### On-screen menu box operation

1. Select the operational display area, then press the **right button**. The [CURSOR] context menu is displayed.

2. Select [EBL OFFSET], then press the **left button**.

3. Select the operational display area, then press the **left button**. The EBL line is attached to the cursor.

4. Place the offset EBL on the target appearing as threatening, then press the **left button**.

5. After waiting for a few minutes (at least 3 minutes), operate the EBL used in step 1 until it bisects the target at the new position (A^1). The EBL readout shows the target ship's course, which can be true or relative depending on the EBL bearing reference setting.

6. To return the EBL origin to the own ship's position, repeat steps 1 and 2, then press the **right button**.

7. Close the menu.

1.33.2 How to set the point of reference origin point for EBL OFFSET

The origin point of the offset EBL can be ground stabilized (geographically fixed), north stabilized (true) or referenced to own ship's heading (relative).

1. Open the [MAIN MENU].

2. Select [NAVTOOL], then press the **ADJUST** knob.

3. For IMO radars, select [EBL•VRM•CURSOR], then press the **ADJUST** knob.
   For non-IMO radars, select [EBL•VRM], then press the **ADJUST** knob.

4. Select [EBL OFFSET BASE], then press the **ADJUST** knob.

5. Rotate the **ADJUST** knob to select [STAB GND], [STAB HDG] or [STAB NORTH] as appropriate, then press the **ADJUST** knob.
   - [STAB GND] : Reference to latitude and longitude. Origin position is always fixed regardless of your ship's movement.
   - [STAB HDG] : Reference to heading. The relationship between origin position and own position is kept always.
   - [STAB NORTH] : Reference to North. The origin position changes with North position.

6. Close the menu.

1.34 How to Measure Range and Bearing Between Two Targets

Range/bearing between targets 1 and 2

Range/bearing between targets 3 and 4
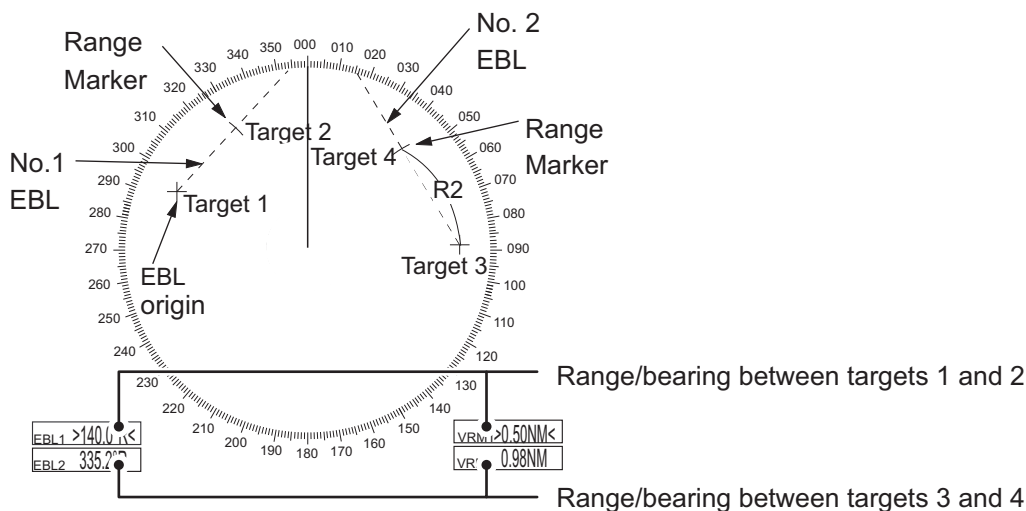
Note: This function requires the [VRM OFFSET] to be set as [LINK EBL]. The [EBL OFFSET] function must also be assigned to a function key

How to link EBL to VRM OFFSET

1. Open the [MAIN MENU].

2. Select [NAVTOOL], then press the **ADJUST** knob.

3. Select [EBL•VRM•CURSOR], then press the **ADJUST** knob.

4. Select [VRM OFFSET], then press the **ADJUST** knob.

5. Select [LINK EBL], then press the **ADJUST** knob.

6. Close the menu.

How to measure range and bearing from the control unit

1. Press the **EBL OFFSET** function key, then use the touchpad to place the origin of EBL1, for example, on a target of interest. (Shown as "Target 1" in the above example).
   Note: If there is no EBL displayed when the **EBL OFFSET** function key is pressed, EBL1 is automatically displayed.

2. Using the **ADJUST** knob, move the EBL until it passes through another target of interest. (Shown as "Target 2" in the above example).

3. Press the [VRM] key, then rotate the **ADJUST** knob until the range marker on the EBL is on the inside edge of Target 2. The active VRM readout at the lower-right corner of the screen indicates the distance between the two targets.

4. You can repeat the same procedure on third and fourth targets (shown as "Target 3" and "Target 4" in the above example) by using the No. 2 EBL and the No. 2 VRM.

Bearing is shown relative to own ship with suffix "R" or as a true bearing with suffix "T" depending on EBL relative/true settings in the [EBL•VRM] menu. To return the EBL origin to the screen center, press the **EBL OFFSET** function key again.

How to measure range and bearing from the on-screen box menu

1. Select the operational display area, then press the **right button**. The [CURSOR] context menu is displayed.

2. Select [EBL OFFSET], then press the **ADJUST** knob.

3. Place the offset EBL on the target of interest (Target 1), then press the **ADJUST** knob.

4. Select the [VRM1] box, then press the **ADJUST** knob.

5. Rotate the **ADJUST** knob until the range marker on the EBL aligns with Target 2. The active VRM readout at the lower-right corner of the screen indicates the distance between the two targets.

6. You can repeat the same procedure on third and fourth targets (shown as "Target 3" and "Target 4" in the above example) by using the No. 2 EBL and the No. 2 VRM.

Bearing is shown relative to own ship with suffix "R" or as a true bearing with suffix "T" depending on EBL relative/true settings in the [EBL•VRM] menu. To return the EBL origin to the screen center, move the cursor to the [EBL] box, then press and hold the **left button**.

1.35 How to Off-Center the Display

Own ship position, or sweep origin, can be displaced to expand the view field without switching to a larger range scale. The sweep origin can be off-centered to the cursor position, but not more than 75% of the range in use; if the cursor is set beyond 75% of the range scale, the sweep origin will be off-centered to the point of 75% of the limit.
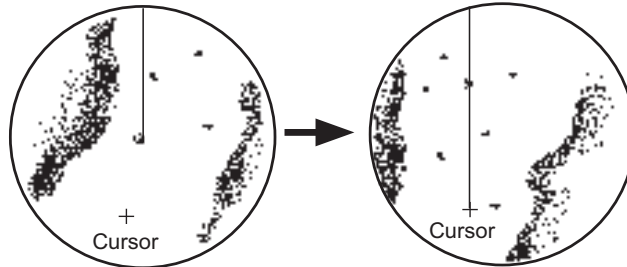
Put cursor where desired and do appropriate off-center procedure.

Off-centered display

This feature is not available on the 96 nm range or in the true motion mode.

If the conning position is outside the effective radar display, some parts of the bearing scale are not shown. For details, see section 1.47.

