preheat the equipment in the standby state for 20 to 30 minutes before setting it into the transmit state.
- If the preheating time is short, the magnetron causes sparks, resulting in its unstable oscillation. Start transmission on a short-pulse range and change the range to the longer pulse ranges in turn. If the transmission is unstable in the meantime, immediately place the system back into the standby state and maintain it in the standby state for 5 to 10 minutes before restarting the operation. Repeat these steps until the operation is stabilized.

Procedure

- 1 Check that the ship's mains are turned on.
- 2 Press [STBY] key.

The system is turned on, and the preheating time is displayed.
[PREHEAT] is indicated at the upper left of the radar display.

- 3 Wait until the preheating time is over.

When the preheating time is over, the preheating time screen disappears, and [PREHEAT] at the upper left of the radar display changes to [STANDBY].

- 4 Press [TX/PRF] key.

The radar will start transmission and the antenna will start rotating.
[STANDBY] at the upper left of the radar display changes to [TRANSMIT].

Note: The radar does not start transmission if you press [TX/PRF] key while [PREHEAT] is indicated.

3.1.2 Observe and Adjust Video

Procedure

- 1 Press [RANGE+] key or [RANGE-] key to set the range to the scale required for target observation.
- 2 Turn the controls [AUTO-GAIN], [AUTO-SEA], and [RAIN] to obtain the clearest targets.

Refer to
[GAIN]→Section 3.4.5 “Control Sensitivity [GAIN/PL]”
[SEA]→Section 3.4.6 “Suppress Sea Clutter [AUTO-SEA]”
[RAIN]→Section 3.4.7 “Suppress Rain/Snow Clutter [AUTO-RAIN]”
for how to use each control.

3.1.3 Acquire and Measure Data

For details on data acquisition and measurement, refer to Section 3.4 “BASIC OPERATIONS” and Section 4 “MEASUREMENT OF RANGE AND BEARING.”

3.1.4 Display and Measure with Reference to CCRP

The radar video, range, bearing, Target Tracking and AIS data display etc... are displayed with reference to CCRP (Consistent Common Reference Point).

If scanner is switched, these data are measured from CCRP.

If some kind of functions (for example off center, true motion, bearing scale, etc.) set scanner position to 75% outside of the PPI range, these data except Target Tracking and AIS data are displayed with reference to scanner position.

For how to setting CCRP, refer to Section 7.1.6 “Setting of CCRP/Antenna/GPS Antenna Position (CCRP Setting).”

3.1.5 End the Operation and Stop the System

Exit

- 1 Press [STBY] key.

The radar will stop transmission and the antenna will stop rotating.

TRANSMIT at the upper left of the radar display changes to **STANDBY**.

(Maintain the standby state if radar observation is restarted in a relatively short time.
Only pressing the [TX/PRF] key starts observation.)

- 2 Press the [STBY] key and the [TX/PRF] key together.

The system will be turned off.

Warning



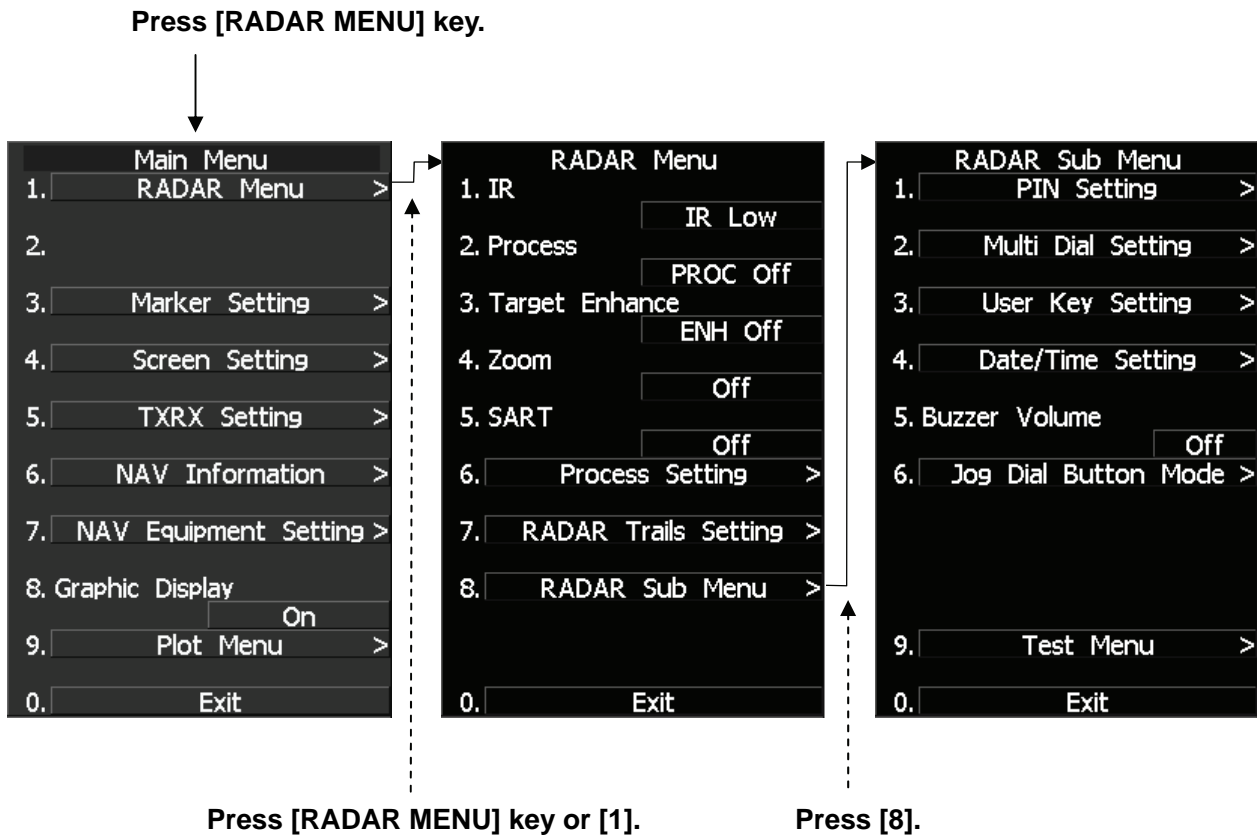
When conducting maintenance work, make sure to turn off the power and unplug the power connector J1 of the radar process unit so that the power supply to the equipment is completely cut off.

Some equipment components can carry electrical current even after the power switch is turned off, and conducting maintenance work without unplugging the power connector may result in electrocution, equipment failure, or accidents.

3.2 MENU COMPOSITION

The Menu system of this radar equipment consists of the main menu and the submenus up to the lower 2 levels. You can jump to each menu by pressing the menu button at the lower right of the radar display or the switch on the operation panel.

3.2.1 Overview of Menu Structure

3


Use the RADAR Menu to change the settings of signal processing functions, use the Main Menu to change the settings of other detailed information, and use the Radar Submenus to change the less frequently used settings or run the system's self-diagnostic program.

3.2.2 Basic Menu Operation

To open the menu:

Press [RADAR MENU] key.

To close the menu:

Press [RADAR MENU] key.

Alternatively, hold down [0] key until the menu closes.

* Software button ② located at the operation/message area in Section 2.3.9 also available to switch between ON and OFF.

To move to a lower level of the menu:

The menu is in hierarchical structure. Press the numeric keys [1]-[9] corresponding to the desired menu item number. Control will move to the lower level.

Alternatively, place the cursor over the item and then press [ENT] key.

is shown at the right end of a menu item having a lower level.

To move to a higher level of the menu:

Press [0] key while the menu is open. Control will return to the higher level from the lower level.

Alternatively, place the cursor over the item and then press [ENT] key.

To determine an item:

Press the numeric keys [1]-[9] corresponding to the desired item number. The selected item will be displayed. Alternatively, place the cursor over the item you want to change, and then press [ENT] key.

To determine the selected item:

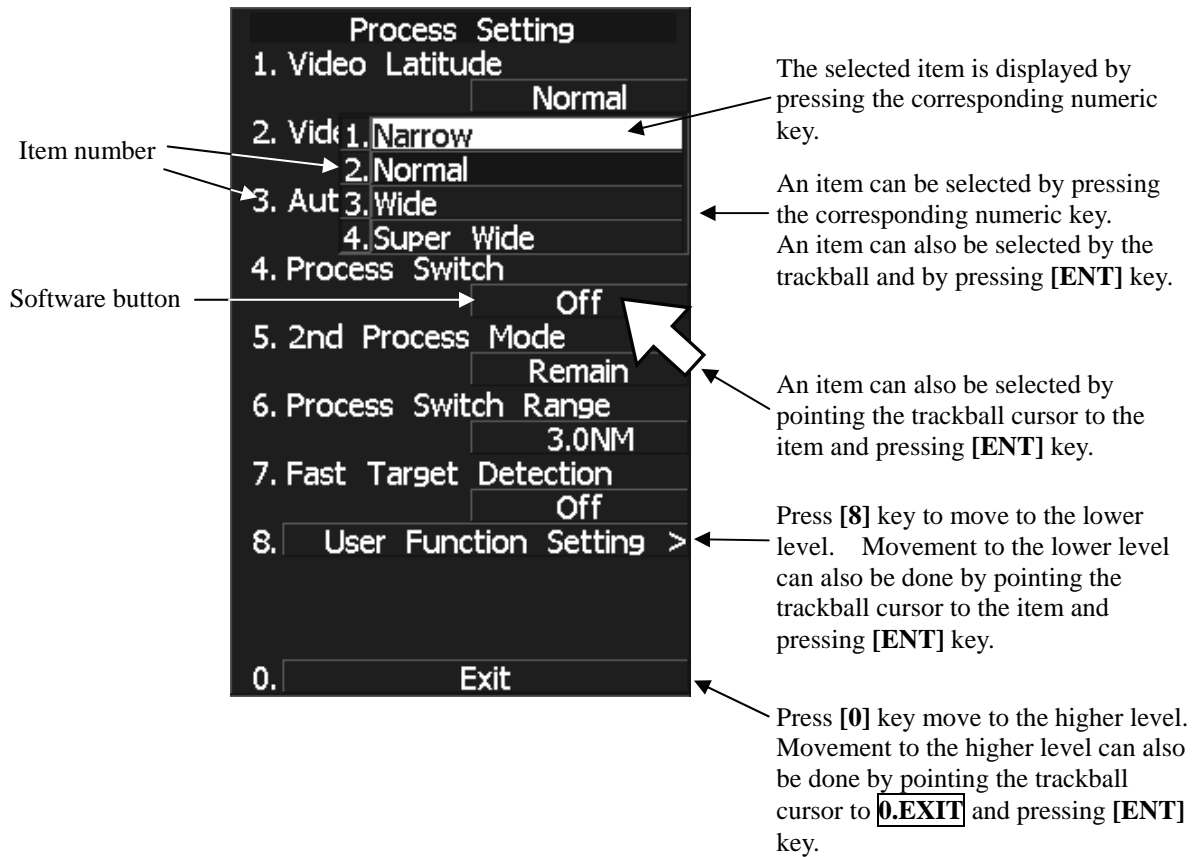
Press the numeric keys [1]-[9] corresponding to the selected item number. Alternatively, place the cursor over the selected item and then press [ENT] key. If you do not change the setting of the selected item, press [CLR/INFO] key.

Menu Operation with the Trackball

The menu items are software buttons that can be operated with the trackball.

An item can be selected by pointing the trackball cursor to the item and pressing [ENT] key, instead of using the numeric key.

Example of menu display



3.3 PREPARATION

3.3.1 Adjust Display Brilliance [BRILL]

Procedure

- 1 Obtain the best-to-see display with optimum brilliance by turning the [BRILL] control at the lower right of the display unit.

Turning the [BRILL] control clockwise increases the brilliance of the entire display. Conversely, turning the [BRILL] control counterclockwise decreases the brilliance of the entire display.

In consideration of the ambient brightness, adjust display brilliance that is high enough to easily observe the radar display but does not glare.

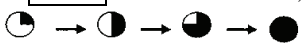
3.3.2 Adjust Contrast

Adjust the contrast of the radar video display.

Procedure

- 1 Point the trackball to the [VID] button (software button ⑨ located at the operation/message area in Section 2.3.9) at the lower right of the radar display, press [ENT] key, and then make adjustment to obtain the best-to-see video.

Point the trackball to the [VID] button at the lower right of the radar display and then press [ENT] key to adjust the contrast of the radar video display at four levels.

Each time the [VID] button is clicked, the contrast level changes in the following sequence: 

Adjust the [VID] button to obtain the best-to-see video with optimum contrast.

3.3.3 Adjust Operation Panel Brilliance [PANEL]

Brilliance of the operational panel can be adjusted in accordance with the ambient illuminance conditions.

Procedure

1 Press [PANEL] key to adjust the brilliance of the operation panel light.

Brilliance increases as the [PANEL] key is pressed. When it reaches the highest level, it returns to the lowest level.

In consideration of the ambient brightness, adjust panel brilliance that is high enough to read the characters on the operation panel but does not glare.

The [PANEL] key lamp lights up irrespective of panel brilliance adjustment.

* Software button ⑧ located at the operation/message area in Section 2.3.9 is also available for switching.

3

3.3.4 Switch Day/Night Mode [DAY/NIGHT]

Display color arrangement can be easily changed using combinations of colors and brilliance in accordance with the ambient illuminance conditions.

The day/night mode changes in the following sequence each time the [DAY/NIGHT] key is pressed:

DAY1 → DAY2 → DUSK → NIGHT → DUSK → DAY2 → DAY1 → DAY2

The current mode is indicated at the lower right of the radar display.

The brilliance level in accordance with the selected mode is saved. For brilliance adjustment, refer to next page. For day/night mode switching, refer to Section 3.3.8 “Set Display Color.”

* Software button ⑩ located at the operation/message area in Section 2.3.9 is also available for switching.

3.3.5 Adjust Brilliance of Information on Radar Display (Brilliance Setting)

Brilliance can be adjusted for each item of information on the radar display by operating the menu.

RADAR Video	Adjusts the brilliance of radar echoes.
RADAR Trails	Adjusts the brilliance of radar trails.
TT/AIS	Adjusts the brilliance of TT symbols and AIS symbols.
FIX Marker	Adjusts the brilliance of fixed range markers.
EBL/VRM	Adjusts the brilliance of variable range markers (VRM1 and VRM2) and electronic bearing lines (EBL1 and EBL2).
Character	Adjusts the brilliance of characters.
Panel	Adjusts the brilliance of operation panel.
Own Ship	Adjusts the brilliance of the own ship symbol.

Procedure

- 1 Press [RADAR MENU] key.

Press [4] key.

Press [2] key.

The Brilliance Setting Menu will appear.

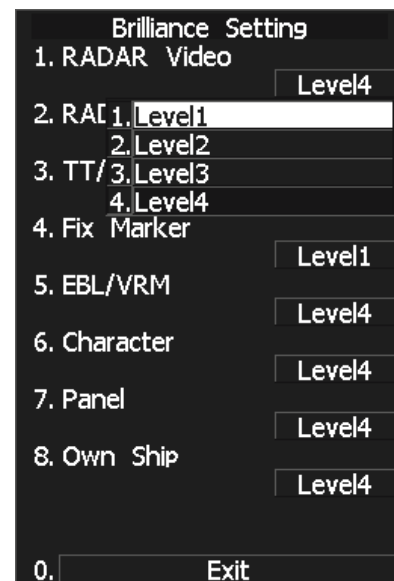
- 2 Select the item for which brilliance is to be adjusted, pressing the numeric keys [1] to [8].

The pull-down menu will appear showing the brilliance levels.

- 3 Select the brilliance level number to be set, pressing the numeric key.

The selected brilliance level will be set.

To change the setting of another item, repeat steps 2 and 3.



Exit

- 1 Press [RADAR MENU] key.

The menu will be closed.

Note: The brilliance levels set here are saved in accordance with the day/night mode.

3.3.6 Adjust Sound Volume (Buzzer Volume)

When an alarm goes off, the operation panel of the equipment produces a sound to notify users of state changes. Adjust the sound volume as follows:

Procedure

- 1 Press [RADAR MENU] key twice.

Press [8] key.

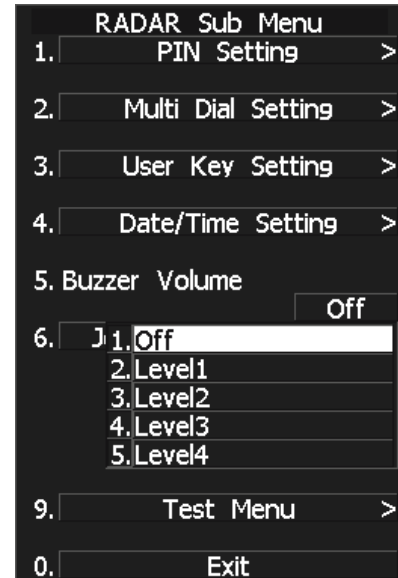
The RADAR Sub Menu will appear.

- 2 Press [5] key to select Buzzer Volume.

The pull-down menu will appear showing the volume levels.

- 3 Select the volume level number to be set, pressing the numeric keys [1] to [5].

The selected volume level will be set.



3

Exit

- 1 Press [RADAR MENU] key.

The menu will be closed.


