

MARINE RADAR FAR-2107/FAR-2807 SERIES Operator's Manual: Fishing Vessel Specifications

The purpose of this manual is to provide the operating procedures for the functions available with the fishing vessel specifications models (50 kW and 60 kW models) of the FAR-2107/FAR-2807 series radar. This manual is provided in addition to the Operator's Manual, which covers features common to all radars in this radar series.

Specification type is set during installation. For details, contact a FURUNO agent or dealer.

Operation from the menu involves spinning the scrollwheel to select menu item or option then pushing the scrollwheel or left button to confirm selection. For sake of brevity, we write "Select XXX" (XXX=name of menu item) when you would spin the scrollwheel to make a selection and "push the left button" when you confirm selection.

Contents

1. TARGET TRAIL FUNCTIONS.....	2	4. FUNCTION KEYS (F1 - F4)	18
1.1 Long Trails.....	2	4.1 F1, F2 and F3 Keys.....	18
1.2 Trail Color.....	3	4.2 Operating the F4 Key	27
1.3 Trail Color Shift.....	4	5. ANCHOR WATCH ALARM.....	31
1.4 Hiding Trails	5	6. VIDEO PLOTTER FUNCTIONS.....	32
1.5 Trail Eraser	6	6.1 Depth Contour with Depth Indication	32
1.6 Narrow Trails	7	6.2 Mark Settings	33
1.7 Preventing True Sea Clutter Trails	7	6.3 Track Settings	36
2. CURSORS	8	6.4 GPS Buoy	41
2.1 Crosshairs Cursor Size	8	7. ARP SYMBOLS	42
2.2 Net Cursor	9	8. DISPLAYING PICTURE FROM EXTERNAL RADAR	43
2.3 Cursor Data Display	11	9. MENU TREE.....	44
2.4 Bearing Scale Format.....	12		
3. OTHER FUNCTIONS.....	13		
3.1 Echo Display Area.....	13		
3.2 Turning On-screen Boxes On/Of.....	14		
3.3 Radar Picture Color.....	15		
3.4 Bearing Reference	16		
3.5 VRM, Cursor Unit	17		
3.6 Pop-up Guidance	17		



FURUNO ELECTRIC CO., LTD.

www.furuno.co.jp

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

1. TARGET TRAIL FUNCTIONS

1.1 Long Trails

The fishing vessel specifications radar provides trail lengths of 12 h, 24 h and 48 h, in addition to the "standard" trail lengths of 15 s, 30 s, 1 min, 3 min, 6 min, 15 min, 30 min and continuous. To select a trail length, do the following:

1. Place the cursor on the TRAIL MODE box at the bottom right-hand corner on the screen.

TRUE TRAIL OFF ▶

2. Right-click the box to open the TRAIL menu.
3. Select 8 TRAIL LENGTH then push the left button.
4. Select NORMAL, 12H, 24H, or 48H as appropriate then push the left button.
NORMAL: Trail lengths of 15 s, 30 s, 1 min, 3 min, 6 min, 15 min, 30 min and continuous, selectable from the TRAIL MODE box.
12H: Max. 12-hour trails
24H: Max. 24-hour trails
48H: Max. 48-hour trails

Note: Trail data is erased and the TRAIL MODE box setting shows "OFF" whenever a trail length is chosen from the menu.

5. Push the right button to close the menu.
6. If you chose the 12H, 24H or 48H trail length, select how many minutes of trails to show in the chosen time period, from the TRAIL MODE box. Settings and corresponding trail times are
12H: 30 minute increments
24H: 1 hour increments
48H: 2 hour increments

For example, you have selected 12H from the TRAIL menu and 30 minutes from the TRAIL MODE box. Then, 30 minutes worth of trails are displayed over the 12-hour time period.

Note: When 2 TRAIL GRAD is set for SINGLE, long trails (12H/24H/48H) are painted in various colors (see section 1.2) and standard trails are painted in single color. For long trails, select SINGLE, since MULTI paints trails in a single color.

[TRAIL MENU]

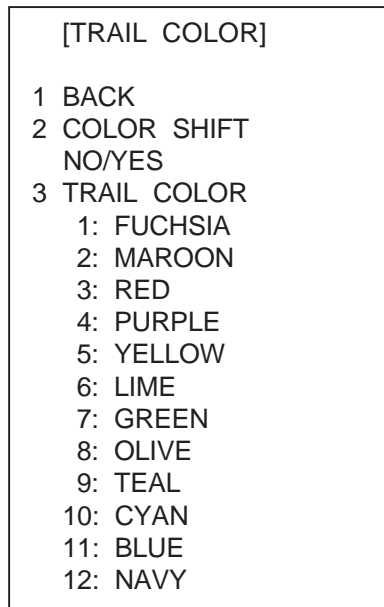
- 1 TRAIL MODE
REL/TRUE
- 2 TRAIL GRAD
SINGLE/MULTI
- 3 NARROW TRAIL
OFF/1/2
- 4 TRAIL LEVEL
1/2/3/4
- 5 TRAIL RESTART
OFF/ON
- 6 TRAIL COPY
OFF/ON
- 7 OS TRAIL
OFF/ON
- 8 TRAIL LENGTH
NORMAL/12H/24H/48H
- 9 TRAIL HIDE*
START 00:00
END 00:00
- 0 [TRAIL COLOR]*

* Shown when 8 TRAIL LENGTH is selected to other than "NORMAL".

1.2 Trail Color

The color of target trails may be chosen from among fuchsia, maroon, red, purple, yellow, lime, green, olive, teal, cyan, blue, and navy, when 2 TRAIL GRAD and 8 TRAIL LENGTH on the TRAIL menu are set for SINGLE and other than NORMAL, respectively.

1. Right-click the TRAIL MODE box.
2. Select 0 [TRAIL COLOR] then push the left button.



Note: 3 TRAIL COLOR shows numbers from 1 to 12 and the color currently selected for each number. Trail color changes at intervals according to trail length setting as follows:

12 hour trails: Trail color changes once every hour.

24 hour trails: Trail color changes once every two hours.

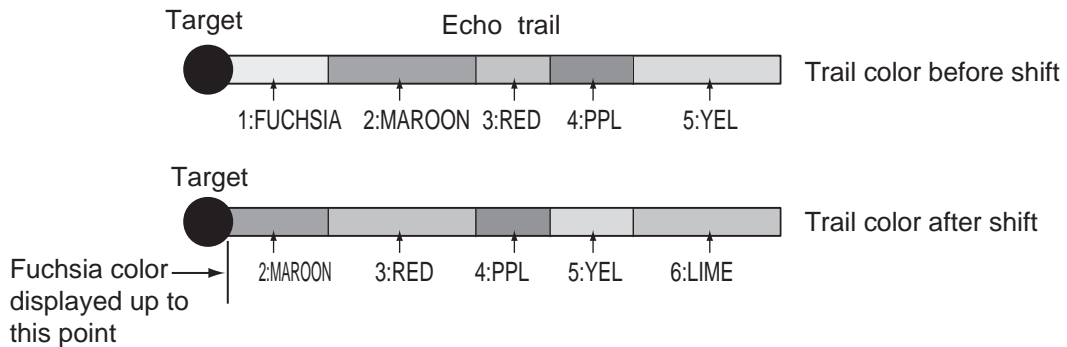
48 hour trails: Trail color changes once every four hours.

The color of the track will change in the color order specified here when 3 COLOR SHIFT (see the next page) is activated. These colors can be changed by continuing this procedure.

3. Select 3 TRAIL COLOR then push the left button. The cursor is choosing color number 1.
4. Select color desired then push the left button.
5. Set colors for other numbers similarly. (Push the left button to select color number.)
6. Push the right button three times to close the menu.

1.3 Trail Color Shift

When there are many trails on the screen, especially when using long trails, it is difficult to distinguish past tracks from current tracks since they are the same color. With the trail color shift feature, tracks are painted in a different color from the point when color shift is activated. For example, the current track color is 1: FUCHSIA. Then, at the moment the trail color shift is made active, trails from that point will be painted in 2: MAROON.



Note: At the moment the trail color shift is activated, the trail colors in effect after the time set in the TRAIL MODE box are erased. For example, the trail length is 12 HOURS and the time set in the TRAIL MODE box is 05:00. Then, using the illustration above as an example, 6: LIME will not be shown.

2 TRAIL GRAD in the TRAIL menu must be set to SINGLE and 8 TRAIL LENGTH to other than NORMAL in order to activate the trail color shift feature.

1. Right-click the TRAIL MODE box.
2. Select 0 [TRAIL COLOR] then push the left button.

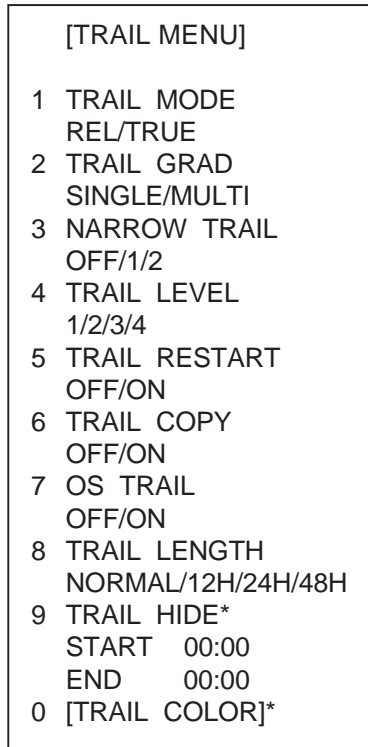
[TRAIL COLOR]
1 BACK
2 COLOR SHIFT NO/YES
3 TRAIL COLOR
1: FUCHSIA
2: MAROON
3: RED
4: PURPLE
5: YELLOW
6: LIME
7: GREEN
8: OLIVE
9: TEAL
10: CYAN
11: BLUE
12: NAVY

3. Select 2 COLOR SHIFT then push the left button.
4. Select YES then push the left button.
5. Push the right button twice to close the menu.

1.4 Hiding Trails

Trails may be "hidden" (painted in light gray) for the period you specify, when 8 TRAIL LENGTH on the TRAIL menu is selected to other than "NORMAL".

1. Right-click the TRAIL MODE box.



* Shown when 8 TRAIL LENGTH is selected to other than "NORMAL".

2. Select 9 TRAIL HIDE then push the left button.
3. Use the scrollwheel to set START time: Spin the scrollwheel to set time then push it to confirm.
4. Set END time similarly.
Note: Time increment depends on the setting of 8 TRAIL LENGTH as follows:
12H trail length: 30-minute increments
24H trail length: 1-hour increments
48H trail length: 2-hour increments
5. Push the right button to close the menu.

To cancel this feature, set START and END times to 00:00.

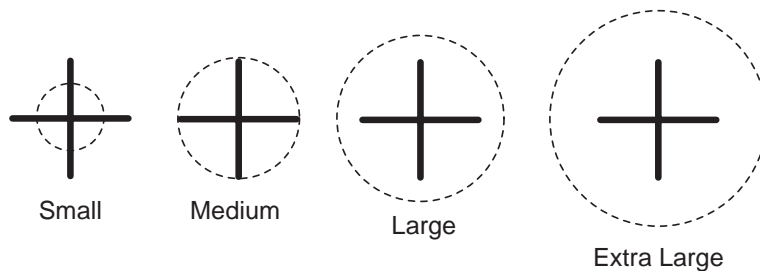
1.5 Trail Eraser

The trail eraser allows you to erase a portion of a trail you select. This is useful when the screen becomes cluttered with trails.

1. Place the cursor inside the effective display area.
2. Spin the scrollwheel to show "T-ERASER L=ERASE / EXIT" in the guidance box at the bottom right-hand corner on the screen.

T-ERASER / EXIT L=ERASE

3. Push the left button successively to select eraser width, from the four choices shown below. (This also may be done anytime while the guidance box shows the above-mentioned indication.)



4. Do one of the following to erase a target trail:
 - To erase a specific point or if you are using a trackball control unit (RCU-015 or RCU-016), place the cursor on the part of the trail to erase and long-push the left button. Trails within the track eraser are erased. To continue erasing, repeat the above procedure.
 - To erase trails in a wide area, select trail with the cursor, and roll the trackball while pressing and holding down the [ALARM ACK] key. Trails which contact the edge of the track eraser are erased.

A beep sounds when the right button, [ALARM ACK] key or trackball is operated.

Note: The trail eraser feature erases only track currently shown on the display. To erase track stored in the memory, select a long trail time (from the TRAIL MODE box), to show more trail on the display.

5. To quit the trail eraser feature, push the right button. (This feature is automatically cancelled when no erasing is done for approx. 30 seconds.)

1.6 Narrow Trails

Target trails may be painted with thinner lines if desired. This can be useful when there are a lot of target trails on the screen.

1. Right-click the TRAIL MODE box to display the TRAIL menu.
2. Select 3 NARROW TRAIL then push the left button.
3. Select OFF, 1 or 2 as appropriate then push the left button. "2" is thinner than "1".
4. Push the right button to close the menu.

1.7 Preventing True Sea Clutter Trails

You can prevent the tracing of true sea clutter trails near your ship to view the situation around your ship more easily. Further, you may enable/disable your ship's trails.

1. Right-click the TRAIL MODE box at the bottom right corner on the screen.
2. Select 7 OS TRAIL then push the left button.
3. Select OFF, 1 or 2 as appropriate then push the left button.