How to off-center the display from the control unit

1. Place the cursor at the position where you wish to move the sweep origin.

2. Press the ![OFF CENTER] key. The sweep origin is now off-centered at the cursor position.

3. To cancel off-centering, press the ![OFF CENTER] key again.

How to off-center the display from the on-screen menu

1. Place the cursor at the position where you wish to move the sweep origin.
2. Press the **right button** to show the [CURSOR] menu.
3. Select [OFF CENTER], then press the **ADJUST** knob.
4. To cancel [OFF CENTER], press the **right button**.

Note: When the conditions shown below are met, off-center cannot be canceled. This is because the radar antenna position is located at a position greater than 75% of the effective radar display.

• Own ship marker is large.

• The distance between antenna position and conning position is large.

• Short-distance display range.

To cancel the off-center, select a larger range, then cancel the off-center.

1.36 Target Trails

The trails of the radar echoes of targets can be displayed in the form of synthetic afterglow. Target trails are shown either relative or true and can be sea or ground stabilized. True motion trails require a compass signal, and position and speed data. When the range is changed, trails are continued for targets which were already
displayed in the previous range. Newly detected targets have no trail when first detected.

True target trails - Stationary targets are not smeared.

1.36.1 True or relative trails

You can display echo trails in true or relative motion. Relative trails show relative movements between targets and own ship. True motion trails present true target movements in accordance with their over-the-ground speeds and courses.

Relative target trails - Targets move relative to own ship, stationary targets are smeared.

Note 1: The [TRAIL MODE] box is shown in yellow under following conditions:

• [TRAIL MODE] is set to [TRUE] and presentation mode is set to [HEAD UP RM].

• [TRAIL MODE] is set to [TRUE] and presentation mode is set to [STERN UP].

The reference for the past position displays for AIS and TT is also switched whenever trail reference is switched.

Note 2: The [TRAIL MODE] box is shown in cyan under the following conditions:

• [TRAIL MODE] is set to [TRUE] and presentation mode is set to [STAB HEAD UP RM].

• [TRAIL MODE] is set to [TRUE] and presentation mode is set to [COURSE UP RM].

• [TRAIL MODE] is set to [TRUE] and presentation mode is set to [NORTH UP RM].
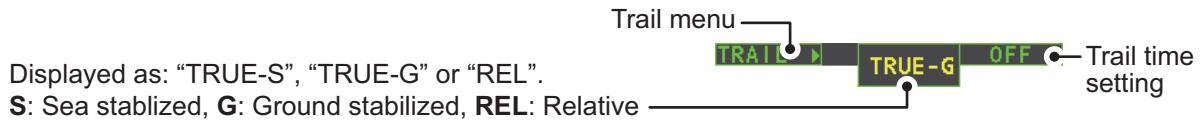
1. Select the [TRAIL] box at the bottom-right of the screen, then press the **right button**. The [TRAIL MENU] is displayed.

2. Select [TRAIL MODE], then press the **ADJUST** knob.

3. Referring to the figure on the right, select the appropriate trail mode, then press the **ADJUST** knob.

4. Close the menu.

1.36.2 Trail time

Trail time is the interval at which the trail is plotted on-screen. You can adjust the trail time as follows:

1. Place the cursor on the trail time setting inside the [TRAIL] box at the bottom-right corner of the screen, then press the **left button** or the **TGT TRAIL** key to cycle through and select the desired setting.

Trail menu

Displayed as: "TRUE-S", "TRUE-G" or "REL".
S: Sea stablized, **G**: Ground stabilized, **REL**: Relative

Trail time setting

The options, in order, are: [OFF] → [15 sec] → [30 sec] → [1 min] → [3 min] → [6 min] → [15 min] → [30 min] → [CONT] → [OFF]...

When using the **ADJUST** knob or the scrollwheel on the RCU-030 to change the trail time, the time is changed in 30 second increments.

Note 1: The timer displays the elapsed time of the selected trail. Use caution when using this feature, as the displayed time is not the overall trail time. Also, when the trail timer is displayed, the trail accuracy of other ship's echoes may be lowered. When the trail time reaches the preset interval, the timer disappears.

Note 2: The [CONT] option sets the trail time plotting as continuous. When the plotting time reaches 29:59, the timer is hidden. The timer reappears when [TRAIL ALL CLEAR] is selected, or when the range is adjusted.

1.36.3 Trail gradation

The trail afterglow can be displayed in a single tone or with gradual shading.

Single
(Monotone shading)

Multiple
(Gradual shading)

1. Select the [TRAIL] box at the bottom-right corner of the screen, then press the **right button** to display the [TRAIL MENU].
2. Select [TRAIL GRAD], then press the **ADJUST** knob.
3. Select [Single] or [Multi] (Multiple) as appropriate, then press the **ADJUST** knob.
4. Close the menu.

1.36.4 Trail level

The level, or intensity, of the afterglow that extends from radar targets can be selected as below.

1. Select the [TRAIL] box at the bottom-right corner of the screen, then press the **right button** to display the [TRAIL MENU].
2. Select [TRAIL LEVEL], then press the **ADJUST** knob.
3. Select the appropriate setting, then press the **ADJUST** knob. The higher the number, the greater the intensity of the afterglow.
4. Close the menu.

1.36.5 Narrow Trails

Target trails can be painted with thinner lines if desired. This can be useful when there are a lot of targets on the screen and it is hard to distinguish one from another.

1. Select the [TRAIL] box at the bottom-right corner of the screen, then press the **right button** to display the [TRAIL MENU].
2. Select [NARROW TRAIL], then press the **ADJUST** knob.
3. Select the appropriate setting from [OFF], [1] or [2], then press the **ADJUST** knob. [2] is thinner than [1].
4. Close the menu.

1.36.6 How to hide the trails temporarily

Following the procedure outlined in "Trail time" on page 1-45, set the trail time to [OFF]. The trails are hidden from view, but are continued. To show the trails again, repeat the procedure, setting the trail time to any interval other than [OFF].

1.36.7 Trail stabilization in true motion

True motion trails can be ground stabilized or sea stabilized. The [TRAIL] box shows current stabilization as "TRUE-G" or "TRUE-S". To change stabilization mode, open the [SHIP SPEED MENU] menu and set [SHIP SPEED] to [LOG(BT)] (ground stabilization) or [LOG(WT)] (sea stabilization).

1.36.8 How to erase/restart trails

All trails can be erased (including those in the memory) and restarted to start fresh trails.

To erase trails, select the [TRAIL] box, then press and hold the **left button** or the **TGT TRAIL** key.

1.36.9 How to prevent sea clutter in true trails

You can prevent the display of sea clutter in true trails about your ship to clear the radar picture. Your ship's trails can also be shown or hidden.

1. Select the [TRAIL] box at the bottom-right corner of the screen, then press the **right button** to display the [TRAIL MENU].
2. Select [OS TRAIL], then press the **ADJUST** knob.
3. Select [OFF], [1] or [2] as appropriate, then press the **ADJUST** knob.

Option	Show own ship's trail	Prevent sea clutter in true trails
[OFF]	No	No
[1]	Yes	Yes
[2]	No	Yes

4. Close the menu.

1.37 Target Analyzer

The target analyzer function is designed to analyze echoes and assist the operator to determine dangerous targets. This function is particularly useful under heavy rain/snow or where there is surface reflection, which can cause interference and noise.

The target analyzer function can also place hatching over heavy rain areas, reducing the visible interference and allowing a clearer view of potential targets.

Echoes are displayed in five different colors to assist the operator in identifying targets. The colors and their respective echoes are shown in the table below.