3.3.7 Reset Alarm Buzzer [ALARM ACK]

When an audible alarm is issued, use ALARM ACK to acknowledge the alarm information, stop the alarm buzzing, and stop the alarm lamp flashing. (If more than one alarm has occurred, press the switch for each alarm indication.) The alarm stops buzzing, but the alarm indication does not disappear.

Procedure

- 1 Press [ALARM ACK] key.

The alarm will stop buzzing.

* Software button  located at the operation/message area in Section 2.3.9 is also available to stop buzzing the alarm.

3.3.8 Set Display Color

For each day/night mode, set the colors of the background outside the bearing scale, the background inside the bearing scale, characters, radar echoes, and radar trails.

Color Adjustment by Menu Operation

Day/Night	Registers the switching of a day/night mode.
Own Ship	Adjust the colors of the ship's heading marker, own ship symbol, and a vector of the own ship.
Outer PPI	Adjusts the background color outside the bearing scale.
Inner PPI	Adjusts the background color inside the bearing scale.
Character	Adjusts the colors of characters and bearing scales.
RADAR Echo	Adjusts the colors of radar echoes.
RADAR Trails	Adjusts the colors of radar trails.
Time: Display interval time is selected.	
All: Continuous display	
TT/AIS	Adjusts the colors of TT symbols, AIS symbols.

Selecting a Day/Night Mode (Day/Night)

Select the mode for which color setting is to be changed.

Procedure

- 1 Press [RADAR MENU] key.**

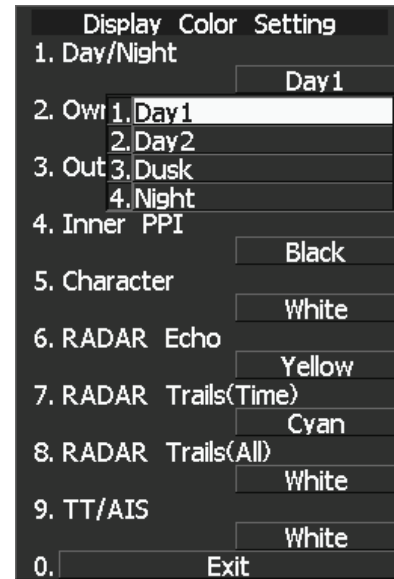
Press [4] key.

Press [1] key.

The Display Color Setting Menu will appear.
- 2 Press [1] key.**

The Day/Night mode selection screen will appear.
- 3 Select the mode number for color adjustment, pressing the numeric keys [1] to [4].**

The mode will be selected.



Setting Colors of Items

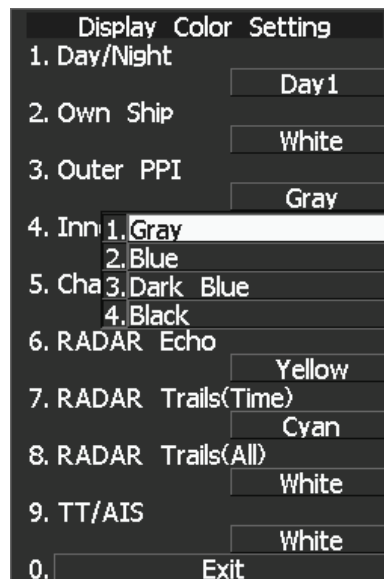
Set the display color of each item.

Procedure

- 1 While the Display Color Setting Menu is open, select the item number for color setting, pressing the numeric keys [3] to [9].**

The color selection screen will appear.

- | | |
|---------------------|--|
| 2. Own Ship: | Adjust the colors of the ship's heading marker, own ship symbol, and a vector of the own ship. |
| 3. Outer PPI: | Adjusts the background color outside the bearing scale. |
| 4. Inner PPI: | Adjusts the background color inside the bearing scale. |
| 5. Character: | Adjusts the colors of characters and bearing scales. |
| 6. RADAR Echo: | Adjusts the colors of radar echoes. |
| 7. 8. RADAR Trails: | Adjusts the colors of radar trails. |
| Time: | Display interval time is selected. |
| All: | Continuous display |
| 9. TT/AIS: | Adjusts the colors of TT, and AIS. |



- 2 Select the color number to be set, pressing the numeric key.**

The selected color will be set.

To set more than one color, repeat steps 1 and 2.

Exit

- 1 Press [RADAR MENU] key.**

The menu will be closed.



3.4 BASIC OPERATIONS

3.4.1 Start Transmission [TX/PRF]

Procedure

- 1 Press [TX/PRF] key.

The radar will start transmission and the antenna will start rotating.
The indication **STANDBY** at the upper left of the radar display changes to **TRANSMIT**.

Note: The radar does not start transmission if you press [TX/PRF] key while **PREHEAT** is indicated.

3.4.2 Stop Transmission [STBY]

Procedure

- 1 Press [STBY] key.

The radar will stop transmission and the antenna will stop rotating.
The indication **TRANSMIT** at the upper left of the radar display changes to **STANDBY**.

* Software button ⑤ located at the top left corner of the radar display described in Section 2.3.1 is also available to start/stop transmission.

3.4.3 Change Range (Observation Range Scale) [RANGE+/-]

Procedure

- 1 Press the [RANGE +] key to expand the observation range.



A larger observation range allows observation of a wider area.
However, objects are shown smaller as the range expands, and objects near own ship are less likely to be detected. Therefore, use a lower-level observation range to observe the area around own ship.

- 2 Press the [RANGE -] key to reduce the observation range.

Area around own ship can be observed in detail as the observation range is reduced.
Note, however, distant images cannot be displayed.

* Software button ① located at the top left corner of the radar display described in Section 2.3.1 is also available to switch the range.

3.4.4 Tune

 <h1 style="font-size: 2em; margin: 0;">Caution</h1>	
	<p>Always use the automatic tuning mode.</p> <p>Use the manual tuning mode only when the automatic tuning mode does not provide the best tuning state due to deterioration of magnetron for example.</p>

3

There are automatic tuning mode and manual tuning mode. In the automatic tuning mode, transmission and receiving frequencies are tuned and adjusted automatically. In the manual tuning mode, tuning is carried out using the dial on the operation panel. The currently selected mode is indicated on the tune mode button (software button ⑫ located at the bottom left corner of the radar display described in Section 2.3.2).

Using the automatic tuning mode

Procedure

- 1 **Move the cursor to the Tune mode button (software button ⑫ located at the bottom left corner of the radar display described in Section 2.3.2) and press the [ENT] key.**

Automatic tuning mode is activated, and AUTO is displayed on the Tune mode button. The equipment carries out tuning automatically. Tuning is adjusted when transmission starts, the observation range is changed, or when the pulse width is changed. Tuning takes only a few seconds.

Using the manual tuning mode

Procedure

- 1 **Move the cursor to the Tune mode button (software button ⑫ located at the bottom left corner of the radar display described in Section 2.3.2), press the [ENT] key, and set the mode to the manual tuning mode.**

Automatic tuning mode is cancelled, and MAN is displayed on the Tune mode button.

- 2 **Turn the [MULTI] dial to set the dial mode to (Tune).**

The multi-dial mode button (⑭ located at the bottom left corner of the radar display described in Section 2.3.2) shows (Tune).

- 3 **Turn the [MULTI] dial to adjust tuning.**

Turn the dial until the tuning state gauge (⑨ located at the top left corner of the radar display described in Section 2.3.1) reaches maximum.

3.4.5 Control Sensitivity [GAIN/PL]



Caution



If sensitivity is set too high, unnecessary signals such as noises in the receiver and false echoes increase to lower target visibility.

At the same time, if sensitivity is set too low, detection of targets such as ships and dangerous objects may be hindered.

Therefore, sensitivity must always be set to an optimal level.

Procedure

- 1 **Control noise on the radar display by turning the [GAIN/PL] control until targets can be easily observed.**

Turning [GAIN/PL] control clockwise increases sensitivity.

Turning [GAIN/PL] control counterclockwise decreases sensitivity.

Turning the [GAIN/PL] control clockwise increases receiving sensitivity and extends the radar observation range. If the sensitivity is too high, the receiver noise increases reducing the contrast between the targets and the background video. As a result, the targets become obscure on the radar display.

To observe densely crowded targets or short-range targets, turn the [GAIN/PL] control counterclockwise to reduce the sensitivity so that the targets are easy to observe. However, be careful not to overlook important small targets.

3.4.6 Suppress Sea Clutter [AUTO-SEA]

Caution



When using the [AUTO SEA] function, never set the suppression level too high canceling out all image noises from the sea surface at close range.

Detection of not only echoes from waves but also targets such as other ships or dangerous objects will become inhibited.

When using the [AUTO SEA] function, make sure to choose the most appropriate image noise suppression level.

3

When using the manual sea clutter suppression function

Procedure

- 1 Control the sea clutter returns on the radar display by turning the [AUTO-SEA] control until targets can be easily observed.

Turning [AUTO-SEA] control clockwise suppresses sea clutter returns.

Turning [AUTO-SEA] control counterclockwise intensifies sea clutter returns.

The sea clutter suppression function suppresses sea clutter returns by decreasing the receiving sensitivity on a short range.

Turning the [AUTO-SEA] control clockwise heightens the effect of sea clutter suppression.

However, be careful that excessive suppression causes low signal-strength targets such as buoys and boats to disappear from the radar display.

Using AUTO SEA (automatic sea clutter suppression function)

Sea clutter suppression can be performed in accordance with the level of sea clutter. Use this function when the clutter level changes with the direction.

Procedure

- 1 Press the [AUTO-SEA] control.

AUTO SEA is selected, and SEA is indicated at the lower left of the radar display. If AUTO SEA is selected, rotating the AUTO RAIN control and AUTO SEA control can make fine adjustments manually.

Note: When AUTO SEA is selected, AUTO RAIN is switched to the manual mode. AUTO SEA and AUTO RAIN cannot be selected at the same time. Use the AUTO RAIN mode to set both the AUTO SEA and AUTO RAIN to automatic mode simultaneously.

Cancellation**1 Press the [AUTO-SEA] control.**

AUTO SEA is deselected, SEA at the lower left of the radar display changes to SEA , and AUTO SEA is cancelled.

* Software button ⑩ located at the bottom left corner of the radar display described in Section 2.3.2 is also available to switch AUTO/MANUAL.

3.4.7 Suppress Rain/Snow Clutter [AUTO-RAIN]



Caution



When using the [AUTO RAIN] function, never set the suppression level too high canceling out all image noises from the rain or snow at the close range.

Detection of not only echoes from the rain or snow but also targets such as other ships or dangerous objects will become inhibited.

When using the [AUTO RAIN] function, make sure to choose the most appropriate image noise suppression level.

3

When using the manual rain/snow clutter suppression function

Procedure

- 1 Control the rain/snow clutter returns on the radar display by turning the [AUTO-RAIN] control until targets can be easily observed.

Turning [AUTO-RAIN] control clockwise suppresses rain/snow clutter returns.
Turning [AUTO-RAIN] control counterclockwise intensifies rain/snow clutter returns.

When the [AUTO-RAIN] control is turned clockwise, the rain/snow clutter suppression function suppresses rain/snow clutter returns and gets targets hidden by rain/snow clutter returns to appear on the radar display. However, be careful that excessive suppression may cause small targets to be overlooked. Since the rain/snow clutter suppression function also has the effect of suppressing sea clutter, the suppression efficiency improves when the [AUTO-RAIN] control is used with the [AUTO-SEA] control. In general, turn the [AUTO-RAIN] control fully to the left.

Using AUTO RAIN (automatic rain/snow clutter suppression function):

Rain/snow clutter suppression can be performed in accordance with the level of rain/snow clutter. Use this function when the clutter level changes with the direction.

Procedure

- 1 Press the [AUTO-RAIN] control.

AUTO RAIN is selected, and RAIN AUTO is indicated at the lower left of the radar display. Rotating the AUTO RAIN control and AUTO SEA control can make fine adjustments manually.

Note: When AUTO RAIN is selected, AUTO SEA is switched to the manual mode. AUTO SEA and AUTO RAIN cannot be selected at the same time. Use the AUTO RAIN mode to set both the AUTO SEA and AUTO RAIN to automatic mode simultaneously.

Cancellation**1 Press the [AUTO-RAIN] control.**

AUTO RAIN is deselected, RAIN at the lower left of the radar display changes to RAIN , and AUTO RAIN is cancelled.

- * Software button ① located at the bottom left corner of the radar display described in Section 2.3.2 is also available to switch AUTO/MANUAL.

3.4.8 Reject Radar Interference [IR]

Use this function to eliminate interference waves from other radars.

Attention

- When viewing a radar beacon or SART signal, select **IR OFF (Interference Rejector OFF)** because IR processing suppresses the video.

3

Procedure

- 1 Press [RADAR MENU] key twice.

Radar Menu will appear.

- 2 Press [1] key.

The IR Menu will appear.

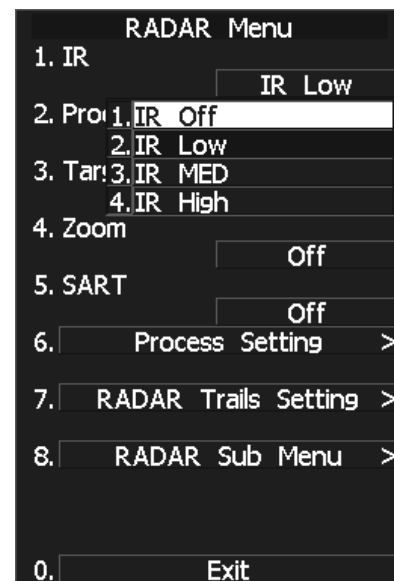
- 3 Select the level number to be set, pressing the numeric keys [1] to [4].

The selected level will be set.

Rejection levels of the interference rejector

IR OFF:	Interference rejector off
IR LOW:	Interference rejection level - low
IR MEDIUM:	Interference rejection level - moderate
IR HIGH:	Interference rejection level - high

When a high interference rejection level is selected, the radar's ability of detecting small targets such as buoys and small boats lowers.
In general, [IR LOW] should be selected.



* Software button ① located at the bottom left corner of the radar display described in Section 2.3.2 is also available to switch IR settings.

3.4.9 Hide/Display Range Rings (RINGS)

Procedure**1 Press [RR/HL] key.**

The range rings display switches back and forth between display and non-display each time [RR/HL] key is pressed.

The scale unit is shown on the Range rings display On / Off button (software button ② located at the top left corner of the radar display described in Section 2.3.1).

Assess the distance to the target based on the location of the target on the range ring scale. Refer to Section 3.3.5 “Adjust Brilliance of Information on Radar Display (Brilliance Setting)” for how to change the brilliance of range rings.

* Software button ② located at the top left corner of the radar display described in Section 2.3.1 is also available to switch between ON and OFF.

3.4.10 Hide Ship's Heading Line (HL OFF)

Procedure**1 Hold down [RR/HL] key.**

The ship's heading line is hidden while [RR/HL] key is held down.

The ship's heading line (HL) that presents the course of own ship is always shown on the radar display. The heading line is hidden while [RR/HL] key is held down, so the targets on the heading line can be easily observed.

* Software button ⑥ located at the bottom-right corner of the radar display described in Section 2.3.4 is also available to switch between ON and OFF.

3.4.11 Hide Graphics Information on Radar Display (Graphic Display)

Procedure

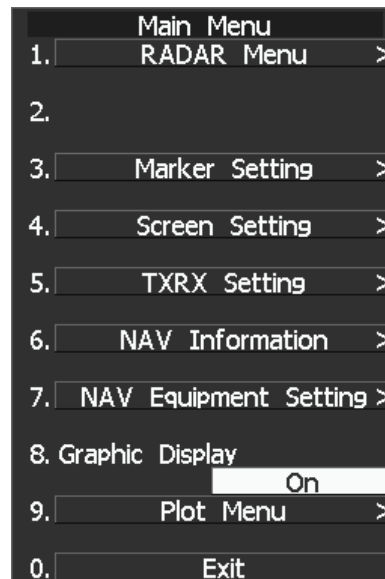
- 1 Press [RADAR MENU] key.

The Main Menu will appear.

- 2 Press [8] key.

The setting of Graphic Display will be changed to ON.

Graphics information other than VRMs, EBLs, HL, cross cursor mark, and range rings on the radar display is temporarily hidden.

**3****Cancellation**

- 1 Press [RADAR MENU] key.

The Main Menu will appear.

- 2 Press [8] key.



The setting of Graphic Display will be changed back to OFF.

Temporarily hidden graphics information is displayed again.

Various graphics information such as TT/AIS symbols, NAV lines, and MAP information is shown on the radar display of this system, and may make it difficult to view the radar video. In this case, use this function to temporarily hide unnecessary graphics information.

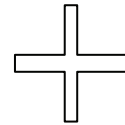
3.5 GENERAL OPERATIONS


3.5.1 Move Cross Cursor Mark by Trackball

The cross cursor mark  is used for position designation and other purposes in various operating procedures. The cross cursor mark  moves in coupling with the trackball. If the trackball is rotated up and down or right and left, the cross cursor mark follows the move of the trackball. Operators must be familiar with trackball operation before running the system.

Operation inside Radar Video PPI

The cross cursor mark as shown at right is displayed inside the radar video PPI.



- 1) The distance and bearing between own ship and the cross cursor mark , and the degrees of latitude and longitude are indicated at the upper right of the radar display.
- 2) When moving the current center position, use the cross cursor mark to designate a new center position.
- 3) Use the cross cursor mark to create marks and lines.
- 4) When the TT function is installed as an option, use the cross cursor mark to acquire targets in manual mode.