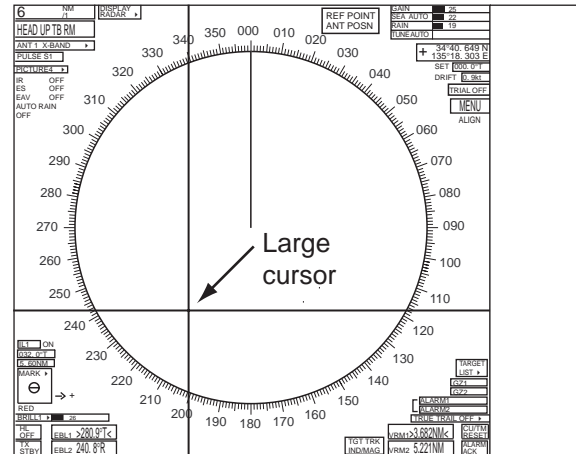
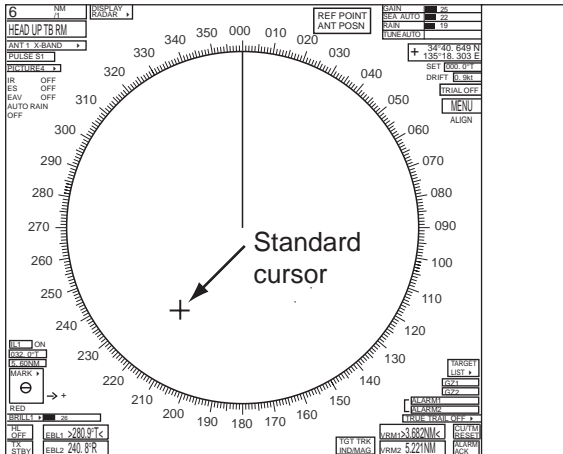
Setting	Draw your ship's track	Prevent true sea clutter trails near your ship
OFF	No	No
1	Yes	Yes
2	No	Yes

4. Right-click to close the menu.

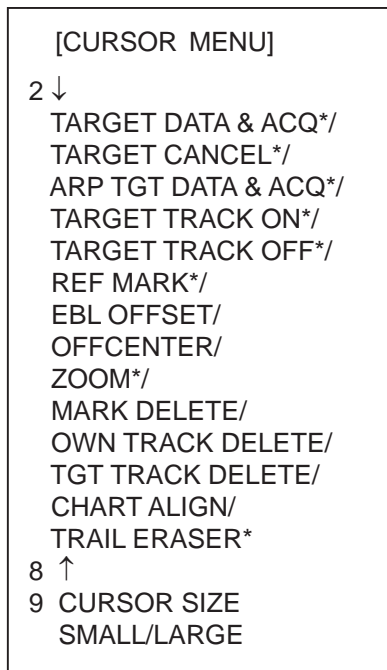
2. CURSORS

2.1 Crosshairs Cursor Size

The size of the crosshairs cursor (+) can be chosen from small or large. The large cursor is useful when a large echo masks the small cursor.



1. Place the cursor inside the effective display area.
2. If the guidance box is currently showing "TARGET DATA & ACQ / CURSOR MENU", push the right button once to show the CURSOR menu. If it is not currently shown, push the right button twice.

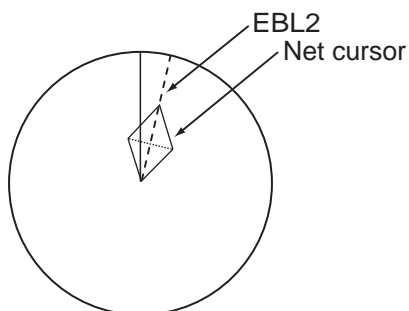


* Not available on the Plotter display.

3. Use the trackball to select 9 CURSOR SIZE then push the left button. (For keyboard-equipped control unit, you may select size by pressing the [9] key.)
4. Select cursor size desired then push the left button.
5. Push the right button to quit the CURSOR menu.

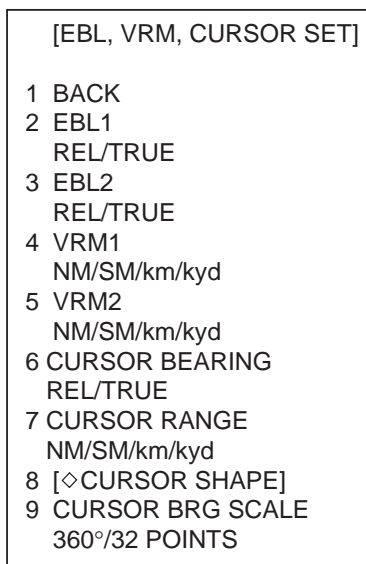
2.2 Net Cursor

The net cursor is used to depict your fishing net on the radar display. It is especially useful for bottom trawlers for knowing where the net is located. Enter the dimensions of your net in the menu to show the net in scale on the display.

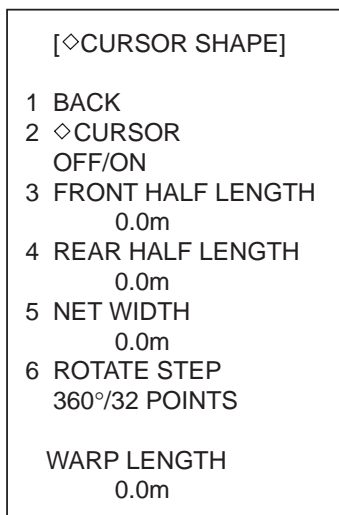


Activating the net cursor

1. Left-click the MENU box.
2. Select 2 [MARK] then push the left button.
3. Select [9 EBL, VRM, CURSOR SET] then push the left button.



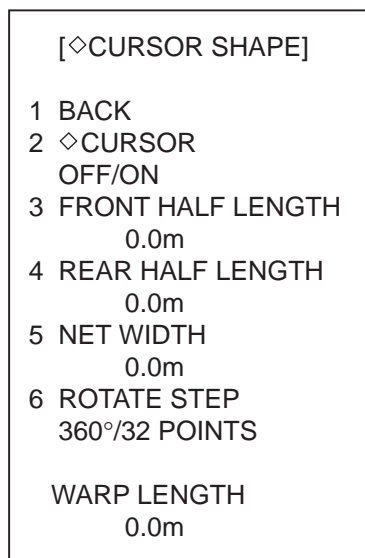
4. Select 8 [◇CURSOR SHAPE] then push the left button.



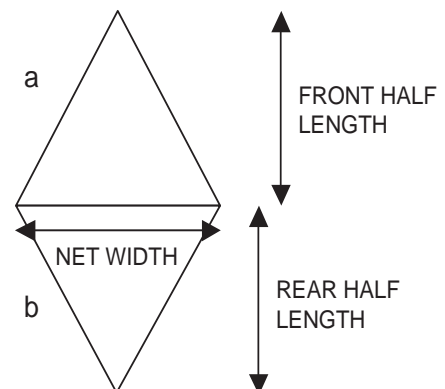
5. Select 2 \diamond CURSOR then push the left button.
6. Select ON then push the left button to enable the net cursor. EBL2 is then automatically turned on.
7. Push the right button four times to close the menu.

Setting net cursor dimensions, adjusting net cursor orientation

1. Left-click the MENU box.
2. Select 2 [MARK] then push the left button.
3. Select 9 [EBL, VRM, CURSOR SET] then push the left button.
4. Select 8 [\diamond CURSOR SHAPE] then push the left button.



5. Set net cursor dimensions as follows, referring to the illustration at right.
 - 1) Select FRONT HALF LENGTH then push the left button.
 - 2) Spin the scrollwheel to set front half length (0-3000 m) then push the left button.
 - 3) Set REAR HALF LENGTH and NET WIDTH similarly.



Warp length (a+b in the illustration at right) is indicated at the bottom of the menu. The net cursor is placed at the screen center, with its top and bottom points bisected by EBL2. To adjust the position of the net cursor, go to step 6. Otherwise, go to step 9.

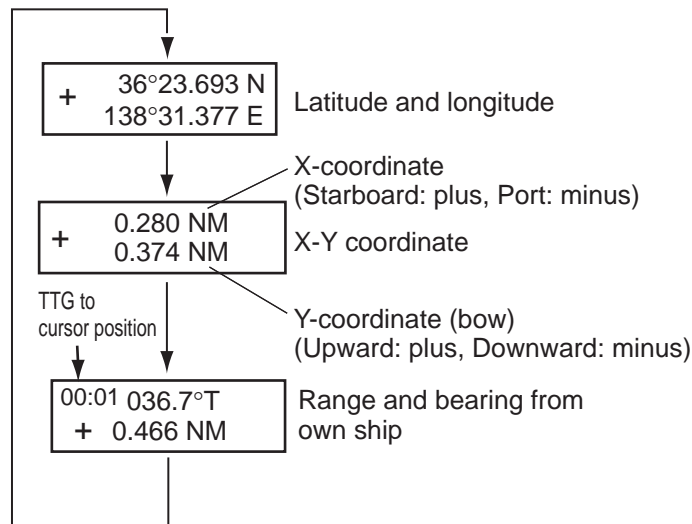
6. Select 6 ROTATE STEP then push the left button.
7. Select 360° or 32 POINTS as appropriate then push the left button. These figures determine how finely to rotate the EBL2 when adjusting the orientation of the net cursor. Select 360° for fine rotation or 32 POINTS for coarse rotation.
8. Use the rotary encoder for the EBL to adjust the orientation of the net cursor.
9. Push the right button four times to close the menu.

10. Use the EBL offset feature to anchor the net cursor at net origin point.
 - 1) Push the **EBL OFFSET** key.
 - 2) Use the trackball to set net origin point.
 - 3) Press the **EBL OFFSET** key to anchor the net cursor.
11. Steer the vessel so your ship's trail runs along the net cursor then throw the net.

2.3 Cursor Data Display

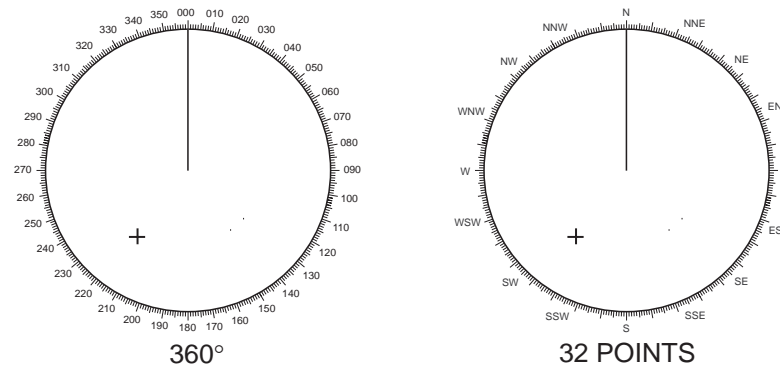
The cursor data box, which is located at the top right corner on the screen, can show latitude and longitude position of the cursor, X- and Y-coordinates, and range and bearing from your ship to the cursor. Further, if set and drift corrections are disabled, two cursor data boxes may be shown, to display two sets of position information.

Left-click the cursor data box successively to change cursor data in the sequence shown below.



2.4 Bearing Scale Format

The bearing scale can be displayed with numerical indications or 32 compass points.



1. Left-click the MENU box.
2. Select 2 [MARK] then push the left button.
3. Select 9 [EBL, VRM, CURSOR SET] then push the left button.

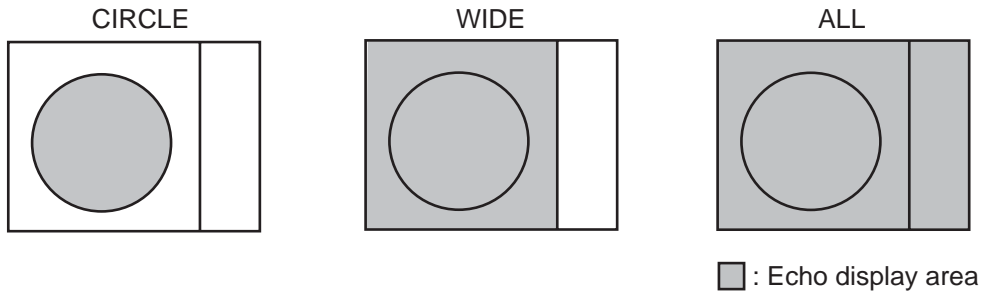
[EBL, VRM, CURSOR SET]
1 BACK
2 EBL1 REL/TRUE
3 EBL2 REL/TRUE
4 VRM1 NM/SM/KM/kyd
5 VRM1 NM/SM/KM/kyd
6 CURSOR BEARING REL/TRUE
7 CURSOR RANGE NM/SM/KM/kyd
8 [◇ CURSOR SHAPE]
9 CURSOR BRG SCALE 360°/32 POINTS

4. Select 9 CURSOR BRG SCALE then push the left button.
5. Select 360° or 32 POINTS as applicable.
6. Push the right button three times to close the menu.

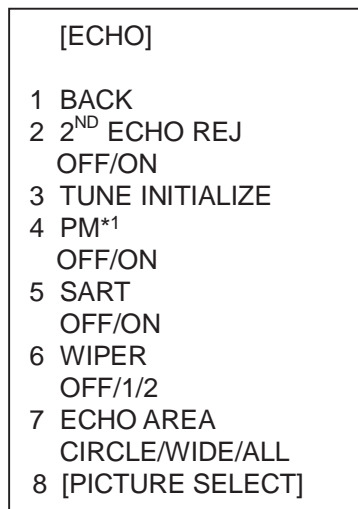
3. OTHER FUNCTIONS

3.1 Echo Display Area

Three types of echo display areas are available: circle, wide and all. "All" uses the entire screen, which allows you to view long-range targets.



1. Left-click the MENU box at the right side of the screen.
2. Select 1 [ECHO] then push the left button to show the ECHO menu.