Echo	Color
Surface reflection	Green
Rain	Gray
Moving target	Red
Approaching target	Pink
Other echoes	Yellow

The following example figures show the manner in which this function affects displayed echoes.
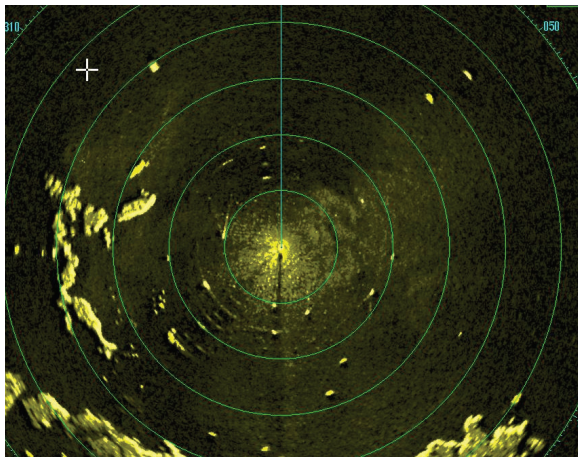
No echo adjustment
(Target analyzer off, EAV off, hatching off)
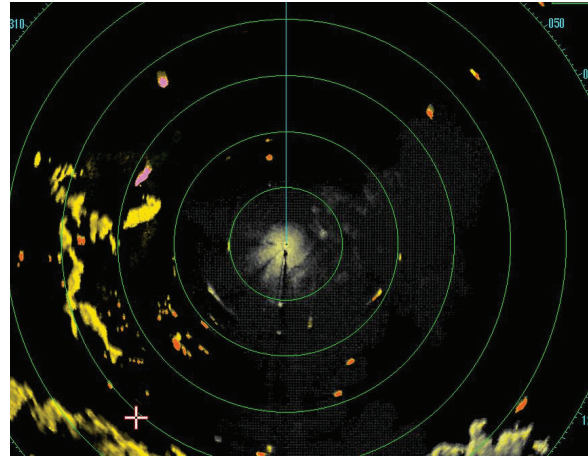Rain, moving targets and surface reflections are all displayed with no filtering.
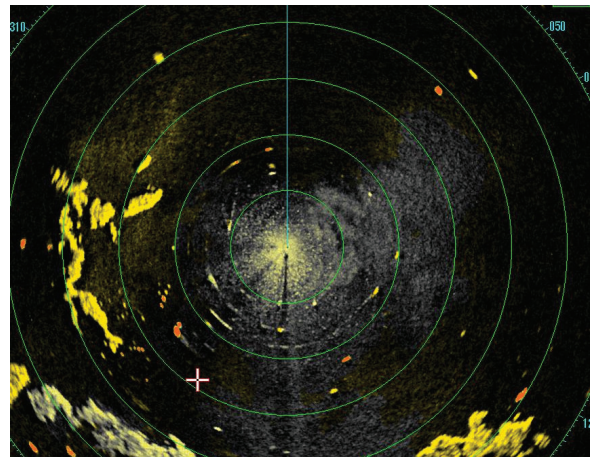
Minimal echo adjustment
(Target analyzer on, EAV off, hatching off)
Echoes are colored, surface reflections are filtered, rain is displayed.
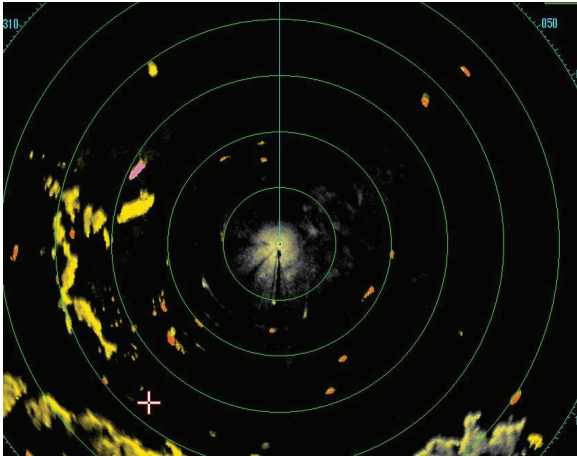
Moderate echo adjustment
(Target analyzer on, EAV on, hatching off)
Echoes are colored, surface reflections and
rain are filtered.

Maximum echo adjustment
(Target analyzer on, EAV on, hatching on)
Echoes are colored, surface reflections are
filtered, rain is displayed in gray colored
hatching.

Note 1: This function works best when the settings for [GAIN], [STC], [RAIN], [NOISE REJECT] and [VIDEO CONTRAST] are properly adjusted (Surface reflections are displayed in green and rain is displayed in gray).

Note 2: This function recognizes moving targets as approaching targets. Buoys and other stationary objects are not recognized as approaching targets by this function.

What is "hatching"?

Where echo averaging may hide light rain on the display, the hatching feature, when activated, places a gray "veil" over the areas where rain is detected. This allows the operator to see where the rain is without affecting the quality of the displayed echoes.

1.37.1 How to activate/deactivate the target analyzer

1. Select the [CUSTOMIZE ECHO] box, then press the **right button**.
2. Select [TARGET ANALYZER], then press the **ADJUST** knob.
3. Select [OFF] to deactivate the function, or [ON] to activate the function, then press the **ADJUST** knob.
4. Select [HATCHING], then press the **ADJUST** knob.
5. Select [OFF] to deactivate the function, or [ON] to activate the function, then press the **ADJUST** knob.
6. Close the menu.

1.38 Target Alarm

The target alarm serves to alert the navigator to targets (ships, landmasses, etc.) entering a specific area, with audiovisual alerts.

⚠️ **CAUTION**

- **The alarm should not be relied upon as the sole means for detecting possible collision situations.**

- **A/C SEA, A/C RAIN and GAIN controls should be properly adjusted to be sure the alarm system does not overlook target echoes.**

The target alarm zone has a fixed width of 0.5 nm in the radial direction (depth) and is adjustable from 3.0 to 6.0 nm (target alarm zone 1) and any distance (target alarm zone 2). On the Non-IMO radar the boundaries can be set at any distance. On any radar type the sector of the zone can be set from 0 to 360 degrees in any direction.

1.38.1 How to set a target alarm

The procedure below shows how to set a target alarm using the figure below as an example.

1. Place the cursor in the [ALR1] or [ALR2] box as appropriate, then press the left button. The cursor jumps into the operational display area and the indication "SET" appears inside the target alarm box selected.

ALR1	OFF
ALR2	OFF
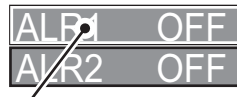
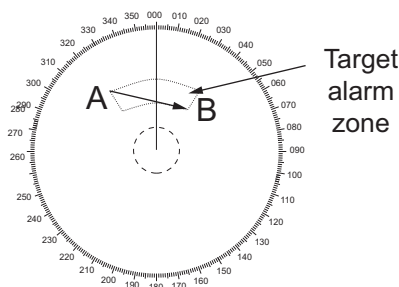| ALR1	SET
ALR2	OFF

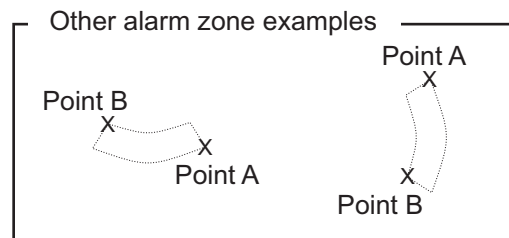ALR1 selected and highlighted   ALR1 ready to be set

2. Using the touchpad, move the cursor to Point A, then press the **left button**.

3. Using the touchpad, move the cursor to Point B, then press the **left button**. "SET" is replaced with "WORK" in the [ALR1] box indication. The target alarm zone's lines are shown as dashed lines.