Operation outside Radar Video PPI

As shown at right, the cursor mark changes into the pointer outside the radar video PPI.



- 1) Use the pointer to operate software buttons.
- 2) Use the pointer to select menu items.

* The EBL/VRL dial is available for operating the cursor mark. Each time the EBL dial is pressed, either operation using the EBL/VRM control or cursor operation using the track ball can be selected. For details, refer to Section 3.9.3 "Set Cursor (Cursor Setting)."

3.5.2 Use EBLs (Electronic Bearing Lines) [EBL1/2]

EBLs (Electronic Bearing Lines) are indispensable to the measurement of bearings. Operators must be familiar with the operation of EBLs beforehand.

EBL1 Operation

If EBL2 is selected or EBL1 is not displayed, press [EBL1] key to select EBL1 before starting operation. (The currently selected EBL is shown in reverse video at the lower right of the radar display.)

Procedure

1 Press [EBL1] key.

EBL1 at the lower right of the radar display will be shown in reverse video, and EBL1 becomes operable.

2 Press [EBL1] key again.

The EBL1 display will disappear.

* Software button ⑤ located at the top right corner of the radar display described in Section 2.3.3 is also available to switch EBL1 between ON and OFF.

EBL2 Operation

If EBL1 is selected or EBL2 is not displayed, press [EBL2] key to select EBL2 before starting operation. (The currently selected EBL is shown in reverse video at the lower right of the radar display.)

Procedure

1 Press [EBL2] key.

EBL2 at the lower right of the radar display will be shown in reverse video, and EBL2 becomes operable.

2 Press [EBL2] key again.

The EBL2 display will disappear.

* Software button ⑦ located at the top right corner of the radar display described in Section 2.3.3 is also available to switch EBL2 between ON and OFF.

Operation procedures are described on the following pages. For how to measure distance and bearing, see Section 4.

EBL Bearing Display

The bearing values of EBL1 and EBL2 currently displayed on the PPI are indicated at the upper right of the radar display.

The currently operable EBL1 or EBL2 is shown in reverse video beside the bearing value.

Starting Point of EBL

The starting point of the currently operating EBL can be switched from the center of the radar display (Floating Off) to any floating position.

Note: The floating position of the EBL's starting point can be fixed on the radar display or at specific latitude and longitude. (For details, refer to Section 3.5.3 [III] "Setting the mode to move the starting point of EBL1 (EBL1 Floating).")

[I] Floating the starting point of EBL1 while EBL1 is operating:

Procedure

1 Press the [EBL] control.

The indicator on the right hand side of the EBL value at the top right corner of the screen shows C, and the EBL starting point is fixed on the screen (Screen Fix).

* If the indicator does not show C, press the [EBL] control repeatedly such that the indication changes as follows:

→ C → D → ...

* EBL1 floating mode can be changed with software button ① located at the top right corner of the radar display described in Section 2.3.3.

* EBL2 floating mode can be changed with software button ② located at the top right corner of the radar display described in Section 2.3.3.

2 Move the starting point of EBL1 with the trackball.

3 Press [ENT] key at the starting point of EBL1 you want to move.

The starting point of EBL1 will be determined.

If EBL2 is operating, the starting point of EBL2 is floating.

EBL modes

: Floating Off mode
EBL with the own ship position as the starting point is displayed.

C : Screen Fix mode
EBL with the specified floating point as the starting point is displayed.
The floating point is set relative to the own ship position and changes as own ship travels.

D : LL fix (Dropped) mode
EBL with the specified floating point as the starting point is displayed.
The floating point is set as an LL position irrespective of the own ship position, and does not change even though own ship travels.

Note: The floating function will not work even though the [EBL] control is pressed unless the EBL control mode is set to the Floating EBL mode.

To switch to the floating mode by pressing the [EBL] control, set the floating EBL as the left jog dial mode while holding down the EBL control.

[III] Moving the starting point of EBL1 to the own ship's position while EBL1 is operating:

Procedure

1 Press the [EBL] control twice.

The letter on the right hand side of the EBL value at the top right corner of the screen disappears.

- * If the letter on the right hand side of the EBL value does not disappear, press the [EBL] control repeatedly such that the indication changes as follows:

□ → **C** → **D** → □ ...

- * EBL1 starting point can be changed with software button ⑪ located at the top right corner of the radar display described in Section 2.3.3.
- * EBL2 starting point can be changed with software button ⑫ located at the top right corner of the radar display described in Section 2.3.3.

If EBL2 is operating, the starting point of EBL2 moves to the own ship's position.

3.5.3 Set EBL Operation (EBL1 /2 Setting)

[I] Setting the bearing display mode of EBL1 (EBL1 Bearing REF)

Determine whether to display EBLs (Electronic Bearing Lines) in true bearing mode or relative bearing mode.

Procedure

1 Press [RADAR MENU] key.

Press [3] key

Press [1] key.

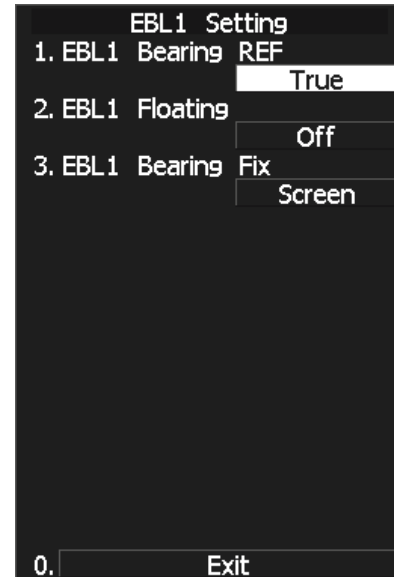
The EBL1 Setting Menu will appear.

2 Press [1] key.

The setting of EBL1 Bearing REF will be switched between TRUE and RELATIVE.

TRUE: EBL1 is displayed in true bearing mode.

RELATIVE: EBL2 is displayed in relative bearing mode.



* Software button ⑨ located at the top right corner of the radar display described in Section 2.3.3 is also available to switch the display mode of EBL1.

[II] Setting the bearing display mode of EBL2 (EBL2 Bearing REF)

Procedure

1 Press [RADAR MENU] key.

Press [3] key.

Press [2] key.

The EBL2 Setting Menu will appear.

Subsequently, set the bearing display mode of EBL2 performing the same operation as explained in [I].

* Software button ⑩ located at the top right corner of the radar display described in Section 2.3.3 is also available to switch the display mode of EBL2.

[III] Setting the mode to move the starting point of EBL1 (EBL1 Floating)

When this function is set to **L/L FIX** and the starting point of an EBL is moved to a position, the starting point can be fixed at the latitude and longitude of that position. The function is effective when the bearing from a certain point is repeatedly measured.

When the function is set to **SCREEN FIX**, the starting point of an EBL is fixed on the radar display. The starting point is always indicated at the same position on the radar display even when the own ship has moved.

Procedure

- 1 Press [RADAR MENU] key.

Press [3] key

Press [1] key.

The EBL1 Setting Menu will appear.

- 2 Press [2] key.

The EBL1 Floating Setting Menu will appear.

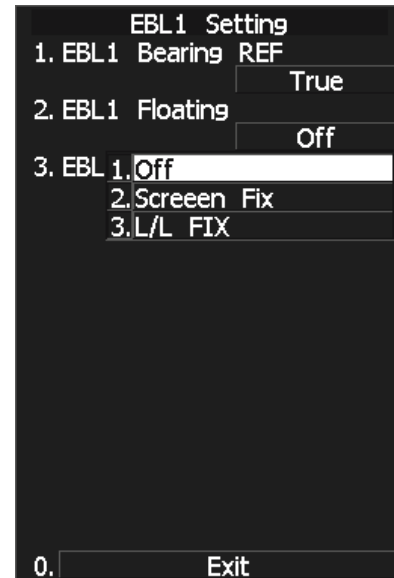
- 3 Select the mode number to be set, pressing the numeric keys [1] to [3].

The selected mode will be set.

OFF: Floating mode off

SCREEN FIX: The starting point of EBL1 is fixed on the radar display.

L/L FIX: The starting point of EBL1 is fixed at specific latitude and longitude.

**3**

* Software button ⑪ located at the top right corner of the radar display described in Section 2.3.3 is also available to switch the Screen Fix and L/L Fix of EBL1.

[IV] Setting the mode to move the starting point of EBL2 (EBL2 Floating)**Procedure**

- 1 Press [RADAR MENU] key.

Press [3] key.

Press [2] key.

The EBL2 Setting Menu will appear.

Subsequently, set the EBL2's starting point move mode performing the same operation as explained in [III].

* Software button ⑫ located at the top right corner of the radar display described in Section 2.3.3 is also available to switch the Screen Fix and L/L Fix of EBL2.

- Notes:**
- The course data and the own ship's latitude and longitude data are required for activating the L/L Fix mode.
 - While the L/L Fix mode is active, the starting point of an EBL will be returned to the center if it disappears from the radar display when moved.

[V] Setting the EBL1 bearing fix mode (EBL1 Bearing FIX)

While this function is set to **ANGLE**, an EBL is fixed to the preset bearing. For example, if the true bearing 020° is preset, the EBL is fixed to the true bearing 020° even when the own ship turns.

While the function is set to **SCREEN**, the EBL is fixed on the radar display.

Procedure

- 1 Press [RADAR MENU] key.

Press [3] key

Press [1] key.

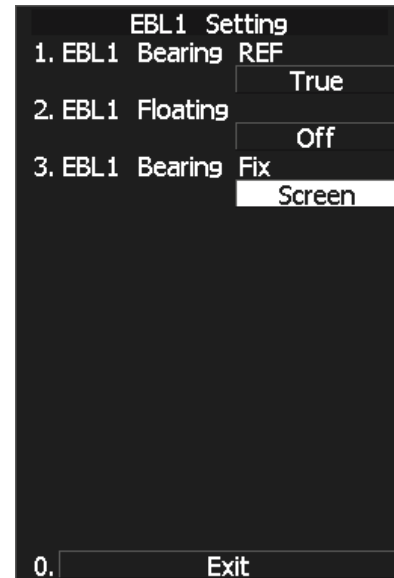
The EBL1 Setting Menu will appear.

- 2 Press [3] key.

The setting of EBL1 Bearing Fix will be switched between **ANGLE** and **SCREEN**.

ANGLE: EBL1 bearing is fixed to the preset value.

SCREEN: EBL1 bearing is fixed on the radar display.



[VI] Setting the EBL2 bearing fix mode (EBL2 Bearing Fix)

Procedure

- 1 Press [RADAR MENU] key.

Press [3] key.

Press [2] key.

The EBL2 Setting Menu will appear.

Subsequently, set the EBL2 bearing fix mode performing the same operation as explained in [V].

Note: The course data is required for activating this function.

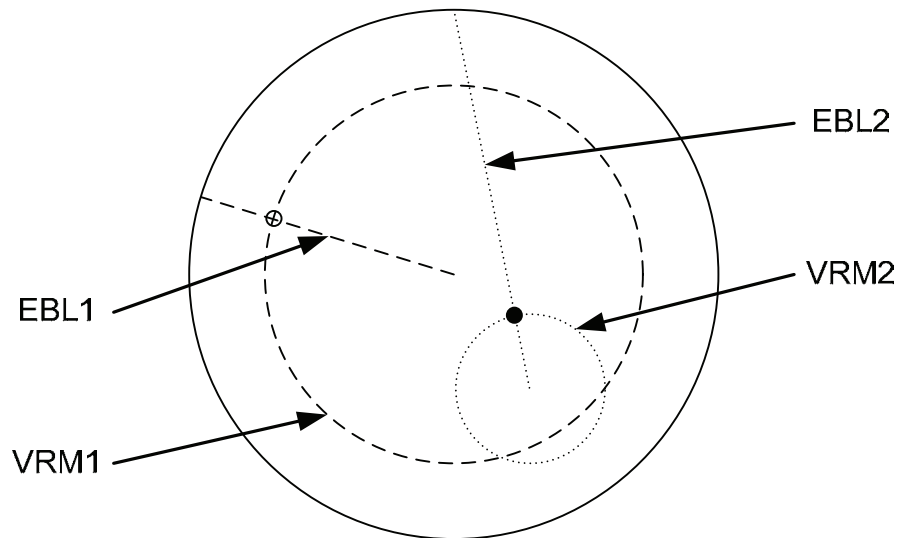
3.5.4 Display Variable Range Markers [VRM1/VRM2]

This function is to display and select variable range markers (VRMs). Two VRMs are available: VRM1 is represented as a broken line, and VRM2 as a dotted line. When EBL1 is displayed, VRM1 marker appears on the EBL1. When EBL2 is displayed, VRM2 marker appears on the EBL2. If the starting point of an EBL is offset, the center of a VRM marker is positioned at the starting point of the EBL.

VRM markers displayed on EBL1/EBL2

○ mark: VRM1

● mark: VRM2



3

VRM1 Operation

If VRM2 is selected or VRM1 is not displayed, press [VRM1] to select VRM1 before starting operation. (The currently selected VRM is shown in reverse video at the upper right of the radar display.)

Procedure

1 Press [VRM1] key.

VRM1 at the upper right of the radar display will be shown in reverse video, and VRM1 becomes operable.

2 Press [VRM1] key again.

The VRM1 display will disappear.

* Software button ⑥ located at the top right corner of the radar display described in Section 2.3.3 is also available to switch VRM1 between ON and OFF.

VRM Operations

The variable range markers are displayed centering around own ship. Turning the [VRM] control clockwise makes the VRM larger. Turning the [VRM] control counterclockwise makes the VRM smaller.

VRM2 Operation

If VRM1 is selected or VRM2 is not displayed, press [**VRM2**] key to select VRM2 before starting operation.

(The currently selected VRM is shown in reverse video at the upper right of the radar display.)

Procedure

1 Press [VRM2] key.

VRM2 at the upper right of the radar display will be shown in reverse video, and VRM2 becomes operable.

2 Press [VRM2] key again.

The VRM2 display will disappear.

* Software button ⑧ located at the top right corner of the radar display described in Section 2.3.3 is also available to switch VRM2 between ON and OFF.

3.5.5 Display Parallel Cursors (Parallel Cursor)

Parallel cursors can be displayed.

Procedure

- 1 **Hold down [VRM] control.**
Jog Dial Button Mode opens.
- 2 **Select 3 PC Menu in the Right Jog Dial menu, and set the parallel index lines as the right jog dial mode.**

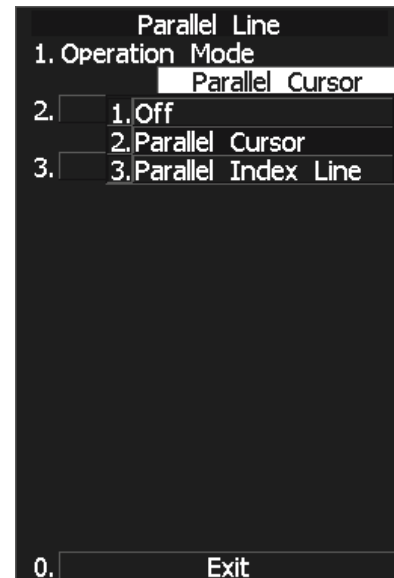
- 3 **After setting the parallel index lines as the right jog dial mode, press the [VRM] control.**

The Parallel Cursor menu opens.
To change the direction of parallel cursors, turn the [EBL] control.
To change the line intervals, turn the [VRM] control.

The bearing and interval of parallel cursors are displayed in the menu area.

- 4 **Press the [VRM] control again.**

The parallel cursor will be fixed.



3

Cancellation


- 1 **Press the [VRM] control again.**

The parallel cursors display will disappear.

Note: Parallel cursors can be operated only while the parallel cursor menu is open. After the menu closes, the parallel cursors display remains, but the settings of the bearing and interval cannot be adjusted any more. To adjust the bearing or interval in this case, press the [VRM] control twice to open the parallel cursor menu.

Parallel Cursor menu will not open even though the [VRM] control is pressed unless the VRM control mode is set to Parallel cursor.

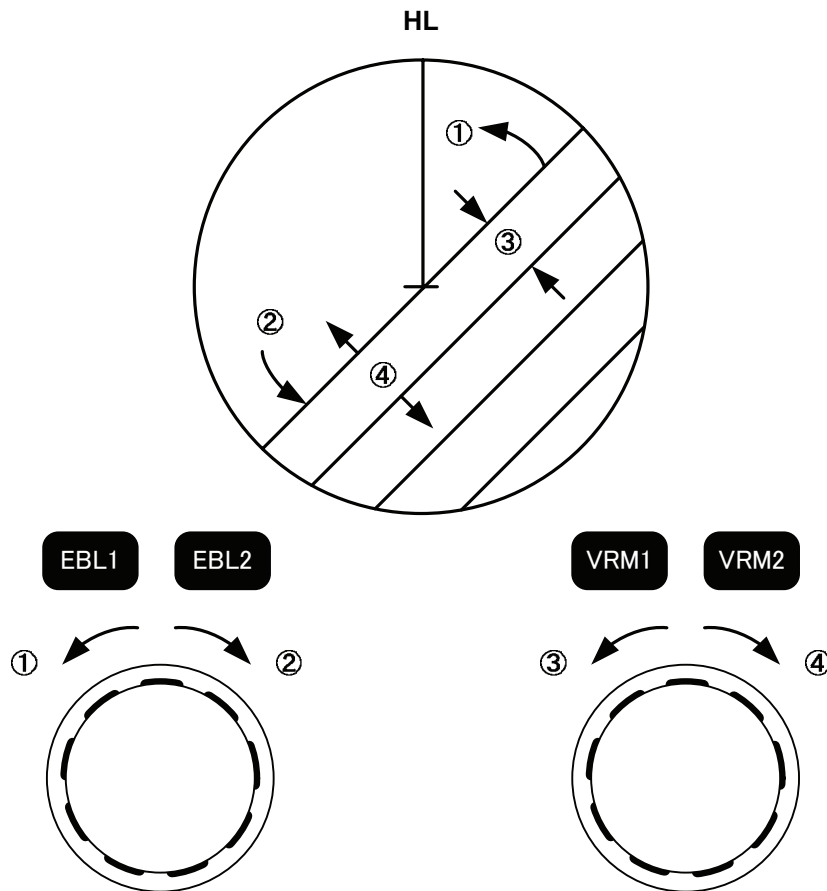
To switch to the parallel index line mode by pressing the [VRM] control, set the parallel index lines as the right jog dial mode while holding down the [VRM] control.