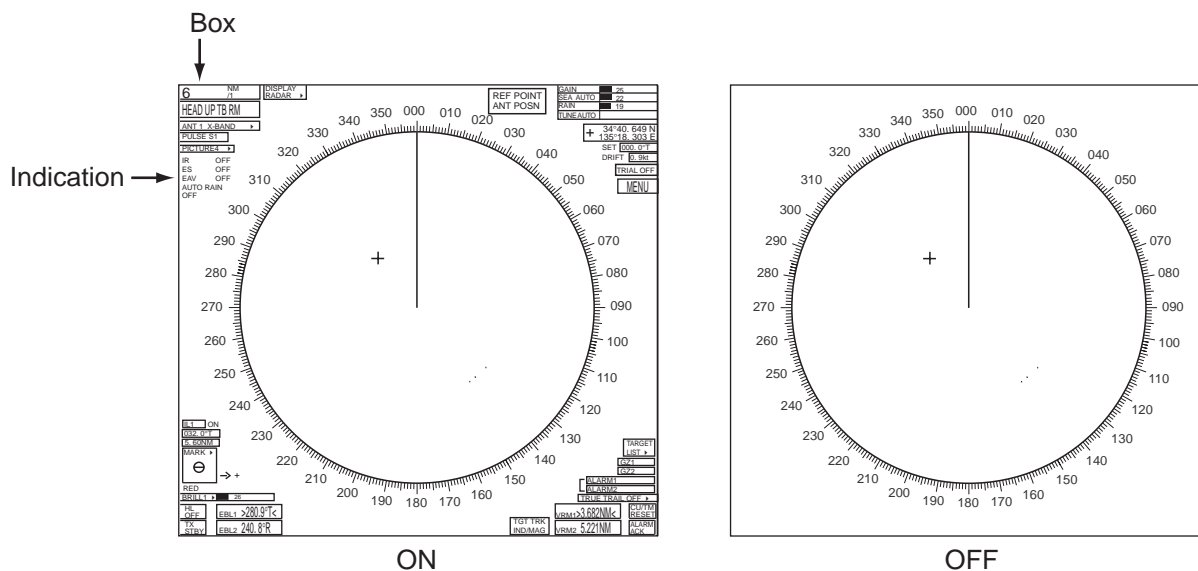


*1 Not available on FAR-2157/2167DS

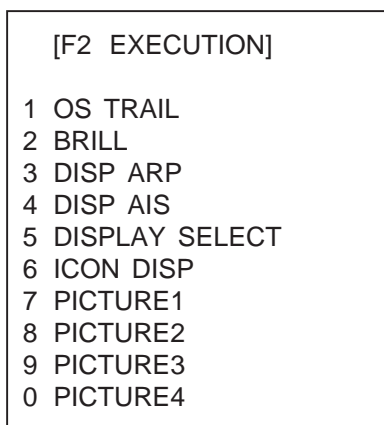
3. Select 7 ECHO AREA then push the left button.
4. Select CIRCLE, WIDE or ALL as applicable, referring to the illustration above.
5. Push the right button twice to close the menu.

3.2 Turning On-screen Boxes On/Off

If you are using the "wide" or "all" echo display area, the on-screen boxes and indications outside the effective display area (data fields at right 1/4 of screen are not included) may obscure radar targets. To view those radar targets, you can turn the boxes and indications off, by a function key. The default setting of the **F2** key turns the boxes on/off. If the function of the **F2** key is set for other than ICON DISP, program for that function (see "Programming the F1, F2 and F3 keys" on page 24) then follow the procedure below.



1. Press the **F2** key.



2. Select 6 ICON DISP then push the left button. Each press of the button turns the boxes and indications on or off alternately.
3. Push the right button to close the menu.

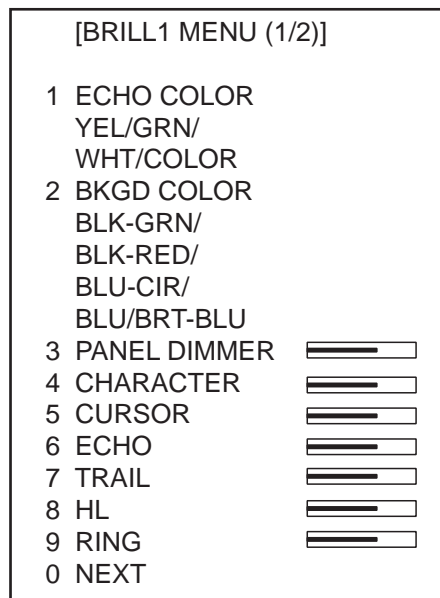
3.3 Radar Picture Color

Radar echoes may be displayed in a single color of yellow, green or white, or in multi-color. The multi-color feature paints echoes in red, yellow or green, in order of descending strength.

1. Set the cursor in the BRILL box at the lower left corner.



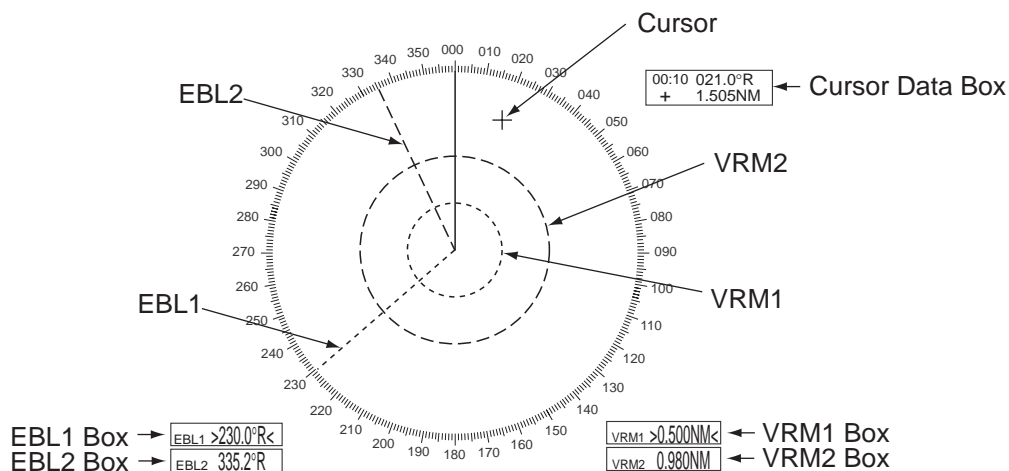
2. Right-click the box to show the BRILL1 menu.



3. Select 1 ECHO COLOR then push the left button.
4. Select YEL, GRN, WHT or COLOR as applicable then push the left button.
5. Push the right button to close the menu.

3.4 Bearing Reference

The EBL bearing (and cursor bearing) can be referenced to your ship heading (relative bearing) or North (true bearing). This radar indicates true or relative bearings with an R or T in the EBL and cursor data boxes. In the head-up and cursor gyro modes you can switch between true and relative bearings. In all other modes true bearings are normally displayed. Heading signal is required to display true bearing.



To select bearing reference, do the following:

1. Left-click the MENU box.
2. Select 2 [MARK] then push the left button.
3. Select 9 [EBL, VRM CURSOR SET] then push the left button.

[EBL, VRM, CURSOR SET]
1 BACK
2 EBL1 REL/TRUE
3 EBL2 REL/TRUE
4 VRM1 NM/SM/km/kyd
5 VRM2 NM/SM/km/kyd
6 CURSOR BEARING REL/TRUE
7 CURSOR RANGE NM/SM/km/kyd
8 [◇CURSOR SHAPE]
9 CURSOR BRG SCALE 360°/32 POINTS

4. Select 2 EBL1, 3 EBL2 or 6 CURSOR BEARING as applicable then push the left button.
5. Select REL or TRUE as applicable then push the left button.
6. Push the right button three times to close the menu.

3.5 VRM, Cursor Unit

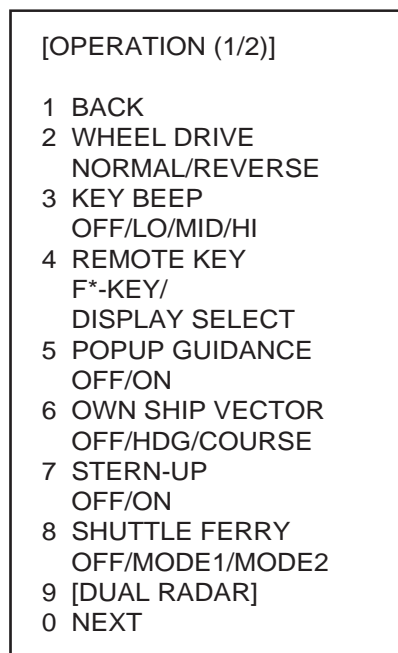
The unit of range measurement for the VRM and cursor can be selected from among nautical mile, statute mile, kilometer and kiloyard. See the illustration on the previous page for location of VRM and cursor data.

1. Left-click the MENU box.
2. Select 2 [MARK] then push the left button.
3. Select 9 [EBL, VRM CURSOR SET] then push the left button.
4. Select 4 VRM1, 5 VRM2 or 7 CURSOR RANGE as applicable then push the left button.
5. Select NM, SM, km or kyd as applicable then push the left button.
6. Push the right button three times to close the menu.

3.6 Pop-up Guidance

You can show pop-up guidance for the on-screen boxes. With this feature turned on, simply set the cursor inside a box to show pop-up guidance for that box.

1. Left-click the MENU box at the right side of the screen.
2. Select 9 [CUSTOMIZE/TEST] then push the left button.
3. Select 7 [OPERATION] then push the left button.



4. Select 5 POPUP GUIDANCE then push the left button.
5. Select ON then push the left button.
6. Push the right button three times to close the menu.

4. FUNCTION KEYS (F1 - F4)

4.1 F1, F2 and F3 Keys

The **F1**, **F2** and **F3** keys can be used to automate complex or repetitive tasks. Each key may be programmed with ten functions. Simply press a key to execute program assigned.

Operating F1, F2 and F3 keys

The table below shows the default functions of the **F1**, **F2** and **F3** keys.

Default functions of F1, F2 and F3 keys

F1 key	F2 key	F3 key
1. PICTURE	1. OS TRAIL	1. OWN TRACK OFF/ON
2. IR	2. BRILL	2. OWN TRACK COLOR
3. ES	3. DISP ARP	3. TGT TRACK OFF/ON
4. EAV	4. DISP AIS	4. TGT TRACK COLOR
5. PULSE LENGTH	5. DISPLAY SELECT	5. OWN TRACK DISPLAY
6. WIPER	6. ICON DISP	6. TARGET TRACK DISPLAY
7. ECHO AREA	7. PICTURE1	7. GPS BUOY DISPLAY
8. NO FUNCTION	8. PICTURE2	8. MAP MARK COLOR
9. NO FUNCTION	9. PICTURE3	9. DISP WPT NO.
0. NO FUNCTION	0. PICTURE4	0. DISP WPT NAME

1. Press **F1**, **F2** or **F3** key. For example, press the **F1** key.

[F1 EXECUTE]
1 PICTURE
2 IR
3 ES
4 EAV
5 PULSE LENGTH
6 WIPER
7 ECHO AREA
8 NO FUNCTION
9 NO FUNCTION
0 NO FUNCTION

2. Select function desired then push the left button. Programmed function is then executed.
3. To continue, repeat step 2.
4. Push the right button to close the menu.

Programming the F1, F2 and F3 keys

1. Press a function key (F1, F2 or F3) twice. For example, press the **F1** key.

```
[F1 REGISTER]

1 [PICTURE]
2 [IR]
3 [ES]
4 [EAV]
5 [PULSE LENGTH]
6 [WIPER]
7 [ECHO AREA]
8 [NO FUNCTION]
9 [NO FUNCTION]
0 [NO FUNCTION]
```

2. Select function desired then push the left button. For example, select 1 [PICTURE].

```
[F1-1]

1 BACK
2 [ECHO]
3 [STD KEY]
4 [ARP•AIS]
5 [OPERATION]
6 [PICTURE]
7 [MARK]
8 [PLOTTER]
9 [NAV LINE•WPT]
0 NO FUNCTION
```

3. Select function desired then push the left button. The corresponding menu appears. See the next page.

[F1-1-ECHO]

1 BACK
 2 PICTURE/
 IR/
 ES/
 EAV/
 NOISE REJ/
 ANT SELECT/
 PULSE LENGTH/
 A/C SEA SELECT/
 AUTO RAIN SELECT/
 TUNE SELECT/
 VIDEO CONTRAST1/
 VIDEO CONTRAST2/
 ANT HEIGHT/
 SEA CONDITION/
 2ND ECHO REJ/
 PM/
 SART/
 WIPER/
 ECHO AREA

[F1-1-STD KEY]

1 BACK
 2 ALARM ACK/
 STBY TX/
 HL OFF/
 MODE/
 OFF CENTER/
 CU TM RESET/
 INDEX LINE/
 VECTOR TIME/
 VECTOR MODE/
 TARGET LIST/
 TRAIL TIME/
 TRAIL GRAD/
 OS TRAIL/
 BRILL/
 MENU/
 RANGE UP/
 RANGE DOWN/
 ACQ/
 TARGET DATA/
 TARGET CANCEL

[F1-1-ARP-AIS]

1 BACK
 2 DISP ARP/
 DISP AIS/
 TARGET DATA&ACQ/
 PAST POSN INTERVAL/
 REF MARK/
 CPA LIMIT/
 CPA/
 TCPA/
 TARGET LIST SORT/
 TRIAL MANEUVER/
 ARP-AIS FUSION/
 ARP SYMBOL COLOR/
 ARP SYMBOL SIZE/
 ARP PAST COLOR/
 ARP PAST POINTS/
 AIS MESSAGE/
 AIS SYMBOL COLOR/
 AIS SYMBOL SIZE/
 AIS PAST COLOR/
 AIS PAST POINTS/
 TRIAL MODE CHANGE

[F1-1-OPERATION]

1 BACK
 2 ECHO COLOR/
 BACK COLOR/
 RING/
 WATCH ALARM RESET/
 ZOOM/
 DISPLAY SELECT/
 RADAR COMBINE/
 MOB/
 USER DEFAULT/
 TLL/
 ANCHOR WATCH/
 COLOR SHIFT/
 ICON DISP/
 OWN TRK ALL ERASE/
 TGT TRK ALL ERASE

[F1-1-PICTURE]

1 BACK
 2 PICTURE1/
 PICTURE2/
 PICTURE3/
 PICTURE4/
 NEAR/
 FAR/
 NEAR BUOY/
 FAR BUOY/
 ROUGH SEA/
 SHIP/
 NEAR BIRD/
 FAR BIRD

[F1-1-MARK]

1 BACK
 2 OWN SHIP MARK/
 STERN MARK/
 INDEX LINE/
 INDEX LINE MODE/
 EBL OFFSET BASE/

 EBL1 BEARING/
 EBL2 BEARING/
 CURSOR BEARING/
 BARGE MARK
 ◇CURSOR

[F1-1-PLOTTER]

1 BACK
 2 CHART COLOR/
 OWN TRACK OFF/ON/
 OWN TRACK COLOR/
 TGT TRACK OFF/ON/
 TGT TRACK COLOR/
 CURSOR L/L ALIGN/
 MARK ALL ERASE/
 WPT ALL ERASE/
 NAV LINE ALL ERASE/
 GRID DISPLAY/
 OWN TRACK DISPLAY/
 TARGET TRACK DISPLAY/
 MARK DISPLAY/
 LAND DENSITY DISPLAY/
 PLACE NAME DISPLAY/
 COAST LINE DISPLAY/
 CONTOUR LINE DISPLAY/
 NAV LINE(MAP)/
 DANGER HIGHLIGHT/
 PROHIBITED AREA DISP/
 BUOY DISPLAY/
 GPS BUOY DISPLAY/
 TARGET TRACK MODE/
 MAP DISPLAY/
 MAP MARK COLOR

[F1-1-NAV LINE-WPT]

1 BACK
 2 NAV LINE DATA/
 ARRIVAL WPT ALARM/
 DISP WPT NO./
 DISP WPT NAME/
 SKIP NEXT WPT/
 TURNING LINE/
 DEPTH/
 DEPTH GRAPH SCALE/
 CURRENT/
 WIND/
 TEMP/
 DATE-TIME/
 WPT DATA

4. Select "2" then push the left button.
 5. Select item to register then push the left button.
 6. Push the right button five times to close the menu.
- The tables on the next several pages describe the functions available.