Note 1: To create a 360° alarm zone, set Point B at the same location as Point A.

Note 2: Two alarm zones can be set simultaneously. The second alarm zone is only available when the first alarm zone is active, however.

Note 3: When the target alarm zone is not within the range in use the indication "UP RNG" appears to the right of the target alarm box. In this case select a range that will display the target alarm zone.

1.38.2   How to mute the target alarm

A target in the target alarm zone produces both visual (flashing) and audible (beep)

alarms. To silence the audio alarm press the [ALERT ACK] key or select the appropriate

target alarm box then press the **left button**. The target alarm box indication shows "ALR× MUTE". This will deactivate the audio alarm but will not stop the flashing of the offending target. To reactivate the audio alarm, press the **ALERT ACK** key again or select the target alarm box then press the left button.

When an external buzzer is connected, the audio alarm does not stop until the alarm zone itself is deactivated. The target alarm box shows "ALR× WORK".

1.38.3   How to deactivate a target alarm

Select the target box to be deactivated, then press and hold the **left button**.

Note: When both [ALR1] and [ALR2] are active, [ALR2] must be deactivated before [ALR1] can be deactivated.

1.38.4   How to change target alarm attributes

You can select the echo strength level that triggers the alarm, the condition that generates the alarm and the volume of the audio alarm as follows:

1. Open the [MAIN MENU].
2. Select [ALERT], then press the **ADJUST** knob.
3. Select [TARGET ALARM], then press the **ADJUST** knob.
4. Select [ALR1 MODE] or [ALR2 MODE] as appropriate, then press the **ADJUST** knob.
5. Select [IN] or [OUT] as appropriate, then press the **ADJUST** knob.
    [IN]: Targets entering the alarm zone trigger the alarm.
    [OUT]: Targets leaving the alarm zone trigger the alarm.
6. Select [LEVEL], then press the **ADJUST** knob.
7. Select the appropriate level of echo strength to trigger the alarm, then press the **ADJUST** knob. [1] is the highest strength, [4] is the lowest strength.
8. Press the **right button** once to return to the [ALERT] menu.
9. Select [ALERT SOUND LEVEL], then press the **ADJUST** knob.
10. Select [OFF], [LOW], [MID] or [HIGH] as appropriate, then press the **ADJUST** knob.
    Note: This setting is applied to all alarms output from this radar system.
11. Close the menu.

1.39 PI (Parallel Index) Lines

PI lines are useful for keeping a constant distance between own ship and a coastline or a partner ship when navigating. Up to six sets of PI lines are available depending on the maximum number of PI lines selected on the menu.

Max. 1 PI line: Six sets of PI lines (PI1 to PI6)

Max. 2, 3 or 6 PI lines: Four sets of PI lines (PI1 to PI4)

You can control the presentation and interval of the PI lines from the [PI Line] box, which is at the lower-left corner of the screen.
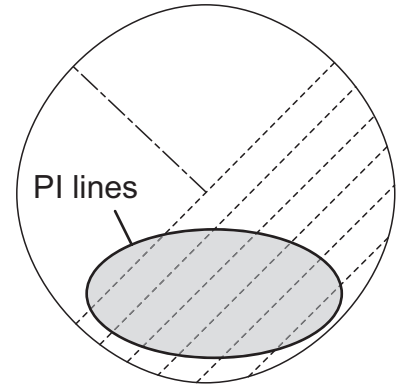
1.39.1 How to set the maximum number of lines to display

The maximum number of PI lines to display can be selected from [1], [2], [3] or [6] lines as below. The actual number of lines visible can be less depending on line interval.

1. Open the [MAIN MENU].
2. Select [NAVTOOL], then press the **ADJUST** knob.
3. Select [PI LINE], then press the **ADJUST** knob.
4. Select [SET ALL PI LINE], then press the **ADJUST** knob.
5. Select the appropriate option, then press the **ADJUST** knob.
6. Close the menu.

1.39.2 How to adjust PI line bearing and interval

1. If not already displayed, show a PI line, referring to paragraph 1.39.1.
2. Place the arrow on the PI line orientation in the [PI Line] box.

PI line orientation

PI line interval

3. Rotate the **ADJUST** knob to adjust the PI line bearing, between 000.0° to 359.9°. Enter a negative value to move the PI line to the opposite side of the PI line passing through the own ship position.
4. Place the cursor on the PI line interval.
5. Rotate the **ADJUST** knob to adjust the PI line interval.

1.39.3 How to change the PI line bearing reference

PI line bearing reference can be relative to own ship's heading (Relative) or referenced to North (True) as below.

Note: This function is not available with IMO type radars in this series. The setting is fixed to [TRUE].

1. Open the [MAIN MENU].
2. Select [NAVTOOL], then press the **ADJUST** knob.
3. Select [PI LINE], then press the **ADJUST** knob.
4. Select [PI LINE BEARING], then press the **ADJUST** knob.
5. Select [REL] or [TRUE] as appropriate, then press the **ADJUST** knob.
6. Close the menu.

1.39.4 How to change the PI line orientation

PI lines orientation can be selected from parallel or perpendicular. This function is available when [SET ALL PI LINE] in the [PI LINE] menu is set for other than [1].

1. Open the [MAIN MENU].
2. Select [NAVTOOL], then press the **ADJUST** knob.
3. Select [PI LINE], then press the **ADJUST** knob.
4. Select [PI LINE MODE], then press the **ADJUST** knob.
5. Select [PARALLEL] or [PERPENDIC] as appropriate, then press the **ADJUST** knob.
6. Close the menu.

1.39.5 How to reset the PI lines to default (ship's heading)

You can automatically return PI lines to default orientation (ship's heading), 0-degrees for parallel orientation, 90-degrees for perpendicular orientation. This is faster than doing it manually.

From the PI line box

Place the cursor inside the PI line box, then press and hold the **left button**.

From the menu

1. Open the [MAIN MENU].
2. Select [NAVTOOL], then press the **ADJUST** knob.
3. Select [PI LINE], then press the **ADJUST** knob.
4. Select [RESET PI LINE], then press the **ADJUST** knob.
5. Select [YES], then press the **ADJUST** knob.
6. Close the menu.

1.39.6   How to adjust PI line length

You can adjust the length of the PI lines. This function is only available when [SET ALL PI LINE] in the [PI LINE] menu is set to [1]. If not already displayed, you can show PI lines for which you wish to adjust the length by referring to paragraph 1.39.1.

1. Open the [MAIN MENU].
2. Select [NAVTOOL], then press the **ADJUST** knob.
3. Select [PI LINE], then press the **ADJUST** knob.
4. Select [TRUNC RANGE 1], then press the **ADJUST** knob.
5. Select [ON], then press the **ADJUST** knob.
6. Rotate the **ADJUST** knob to adjust the front PI line length. The available range is 0.000 NM to 24.000 NM. All PI lines beyond this mark will be hidden.
7. Select [TRUNC RANGE 2], then press the **ADJUST** knob.
8. Select [ON], then press the **ADJUST** knob.
9. Rotate the **ADJUST** knob to adjust the rear PI line length. The available range is 0.000 NM to 24.000 NM. All PI lines beyond this mark will be hidden.
10. To adjust the length of other PI lines, activate the line you wish to adjust, then repeat steps 1 through 9.
11. Close the menu.