* Software button  located at the top right corner of the radar display described in Section 2.3.3 is also available to switch the parallel cursors between ON and OFF.

Operation of Parallel Cursors

- ⊙ Parallel cursors rotate in the same direction as you turn the **[EBL]** control. (①, ②)
- ⊙ The intervals of parallel cursors narrow when you turn the **[VRM]** control counterclockwise (③), and widen when you turn the **[VRM]** control clockwise (④).

Display of Parallel Cursors



- ⊙ When **[RADAR MENU]** key is pressed, the parallel cursor menu closes and the parallel cursors are fixed.

While the Parallel Cursor menu opens, the parallel cursor can be operated by using the EBL or VRM control. When the Parallel Cursor menu closes, the EBL control performs general EBL operation and the VRM control performs general VRM operation.

Setting of Parallel Cursors (Parallel Cursor)

[1] Parallel Cursor Range Link (Range Scale Link)

When a range is switched, parallel cursors links to a radar range scale and displayed.

Procedure

- 1 Press [RADAR MENU] key.

Press [3] key.

Press [5] key.

Press [2] key.

The Parallel Cursor Menu will appear.

- 2 Press [1] key.

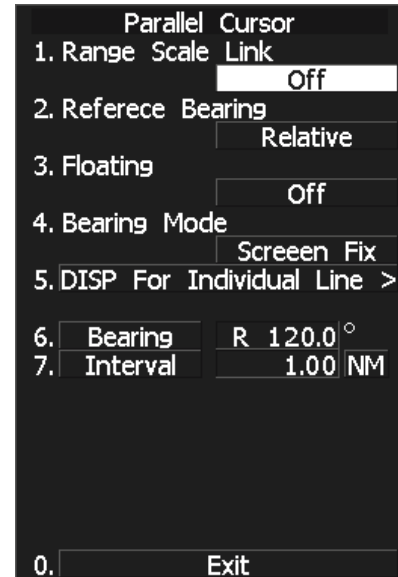
Range Scale Link is switched between ON and OFF each time you press [1] key.

Range Link ON:

If the range is switched, the width between parallel cursors changes in accordance with the radar range scale.

Range Link OFF:

If the range is switched, the width between parallel cursors remains fixed.



3

[III] Parallel Cursor Bearing (Reference Bearing)

Parallel cursor bearing mode can be switched.

Procedure

- 1 Press [RADAR MENU] key.

Press [3] key.

Press [5] key.

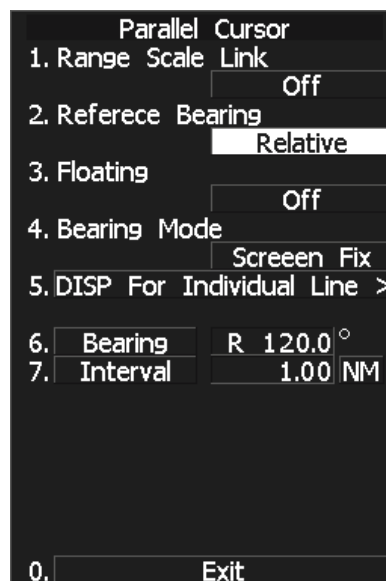
Press [2] key.

The Parallel Cursor Menu will appear.

- 2 Press [2] key.

The Reference Bearing mode is switched between true bearing and relative bearing each time you press [2] key.

* Bearing in the parallel cursor menu will show which is selected, true bearing or relative bearing.



[III] Parallel Cursor Start Point Display Mode (Floating)

If this function is set to **L/L FIX**, and the start point of parallel cursor moves, the start point of the parallel cursor can be fixed to the latitude/longitude of the start point. If the function is set to **SCREEN FIX**, the start point of parallel cursor is fixed within the radar display, and the start point is fixed to the same place on the display even after the own ship moves.

Procedure

- 1 Press [RADAR MENU] key.

Press [3] key.

Press [5] key.

Press [2] key.

The Parallel Cursor Menu will appear.

- 2 Press [3] key.

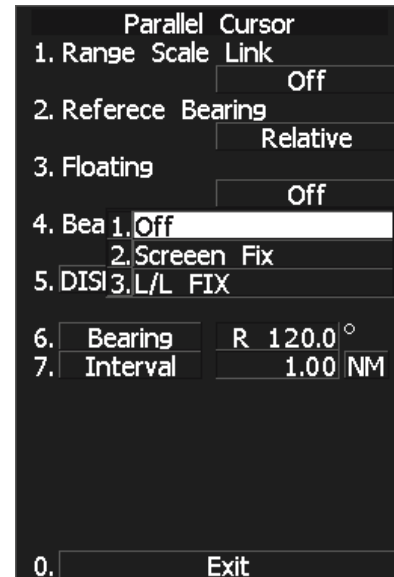
The Floating Setting Menu will appear.

- 3 Select the item you want to display, pressing the numeric keys [1] to [3].

OFF: Floating mode OFF

SCREEN FIX: Fixes the start point of parallel cursor to the radar display.

L/L FIX: Fixes the parallel cursor with latitude and longitude.

**3**

* Software button ⑭ located at the top right corner of the radar display described in Section 2.3.3 is also available for switching.

Note: Setting the function to the L/L Fix mode needs course data and latitude/longitude data.

[IV] Parallel Cursor Bearing Fix Mode (Bearing Mode)

If this function is set to **ANGLE**, the parallel cursor also rotates in accordance with the bearing while the own ship is turning. If the function is set to **SCREEN FIX**, the parallel cursors are fixed within the radar display even while the own ship is turning. The parallel cursors are displayed at the same place even while the own ship is turning.

Procedure

- 1 Press **[RADAR MENU]** key.

Press **[3]** key.

Press **[5]** key.

Press **[2]** key.

The Parallel Cursor Menu will appear.

- 2 Press **[4]** key.

The Bearing Mode Setting Menu will appear.

Angle Fix : The angle of the parallel cursors is set in true bearing.

For NUP and CUP, the cursors are displayed in true bearing irrespective of changes in the course of own ship.

For HUP, the angle of the parallel cursors changes as the course of own ship changes.

Screen Fix : Parallel cursors are fixed on the radar screen.

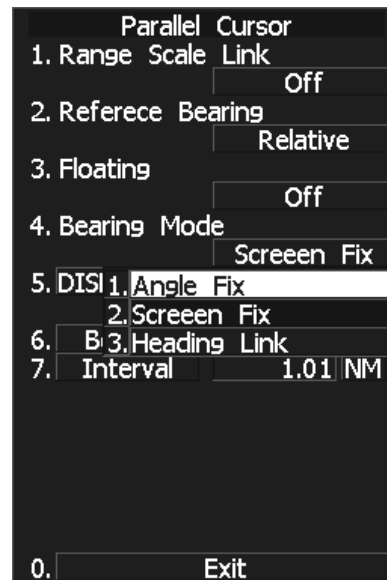
For HUP, NUP, and CUP, the angle of the parallel cursors stays the same on the screen.

When own ship is engaged in TM motions, the parallel cursors move as own ship moves.

Heading Fix : The parallel cursors are displayed while the relative angle of the ship's heading bearing line stays the same.

For HUP, the ship's heading bearing line does not change even though the course of own ship changes; therefore, the parallel cursors do not move.

For NUP, the ship's heading bearing line changes as the course of own ship changes; therefore, the parallel cursors also change as the course of own ship changes.



[V] Individual Display of Parallel Cursor (PI Individual)

Individual parallel cursors can be switched between ON and OFF.

Procedure

- 1 Press [RADAR MENU] key.

Press [3] key.

Press [5] key.

Press [2] key.

The Parallel Cursor Menu will appear.

- 2 Press [5] key.

DIPS For Individual Line Setting Menu will appear.

- 3 Select the item for which you want to display or not to display, pressing the numeric keys [1] to [7].

Individual setting is switched between ON and OFF each time you press each numeric keys.

ON: Displayed
OFF: Not displayed

DISP For Individual Line	
1. Line1	<input checked="" type="checkbox"/> On
2. Line2	<input type="checkbox"/> On
3. Line3	<input type="checkbox"/> On
4. Line4	<input type="checkbox"/> On
5. Line5	<input type="checkbox"/> On
6. Line6	<input type="checkbox"/> On
7. Line7	<input type="checkbox"/> On
0.	Exit

3

* The line nearest to the own ship is specified as Line1.

3.5.6 Display Parallel Index Lines (Parallel Index Line)

Parallel index lines can be displayed.

Up to 4 parallel index lines can be set.

For each line, angle, distance to own ship, and length can be specified.

Changing the angle of parallel index lines

Procedure

- 1 Hold down [VRM] control.

Jog Dial Button Mode opens.

- 2 Select 3 PC Menu in the Right Jog Dial menu, and set the parallel index lines as the right jog dial mode.

- 3 Press the [VRM] control.

The Parallel Index Line menu will open and the parallel index line mode will be turned on, so operation can be performed in the mode.

(*) These steps are not required if the mode is already on.

- 4 Press the [EBL] while the Parallel Index Line mode is on.

Press the jog dial to scroll target parallel index lines.

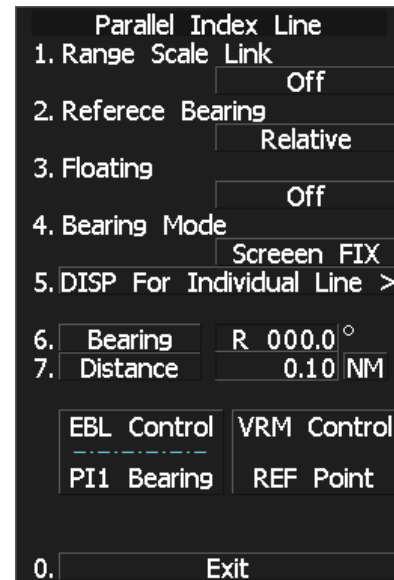
A parallel index line currently in use is shown as follows:

EBL Control

PI 1 Bearing

- 5 Turn the [EBL] control.

Turn the control to change the parallel index line angle.



Changing the interval (distance from own ship) and length of parallel index lines

Procedure

1 Press the [VRM] control.

- **Turn the mode on using the jog dial.**
Press the jog dial to turn the mode on.
- **Turn the mode on from the menu screen.**
Turn the mode on by following the steps below:
Press the [Radar Menu] key.
 - 3 Marker Setting
 - 5 Parallel Line
 Press the [1] key to set the Operation Mode to Parallel Index Line mode.

(*) These steps are not required if the mode is already on.

2 Press the [EBL] while the Parallel Index Line mode is on.

Press the jog dial to scroll target parallel index lines.
A parallel index line currently in use is shown as follows:
EBL Control
PI 1 Bearing

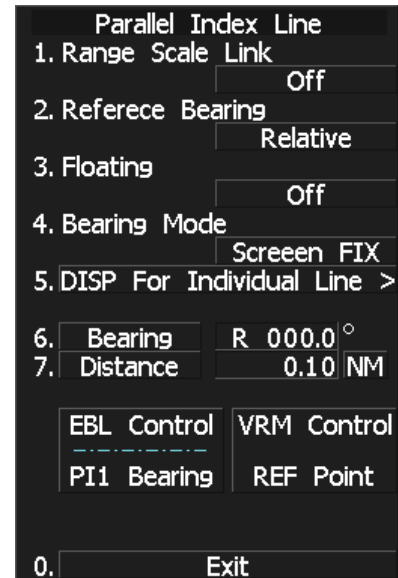
3 Press the [EBL] control.

Press the jog dial to change the VRM target in the following order:

Interval setting → end point 1 setting → end point 2 setting → interval setting ...
Length of the index line changes as the position of end point 1 or end point 2 changes.

When the jog dial is turned...

Interval of index lines, distance to end point 1, and distance to end point 2 are changed.



Setting of Parallel Index Lines (Parallel Index Line)

[I] Parallel Index Line Range Link (Range Scale Link)

When a range is switched, parallel index lines links to a radar range scale and displayed.

Procedure

- 1 Press [RADAR MENU] key.

Press [3] key.

Press [5] key.

Press [3] key.

The Parallel Index Line Menu will appear.

- 2 Press [1] key.

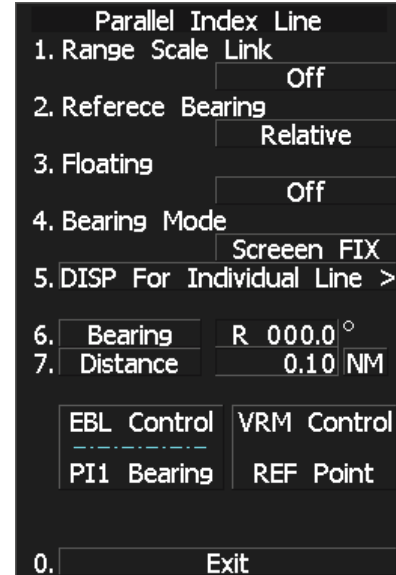
Range Scale Link is switched between ON and OFF each time you press [1] key.

Range Scale Link ON:

If the range is switched, the width between parallel index lines changes in accordance with the radar range scale.

Range Scale Link OFF:

If the range is switched, the width between parallel index lines remains fixed.



III] Parallel Index Line Bearing (Reference Bearing)

Parallel index line bearing mode can be switched.

Procedure

- 1 Press [RADAR MENU] key.

Press [3] key.

Press [5] key.

Press [3] key.

The Parallel Index Line Menu will appear.

- 2 Press [2] key.

The Reference Bearing mode is switched between true bearing and relative bearing each time you press [2] key.

* Bearing in the parallel index line menu will show which is selected, true bearing or relative bearing.

Parallel Index Line	
1. Range Scale Link	Off
2. Reference Bearing	Relative
3. Floating	Off
4. Bearing Mode	Screen FIX
5. DISP For Individual Line >	
6. Bearing	R 000.0°
7. Distance	0.10 NM
EBL Control	VRM Control
PI1 Bearing	REF Point
0.	Exit

3

[III] Parallel Index Line Start Point Display Mode (PI Floating)

If this function is set to **L/L FIX**, and the start point of parallel index line moves, the start point of the parallel index line can be fixed to the latitude/longitude of the start point. If the function is set to **SCREEN FIX**, the start point of parallel index line is fixed within the radar display, and the start point is fixed to the same place on the display even after the own ship moves.

Procedure

- 1 Press [RADAR MENU] key.

Press [3] key.

Press [5] key.

Press [3] key.

The Parallel Index Line Menu will appear.

- 2 Press [3] key.

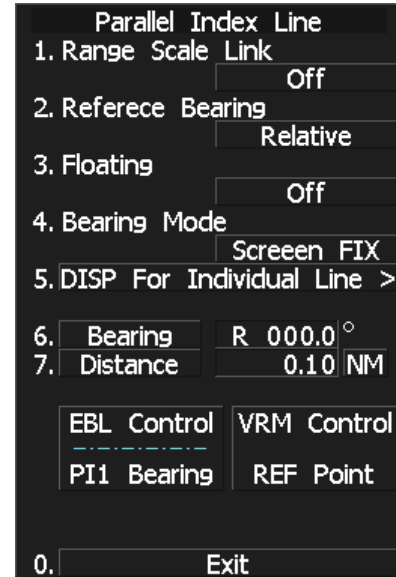
The PI Floating Setting Menu will appear.

- 3 Select the item you want to display, pressing the numeric keys [1] to [3].

OFF: Floating mode OFF

SCREEN FIX: Fixes the start point of parallel index line to the radar display.

L/L FIX: Fixes the parallel index line with latitude and longitude.



* Software button ⑭ located at the top right corner of the radar display described in Section 2.3.3 is also available for switching.

Note: Setting the function to the L/L Fix mode needs course data and latitude/longitude data.

[IV] Parallel Index Line Bearing Fix Mode (PI Bearing Mode)

If this function is set to **ANGLE**, the parallel index line also rotates in accordance with the bearing while the own ship is turning. If the function is set to **SCREEN FIX**, the parallel index lines are fixed within the radar display even while the own ship is turning. The parallel index lines are displayed at the same place even while the own ship is turning.

Procedure

- 1 Press [RADAR MENU] key.

Press [3] key.

Press [5] key.

Press [3] key.

The Parallel Index Line Menu will appear.

- 2 Press [4] key.