Functions available with F1-F3 keys: ECHO category

Item	Function	Settings
PICTURE	Select picture setup condition.	PICTURE1, PICTURE2, PICTURE3, PICTURE4, NEAR, FAR, NEAR BUOY, FAR BUOY, ROUGH SEA, SHIP, HARBOR ¹ , COAST ¹ , NEAR BIRD ² , FAR BIRD ² ¹ 10 kW/25 kW ² 50 kW/60 kW
IR	Enable/disable interference rejector.	OFF, 1, 2, 3
ES	Enable/disable echo stretch.	OFF, 1, 2, 3
EAV	Enable/disable echo averaging.	OFF, 1, 2, 3
NOISE REJ	Enable/disable noise rejector.	OFF, ON
ANT SELECT	Select antenna unit.	
PULSE LENGTH	Select pulse length.	<u>10 kW/25 kW models</u> 0.125, 0.25, 0.5 NM: S1 0.75, 1, 1.5, 2 NM: S1, S2, M1 3, 4 NM: S2, M1, M2, M3 6, 8 NM: M1, M2, M3, L 12, 16, 24 NM: M2, M3, L 32, 48, 96, 120 NM: L <u>50 kW/60 kW models</u> 0.125, 0.25, 0.5 NM: S 0.75, 1, 1.5, 2 NM: S, M1 3, 4 NM: M1, M2 6, 8, 12, 16, 24 NM: M2, L 32, 48, 96, 120 NM: L
A/C SEA SELECT	Select A/C SEA adjustment method.	AUTO, MANUAL
AUTO RAIN SELECT	Enable/disable AUTO RAIN.	OFF, 1, 2, 3, 4
TUNE SELECT	Select tuning method.	AUTO, MANUAL
VIDEO CONTRAST1	Set Video Contrast1.	1, 2, 3, 4
VIDEO CONTRAST2	Set Video Contrast2.	A, B, C
ANT HEIGHT	Select antenna height (above the waterline).	5, 7.5, 10, 15, 20, 30, 35, 40, 45, more than 50 (m)
SEA CONDITION	Set sea condition.	1, 2, 3, 4, 5
2ND ECHO REJ	Enable/disable second-trace echo rejector.	OFF, ON
PM	Enable/disable performance monitor.	OFF, ON
SART	Enable/disable set up for optimum detection of SART.	OFF, ON
WIPER	Enable/disable wiper.	OFF, 1, 2
ECHO AREA	Select echo area configuration.	CIRCLE, WIDE, ALL

Functions available with F1-F3 keys: STD KEY category

Item	Function	Settings
ALARM ACK	Silence alarm buzzer.	
STBY TX	Alternate between standby and TX.	
HL OFF	Hide heading line temporarily.	
MODE	Select presentation mode.	Head-up, Cursor gyro, North-up, Course-up, True motion
OFF CENTER	Off center the display.	
CU TM RESET	Reset position in course-up/true motion.	
INDEX LINE	Display index line.	IL1, IL2
VECTOR TIME	Select vector time.	30 s, 1-5 min (one-minute intervals), 20 min, 30 min, 40 min, 50 min, 60 min
VECTOR MODE	Select vector mode.	Relative vector, true vector
TARGET LIST	Display ARP target list.	
TRAIL TIME	Select trail time.	"Standard" trail length: OFF, 00:15, 00:30, 01:00, 03:00, 06:00, 15:00, 30:00, Continuous
		"12h" trail length: OFF, 00:30, 01:00, 03:00, -6:00, 12:00, Continuous
		"24h" trail length: OFF, 01:00, 02:00, 03:00, 06:00, 12:00, 18:00, 24:00, Continuous
		"48h" trail length: OFF, 02:00, 04:00, 08:00, 16:00, 24:00, 36:00, 48:00, Continuous
TRAIL GRAD	Select trail gradation.	Single (color), Multi (single color)
OS TRAIL	Display/hide other ship's trail near your ship.	OFF, 1, 2
BRILL	Select display brilliance.	1, 2, 3, 4
MENU	Open main menu.	
RANGE UP	Raise range.	
RANGE DOWN	Lower range.	
ACQ	ARP: Acquire target for ARP.	
TARGET DATA	ARP: Display ARP target data. AIS: Activate sleeping target. Display AIS target data.	
TARGET CANCEL	ARP: Cancel tracking on ARP target. AIS: Sleep a target.	

Functions available with F1-F3 keys: ARP•AIS category

Item	Function	Settings
DISP ARP	Enable/disable ARP display.	OFF, MANUAL, AUTO, AUTO/MANUAL
DISP AIS	Show/hide AIS display.	OFF, ON
TARGET DATA&ACQ	ARP: Acquire ARP target. Display ARP target data. AIS: Activated sleeping AIS target. Display AIS target data.	
PAST POSN INTERVAL	Select past position interval.	
REF MARK	Inscribe reference mark.	
CPA LIMIT	Enable/disable CPA alarm.	OFF/ON
CPA	Set CPA limit.	0.5, 1.0, 1.5, 2.0, 3.0, 4.0, 5.0, 6.0 (nm)
TCPA	Set time of closest approach.	1, 2, 3, 4, 5, 6, 12, 15 (min)
TARGET LIST SORT	Select target list sort method.	CPA, TCPA, BCR, BCT, DISTANCE, SPEED
TRIAL MANEUVER	Start trial maneuver.	
ARP•AIS FUSION	Enable/disable ARP•AIS target fusion.	OFF, ON
ARP SYMBOL COLOR	Select ARP symbol color.	RED, GREEN, BLUE, YELLOW, LIGHT-BLUE, PURPLE
ARP SYMBOL SIZE	Select ARP symbol size.	SMALL, STANDARD, LARGE
ARP PAST COLOR	Select ARP past position color.	RED, GREEN, BLUE, YELLOW, LIGHT-BLUE, PURPLE
ARP PAST POINTS	Set number of ARP past points to show.	5, 10
AIS MESSAGE	Show/hide the "you got mail" symbol. The symbol below appears when an AIS message arrives. 	
AIS SYMBOL COLOR	Select AIS symbol color.	RED, GREEN, BLUE, YELLOW, LIGHT-BLUE, PURPLE
AIS SYMBOL SIZE	Select AIS symbol size.	SMALL, STANDARD, LARGE
AIS PAST COLOR	Select ARP past position color.	RED, GREEN, BLUE, YELLOW, LIGHT-BLUE, PURPLE
AIS PAST POINTS	Set number of AIS past points to show.	5, 10
TRIAL MODE CHANGE	Select type of trial mode.	OFF, STATIC, DYNAMIC

Functions available with F1-F3 keys: OPERATION category

Item	Function	Settings
ECHO COLOR	Select echo color.	YELLOW, GREEN, WHITE, MULTI
BACK COLOR	Select background color.	BLACK(GREEN characters), BLACK(RED characters), ECHO BLUE, BLUE, DARK BLUE
RING	Show/hide fixed range rings.	OFF, ON
WATCH ALARM RESET	Reset watch alarm.	
ZOOM	Enable/disable zoom.	
DISPLAY SELECT	Select display mode.	RADAR, RADAR+PLOTTER, PLOTTER
RADAR COMBINE	Select dual-range display format.	OFF, MIX, COMBINE
MOB	Inscribe MOB mark.	
USER DEFAULT	Restore user defaults for [F1]-[F3]. (When "F-KEY" is selected at USER DEFAULT in OPERATION (2/2) menu. 1. Set equipment as desired. 2. Display F1, F2 or F3 menu as applicable. 3. Choose USER DEFAULT and long-push (more than one second) the left button. 4. To recall a setting, select F1, F2 or F3 menu as applicable and choose USER DEFAULTS. The radar is then set to stand-by and "USER DEFAULT" appears at the bottom right corner.	
TLL	Output cursor-selected radar target's position to chart plotter.	
ANCHOR WATCH	Enable/disable anchor watch.	OFF, ON
COLOR SHIFT	Change track color according to color arrangement.	
ICON DISP	Show/hide on-screen icons.	
OWN TRK ALL ERASE	Erase all tracks of your ship.	
TGT TRK ALL ERASE	Erase all tracks of all targets.	

Functions available with F1-F3 keys: PICTURE category

Item	Function
PICTURE 1 - 4	Select picture setup condition.
NEAR	Optimum detection of targets in range of 3 nm or less
FAR	Optimum detection of targets in range of 6nm or higher
NEAR BUOY	Optimum detection of close-in buoys
FAR BUOY	Optimum detection of distant buoys
ROUGH SEA	Optimum radar setup in rough seas
SHIP	Optimum detection of ships
NEAR BIRD	Optimum detection of birds near your ship
FAR BIRD	Optimum detection of distant birds

Description of functions available with F1-F3 keys: MARK category

Item	Function	Settings
OWN SHIP MARK	Enable/disable your ship mark.	OFF, ON
STERN MARK	Enable/disable stern mark.	OFF, ON
INDEX LINE	Select number of index lines to display.	1, 2, 3, 6
INDEX LINE MODE	Select index line mode.	HORIZONTAL, VERTICAL
EBL OFFSET BASE	Select offset EBL reference point.	STAB GND, STAB NORTH, STAB HEAD
EBL1 BEARING	Set bearing reference for EBL1.	RELATIVE, TRUE
EBL2 BEARING	Set bearing reference for EBL2.	RELATIVE, TRUE
CURSOR BEARING	Set bearing reference for cursor.	RELATIVE, TRUE
BARGE MARK	Enable/disable barge marks.	OFF, ON
CURSOR SHAPE	Enable/disable net cursor.	OFF, ON

Description of functions available with F1-F3 keys: PLOTTER category

Item	Function	Settings
CHART COLOR	Select chart color.	GREEN, YELLOW, LIGHT-BLUE, ORANGE, GRAY
OWN TRACK OFF/ON	Hide/show your ship's track.	OFF, ON
OWN TRACK COLOR	Select color of your ship's track.	RED, GREEN, YELLOW, LIGHT-BLUE, PURPLE, WHITE
TGT TRACK OFF/ON	Hide/show tracks of targets.	OFF, 10 s, 30 s, 1 min, 3 min, 6 min, 15 min
TGT TRACK COLOR	Select color for target tracks.	RED, GREEN, YELLOW, LIGHT-BLUE, PURPLE, WHITE
CURSOR L/L ALIGN	Enable/disable L/L alignment w/cursor.	OFF, ON
MARK ALL ERASE	Erase all marks.	
WPT ALL ERASE	Erase all waypoints.	
NAV LINE ALL ERASE	Erase all nav lines.	
GRID DISPLAY	Show/hide grid.	OFF, L/L
OWN TRACK DISPLAY	Show/hide your track.	OFF, ON
TARGET TRACK DISPLAY	Show/hide targets' track.	OFF, ON
MARK DISPLAY	Show/hide all marks.	OFF, ON
LAND DENSITY DISPLAY	Fill/hollow land on chart.	OFF, ON
PLACE NAME DISPLAY	Show/hide geographic names.	OFF, ON
COAST LINE DISPLAY	Show/hide coastlines.	OFF, ON
CONTOUR LINE DISPLAY	Show/hide depth contour lines.	OFF, ON, DEPTH(value)
NAV LINE(MAP)	Show/hide nav lines.	OFF/ON

Description of functions available with F1-F3 keys: PLOTTER category

Item	Function	Settings
DANGER HIGHLIGHT	Show/hide danger highlights	OFF, ON
PROHIBITED AREA DISP	Show/hide prohibited areas.	OFF, ON
BUOY DISPLAY	Show/hide buoys.	OFF, ON
GPS BUOY DISPLAY	Show/hide GPS buoys.	OFF, ON
TARGET TRACK MODE	Select target track color assignment method.	ALL, INDIVIDUAL
MAP DISPLAY	Show/hide radar map.	OFF, ON
MAP MARK COLOR	Select map mark color	RED, GREEN, BLUE, YELLOW, LIGHT-BLUE, PURPLE, WHITE

Description of functions available with F1-F3 keys: NAV LINE•WPT category

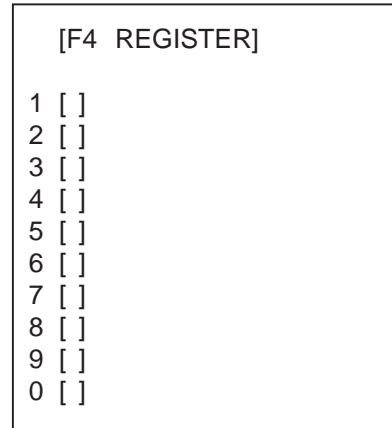
Item	Function	Settings
NAV LINE DATA	Show/hide nav line data.	OFF, EXTERNAL, INTERNAL, WAYPOINT
ARRIVAL WPT ALARM	Enable/disable arrival waypoint alarm.	OFF, ON
DISP WPT NO.	Show/hide waypoint number.	OFF, ON
DISP WPT NAME	Show/hide waypoint name	OFF, ON
SKIP NEXT WPT	Skip next waypoint in a route.	
TURNING LINE	Show/hide turning line.	OFF, ON, REVISED
DEPTH	Show/hide depth indication.	OFF, m, ft
DEPTH GRAPH SCALE	Select graph scale.	10, 20, 50, 100, 200, 500 (m)
CURRENT	Show/hide current data.	OFF, ON
WIND	Show/hide wind indication; select unit of measurement.	OFF, m/s, KT
TEMP	Show/hide water temperature data.	OFF, ON
DATE-TIME	Show/hide date-time indication; select time format.	OFF, UTC, LOCAL
WPT DATA	Show/hide waypoint data; select waypoint display format.	OFF, RELATIVE, TRUE

4.2 Operating the F4 Key

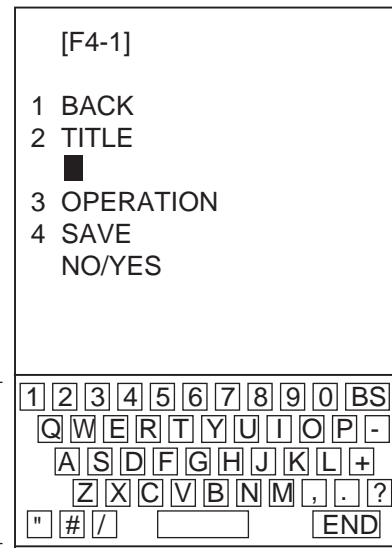
The **F4** key is a user-programmable macro key for automating complex or repetitive tasks. The user may program this key with as many as ten functions.