1.40 Zoom

The zoom function enlarges an area of interest as large as twice the normal viewing size, in the [INFORMATION BOX]. Zoom can be selected using the control unit or from a preset function key (See section 1.9 for how to assign functions to the function keys).

Zoom is not available when the [INFORMATION BOX] setting for [TARGET DATA] is [LARGE].

1.40.1 How to enable/disable the zoom magnification

To enable/disable the zoom magnification, do the following:

1. Open the [MAIN MENU].
2. Select [INFORMATION BOX], then press the **ADJUST** knob.
3. Select [ZOOM], then press the **ADJUST** knob.
4. Select the appropriate setting, then press the **ADJUST** knob.
   - [OFF]: Disables the zoom function.
   - [2TIMES]: Enables magnification at 2×.
   - [3TIMES]: Enables magnification at 3×.
5. Close the menu.

1.40.2 How to select a zoom area from the control unit

1. Select the operational display area, then press the **right button** to display the [CURSOR] context menu.
2. Select [ZOOM], then press the **ADJUST** knob. The cursor is displayed with a zoom box when inside the operational display area.
3. Place the cursor and zoom box at the location you wish to zoom, then press the **left button**. The cursor returns to normal display, leaving the zoom box at the selected zoom area.

1.40.3 How to select a zoom area with the function key

When the zoom function is assigned to a function key, the function can be disabled, or enabled and set, using the function key.

1. Press the **ZOOM** function key to select the zoom function. The options are selected in the following cycle: [OFF] → [2TIMES] → [3TIMES] → [OFF]...
The cursor indication changes as shown in paragraph 1.40.2 when [2TIMES] or [3TIMES] is selected.
2. Place the cursor and zoom box at the location you wish to zoom, then press the **left button**. The cursor returns to normal display, leaving the zoom box at the selected zoom area.
3. To remove the zoom area, press the **ZOOM** function to cycle through the zoom settings until the zoom is set to [OFF].

1.41 How to Use Marks

```
[MARK MENU]

1   ORIGIN MARK
    STAB GND / STAB SEA
2   MARK KIND
    ORIGIN MARK(No.) /
    ORIGIN MARK(SYM) /
    MAP MARK /
    WP 1~50 /
    WP 51~98 /
8   MARK POSITION
    CURSOR / OS / L/L
9   MARK COLOR
    RED / GRN / BLU / YEL /
    CYA / MAG / WHT
0   MAP•MARK MENU
```

Select the [MARK] box at the bottom of the screen then press the **right button** to open the [MARK] context menu.

Marks can be entered at any location inside the operational display area, however, no mark can be entered at the location of an on-screen box. A total of 5000 marks can be inscribed at any one time.

You can mark any prominent target or a point of particular interest using the mark feature.

Note: The location and orientation of mark symbols and mark lines can change, depending on the display presentation mode, as shown in the table below.

Presentation mode	Mark symbol	Mark line
HEAD UP RM/STERN UP RM/STAB HEAD UP RM	Location is adjusted according to heading and own ship position. Orientation is unchanged.	Location and orientation are adjusted according to heading and own ship position.
COURSE UP RM/NORTH UP RM/NORTH UP TM	Location is adjusted according to own ship position. Orientation is unchanged.	Location and orientation are adjusted according to own ship position.

1.41.1 How to select a mark type

1. Select the [MARK] box at the bottom of the screen, then press the **right button** to open the [MARK] context menu.

2. Select [MARK KIND], then press the **ADJUST** knob.

3. Select the appropriate type of marker, referring to the table below, then press the **ADJUST** knob.

Mark kind	Description
[ORIGIN MARK(No.)]	Inscribes the standard origin mark symbol, with mark number.
[ORIGIN MARK(SYM)]	Inscribes the standard origin mark symbol, without mark number.
[MAP MARK]	Inscribes the selected map mark.
[WP1-50]	Inscribes waypoint marker 1 through 50.
[WP51-98]	Inscribes waypoint marker 51 through 98.

4. Close the menu.
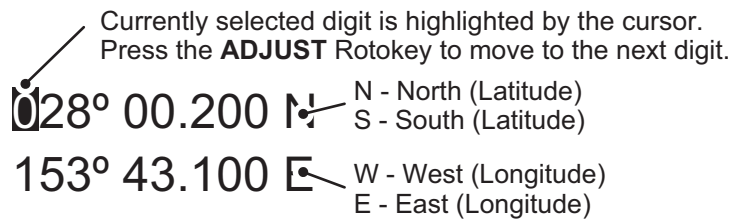
1.41.2 How to select the mark inscription position

You can select the location at which the marker is inscribed from the following:

Location	Description
[CURSOR]	You can select the location using the touchpad.
[OWN SHIP]	Marker is placed at own ship position.
[L/L]	Marker is placed at the coordinates selected.

1. Select the [MARK] box at the bottom of the screen, then press the **right button** to open the [MARK] context menu.

2. Select [MARK POSITION], then press the **ADJUST** knob.

3. Referring to the table above, select the appropriate location, then press the **ADJUST** knob.

How to set the coordinates

Where [MARK POSITION] is set to [L/L], the coordinates settings are displayed. Coordinates can be set one digit at a time, as shown in the figure below.

Currently selected digit is highlighted by the cursor.
Press the **ADJUST** Rotokey to move to the next digit.

028° 00.200 N — N - North (Latitude)
S - South (Latitude)

153° 43.100 E — W - West (Longitude)
E - East (Longitude)

1) Rotate the **ADJUST** knob to adjust the digit, then press the **ADJUST** knob to move to the next digit.

2) Repeat step 1 to adjust the Latitude and Longitude as appropriate.

4. Close the menu.

1.41.3 How to select the mark color (for non-IMO types only)

1. Select the [MARK] box at the bottom of the screen, then press the **right button** to open the [MARK] context menu.

2. Select [MARK COLOR], then press the **ADJUST** knob.

3. Select the appropriate color. Available options are shown in the table below.

Menu indication	Color	Menu indication	Color
RED	Red	CYA	Cyan
GRN	Green	MAG	Magenta
BLU	Blue	WHT	White
YEL	Yellow		

1.41.4 How to inscribe marks

You can inscribe marks anywhere inside the operational display area, however, marks cannot be inscribed in the same location as a menu box.

1. Select the [MARK] box. The [MARK] box is now highlighted.

2. Rotate the **ADJUST** knob to select the appropriate mark symbol or number.

3. Place the cursor on location (inside the operational display area) you wish to inscribe the mark, then press the **left button** to anchor the mark.

4. Repeat steps 1 to 3 for multiple mark inscription, or press the **right button** to complete the procedure.

1.41.5 How to use the drop mark

The operator can inscribe a drop mark at a selected location to find the range and bearing from own ship to the mark. This can be useful for marking a point to avoid while navigating to a destination.