The PI Bearing Mode Setting Menu will appear.

Angle Fix: The parallel index line angle (bearing) will be fixed as specified.
(The parallel index line will not be interlocked with the azimuth line.)

For NUP and CUP, the on-screen bearing is fixed while azimuth line changes, therefore parallel index line angle remains fixed.

For HUP, the on-screen bearing changes as azimuth line changes, and is interlocked with parallel index line that turns as bearing moves.

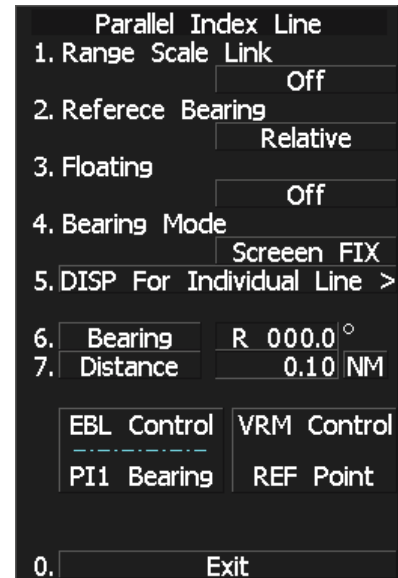
Screen Fix: The on-screen degree (angle) of parallel index line is always fixed.
(It will not be interlocked with either alteration of azimuth line or bearing.)

For NUP, CUP, and HUP, the on-screen angle will not be affected by bearing alteration. The parallel index line remains fixed.

Heading Link: The parallel index line moves as bearing changes.
(The parallel index line is interlocked with the bearing line.)

For NUP and CUP, the bearing line turns as bearing changes, and the interlocked parallel index line turns as well.

For HUP, bearing can change while bearing line remains fixed. The parallel index line is interlocked with the bearing line, and remains fixed as well.

**3**

[V] Individual Display of Parallel Index Line (PI Individual)

Individual parallel index lines can be switched between ON and OFF.

Procedure

- 1 Press [RADAR MENU] key.

Press [3] key.

Press [5] key.

Press [3] key.

The Parallel Index Line Menu will appear.

- 2 Press [5] key.

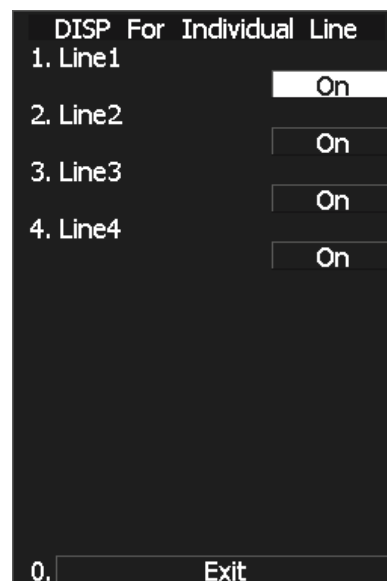
The PI Individual Setting Menu will appear.

- 3 **Select the item for which you want to display or not to display, pressing the numeric keys [1] to [7].**

Individual setting is switched between ON and OFF each time you press each numeric keys.

ON: Displayed

OFF : Not displayed




* The line nearest to the own ship is specified as Line1.

3.5.7 Switch Bearing Display Mode [AZI MODE]

Select the azimuth for the radar video to be displayed of the display.

The bearing display mode is switched in the sequence of [NORTH UP] (true bearing), [HEAD UP] (relative bearing), and [COURSE UP] (course-up bearing) each time [AZI MODE] key is pressed.

The indication at the upper left of the radar display changes in sequence of HUP → NUP → CUP.

* Software button  located at the top left corner of the radar display described in Section 2.3.1 is also available to switch the radar bearing display.

3

True Bearing Mode [North Up]

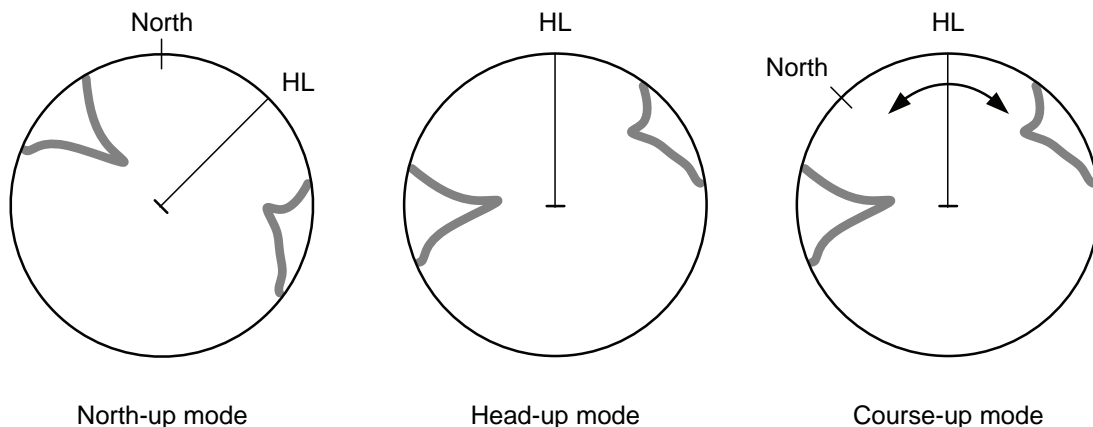
The video is displayed so that the zenith of the PPI (0° on range rings) points to the due north. Fixed targets do not flicker and are easily identified on the chart, and the true bearing of a target can easily be read out.

Relative Bearing Mode [Head Up]

The video is displayed so that the ship's heading line points to the zenith of the PPI (0° on range rings). Since targets are displayed in their directions relative to the ship's heading line, the operator can view the video in the same field of view as in operating the ship at sea. This mode is suitable for watching over other ships.

Course-up Bearing Mode [Course Up]

By pressing [AZI MODE] key, the own ship's course is fixed pointing to the zenith of the PPI (0° on range rings) points to the due north. In the same way as in the North-up mode, fixed targets do not flicker, and are stabilized even if the ship is yawing. The bearing of the heading line varies by the same shift of own ship's course. To change the course, press [AZI MODE] key several times to select the Course-up mode, and set a new course.



3.5.8 Switch True/Relative Motion Display Mode [TM/RM]

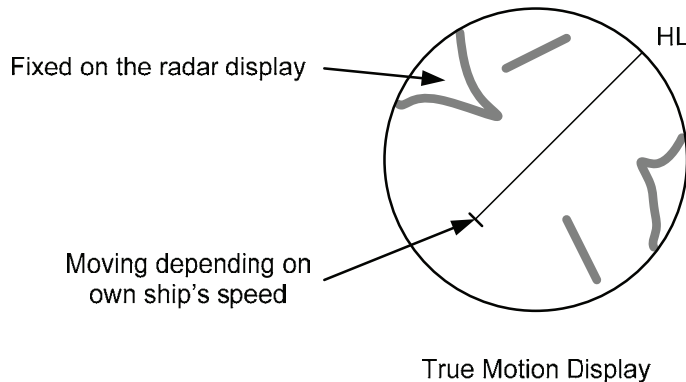
Note: If the CCRP is outside the display area due to resetting of the own ship position in true motions, the CCRP becomes the antenna location.

Switching Relative Motion (RM) Mode to True Motion (TM) Mode

Procedure

- 1 Press [TM/RM] key.

The true motion mode will be selected. In the true motion mode, the own ship's position on the radar display moves depending upon its speed and course and the influence of the current. Land and other fixed targets are fixed on the radar display and only actually moving targets move on the radar display. When the true motion mode is selected, the own ship's position is set to about 60% of the display radius in the opposite direction to its course allowing for the influence of the current. Own ship starts moving depending upon its speed and course and the influence of the current. Subsequently, when own ship arrives at the position of about 66% of the display radius, it is automatically reset to its initial position at about 60% of the display radius in the opposite direction to its course allowing for the influence of the current.



Resetting Own Ship to its Initial Position in True Motion (TM) Mode

Procedure

- 1 Press [TM/RM] key for 2 seconds.

Own ship will be reset to its initial position as established when the relative motion mode is changed to the true motion mode. The ship starts moving from that position.

Switching True Motion (TM) Mode to Relative Motion (RM) Mode

Procedure

- 1 Press [TM/RM] key.

The relative motion mode will be selected. Own ship returns to the center of the radar display.

* Software button ③ located at the top left corner of the radar display described in Section 2.3.1 is also available to switch between true motion and relative motion. Keep pressing the button for two seconds can reset the position of the own ship during true motion.


3.5.9 Move Own Ship's Display Position [OFF CENT]

The own ship's position can be moved from the display center to any position within 66% of the display radius. This function is convenient for observing a wide coverage in any direction.

Note: This function is not available on the 96 NM range. If the CCRP is outside the display area due to off-centering, the CCRP becomes the antenna location.

Procedure

1 Press [OFF CENT] key.

The cross cursor mark  will appear at the own ship's position on the radar display.


* Software button ④ located at the top left corner of the radar display described in Section 2.3.1 is also available to activate OFF Center.

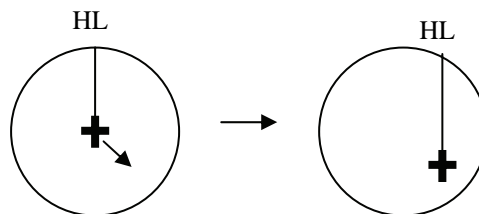
2 Move the cross cursor mark (own ship's display position) to a desired position by using the trackball.


While the cross cursor mark is moving, the own ship's display position moves following the cross cursor mark.

When it moves to a position outside 66% of the display radius, the center position is limited to a position within 66% of the display radius.

3 Press [ENT] key.

The own ship's display position will be fixed to the cross cursor mark .



Move the cross cursor mark  to a desired position.

Press [ENT] key.
The own ship's display position will be fixed.

Returning Own Ship's Position to the Center

Procedure

1 Press [OFF CENT] key for 2 seconds.

Note: Close the menu before using this function. While the menu is open, the function cannot be used.

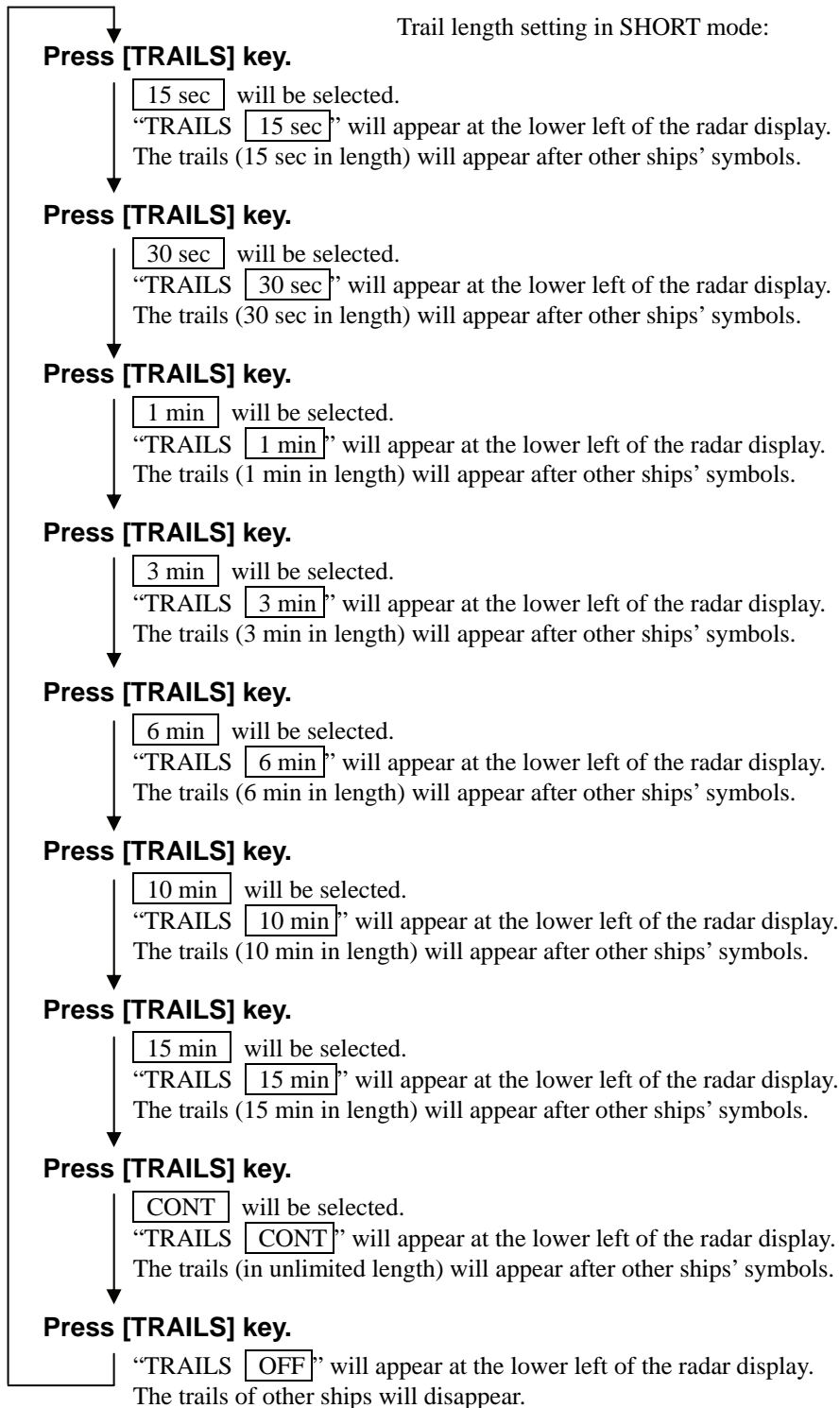
* You can keep pressing software button ④ located at the top left corner of the radar display described in Section 2.3.1 for two seconds to return the own ship position to the center.

3.5.10 Display Radar Trails (Other Ships' Trails) [TRAILS]

Other ships' movements and speeds can be monitored from the lengths and directions of their trails, serving for collision avoidance. The trail length varies according to setting. The setting is described on the next page.

Changing the trail length

Procedure



SHORT mode: 15 sec, 30 sec, 1 min, 3 min, 6 min, 10 min, 15 min, and CONT
 MID mode: 30 sec, 1 min, 3 min, 6 min, 10 min, 15 min, 30 min, and CONT
 LONG mode: 1 min, 3 min, 6 min, 10 min, 15 min, 30 min, 60 min, and CONT
 SUPER LONG mode: 30 min, 1 hr, 2 hr, 3 hr, 4 hr, 5 hr, 6 hr, 7 hr, 8 hr, 9 hr, 10 hr, 11 hr, 12 hr and CONT

A trail length can also be changed by using the multi-function control. (Refer to Section 3.5.18 “Operate Multi-Function Control [MULTI].”)

Stored trails cannot be erased even when the trail lengths are changed by using [TRAILS] key. Even after the trails display is turned off, the past trails can be displayed traced back by setting a desired time. The system is plotting trails even while the trails display is off.

If the transmit time is short, the indicated trails duration may not have achieved the specified time. The radar trails remaining time is indicated at the right of the trails length setting.

* Software button ⑭ located at the other ship's information area in Section 2.3.6 is also available to change trail length.



Erasing Trails Data

Procedure **1 Hold down [TRAILS] key for 5 seconds.**

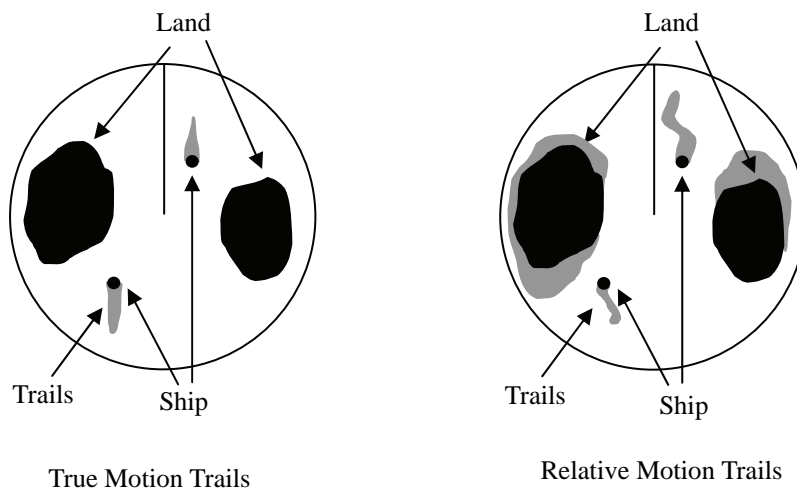
All the stored trails data will be erased. The system starts plotting trails in initial state. When [TRAILS] key is pushed for 2 seconds, a RADAR Trails Setting menu will be displayed. Furthermore, data will be erased if it continues pushing.

Trails Motion Mode

There are two types of trails: relative motion trails and true motion trails.

Relative motion trails: The system plots the trails of a target at a position relative to the own ship. The operator can easily judge whether the target is approaching the own ship. While the own ship is moving, the system also plots the trails of land and other fixed targets.

True motion trails: The system plots the absolute motion trails of a target, irrespective of the own ship's position. The operator can easily judge the course and speed of the target. The system does not plot the trails of land and other fixed targets.



Trails modes provided with this system vary depending on the motion mode.

With true motion (TM) mode: Only the true motion trails mode is available.

With relative motion (RM) mode: The relative motion trails mode or true motion trails mode is selectable.