Registering a program to the F4 key

1. Press the F4 key twice to show the F4 REGISTER menu. (Each press of the key displays the F4-REGISTER and F4 EXECUTION menus alternately.)
2. Select the number to register then push the left button. For example, select "1" and the F4-1 menu appears.



3. Select 2 TITLE then push the left button. A keyboard appears.
4. Use the keyboard to enter program title, using up to 15 alphanumeric characters.
 - 1) Place the cursor on a desired character.
 - 2) Push the left button. Chosen character appears below TITLE in the menu. Numeric and alphabet may be directly entered from keyboard-equipped control unit.
 - 3) Repeat steps 1 and 2 to complete the title.
 - 4) Finally, place the cursor on END then push the left button.



5. Select 3 OPERATION then push the left button. The message "MACRO RECORDING" PRESS F4 KEY TO END RECORDING." appears at the lower right-hand corner on the screen.
6. Operate the equipment to select setting content (max. 20 steps). For example, set the range for 16 nm, interference rejector for 3 and echo averaging for 2. The method for counting steps depends on the content of the step as follows:
Main menu, box menu: Each setting counts as one step. For example, if you set 20 items, that counts as 20 steps.
Note: When you reach 20 steps the message disappears and the macro recording mode ends. If you could not record all the steps you require, do step 5 again, staying within 20 steps.
7. After setting the equipment as desired, press the **F4** key.
8. Select 4 SAVE then push the left button.
9. Select YES then push the left button.
10. Push the right button four times to close the menu.

Menu functions recordable to F4 key

[ECHO] menu (main menu)
2ND ECHO REJ
PM
SART
WIPER
ECHO AREA
[MARK] menu (main menu)
OWN SHIP MARK
STERN MARK
INDEX LINE BEARING
INDEX LINE
INDEX LINE MODE
EBL OFFSET BASE POINT
RING
[BARGE MARK] menu (main menu)
BARGE MARK
BARGE SIZE
ARRANGEMENT
[EBL, VRM, CURSOR SET] menu (main menu)
EBL1
EBL2
CURSOR BEARING
[CURSOR SHAPE] menu (main menu)
CURSOR
FRONT HALF LENGTH
REAR HALF LENGTH
NET WIDTH
ROTATE STEP
[ARP/AIS] menu (main menu)
AIS DISPLAY
[ARP SYMBOL] menu (main menu)
ARP SYMBOL COLOR
ARP SYMBOL SIZE
PAST POSN COLOR
PAST POSN POINTS
[AIS SYMBOL] menu (main menu)
AIS SYMBOL COLOR
AIS SYMBOL SIZE
ROT TAG LIMIT
PAST POSN COLOR
PAST POSN POINTS

[FUSION] menu (main menu)
FUSION TARGET
GAP
RANGE
BEARING
SPEED
COURSE
[PLOTTER] menu (main menu)
CHART COLOR
CURSOR L/L ALIGN
[OWN TRACK] menu (main menu)
TRACK INTERVAL
TRACK COLOR
[TGT TRACK] menu (main menu)
TRACK INTERVAL
TRACK COLOR MODE
TRACK COLOR MODE
AUTO TARGET TRACK
[DISPLAY] menu (main menu)
GRID
OWN TRACK
TARGET TRACK
MARK
LAND DENSITY
PLACE NAME
COAST LINE
CONTOUR LINE
NAVLINE(MAP)
DANGER HIGHLIGHT
PROHIBITED AREA
[GPS BUOY] menu (main menu)
GPS BUOY
[NAV DATA] menu (main menu)
DEPTH
DEPTH GRAPH SCALE
DEPTH MARK
CURRENT
WIND
TEMP
DATE-TIME
LOCAL TIME
WPT DATA

Menu functions recordable to F4 key

[NAV LINE/WPT] menu (main menu)
NAV LINE DATA SOURCE
NAV LINE WIDTH
ARRIVAL WPT ALARM
TURNING LINE
DISP WPT NO.
DISP WPT NAME
[DATA BOX] menu (main menu)
NAV DATA
ZOOM
[PICTURE] menu (box menu)
INT REJECT
ECHO STRETCH
ECHO AVERAGE
NOISE REJ
AUTO STC
AUTO RAIN
VIDEO CONTRAST
[PULSE] menu (box menu)
Pulse length selection
[CONDITION] menu (in PICTURE menu (box menu))
SEA CONDITION
ANT HEIGHT
COLOR ERASE

[MARK] menu (box menu)
MARK POSN (mark entry method)
MAP DISPLAY
MAP MARK COLOR
[BRILL] menu (box menu)
ECHO COLOR
BKGD COLOR
[TRAIL] menu (box menu)
TRAIL MODE
TRAIL GRAD
NARROW TRAIL
TRAIL LEVEL
TRAIL RESTART
TRAIL COPY
OS TRAIL
TRAIL LENGTH
TRAIL HIDE
[ARPA] menu (box menu)
ARPA ON/OFF

Functions recordable to the F4 key

Key
ALARM ACK
MODE SELECTION
OFF CENTER
CU/TM RESET
INDEX LINE
VECTOR TIME
VECTOR MODE (Relative/True)
TRAIL ERASE
BRILL
RANGE

On-screen box operations recordable to the F4 key

DISPLAY MODE box
Select display mode.
ANTENNA box
Select antenna.
PRESENTATION MODE box
Select presentation mode.
PICTURE box
Adjust radar picture.
RANGE box
Select display range.
TRAIL MODE box
Select echo trail time.
ARP VECTOR box
Select ARP vector length.

TRUE/REL VECTOR box
Select vector reference.
ARP box
Turn ARP on/off.
AIS box
Turn AIS on/off.
CPA ALARM box
Enable/disable CPA alarm.
CPA LIMIT box
Set CPA limit.
TCPA LIMIT box
Set TCPA limit.

Operating the F4 key

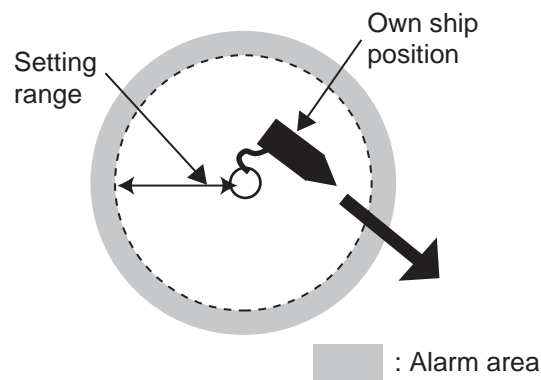
1. Press the **F4** key to show the F4 EXECUTION menu.

[F4 EXECUTION]
1 BUOY
2 DISTANT TARGET
3
4
5
6
7
8
9
0

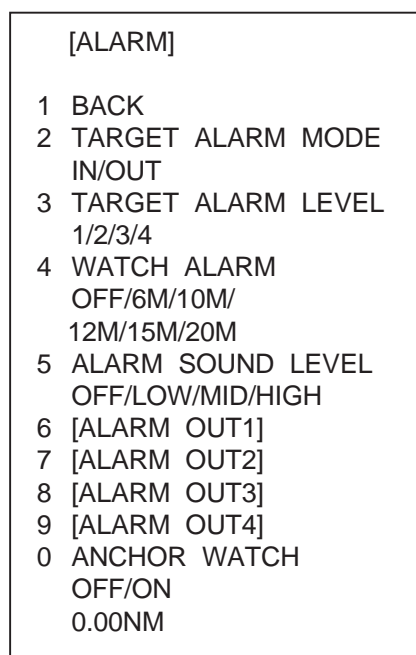
2. Select the program to execute then push the left button.
3. Push the right button to close the menu.

5. ANCHOR WATCH ALARM

The anchor watch alarm informs you when your boat is moving when it should be at rest. When the anchor watch is active, a red dashed circle marks the anchor watch area.



1. Left-click the MENU box.
2. Select 3 [ALARM] then push the left button.



3. Select 0 ANCHOR WATCH ALARM then push the left button.
4. Select ON then push the left button.
5. Use the scrollwheel to set alarm radius, from 0.00 to 9.99 (nm). Spin the scroll-wheel to set then push it to confirm.
6. Push the right button twice to close the menu.

When your ship moves a distance more than the anchor watch setting, the buzzer sounds and the indication ANCHOR WATCH appears at the bottom right corner.

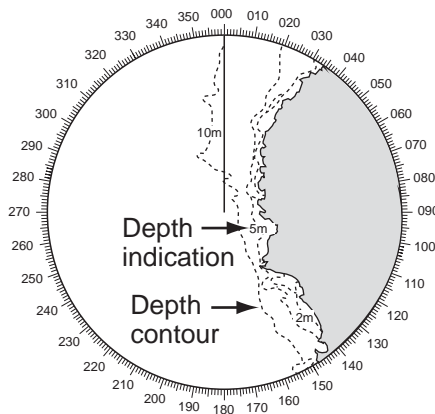
To disable the alarm, select OFF at step 4 then push the right button twice to close the menu.

6. VIDEO PLOTTER FUNCTIONS

The fishing specification radar has three operating modes: radar, radar plus plotter, and plotter.

6.1 Depth Contour with Depth Indication

Depth indication can be shown on depth contours.



1. Left-click the MENU box.
2. Select 5 [PLOTTER] then push the left button.
3. Select 7 [DISPLAY] then push the left button.

[DISPLAY (1/2)]
1 BACK
2 GRID OFF/L/L
3 OWN TRACK OFF/ON
4 TARGET TRACK OFF/ON
5 MARK OFF/ON
6 LAND DENSITY OFF/ON
7 PLACE NAME OFF/ON
8 COAST LINE OFF/ON
9 CONTOUR LINE OFF/ON/DEPTH
0 NEXT

4. Select 9 CONTOUR LINE then push the left button.
5. Select DEPTH then push the left button to show depth indication on the depth contours.
6. Push the right button three times to close the menu.

6.2 Mark Settings

You can enter a mark to denote a reef, fishing ground, navigation buoy. The position of a mark is saved at the time of entry. The radar can store up 20,000 marks and lines.

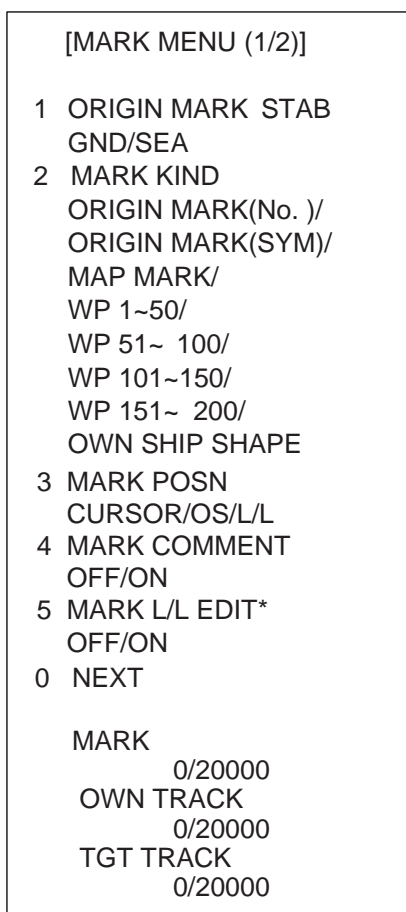
This section shows you how to enter mark comment, and change its position and color.

Enabling, disabling mark comment input and mark position editing

1. Use the trackball to put the cursor on the arrow in the MARK box at the bottom left-hand corner.



2. Push the right button to show the MARK (1/2) menu.



* Available when 3 MARK POSN is set for CURSOR or OS.

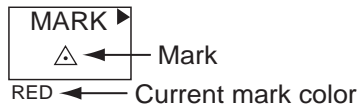
3. Select 4 MARK COMMENT then push the left button.
4. Spin the scrollwheel to select OFF or ON as applicable then push the left button. OFF to disable mark comment entry, ON to enable it.
5. Select 5 MARK L/L EDIT then push the left button.
6. Select OFF or ON as applicable. OFF to disable mark editing, ON to enable it.
7. Push the right button to close the menu.

Entering mark comment, changing mark position

Mark comments can be entered and mark position changed when MARK COMMENT and MARK L/L EDIT are set to ON.

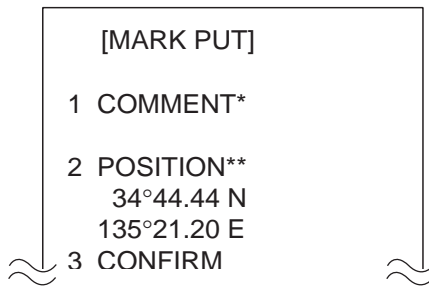
To show mark comments MAP DISPLAY on page 2 of the MARK menu must be set to ON.

1. Use the trackball to put the cursor on the arrow in the MARK box at the bottom left-hand corner.
2. Spin the scrollwheel to select desired mark then push the left button.