To active the drop mark feature, do the following:

1. Open the [MAIN MENU].

2. Select [MARK], then press the **ADJUST** knob.

3. Select [ON] to enable [DROP MARK]. Two indications appear at the bottom of the screen.
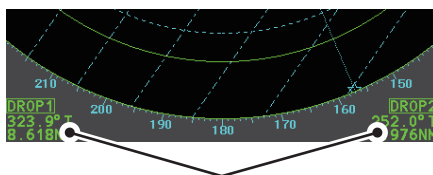
DROP MARK boxes show mark number, bearing and range to mark

4. Close the menu.

To inscribe a drop mark, follow the procedure outlined in paragraph 1.41.4.

1.41.6 How to set origin mark stabilization

Origin marks can be geographically fixed (ground stabilized) or moving (sea stabilized).

1. Select the [MARK] box at the bottom of the screen, then press the **right button** to open the [MARK] context menu.

2. Select [ORIGIN MARK], then press the **ADJUST** knob.

3. Select [STAB GND] or [STAB SEA] as appropriate, then press the **ADJUST** knob.

4. Close the menu.

1.41.7 How to delete marks

Marks can be deleted one at a time, or all at once.

How to delete marks individually

1. Select the operational display area, then press the **right button** to show the [CURSOR] menu.

2. Select [MARK DELETE], then press the **ADJUST** knob. The cursor changes to a highlighted cursor.

3. Place the highlighted cursor on the mark to be deleted, then press the **ADJUST** knob.

4. Repeat step 3 to delete another mark, or press the **right button** to return the cursor to normal function.

How to delete all marks

1. Open the [MAIN MENU].

2. Select [MARK], then press the **ADJUST** knob.

3. Select [DATA DELETE], then press the **ADJUST** knob.

4. Select [MARK ALL DELETE], then press the **ADJUST** knob. A confirmation message is displayed.

5. Select [YES], then press the **ADJUST** knob.

6. Close the menu.

1.41.8 How to hide the heading line marker

The heading line is a line from the own ship position to the outer edge of the radar display area and appears at zero degrees on the bearing scale in HEAD UP mode; it changes the orientation depending on the ship orientation in NORTH UP and True Motion modes.

To temporarily extinguish the heading line to look at targets existing dead ahead of own ship, press the [HL OFF] key on the keyboard, or use the touchpad to select the [HL OFF] box at the left of the display then press the **left button**. In addition to the heading line, the stern marker and all graphics within the effective display are also erased. To redisplay the heading line, etc., release the key or the **left button**.

1.41.9 How to hide/show the stern mark

The stern marker, which is a dotted line, appears opposite to the heading line. To display or erase this marker do the following:

1. Open the [MAIN MENU].

2. Select [MARK], then press the **ADJUST** knob.

3. Select [STERN MARK], then press the **ADJUST** knob.

4. Select [ON] or [OFF] as appropriate, then press the **ADJUST** knob.

5. Close the menu.

1.41.10 How to set up the own ship symbol

The own ship symbol marks own position on the display. It can be turned on or off and its configuration selected from the [MARK] menu. Two configurations are available: minimized symbol and scaled symbol. If the largest dimension of the symbol gets smaller than 6 mm, the scaled symbol will disappear and the own ship mark will be shown as a minimized symbol. The scaled symbol is scaled to indicate the length and beam of the vessel. Ship's dimensions should be entered at installation to use the scaled ship symbol.

Antenna position — Heading line — Beam line
Scaled symbol

Heading line — Beam line
Minimized symbol
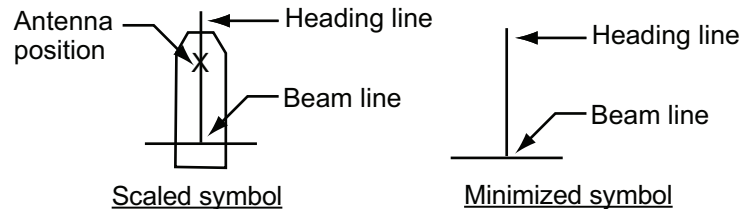
1. Open the [MAIN MENU].
2. Select [MARK], then press the **ADJUST** knob.
3. Select [OWN SHIP MARK], then press the **ADJUST** knob.
4. Select [MIN] or [SCALED] as appropriate, then press the **ADJUST** knob.
5. Close the menu.

1.41.11 How to use the INS marker

You can receive predicted position data by connecting this radar to an INS.

1. Open the [MAIN MENU].
2. Select [MARK], then press the **ADJUST** knob.
3. Select [INS MARK], then press the **ADJUST** knob.
4. Select [PREDICTOR], then press the **ADJUST** knob.
5. Select [ON], then press the **ADJUST** knob.
6. Close the menu.

1.41.12 How to show/hide radar map marks

You can show or hide marks on the radar map.

1. Place the cursor on the [MARK] box at the bottom of the screen, then press the **right button** to open the [MARK] context menu.
2. Select [MAP DISPLAY], then press the **ADJUST** knob.
3. Select [ON] or [OFF] as appropriate, then press the **ADJUST** knob.
4. Close the menu.

1.41.13 How to set the barge marker

You can mark the locations of barges on the display with icons. Set up barge information as follows:

1. Open the [MAIN MENU].

2. Select [MARK], then press the **ADJUST** knob.

3. Select [BARGE], then press the **ADJUST** knob.

4. Select [BARGE MARK], then press the **ADJUST** knob.

5. Select [ON] to display barge marks, [OFF] to hide barge marks, as appropriate, then press the **ADJUST** knob.

6. Select [BARGE SIZE], then press the **ADJUST** knob. Use the **ADJUST** knob to enter the [LENGTH] and [WIDTH] of the barge.
    Rotate the **ADJUST** knob to increase or decrease the value of the highlighted digit.

7. Select [ARRANGEMENT], then press the **ADJUST** knob. This item lets you set a single barge or a barge chain. Select one of the five arrangements and rotate the **ADJUST** knob. Select number of barges (max. 9) to display. As you rotate the **ADJUST** knob the squares light or extinguish and the number of barges selected appears at the right side.

First row of barge [ARRANGEMENT] is displayed as the left side of the barge icon on-screen.

Own ship icon
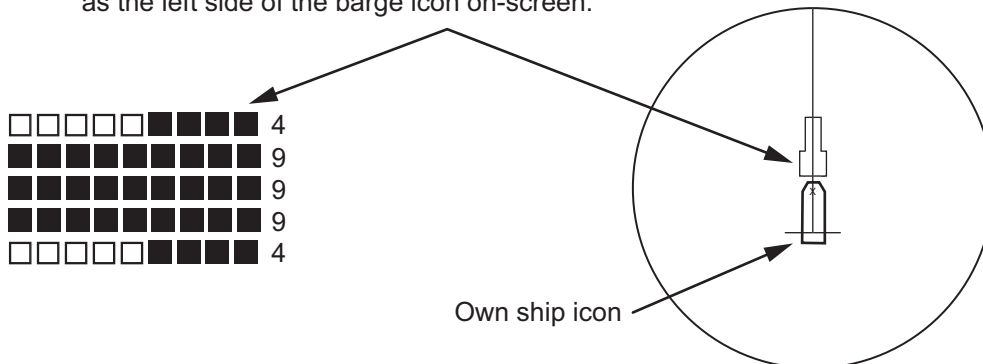
8. Close the menu. The barge mark is now displayed as shown in the figure above.

1.42 How to Adjust Brilliance of On-screen Data

On-screen markers and alphanumeric readout brilliance can be adjusted using the following procedure:

1. Place the cursor on the [BRILL] box at the right of the screen, then press the **right button**. The [BRILL] menu is displayed.