RM(R) is indicated while the relative motion trails mode is active.

RM(T) is indicated while the true motion trails mode is active.

While the true motion trails mode is active, this system enables the continuous use of true motion trails even if any of the following operations is performed:

- Motion display mode change **[TM/RM]** key
- TM reset **[TM/RM]** key
- Bearing display mode change **[AZI MODE]** key
- Center move **[OFF CENT]** key
- MAP display on/off **[MAP]** key

* Software button **ⓑ** located at the other ship's information area in Section 2.3.6 is also available to change trial motion mode.

Note: Accurate true bearing signals and speed signals are necessary for using the true motion trails mode.

Changing Motion Mode of Trails (Trails mode)

Procedure

- 1 Press **[RADAR MENU]** key twice.

Press **[7]** key.

The RADAR Trails Setting Menu will appear.

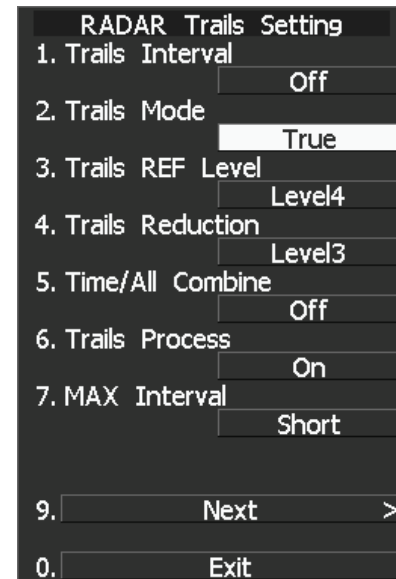
- 2 Press **[2]** key.

The setting of radar trails display mode will be switched between **TRUE** and **RELATIVE**.

TRUE: True motion trails

RELATIVE: Relative motion trails

→ For other settings, see Section 3.9.2 “Set Radar Trails (RADAR Trails Setting).”



3.5.11 Switch Pulse Length (GAIN/PL)

Procedure

1 Press the [GAIN / PL] dial.

Values of the transmitter pulse length are switched.

Example MP1 ⇒ MP2 ⇒ LP1 ⇒ LP2 ⇒ MP1

Effects of transmitter pulse length

With SP selected:

The transmitter pulse becomes shorter, and the range resolution improves.

The effect of suppressing sea clutter returns and rain / snow clutter returns heightens.

Recommended condition for selection:

In bays / harbors where targets are densely crowded

Rough sea state due to torrential rain or stormy weather

With MP selected:

The normal transmitter pulse length is set.

Both range resolution and gain are appropriately set.

Recommended condition for selection:

General navigation

With LP selected:

The transmitter pulse becomes longer, and gain improves.

Small targets are zoomed and are easy to observe.

When the sea state is bad, detection performance decreases.

Recommended condition for selection:

Detection of small targets in good weather conditions

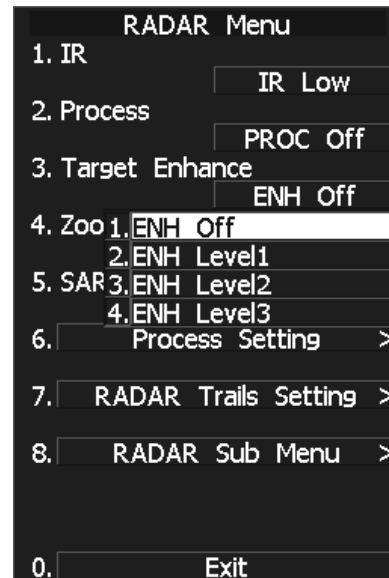
Usable transmitter pulse length differs according to the type of scanner unit being used and the observation range being used. For usable pulse length, see Section 11 "SPECIFICATIONS".

3.5.12 Expand Targets (Target Enhance)

The dimension of video display is enlarged to enhance a target.

Procedure

- 1 **Press [RADAR MENU] key twice.**
The Radar Menu will appear.
- 2 **Press [3] key.**
The Target Enhance Selection Menu will appear.
- 3 **Select the mode number to be set, pressing the numeric keys [1] to [4].**



Target expansion modes

ENH OFF	Expansion off:	Select this mode particularly when resolution is required.
ENH LEVEL1	Expansion - small:	Select this mode in general. Radar echoes are expanded by 1 scale in all directions.
ENH LEVEL2	Expansion - medium:	Select this mode to easily view the radar video. Radar echoes are expanded by 2 scales in all directions on the display.
ENH LEVEL3	Expansion - large:	Select this mode to detect small targets such as buoys. The expansion near a screen center is added to ENH LEVEL2.

Note: When ENH LEVEL3 is selected, sea clutter returns and rain/snow clutter returns are apt to be expanded. When using this expansion mode, operate [AUTO-SEA] control and [AUTO-RAIN] control to suppress sea clutter returns and rain/snow clutter returns. In general, ENH LEVEL1 or ENH LEVEL2 should be selected.

* Software button ③ located at the bottom left corner of the radar display described in Section 2.3.2 is also available to switch the target enhance mode.

3.5.13 Use Video Process (Process)

This function reduces unnecessary noise to highlight targets.

Attention

- When viewing a radar beacon, SART signal, or fast moving target on the radar display, select PROC Off (video processing off).
- If video processing mode is set to **CORREL**, it may be difficult to detect high speed target.

3

Procedure

- 1 Press [RADAR MENU] key twice.

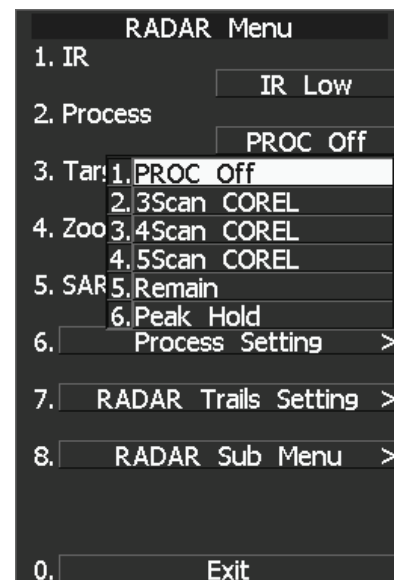
The Radar Menu will appear.

- 2 Press [2] key.

The Process Selection Menu will appear.

- 3 Select the mode number to be set, pressing the numeric keys [1] to [6].

The selected mode will be set.



Video process modes

PROC OFF	Video process off:	Select this mode in general.
3SCAN COREL	Correlative process 1:	Select this mode when many rain/snow clutter returns are detected.
4SCAN COREL	Correlative process 2:	Select this mode to highlight targets while suppressing sea clutter returns.
5SCAN COREL	Correlative process 3:	Select this mode to detect small targets hidden by sea clutter returns.
REMAIN	Video process 4:	Select this mode when own ship yaws wildly.
PEAK HOLD	Video process 5:	Select this mode to detect small targets of which detection probability is low.

* Software button ④ located at the bottom left corner of the radar display described in Section 2.3.2 is also available for switching video process modes.

3.5.14 Zoom

This function doubles the size of radar video near a specified position.

Note: If the range is 0.125 NM , this function is not available.
If the true motion mode is selected, this function is not available.

Procedure

- 1 Press [RADAR MENU] key twice.

The Radar Menu will appear.

- 2 Press [4] key.

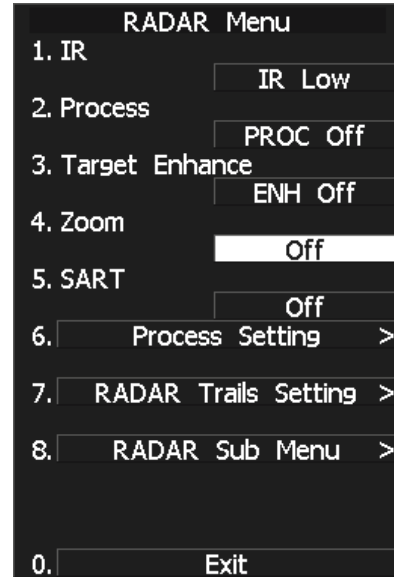
The setting of the zoom mode will be switched between ON and OFF.

OFF : Not zoomed
ON : Zoomed

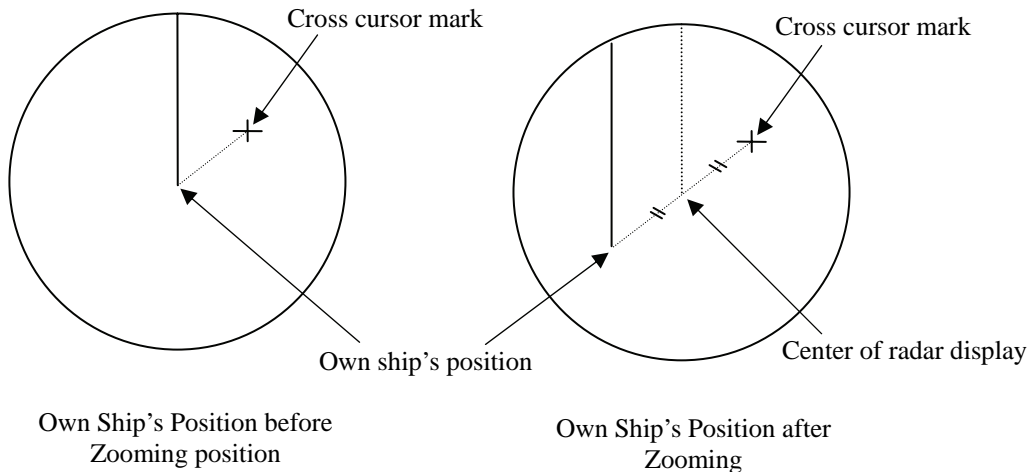
This function is not available at places where the size exceeds 66% of the radius of the display.

- 3 With **ZOOM ON** selected, move the cross cursor mark to the position to be zoomed, and press [ENT] key.

The position will be zoomed.



Using the cross cursor mark as reference, the zoom function doubles the size of a radar video with the midpoint between the cursor mark and own ship's position being set to the center of radar display.



* Software button ① located at the bottom left corner of the radar display described in Section 2.3.2 is also available to switch the zoom function between ON and OFF.

3.5.15 Use Marker [MOB]

The marker function displays a dotted line from the marker input position to the own ship's position, and indicates the range, bearing, and required time from the own ship to the marker.

Procedure

1 Press [MOB] key.

A marker will be displayed at the own ship's position on the radar display at the moment when [MOB] key is pressed.

The own ship and the marker are connected with a dotted line.

Even when the own ship moves, the marker is fixed at the latitude and longitude. Thus, if a marker is put to an important position, the ship can return to the position regarding the marker as a target.

3

Cancellation

1 Hold down [MOB] key for 2 seconds.

The marker will disappear.

3.5.16 Marking [MARK]


A maximum of 20 marks can be indicated at arbitrary positions on the radar display.
A mark created on the radar display holds the latitude and longitude.


[I] Creating Marks

Procedure

- 1 Press [MARK] key.

[□] will appear in the CURSOR field at the upper right of the radar display.

- 2 Put the cross cursor mark  on the position where a mark is to be created, and press [ENT] key.

The cross cursor mark  will be changed into the [□] mark and fixed on the radar display. To enter more [□] marks, repeat step 2.
Up to 20 marks can be entered.

Note: If more than 20 marks are created, the oldest mark is cleared and the newly created mark is displayed.

[II] Clearing Marks

Procedure

- 1 Press [MARK] key.

The [□] mark will appear in the CURSOR field at the upper right of the radar display.

- 2 Put the cross cursor mark  on the mark to be cleared.

The [□] mark will disappear. To clear another [□] mark, repeat step 2.
To clear all [□] marks, press [MARK] key and then hold down [CLR] key.

* Software button ① located at the top right corner of the radar display described in Section 2.3.3 changes the cursor mode. When "□" appears, the cross cursor is available to create "□" mark.

3.5.17 Operate EBL Maneuver Function (EBL Maneuver)

[I] Initial Setting (Reach, Turn Mode, Turn Set)

Procedure

- 1 Press [RADAR MENU] key.

Press [3] key.

Press [7] key.

The EBL Maneuver Setting Menu will appear.

- 2 Press [2] key.

The CODE INPUT Menu will appear.

Enter the Reach value and select the software button ENT.

- 3 Press [3] to select Turn Mode.

The setting of turn mode will be switched between RADIUS and RATE.

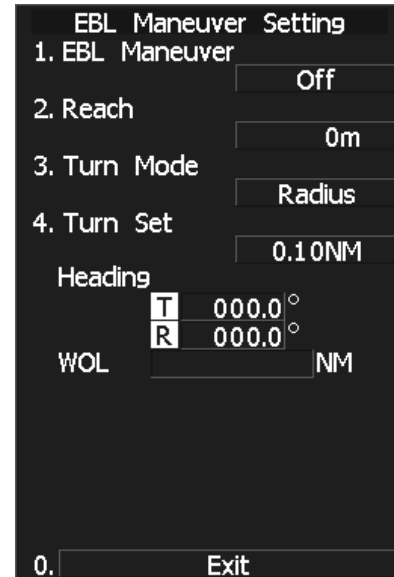
RADIUS: Constant turn diameter (NM)

RATE: Constant turn speed (deg/min)

- 4 Press [4] key.

The CODE INPUT Menu will appear.

Enter the Turn Set value and select the software button ENT.



3

Note: If the initial setting is not correct, the maneuver curve is affected.

[II] Creating Maneuver Curve (EBL Maneuver)

Procedure

- 1 Press [1] key while the EBL Maneuver menu is open.

EBL Maneuver will be set to ON.

A supplemental line, a maneuver curve, and WOL will appear on the radar display.

- 2 Set the starting point of the supplemental line using the trackball, and set the bearing of the supplemental line using the [EBL] control.

The bearing of the supplemental line will be the final bearing in which the own ship is to move.

The position of WOL will change depending on the bearing of the supplemental line.

If the WOL is behind the own ship's position, the line color of WOL will change.

- 3 Press [ENT] key.

The setting will be determined. However, if the WOL is behind the own ship's position at this point, the pressing of [ENT] key is rejected, and the setting is not determined.

Cancellation

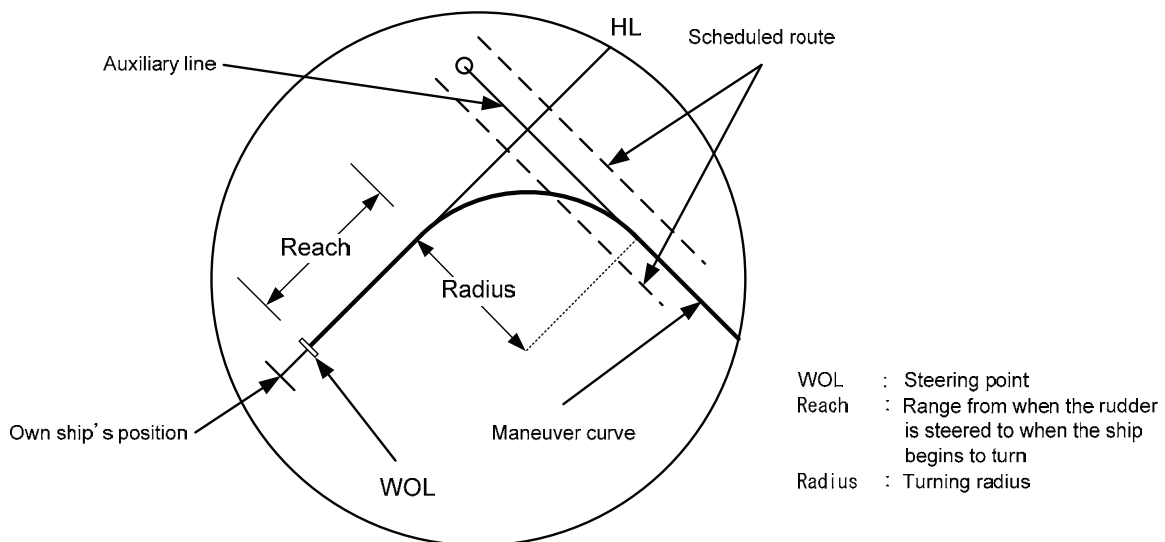
- 1 Press [1] key.

The EBL Maneuver function will be set to OFF.

Exit

- 1 Press [RADAR MENU] key.

The EBL Maneuver Menu will close.



WOL: Steering point

REACH: Distance from when the wheel is steered to when the ship begins to turn

R: Turning radius

3.5.18 Operate Multi-Function Control [MULTI]

The multi-function control [MULTI] is provided to change the settings of parameters such as the length of radar trails. Turn the control to select a parameter. Radar operation is simplified by using the control.

[I] Initial Setting (Multi Dial Setting)

Set parameters that can be operated with the multi-function control.
A parameter set to ON can be called by turning [MULTI] control.

Procedure

- 1 Press [RADAR MENU] key twice.

Press [8] key.

Press [2] key.

The Multi Dial Setting Menu will appear.

- 2 Press the numeric key of the number of the parameter whose setting is to be changed.

The setting will be switched between ON and OFF.

ON: Can be operated with the multi-function control.

OFF: Cannot be operated with the multi-function control.