3. Put the cursor on the location where you want to enter a mark then push the left button.

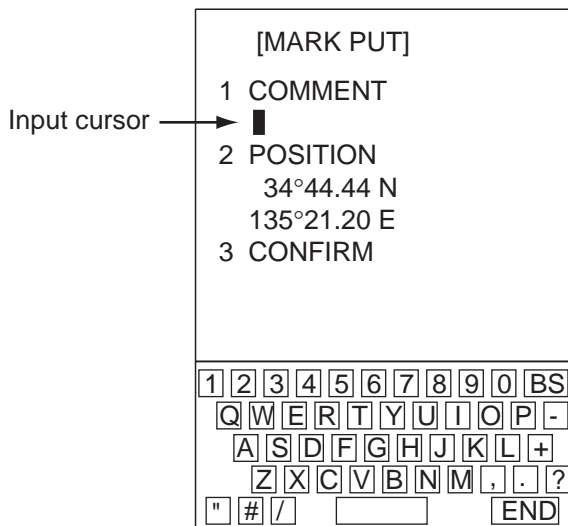
The location is circumscribed with a broken rectangle and the MARK ENTRY menu (1/2) appears. If 3 MARK POSN on the MARK ENTRY menu (1/2) is selected to OS (Own Ship), the broken rectangle appears at current position.



*: Available when MARK COMMENT is ON.

** : Available when MARK L/L EDIT is ON.

4. Select 1 COMMENT then push the left button.



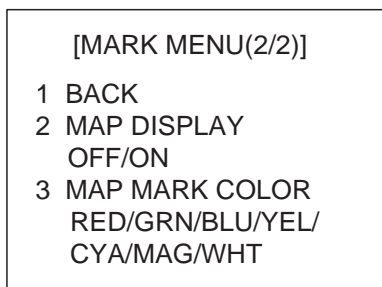
5. Use the on-screen keyboard to enter comment, following the instructions below. You may enter up to eight alphanumeric characters.
 - 1) Place the cursor on a desired character.
 - 2) Push the left button. Chosen character appears below TITLE in the menu. Numeric and alphabet may be directly entered from keyboard-equipped control unit.
 - 3) Repeat steps 1 and 2 to complete the title.
 - 4) Finally, place the cursor on END then push the left button.

6. To edit mark position, select 2 POSITION then push the left button.
7. Spin the scrollwheel to select numeric. Numeric may also be directly entered in case of keyboard-equipped control unit. After setting position, the values entered are colored blue.
8. Select 3 CONFIRM then push the left button.
The comment entered is placed next to on-screen mark. If the position of the mark was changed mark appears at the newly entered position.
9. Push the right button to finish.

Selecting mark color

Mark color is available in red, green, blue, yellow, cyan (light-blue), magenta, and white.

1. Use the trackball to put the cursor on the arrow in the MARK box at the bottom left-hand corner.
2. Push the right button to show the MARK (1/2) menu.
3. Spin the scrollwheel to select 0 NEXT then push the left button.



4. Select 3 MAP MARK COLOR then push the left button.
5. Spin the scrollwheel to select color desired then push the left button. Selected color appears below the MARK box.
6. Push the right button twice to close the menu.

All marks entered after changing mark color will be colored in the newly selected color.

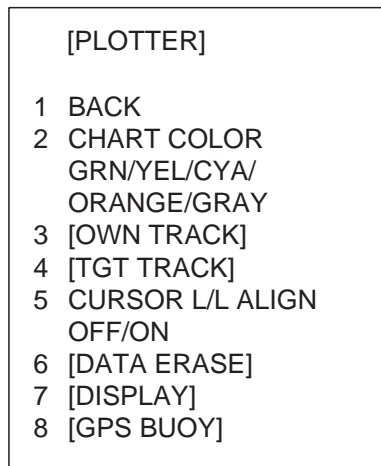
6.3 Track Settings

This section provides the procedures for how to select track recording parameters, select track color, and erase track.

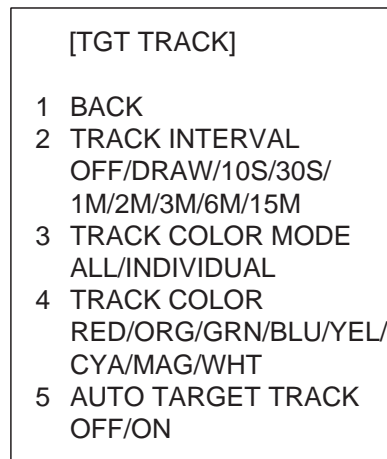
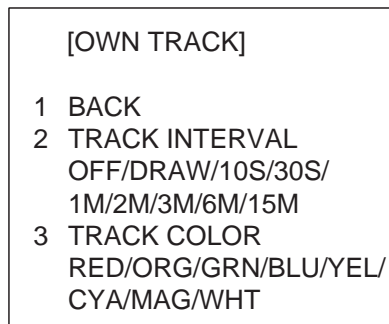
Track recording interval

This radar can store 20,000 points of your track and 15,000 points of target tracks (1,000 points/target). The shorter the recording interval the smoother the track is drawn, however the recording time is greatly shortened. When the capacity for track is reached, the oldest track is erased to make room for the latest.

1. Place the cursor in the MENU box then push the left button.
2. Select [5 PLOTTER] then push the scrollwheel.



3. Spin the scrollwheel to select [3 OWN TRACK] or [4 TGT TRACK] as appropriate then push the left button.



4. Spin the scrollwheel to select 2 TRACK INTERVAL then push the left button.
5. Select option desired then push the left button.
Select OFF to stop recording track. To show track on the display but don't record it, select DRAW.
6. Push the right button three times to close the menu.

Changing track color

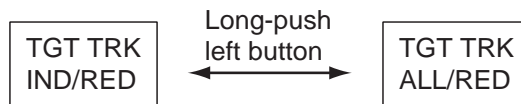
Track can be colored red, green, blue, yellow, cyan, magenta, and white. It can be useful to change the color of ship's track to clearly differentiate past track from current track.

Changing the color of your ship's track

1. Place the cursor in the MENU box then push the left button.
2. Select [5 PLOTTER] then push the left button.
3. Select [3 OWN TRACK] then push the left button.
4. Select [3 TRACK COLOR] then push the left button.
5. Select color desired then push the left button.
6. Push the right button three times to close the menu.

Changing the color of target tracks

1. Put the cursor in the track color selection box at the bottom of the screen.



2. Long-push the left button to select track color changing format (ALL or IND(individual)).
IND: Change color of specific target's track.
ALL: Change color of all target tracks.
3. Push the left button to select color. The color selection changes cyclically in the order of red, blue, green, light-blue, magenta, white, red... .

The color of target tracks can be automatically changed as shown in the table, by setting turning on 5 AUTO TARGET TRACK in the TGT TRACK menu.

AUTO TARGET TRACK status and track color

	AUTO TARGET TRACK "ON"	AUTO TARGET TRACK "OFF"
ALL	<u>When track is drawn</u> When a target is acquired its track is drawn in the color specified.	<u>When track is drawn</u> Manually acquire a target. The track of a manually acquired target is drawn in the color specified if the target selected by using the TARGET TRACK ON* feature.
	<u>When color is changed</u> The color of all track is changed at the moment new color is selected.	<u>When color is changed</u> The color of all track is changed at the moment new color is selected.
INDIVIDUAL	<u>When track is drawn</u> When a target is acquired it is drawn in the color specified. To change track color for individual target, select a different color and acquire the target.	<u>When track is drawn</u> Manually acquire a target. The track of a manually acquired target is drawn in the color specified if the target selected by the TARGET TRACK ON* feature. To change track color of individual target and acquire the target by using the TARGET TRACK ON* feature.
	<u>When color is changed</u> Current track is not affected when color is changed. To change track color, select color desired and cancel tracking of target. Reacquire the target, and its track is then drawn in the color specified. Note: When 5 AUTO TARGET TRACK is switched from ON to OFF, track display is turned off from the moment of switching. If AUTO TARGET TRACK is again switched ON when INDIVIDUAL is active, the tracks of all targets (1-15) are displayed in the color specified.	<u>When color is changed</u> Current track is not affected when color is changed. To change track color, select desired color and turn off the track of the target by using the TARGET TRACK OFF* feature. Select the target by using the TARGET TRACK ON feature, and the target's track is drawn in the color specified.

*: You can switch between TARGET TRACK ON (display target tracks) and TARGET TRACK OFF (don't display target tracks) as follows:

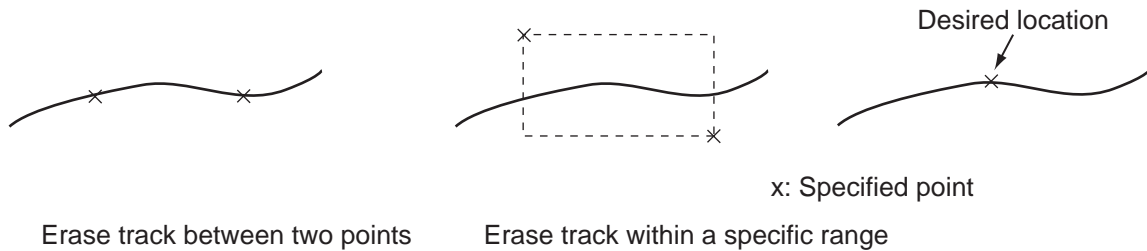
1. Place the cursor inside the effective display area.
2. Spin the scrollwheel to show TARGET TRACK ON or TARGET TRACK OFF at the bottom of the screen.



3. Put the cursor on the track that you want to display (or turn off) then push the left button.
4. Push the right button to finish.

Erasing track with the cursor

You may erase your ship's track or any target's track directly on the screen, by two points or area. Select the erasure method then erase track.



Selecting erasure method

Select the erasure method for own track and target track as follows:

1. Left-click the MENU box.
2. Select 5 [PLOTTER] then push the left button.
3. Select 8 [DATA ERASE] then push the left button.

[DATA ERASE]
1 BACK
2 OWN TRACK RED/GRN/BLU/YEL/ CYA/MAG/WHT/ 30%/50%/80%/ALL
3 TARGET TRACK RED/GRN/BLU/YEL/ CYA/MAG/WHT/ 30%/50%/80%/ALL
4 MARK ALL ERASE NO/YES
5 WPT ALL ERASE NO/YES
6 NAV LINE ALL ERASE NO/YES
7 OWN TRACK DELETE 2POINTS/AREA
8 TARGET TRACK DELETE 2POINTS/AREA

4. Select 7 OWN TRACK DELETE or 8 TARGET TRACK DELETE then push the left button.
5. Select 2POINTS or AREA as appropriate then push the left button.
2POINTS: Erase track between two points.
AREA: Erase all track within an area.
6. Push the right button three times to close the menu.

Erasing track between two points, area

1. Place the cursor inside the effective display area.
2. Spin the scrollwheel to show OWN TRACK DELETE/EXIT or TGT TRACK DELETE/EXIT in the guidance box at the bottom right-hand corner on the screen, whichever track you want to erase.



3. Use the trackball to place the cursor at the top-left corner of the area (or 1st point in case of erasure by two points) then push the left button.
4. Use the trackball to drag the cursor at the bottom-right corner of the area (or 2nd point in case of erasure by two points). If the erasure method (chosen on the previous page) is "AREA", a rectangle appears when you start dragging the cursor.
5. Push the left button to erase track.
6. Push the right button to quit.

Note that this function is automatically canceled if there is no erasure occurring in 30 seconds.

Erasing all track of a target

1. Place the cursor inside the effective display area.
2. Spin the scrollwheel to show TGT TRACK DELETE/EXIT in the guidance box at the bottom right-hand corner on the screen.



3. Use the trackball to put the cursor on the track you want to erase then push the left button to erase track.
4. Push the right button to quit.

Automatically displaying other target tracks

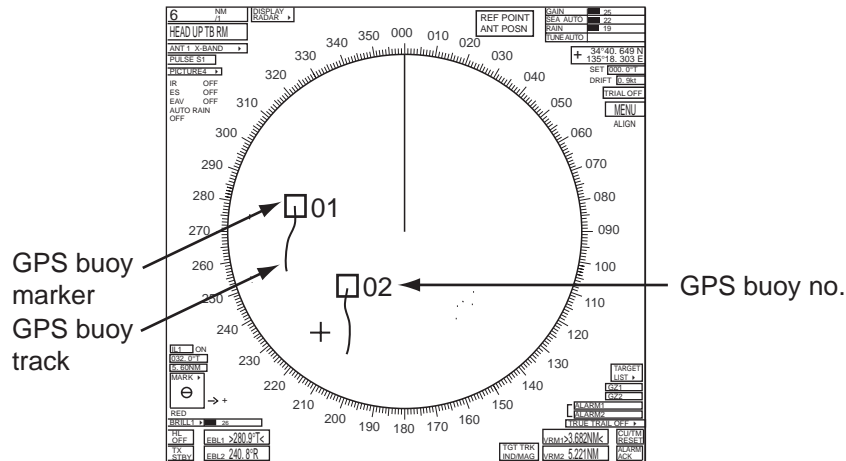
The tracks of 15 acquired targets (numbered 1-15) may be automatically displayed. When the lost target alarm sounds for a lost target, the number of that target is automatically reused when another target is acquired.

1. Right-click the MENU box.
2. Select 5 [PLOTTER] then push the left button.
3. Select 0 AUTO TARGET TRACK then push the left button.
4. Select ON then push the left button.
5. Push the right button twice to close the menu. To display the track of a specific target, turn off AUTO TARGET TRACK and do the following:
 - 1) In the PLOTTER menu, set 5 TGT TRACK INTERVAL to other than OFF.
 - 2) Place the cursor inside the effective display area.
 - 3) Spin the scrollwheel to show TARGET TRACK ON / EXIT in the guidance box.
 - 4) Place the cursor on the target for which you want to show its track then push the left button.
 - 5) Push the right button to finish.



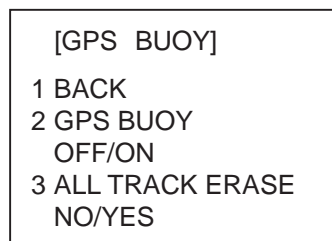
6.4 GPS Buoy

With connection of a GPS radio buoy locator, the information (GPS buoy marker and GPS buoy track) for up to seven GPS buoys may be shown on the radar screen. One application of a GPS buoy is to tether it to a fishing net to monitor net position. Each track may contain up to 20 track points. Marker color is available in red, green, blue, yellow, light-blue, magenta and white.



Enabling, disabling GPS buoy information

1. Select the MENU box at the right side of the screen then push the left button.
2. Select [5 PLOTTER] then push the left button.
3. Select [8 GPS BUOY] then push the left button.



4. Select 2 GPS BUOY then push the left button.
5. Select ON or OFF as appropriate then push the left button.
6. Push the right button three times to close the menu.