2. Select the appropriate item to adjust, then press the **ADJUST** knob.

Menu item	Description
ECHO COLOR	Adjust brilliance of the echo color.
PALETTE	Adjust background brilliance (See paragraph 1.42.1).
CONTROL PANEL	Adjust brilliance of the control panel keys.
CHARACTER	Adjust on-screen text brilliance.
CURSOR	Adjust brilliance of the cursor.
ECHO	Adjust the echo brilliance.
TRAIL	Adjust echo trail brilliance.
HL	Adjust heading line brilliance.
RING	Adjust range ring brilliance.
BEARING CURSOR	Adjust bearing cursor brilliance.
EBL	Adjust EBL line brilliance.
VRM	Adjust VRM line brilliance.
PI LINE	Adjust PI line brilliance.
TT SYMBOL	Adjust Target Trail symbol brilliance.
AIS SYMBOL	Adjust AIS symbol brilliance.
L/L GRID	Adjust Latitude/Longitude grid brilliance.
MARK	Adjust brilliance of all marks.

3. Rotate the **ADJUST** knob to select the appropriate brilliance setting, then press the **ADJUST** knob.

4. Close the menu.

1.42.1 How to adjust color palettes

This radar provides six sets of color and brilliance sets to match any ambient lighting condition and can be assigned to a BRILL box preset.
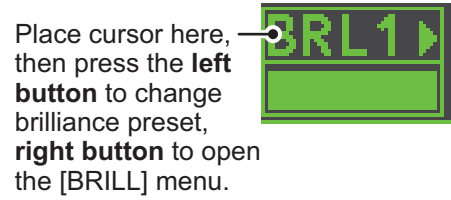
1. Select the [BRILL] box at the bottom-left of the screen, then press the **right button**. The [BRILL] menu is displayed.

2. Select [PALETTE], then press the **ADJUST** knob.

3. Select the appropriate palette, then press the **ADJUST** knob. The default settings for each palette is shown in the table below.

PALETTE	BRILL	PANEL	OTHERS	TEXT COLOR	BCKGRND/CIRCLE
DAY-GRY	100	15	15	GREEN	GRY/BLK
DAY-BLU	100	15	15	WHITE	BLU/BLU
DUSK-GRY	40	10	15	GREEN	GRY/BLU
DUSK-BLU	40	10	15	WHITE	BLU/BLU
NIGHT-GRY	4	5	15	AMBER	GRY/BLK
NIGHT-BLU	4	5	15	WHITE	BRT-BLU/BRT-BLU

4. Close the menu.

How to assign/change the brilliance presets

1. Place the cursor on the BRL indication inside the [BRILL] box.

2. Press the left button to cycle through the presets. There are four available: [BRL1], [BRL2], [BRL3] and [BRL4].

3. To adjust the palette for a preset, press the **right button** with the preset selected. The [BRILL] menu is displayed.

Place cursor here, then press the **left button** to change brilliance preset, **right button** to open the [BRILL] menu.

4. Follow steps 2 to 4 in "How to adjust color palettes" on page 1-61.

5. Repeat the process to adjust other presets' palettes.

1.42.2 How to adjust the echo color

1. Select the [BRILL] box at the bottom-left of the screen, then press the **right button**. The [BRILL] menu is displayed.

2. Select [ECHO COLOR], then press the **ADJUST** knob.

3. Select the appropriate color, then press the **ADJUST** knob. The available options are listed in the table below.

Color	Description/remarks
YEL	Yellow echo (default setting)
GRN	Green echo
WHT	White echo
AMB	Amber echo
M-GRN	Red echo, gradually changes to green color as the echo weakens.
M-CYA	Red echo, gradually changes to cyan color as the echo weakens.

1.43 How to Display and Set Up Navigational Data

Wind, depth, ocean current, water temperature, date and time and waypoint data can be displayed on this radar, however appropriate sensors are required.

1.43.1 How to set up the navigational data

1. Open the [MAIN MENU].

2. Select [INFORMATION BOX], then press the **ADJUST** knob.

3. Select [SET NAV DATA], then press the **ADJUST** knob.

4. Referring to the table below, select the appropriate menu item, then press the **ADJUST** knob.

Menu item	Available settings
DEPTH	[OFF], [ON] (m, ft)
DEPTH GRAPH SCALE	[10], [20], [50], [100], [200], [500] (m)
DEPTH MARK	[000] to [500] (m)
CURRENT	[OFF], [ON]
WIND	[OFF], [ON] (kn, m/s)
WIND STAB	[APPARENT], [NORTH], [THEORETICAL]
TEMPERATURE	[OFF], [ON] (°C, °F)
WPT DATA	[OFF], [REL], [TRUE]

5. Referring to the available options listed in the table above, select the appropriate setting, then press the **ADJUST** knob.

6. Close the menu.

1.43.2 How to display navigational data

1. Open the [MAIN MENU].

2. Select [INFORMATION BOX], then press the **ADJUST** knob.

3. Select [NAV DATA], then press the **ADJUST** knob.

4. Select [ON] to display navigational data, [OFF] to hide navigational data, then press the **ADJUST** knob.

5. Close the menu.

1.44 How to Use the Information Box

The information box shows target data, navigational data and zoomed areas of the radar display. To set up the information box, do the following:

1. Open the [MAIN MENU].

2. Select [INFORMATION BOX], then press the **ADJUST** knob.

3. Select and set the appropriate menu item, referring to the table below.

4. Close the menu.

```
[INFORMATION BOX]

1   BACK
2   NAV DATA
    OFF / ON
3   [SET NAV DATA]
4   ZOOM
    OFF / 2TIMES / 3TIMES
5   ZOOM DISPLAY
    STAB GND / STAB HDG /
    STAB NORTH / TT TRACK
6   TARGET DATA
    1BOX / 2BOX / LARGE
```

Menu item	Settings	Description
[NAV DATA]	• OFF • ON	• Disable navigational data display. • Enable navigational data display.
[SET NAV DATA]	See section 1.43 for details.	Set up the format in which various navigational data is displayed in the [INFORMATION BOX]. See section 1.43 for details.
[ZOOM]	• OFF • 2TIMES • 3TIMES	• Disable zoom magnification. • Set zoom magnification at 2×. • Set zoom magnification at 3×.
[ZOOM DISPLAY]	• STAB GND • STAB HDG • STAB NORTH • TT TRACK	• Ground stabilized zoom (Geographically fixed). • Heading stabilized zoom (Relative). • North stabilized zoom (True). • Tracked targets are zoomed.
[TARGET DATA]	• 1BOX • 2BOX • LARGE	See figure below.

Zoom and navigational data are displayed here.

Only TT/AIS data is displayed in the lower half of the information box.

1BOX

Zoom and navigational data are displayed here, but can be hidden by TT/AIS data.

Only TT/AIS data is displayed in the lower half of the information box.

2BOX

Only TT/AIS Data is displayed in the large box. Up to two AIS targets or up four TT targets

LARGE

• TT/AIS data displayed in the information box is shown in order of acquisition in the bottom half of the box.
• When using the 2BOX setting and the bottom half of the information box is full, the upper half is overlayed with the newly aquired TT/AIS target data.
• When the target data is no longer displayed (TT is cancelled, etc.) in the upper box, the previous display is restored.
• Each box may display up two TT targets or one AIS target.