Parameters

- | | |
|------------------------|---|
| 1. Vector Length: | Vector length of TT |
| 2. Trails Length: | Length of radar trails |
| 3. TT TGT Display No.: | TT target number for which values are to be displayed |
| 4. C-UP Angle: | Course in course-up mode bearing mode |
| 5. Own Track Color: | Available with plotter option. |
| 6. Mark/Line Color: | Available with plotter option. |

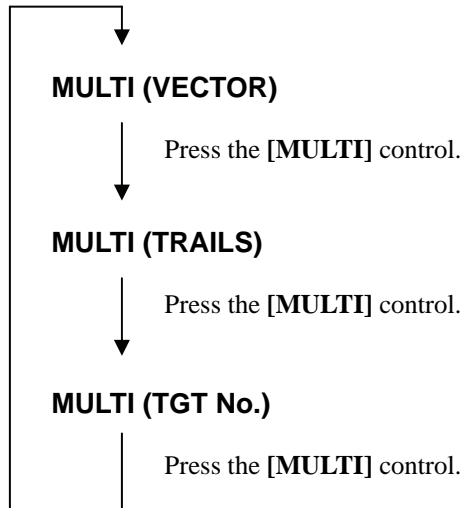
[II] Using Multi-function Control

Procedure

- 1 Press the [MULTI] control to select the parameter whose setting is to be changed.

Parameters will be selected sequentially each time the [MULTI] control is pressed. The currently selected parameter is indicated at the lower left of the radar display.

For example, if three parameter 1-3 are initially set to ON, they are selected in the following sequence each time the [MULTI] control is pressed:



- 2 Turn the [MULTI] control to change the setting.

The preset values of the selected parameter will change sequentially. Stop turning the control when the desired value appears.

* Software button ⑬ located at the bottom left corner of the radar display described in Section 2.3.2 is also available for switching the settings.

3.5.19 Operate User Key Switches [User Key 1/2]

Users can freely make settings with [USER KEY1] key and [USER KEY2] key.

By using the switches, users can open a frequently used menu by only single operation, or assign special functions, which are not on the standard operation panel, to the user key switches.

[1] Initial Setting (User Key Setting)

Set functions that can be performed with the user key switches.

Procedure

- 1 Press [RADAR MENU] key twice.

Press [8] key.

Press [3] key.

The User Key Setting Menu will appear.

- 2 Press the numeric keys [1] or [2] to select the user key switch whose setting is to be changed.

The pull-down menu will appear showing the functions.

User Key1: [1] key

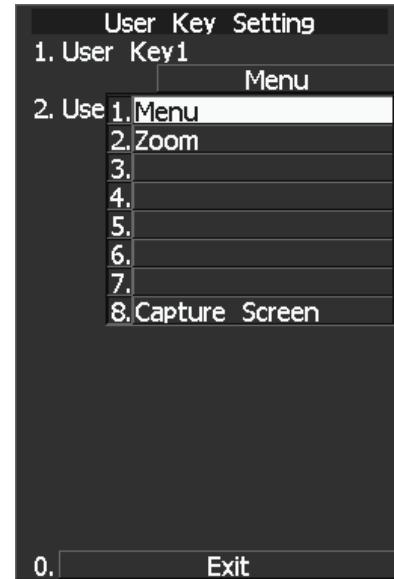
User Key2: [2] key

- 3 Press the numeric key to select the function that is to be assigned to the user key switch.

The function will be selected.

Pull-down menu items

1. MENU: Directly displays a specified menu.
2. ZOOM: Sets the zoom function to ON/OFF.



[II] Using User Key Switches (Directly displaying a specified menu)

Preset the menu that is to be displayed with the user key switch.

Setting the menu that is to be displayed with User Key 1:

Procedure

- 1 Perform the general menu open procedure to open the menu that is to be directly displayed with User Key 1.**
- 2 While the menu is open, hold down [USER KEY1] key for 2 seconds.**

The menu will be assigned to [USER KEY1] key.

Setting the menu that is to be displayed with User Key 2:

Procedure

- 1 Perform the general menu open procedure to open the menu that is to be directly displayed with User Key 2.**
- 2 While the menu is open, hold down [USER KEY2] key for 2 seconds.**

The menu will be assigned to [USER KEY2] key.

Directly displaying the menus assigned to the User Keys:

Procedure

- 1 Press [USER KEY1] key.**

The menu assigned to [USER KEY1] key will appear.
Subsequently, general menu operation can be performed.

Procedure

- 1 Press [USER KEY2] key.**

The menu assigned to [USER KEY2] key will appear.
Subsequently, general menu operation can be performed.

3.5.20 Automatic Acquisition

Note: If the number of targets being tracked has reached the allowable maximum and other targets (not being tracked) go into the acquisition/activation zone, automatically acquired targets are canceled in ascending order of danger.

Turning On / Off the automatic acquisition and AIS activation (AZ Menu)

Procedure

1 Press the [TT Menu] key.

TT Menu opens.


2 Press the [5] key.

Press the [1] key.

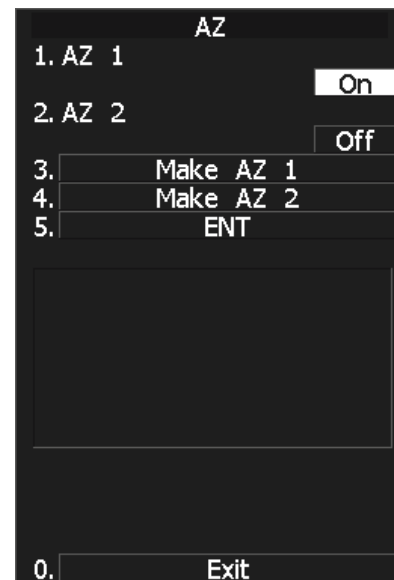
Acquisition / activation zone setting menu (AZ) opens.

3 Press the [1] or [2] key.

The acquisition / activation zone 1 (AZ1) or acquisition / activation zone 2 (AZ2) will be set to on or off.

On :The acquisition / activation zone is turned on. The mark "  " and target ID number are put to an acquired target and move with the target. The vectors are displayed within 1 minute. AIS targets are activated.

Off :The acquisition/activation zone is turned off. The acquisition/activation zone will disappear from the radar display, but the system continues to track the acquired target. The activated AIS targets remain activate.



3

Creating the automatic acquisition and AIS activation Zone

Procedure

- 1 Press the [TT Menu] key.

TT Menu opens.

- 2 Press the [5] key.

Press the [1] key.

Acquisition / activation zone setting menu (AZ) opens.

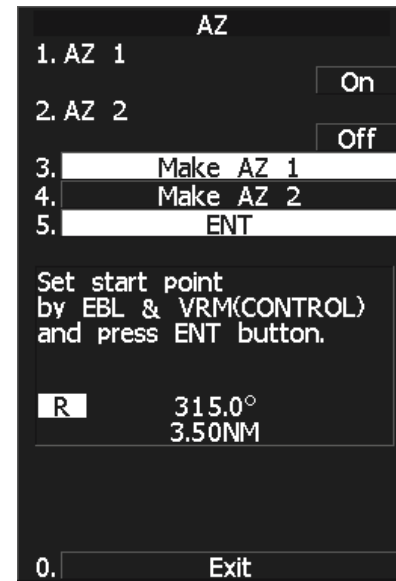
- 3 Press the [3] or [4] key.

The range setting of the acquisition / activation zone 1 (AZ1) or acquisition / activation zone 2 (AZ2) will be started.

- 4 Set the starting azimuth and range by turning the [EBL] dial and [VRM] dial, and press the [ENT] key.

- 5 Set the ending azimuth and range by turning the [EBL] dial and [VRM] dial, and press the [ENT] key.

The acquisition / activation zone will be determined.



Setting the [AZ] key allocation (Set AZ Key)

A generally used acquisition / activation zone can be turned on / off by simply pressing the [AZ] key.

Procedure

1 Press the [TT Menu] key.

TT Menu opens.

2 Press the [5] key.

Press the [3] key.

Alarm key allocation menu (Set AZ Key) opens.

3 Press the [1] key.

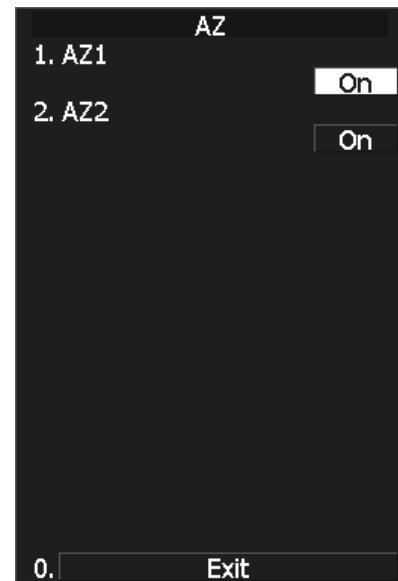
Allocate alarm keys for the acquisition / activation zone.

On

:Pressing the [AZ] key turns on / off the acquisition / activation zone.

Off

:Pressing the [AZ] key does not turn on the acquisition / activation zone.



3

Note: If the RADAR Alarm key assignment is set, pressing the [AZ] key turns on / off the AZ Alarm key at the same time the RADAR Alarm is turned on / off.

3.5.21 Radar Alarm (Radar Alarm)

With a fan-shaped range made, the radar alarm can give an alarm to ships that enter or depart from the range.

[1] Display Sector Alarm (Sector Alarm 1, 2)

Display a created Sector Alarm.

Procedure

- 1 Press [TT MENU] key.

The TT Menu will appear.

- 2 Press [5] key.

Press [2] key.

The Radar Alarm Menu will appear.

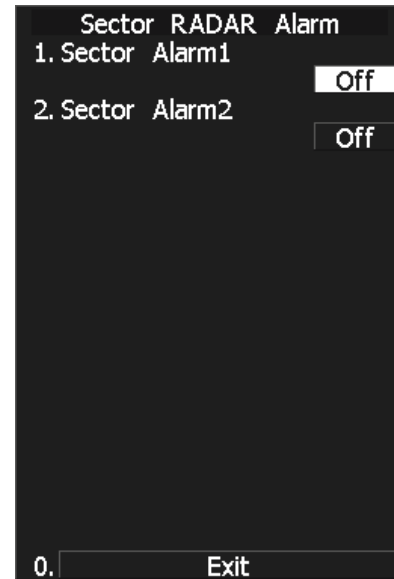
- 3 Press [1] key.

The Sector Radar Alarm Menu will appear.

- 4 Press numeric key [1] or [2] in accordance with the Sector Alarm to be displayed.

The display sector alarm mode will be switched between ON and OFF.

ON: Displayed
OFF: Not displayed



[III] Set Radar Alarm Mode (Radar Alarm Mode)

For alarm issuing conditions for the radar alarm, set either entry or departure.

Procedure

- 1 Press [TT MENU] key.

The TT Menu will appear.

- 2 Press [5] key.

Press [2] key.

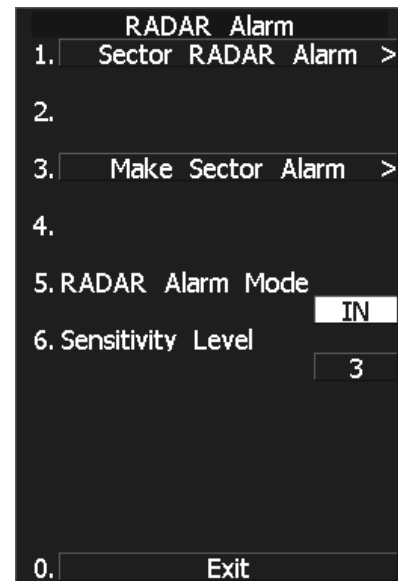
The Radar Alarm Menu will appear.

- 3 Press [5] key.

The radar alarm mode will be switched between ON and OFF.

IN: Issues an alarm when ship enters.

OUT: Issues an alarm when ship departs.

**3**

[III] Set Radar Alarm Detection Level (Sensitivity Level)

Detection levels can be set to issue alarms from the radar alarm.

Procedure

- 1 Press [TT MENU] key.

The TT Menu will appear.

- 2 Press [5] key.

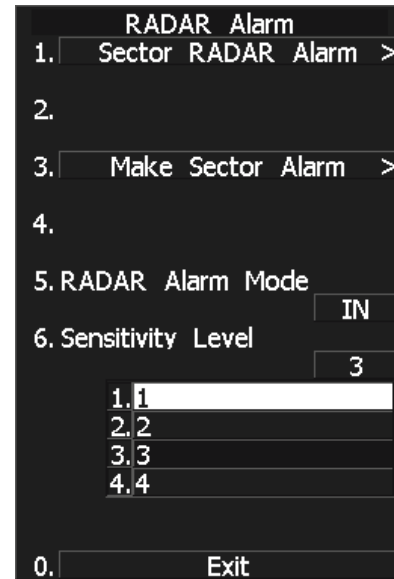
Press [2] key.

The Radar Alarm Menu will appear.

- 3 Press [6] key.

When a detection level appears, select the number you want to set, pressing the numeric keys [1] to [4].

* As the numeric value for detection level is larger, echo needs to be stronger for detection. If the numeric value for detection level is low, detection can be made with weak echo to issue an alarm.



[IV] Make Sector Alarm (Make Sector Alarm)

Sector alarms that can be made are divided into the two types.

Procedure

- 1 Press [TT MENU] key.

The TT Menu will appear.

- 2 Press [5] key.

Press [2] key.

The Radar Alarm Menu will appear.

- 3 Press [3] key.

The Make Sector Alarm Menu will appear.

- 4 Press numeric key [1] or [2] in accordance with the Sector Alarm to be made.

This operation is available only while the unit is in the transmission mode.

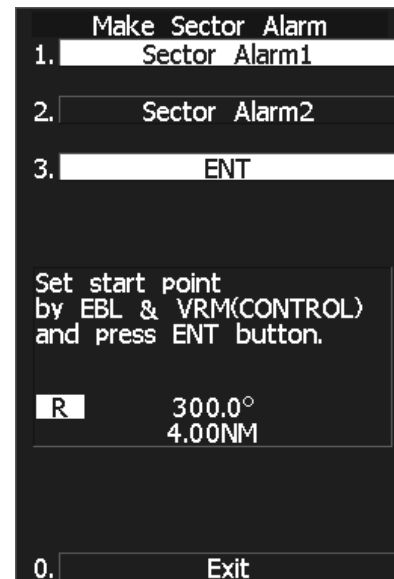
(In the stand-by state, operation is not allowed to go further.)

- 5 Place the start position of the sector alarm at a desired position by operating the EBL/VRM dial, and then select 3 ENT.

The start position of the Sector Alarm will be set.

- 6 Place the end position of the Sector Alarm at a desired position by operating the EBL/VRM dial, and then select 3 ENT.

The end position of the Sector Alarm will be set.



3

Setting RADAR Alarm Key Assignment (Set AZ Key)

This section explains how to set a RADAR alarm that is to be assigned to the [AZ] key.

The setting enables the operator to select ON/OFF for a generally used RADAR alarm by simply operating the [AZ] key on the control panel.

Procedure

- 1 Press [TT MENU] key.

Press [5].

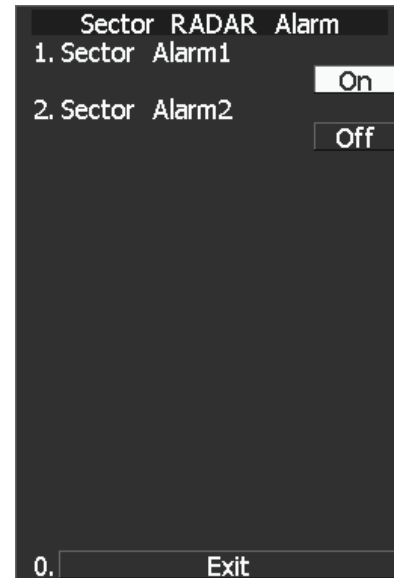
Press [3].

Press [2].

Sector RADAR Alarm menu will appear.

ON: Turns on the RADAR alarm when the [AZ] key is pressed.

OFF: Does not turn on the RADAR alarm when the [AZ] key is pressed.



Note: When the automatic acquisition / activation zone key allocation is set, pressing the [AZ] key will simultaneously turn on or off the radar alarm in the automatic acquisition / activation zone.

3.6 USE OWN SHIP'S TRACK DATA (OWN TRACK)

The own ship's track function saves and displays own ship's track.

If navigation equipment is connected, this radar system records latitude / longitude data sent from the navigation equipment and displays own ship's track.

Note: Even when own ship's track interval switching (software button ⑫ located at the bottom right corner of the radar display described in Section 2.3.4) is set to **Off**, own ship's track can be displayed. However, in this case, if rewrite operation such as changing of the display range is performed for the radar display, own ship's track display is erased and the track will not be plotted again.

If the DISP Own Track is turned off when the own ship track is in save, own ship's track is not shown of the display, but own ship's track data is still saved.

The own ship's track function is available between latitudes of 85°N and 85°S.

When a plotter unit (optional) is connected, own ship's track can be displayed and saved in seven different colors. The color display can be turned on or off by color.

3

3.6.1 Display Own Ship's Track (Display Own Track)

If navigation equipment is connected, this system records data received from the navigation equipment and displays the own ship's track.

1 Select color for new own ship past tracks. (Own Track Color)

Procedure

- 1 Press [RADAR MENU] key.
Press [9] key.
Press [1] key.

The Own Track Setting Menu will appear.

- 2 Press [5] key.

The color list is displayed.

- 3 Select the number to be set, pressing the numeric key.

The selected track color will be set.