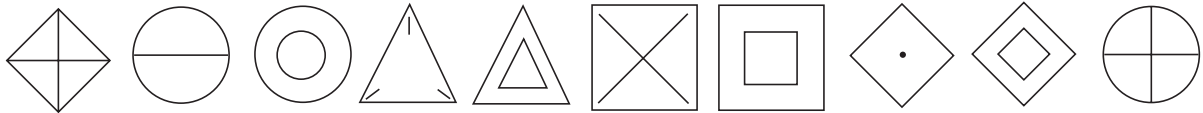
Erasing all tracks of GPS buoys

1. Select the MENU box at the right side of the screen then push the left button.
2. Select [5 PLOTTER] then push the left button.
3. Select [8 GPS BUOY] then push the left button.
4. Select 3 ALL TRACK ERASE then push the left button.
5. Select YES then push the left button.
6. Push the right button three times to close the menu.

7. ARP SYMBOLS

The ARP symbol is available in the 10 shapes shown in the illustration below. You can select shape desired as follows:

1. Select target with trackball.
2. Press the **TARGET DATA** key repeatedly to select symbol desired.



Note: If you are using the trackball-type control unit (RCU-015, RCU-016), ARP symbol shape cannot be chosen by the above procedure. However, you can program a function key to do so, with the combination of the "STD KEY" category and the option "TARGET DATA." For how to program a function key, see section 4.1.2.

8. DISPLAYING PICTURE FROM EXTERNAL RADAR

The picture from an external radar connected to the SUB DISPLAY terminal can be displayed on the FAR-2xx7 series display.

1. Use the trackball to set the pointer on the triangle in the ANTENNA box at the upper left corner on the display.

ANT2 X-BAND ▶

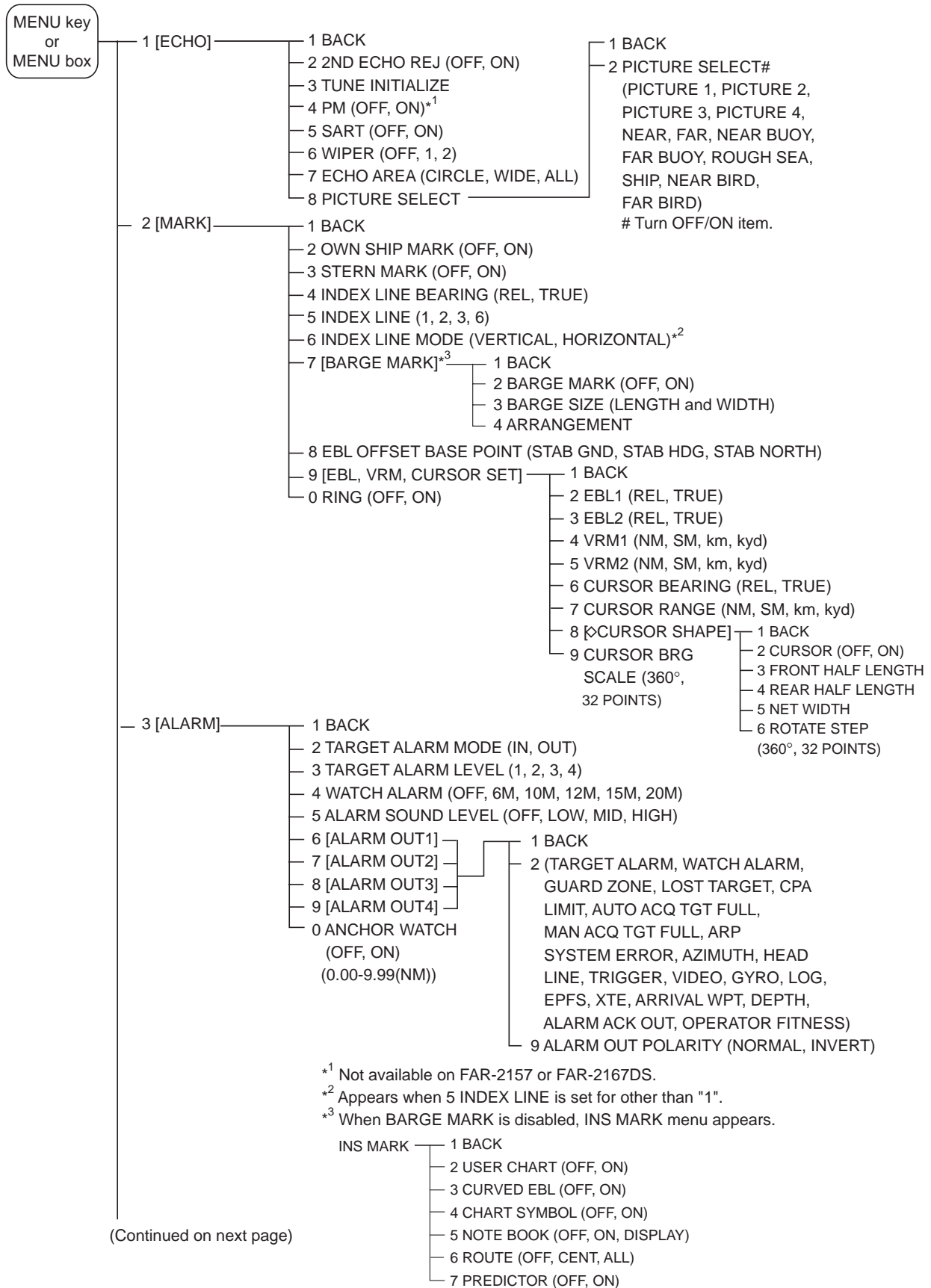
2. Right click to show the ANT INFORMATION menu.

```
[ANT INFORMATION]
ANT NO 1
  BAND : X-BAND
  MODEL: 12
  POS  : MAIN TOP
ANT NO 2
  BAND : X-BAND
  MODEL: 12
  POS  : FORE
ANT NO 3
  BAND :
  MODEL:
  POS  :
ANT NO 4
  BAND :
  MODEL:
  POS  :
OWN RADAR NO: 1
8 SUB MONITOR
  OFF/ON
9 INTER SW PRIORITY
  OFF/ON
```

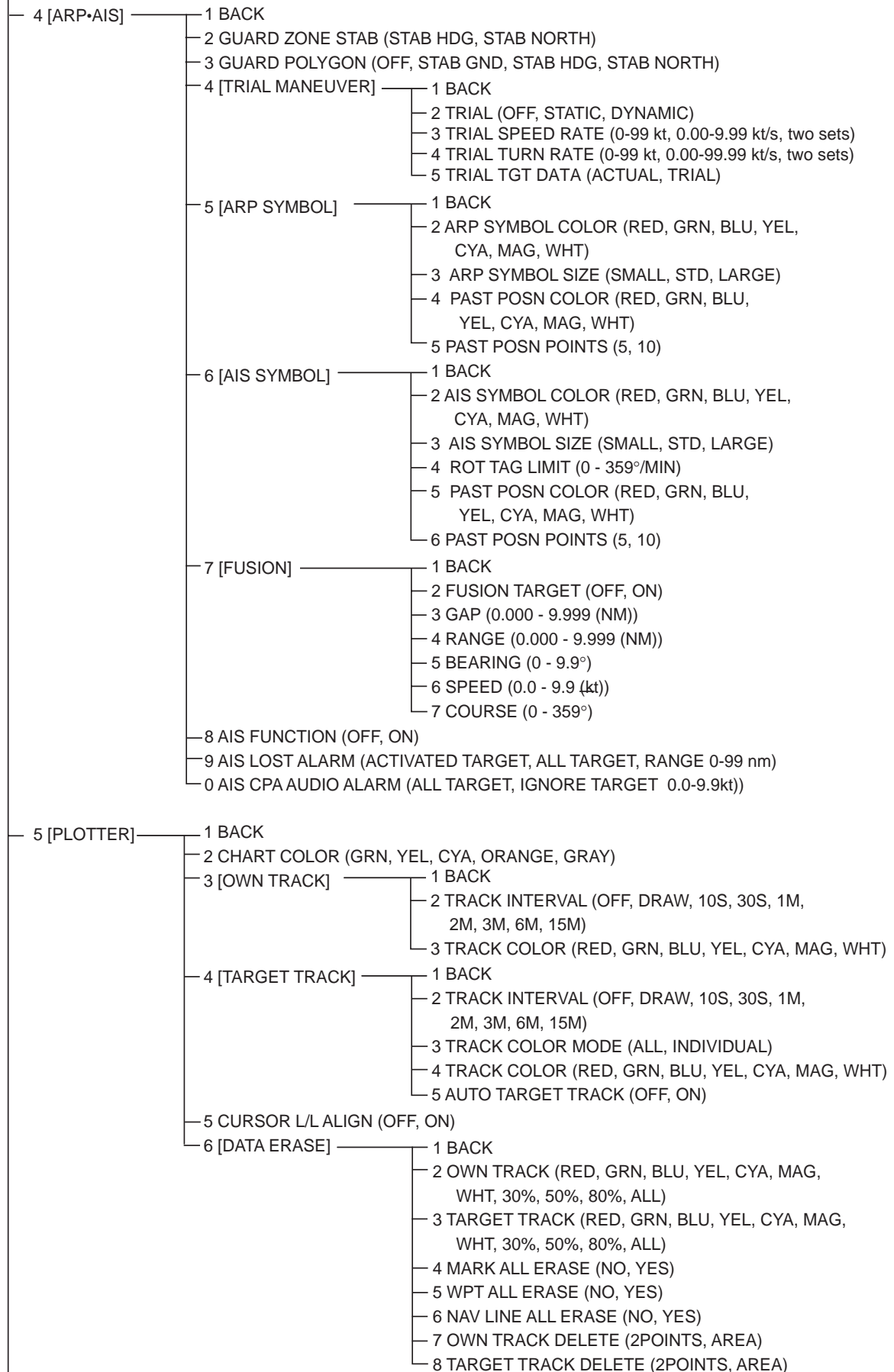
3. Select 8 SUB MONITOR then push the left button.
4. Select ON then push the left button.
5. Push the right button to close the menu.
6. Set the pointer on triangle in the ANTENNA box, and left-click several times to display SUB MONITOR to show the picture from the external radar.

9. MENU OVERVIEW

Menu tree

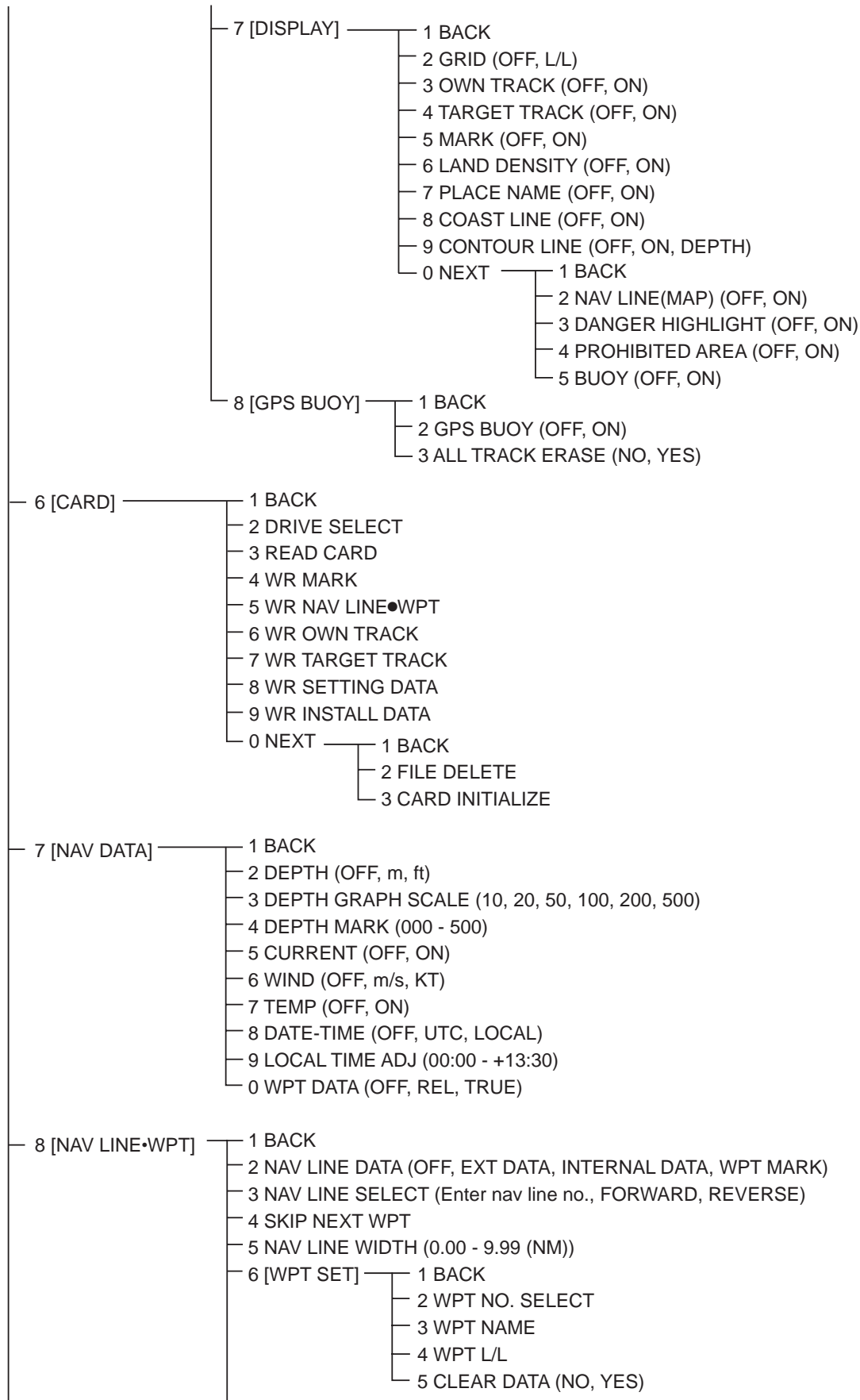


(Continued from previous page)