1.45 Interswitch

The interswitch of this radar uses an Ethernet to transfer video and control signals. A digital signal transfers the video and control signals. You can connect two antennas and two display units. Set radar display and antenna groups from the [ANTENNA SELECT] display.

```
TX  6      NM
STBY 0    /1
HEAD UP RM
ANT1(M) X-BAND
```
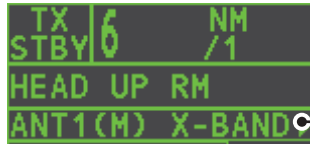
Antenna box
ANT1 (or ANT2): indicates antenna selected
(M) or (S): indicates antenna is (M)aster or (S)lave
X-Band: indicates the antenna bandwidth

When you switch to a different antenna, the heading skew and timing adjustment (set at installation) for that antenna is automatically applied.

The [ANTENNA] box at the upper left position shows current antenna selection.

## 1.45.1 How to display antenna information

You can display antenna information by highlighting the [ANTENNA] box, then pressing the **right button**. The [ANT SELECT] context menu is displayed.

The following information is displayed in the [ANT SELECT] context menu.
• Radar band, output power and antenna position of each antenna currently powered. (If an antenna is not powered, its data area is blank.)
• Current antenna and display combinations.

```
[ANT SELECT]
ANT1: X -BAND
    25UP    MAIN - TOP
ANT2: X -BAND
    12      MAIN - 2ND

OWN RADAR NO.1
1   DISP1   ANT1
                MASTER
2   DISP1   ANT2
                MASTER
9   STORE INTER -SW
    NO / YES
```

Using the information displayed in this example the antenna system configuration would look something like this.

ANT1   ANT2
← Antenna Unit

DISP1   DISP2   ← Processor Unit

HUB-100
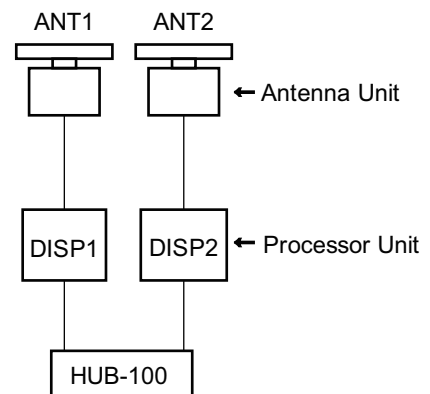
1.45.2 How to preset antenna and display combinations

You can preset the antenna and display combinations for each antenna and display in the radar system. As an example, the procedure below shows how to select the no. 1 antenna unit for the no. 2 display unit.

1. Highlight the [ANTENNA] box, then press the **right button** to open the [ANT SELECT] menu.

2. Select the display unit for which to select an antenna (at the next step). For example, select [DISP2] to select the no. 2 display unit.

3. Select [ANT 1] and [M].

4. Repeat steps 2 and 3 to set other display and antenna combinations.

5. Click [STORE INTER-SW] and select [YES] to save your selections.

6. Close the menu.

Antenna selection considerations

- An antenna unit cannot be controlled from multiple display units. Select one Master display unit for one antenna unit. If two antenna units are set as masters, the display last-set as master becomes the master and all other displays are automatically changed to slave.
- An antenna unit without a Master display cannot be selected on the sub display units. If there is no antenna unit set as master, the lowest number display is automatically set as master.
- If the Alert 740 "EXT RADAR ERROR" appears, do one of the following as applicable:
  - If only your antenna is not displayed on the [ANT SELECT] display, the LAN line in the Processor Unit may be faulty. In this case, use the standalone mode.
  - If the antenna that was in use does not appear on the [ANT SELECT] display, the LAN line in other Processor Unit may be faulty. In this case, see the preceding page for how to select a different antenna unit.
- When the Network fails, the Interswitch does not work, but standalone operation is possible.
- Radar functions are controlled independently, dependently or commonly depending on selection as Master or Slave (see the table below).

Radar Functions	Control	Master Display Option	Slave Display Option
AIS function	Independent	Desired value can be set	Desired value can be set
Brilliance			
Echo trails			
EBL			
Lat/long data			
Presentation mode			
Speed data			
Target alarm			
TT, AIS on/off			
TT, AIS track interval			
Vector mode			
Vector time			
VRM			
Wiper			
Zoom			
TT COLLISION alarm			
Range (Sampling at Master)	Independent	Desired Value can be set (Echo Sampling at Master Range)	Desired value can be set
A/C SEA	Dependent Control	Desired value can be set	Cannot control
A/C RAIN			
Automatic Clutter Elimination (ACE)			
Gain			
IR			
Echo stretch			
Echo averaging			
Picture setting (Customize echo)			
STBY/TX			
Tuning			
Reference Point			
TT LOST warning	Common Control	Item Commonly Controlled	Item Commonly Controlled
TT alerts ACK			
TT acquire			
TT/AIS AZ			

1.46   Performance Monitor

The performance monitor, installed in the antenna unit, produces a visual indication on the radar display screen when the radar transmitter power and radar receiver sensitivity and are within the prescribed limits.

1.46.1   How to activate/deactivate the performance monitor

1) Set the radar to TX (transmit) mode.
2) Open the [MAIN MENU].
3) Select [ECHO], then press the **ADJUST** knob.
4) Select [PERFORMANCE MON], then press the **ADJUST** knob.
5) Select [OFF] or [ON] as appropriate, then press the **ADJUST** knob.
6) Close the menu.

When the performance monitor is active, the indication "PM" appears (in yellow characters) inside the [ALERT] box.

Note: If the blind sector and the direction of the PM antenna overlap on another, turn off the blind sector in order to display echoes correctly.

The radar is automatically set as follows when the performance monitor is activated.

Setting	Setting at PM activation	Adjustable while PM is active	Setting at PM deactivation
GAIN	70 *1	Yes *3	Setting before PM activation.
SEA	0	No	Setting before PM activation.
SEA AUTO	MAN	No	Setting before PM activation.
RAIN	0	No	Setting before PM activation.
RAIN AUTO	MAN	No	Setting before PM activation.
TUNE	AUTO	No	Setting before PM activation.
ACE	OFF	No	Setting before PM activation.
ES	OFF	No	Setting before PM activation.
EAV	OFF	No	Setting before PM activation.
IR	2	No	Setting before PM activation.
NOISE REJECT	OFF	No	Setting before PM activation.
VIDEO CONTRAST	4-B	No	Setting before PM activation.
PULSE	LONG	No	Setting before PM activation.
2ND ECHO REJ	OFF	Yes	Setting at PM deactivation.
LOW LEVEL ECHO	Previous setting kept, fixed.	No	Setting before PM activation.
WIPER	OFF	No	Setting before PM activation.
CUSTOMIZE ECHO	Previous setting kept, fixed.	No	Return to active display.
PRESENTATION MODE	No change. *2	Yes	Setting at PM deactivation.
RANGE	24 NM, 24 SM, 48 km	Yes *4	Setting at PM deactivation.
OFF CENTER	OFF	Yes	Setting at PM deactivation.

*1: Gain is automatically set according to [PM GAIN ADJ], if it was adjusted at installation.

*2: [NORTH UP RM] is selected when the [PRESENTATION MODE] is set to [NORTH UP TM].

*3: The setting is not memorized.

*4: The performance monitor is deactivated if the range is changed manually.