* Software button ⑫ located at the bottom right corner of the radar display described in Section 2.3.4 is also available to select the Own Track color.

Own Track Setting	
1. Own Track Interval	1min
2. DISP Own Track Color >	
3. Clear Own Track Color	All
4. Own Track Memory	ON
5. Track Color	Cyan
6. Track Color	1. Off
	2. White
7. Nun	3. Cyan
	4. Blue
	5. Green
	6. Yellow
9.	7. Pink
	8. Red
0.	Exit

The selected color is applied to the newly displayed track only.
The tracks displayed already are not affected by the setting.

Note: The own ship's track can be displayed even while Own Track Memory is set to OFF. In this case, if rewrite operation such as changing of the display range is performed for the radar display, the own ship's track display is erased and the track is not plotted again.

If DISP Own Track is set to OFF when Own Track Memory is ON, the own ship's track is not shown on the radar display but the system stores own ship's track data at specified intervals.

2 Select Own ship tracks by the color. (Display Own Track Color)

Procedure

- 1 Press [RADAR MENU] key.

Press [9] key.

Press [1] key.

The Own Track Setting Menu will appear.

- 2 Press [2] key.

The track color list is displayed.

- 3 Select the color of the tracks to be displayed by Pressing the numeric key.

The selected tracks are displayed.



* You can select the color for new own ship's track in "Track Color". Then you can view the memorized own ship's tracks by colors selected in "DISP Own Track Color".

3.6.2 Set Own Ship's Track Data Storage Interval (Own Track Interval)

There are 10 preset time intervals and 8 preset range intervals that can be selected for storing own ship's track data.

Procedure

1 Press [RADAR MENU] key.

Press [9] key.

Press [1] key.

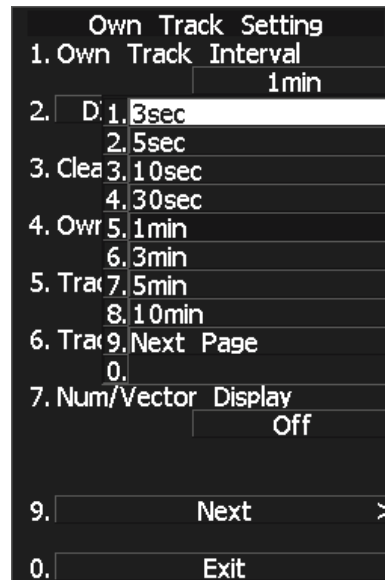
The Own Track Setting Menu will appear.

2 Press [1] key.

The Own Track Interval Setting Menu will appear.

3 Select the storage interval number to be set, pressing the numeric key.

The selected storage interval will be set.



A preset time interval or preset distance interval can be selected as the storage interval.

Storage intervals that can be selected

Time: 3 sec, 5 sec, 10 sec, 30 sec, 1 min, 3 min, 5 min, 10 min, 30 min, and 60 min

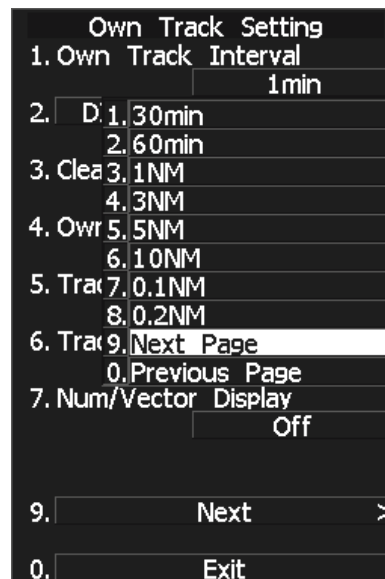
Range: 1 nm, 3 nm, 5 nm, and 10 nm

The pull-down menu consists of 2 pages.

To switch between the pages, select Next Page pressing the numeric key [9], or Previous Page pressing the numeric key [0].

* Pressing software button ⑫ located at the bottom right corner of the radar display described in Section 2.3.4, you can switch track data storage intervals, and pressing software button ⑬ located at the bottom right corner of the radar display described in Section 2.3.4, you can switch of a memory unit.

Setting the button to OFF cancels the storing of data.



3.6.3 Cancel Storing of Own Ship's Track Data (Own Track Memory)

This function cancels the storing of own ship's track data.

Procedure

1 Press [RADAR MENU] key.

Press [9] key.

Press [1] key.

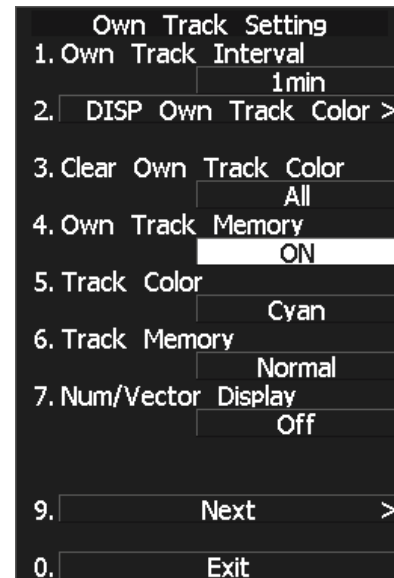
The Own Track Setting Menu will appear.

2 Press [4] key.

The setting of Own Track Memory will be switched between ON and OFF.

ON: Own ship's track data is stored.

OFF: Own ship's track data is not stored.



* Software button ⑫ located at the bottom right corner of the radar display described in Section 2.3.4 is also available for switching Track Data Storage Intervals. Setting the button to OFF cancels own track memory.

Note: The own ship's track can be displayed even while Own Track Memory is set to OFF. In this case, if rewrite operation such as changing of the display range is performed for the radar display, the own ship's track display is erased and the track is not plotted again. If Display Own Track is set to OFF when Own Track Memory is ON, the own ship's track is not shown on the radar display but the system stores own ship's track data at specified intervals.

3.6.4 Clear Own Ship's Track Data (Clear Own Track)

This function clears own ship's track data from memory.

Procedure

- 1 Press [RADAR MENU] key.

Press [9] key.

Press [1] key.

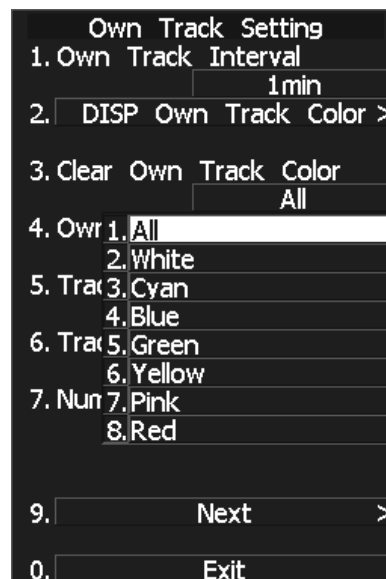
The Own Track Setting Menu will appear.

- 2 Press [3] key.

The Own Track color list will appear.

- 3 Select the track color to be cleared, pressing the numeric key.

The tracks with selected color will be cleared.



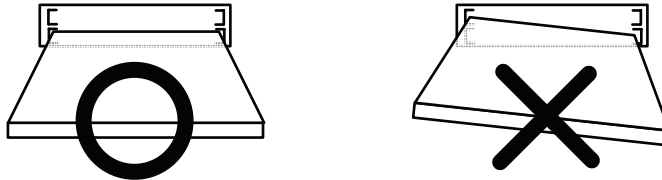
3

3.7 DISPLAY CHARTS

3.7.1 Insert/Remove a Card

Insert or remove the JRC coastline ROM card, ERC card, C-MAP card and memory card according to the procedures below.

Note: Keep a card horizontal when inserting it into a card slot. An inclined card causes a failure.



Do not simultaneously insert a JRC coastline ROM card, an ERC card and C-MAP card into the card slot. A malfunction will occur on the display.

Insert the card into the specified slot according to the following table:

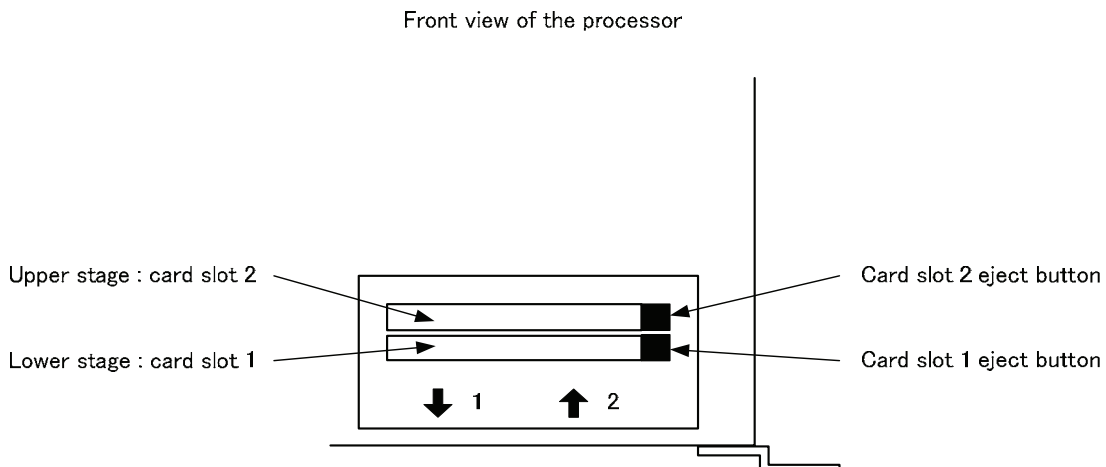
Card type	Insertion slot No.
JRC card	Either one
ERC card	Either one
C-Map NT+ detail card	Either one
Memory card	Card slot 2 (Upper stage)

Note: The Background of C-Map has been built in, don't insert C-Map NT+ background card. If the background card is inserted, the system will malfunction.

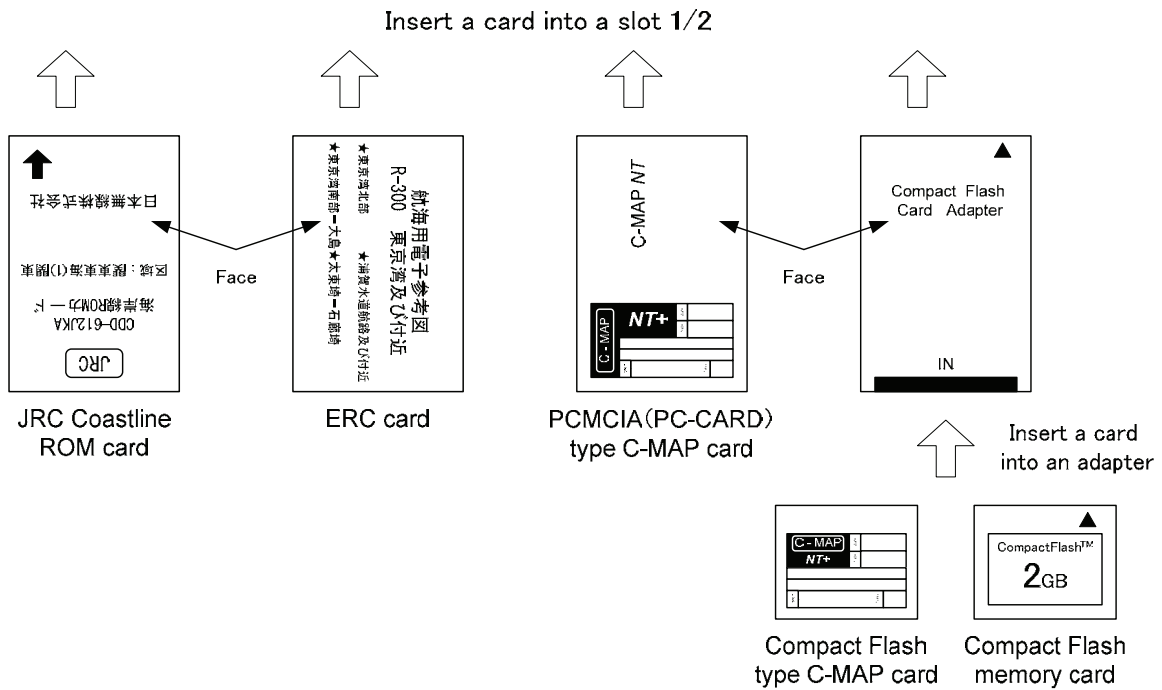
Insert a card into processor unit

Procedure

- 1 Remove the rubber packing located at the front view of the processing unit cabinet, and expose the card slot.



2 Insert the card in the direction indicated by the arrow.



3 Insert the card until the card slot's eject button protrudes and complete the installation of a card.

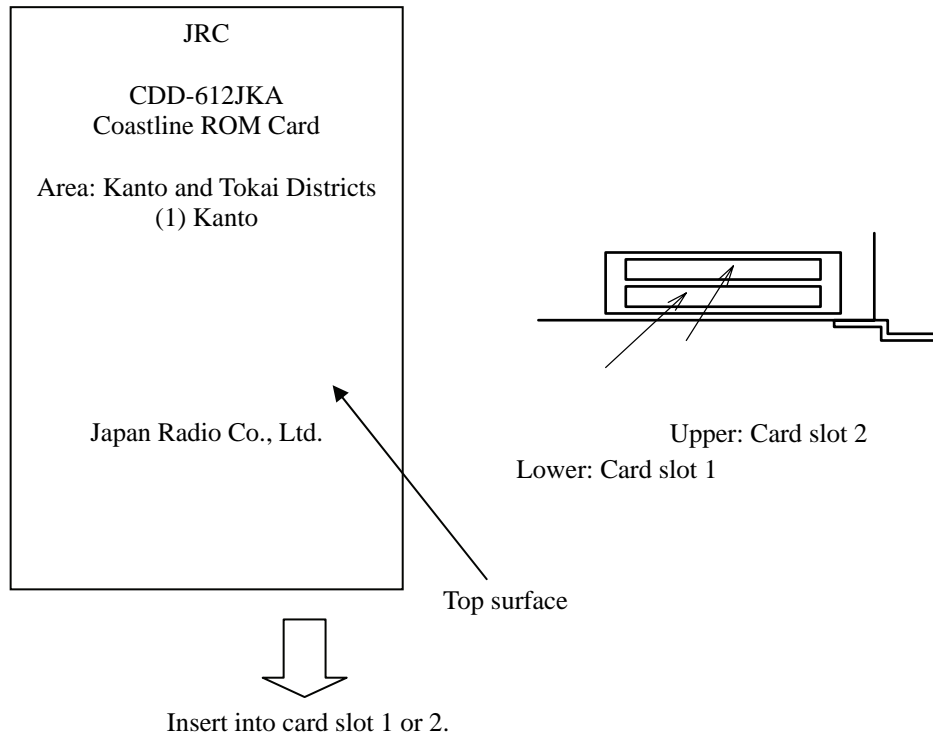
Eject a card from processor unit

Procedure

- 1 Push the eject button corresponding to the desired card slot.
- 2 remove a card from processor unit

3.7.2 Display Coastline ROM Card Produced by JRC

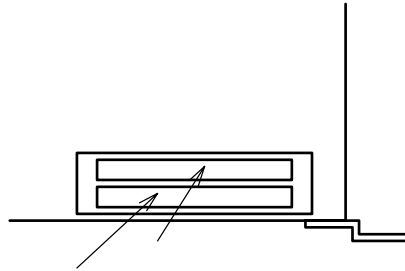
- Insert the Coastline ROM card produced by JRC with the top surface upward into card slot 1 (lower) or 2 (upper) as shown in the figure below. Press [MAP] key, and the coastlines will be displayed automatically.
- Two Coastline ROM cards can be inserted into card slots 1 and 2 at the same time.
- For ranges including detailed coastlines, refer to the Coastline ROM card catalog.
- Do not insert an ERC card (provided by Japan Hydrographic Association) or C-MAP card into a card slot while JRC's Coastline ROM card is in the other slot. Doing so causes display trouble.



* Insert the card and then press software button ④ located at the bottom right corner of the radar display described in Section 2.3.4 to switch Display Charts between ON and OFF.

3.7.3 Display ERC Card

- Insert the ERC card (provided by Japan Hydrographic Association) with the top surface upward into card slot 1 (lower) or 2 (upper) as shown in the figure below. Press [MAP] key, and the coastlines will be displayed automatically.
- Two ERC cards can be inserted into card slots 1 and 2 at the same time.
- For ranges of charts to be displayed, refer to the catalog issued by Japan Hydrographic Association.
- Do not insert JRC's Coastline ROM card or C-MAP card into a card slot while the ERC card is in the other slot. Doing so causes display trouble.



Upper: Card slot 2

Lower: Card slot 1

Insert into card slot 1 or 2.



Electronic Reference Charts for Navigation
R-300 Tokyo Bay and Vicinity

- ★North of Tokyo Bay
- ★Uruga Channel and Vicinity
- ★South of Tokyo Bay – Ohshima
- ★Taitohsaki - Irohazaki

* Insert the card and then press software button ④ located at the bottom right corner of the radar display described in Section 2.3.4 to switch Display Charts between ON and OFF.

3.7.4 Fill Charts (Fill Land Area)

This function fills the chart when JRC/ERC card is in use.

Procedure

- 1 Press [RADAR MENU] key.

Press [9] key.

Press [5] key.

The Map Setting Menu will appear.

- 2 Press [1] key.

The setting of Fill Land Area will be switched between ON and OFF.

ON: Charts are filled.

OFF: Charts are not filled.