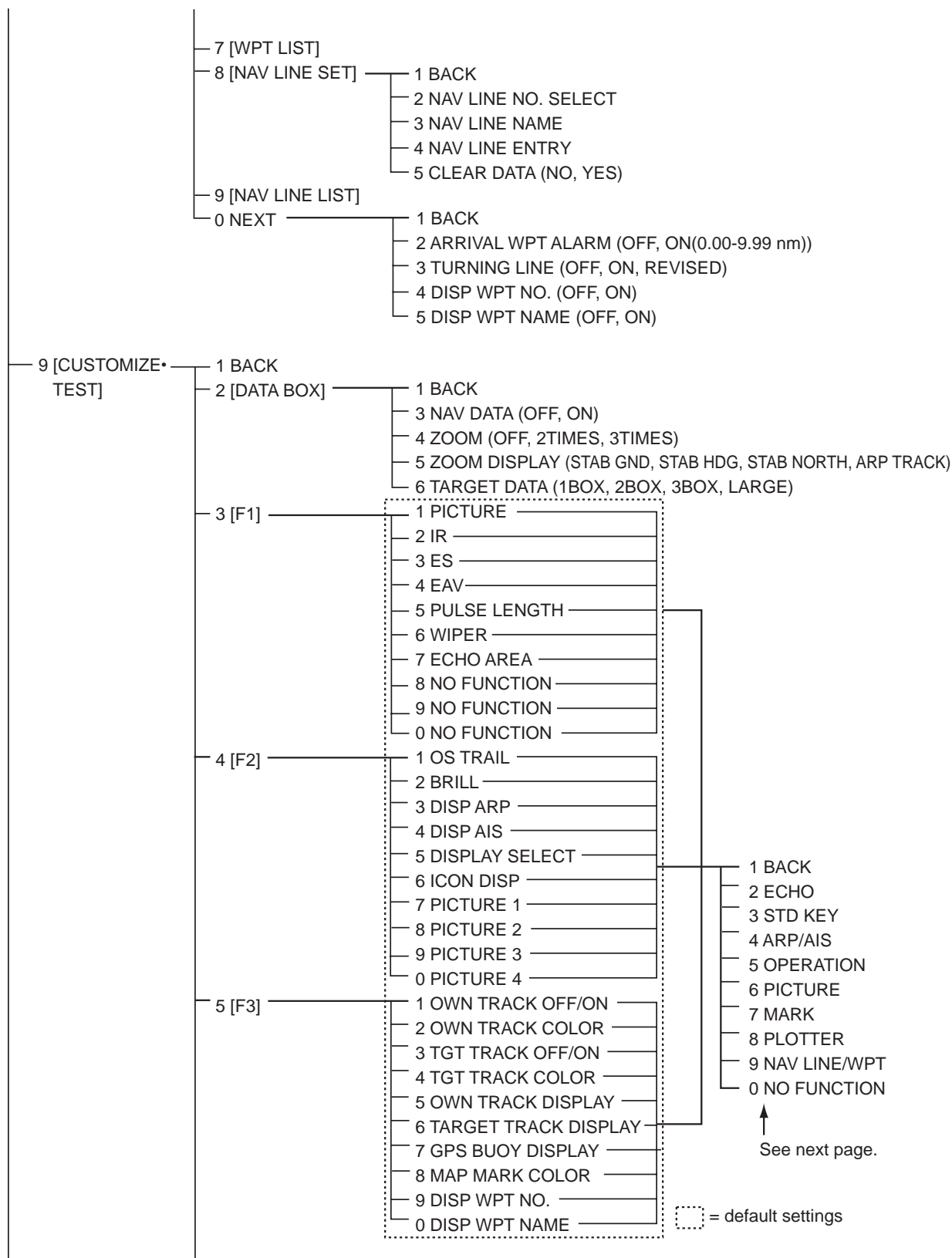
(Continued on next page)

(Continued from previous page)



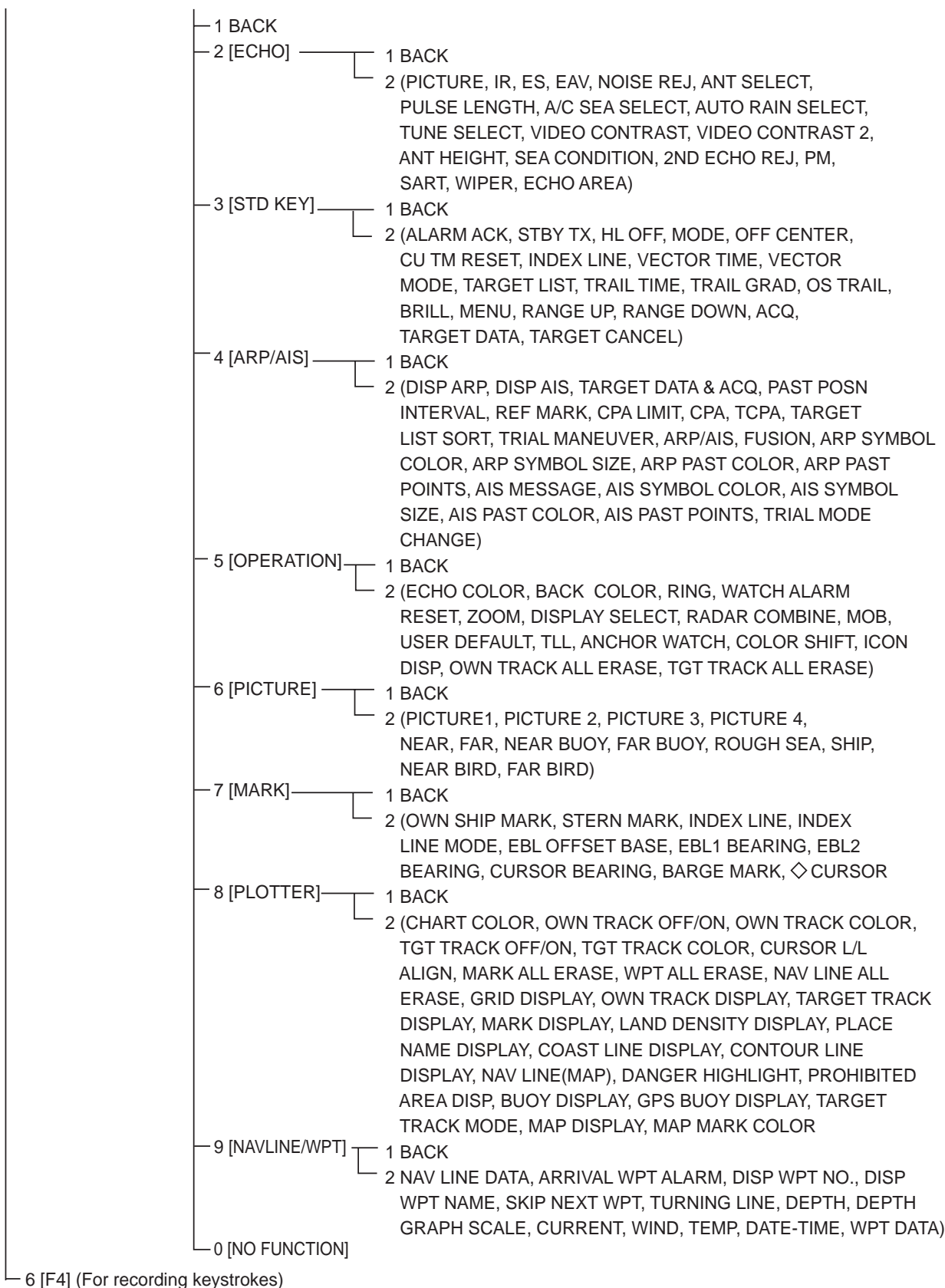
(Continued on next page)

(Continued from previous page)



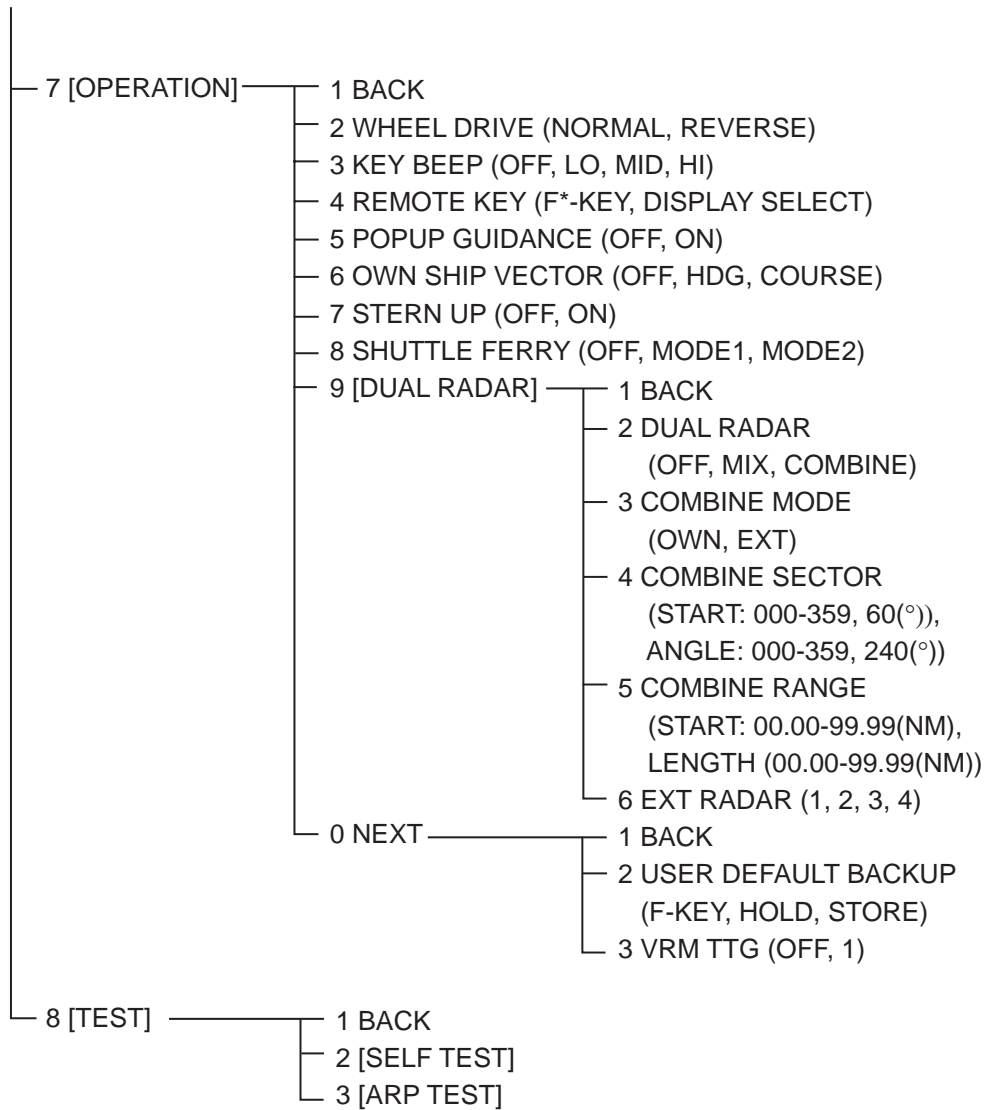
(Continued on next page)

(Continued from previous page)



(Continued on next page)

(Continued from previous page)



Pop-up menus (access by

- [HDG MENU]
- 1 HDG SOURCE
AD-10/SERIAL
 - 2 GC-10 SETTING
000.0°

HDG menu

- [SPD MENU]
- 1 SHIP SPEED
LOG(BT)/LOG(WT)/
GPS/MANUAL/REF
 - 2 MANUAL SPEED
0.0kt
 - 3 SET DRIFT
OFF/ON

SPEED menu

- [CURSOR MENU]
- 2 ↓
TARGET DATA & ACQ/
TARGET CANCEL/
ARP TGT DATA & ACQ/
TARGET TRACK ON/
TARGET TRACK OFF/
REF MARK/
EBL OFFSET/
OFFCENTER/
ZOOM/
MARK DELETE/
OWN TRACK DELETE/
TGT TRACK DELETE/
CHART ALIGN/
TRAIL ERASER
 - 8 ↑
 - 9 CURSOR SIZE
SMALL/LARGE

CURSOR menu

- [OS POSN MENU]
- 1 NAV AID
GPS1/GPS2/
DEAD RECKONING/
LAN
 - 2 MANUAL L/L
00°00.000 N
000°00.000 W
 - 3 SIO DATA LAN OUTPUT
OFF/ON

OS POSN menu

- [ARP TARGET MENU]
- 1 ARP SELECT
MANUAL 100/
AUTO 25/
AUTO 50/
AUTO 75/
AUTO 100
 - 2 ALL CANCEL
NO/YES
 - 3 REF TARGET VECTOR
OFF/ON

ARP TARGET menu

- [AIS TARGET MENU]
- 1 SLEEP ALL TRGTS
NO/YES
 - 2 ACTIVATE ALL TRGTS
NO/YES
 - 3 AUTO DISP MESSAGES
OFF/ON
 - 4 [RECEIVED MESSAGES]
 - 5 [TRANSMIT MESSAGE]
 - 6 [VOYAGE DATA]
 - 7 [STATIC DATA]
 - 8 [AIS ALM MESSAGES]

AIS TARGET menu

- [TRANSMIT MESSAGE]
- 1 BACK
 - 2 ADDRESS TYPE
ADDRESSED/BROADCAST
 - 3 MESSAGE TYPE
SAFETY/BINARY
 - 4 MMSI NO. 000000000
 - 5 CHANNEL
A/B/A or B/A and B
 - 6 OPEN FILE 1
 - 7 SAVE FILE 1
 - 8 EDIT
 - 9 TRANSMIT MESSAGE

TRANSMIT MESSAGE menu

- [VOYAGE DATA]
- 1 BACK
 - 2 NAVIGATION STATUS
00UNDERWAY USING ENGINE
 - 3 ETA
00/000/0000 00:00
 - 4 DESTINATION
 - 5 DRAUGHT
00.0m
 - 6 CREW
0000

VOYAGE DATA menu

- [STATIC DATA]
- 1 BACK
 - TYPE OF SHIP
000 ALL SHIPS OF THIS TYPE
 - CALL SIGN
 - NAME
 - EXT GPS ANT POSN
A: 000m B: 000m
C: 00m D: 00m

STATIC DATA menu

- [TARGET LIST MENU]
- 1 SORT BY
CPA/TCPA/BCR/BCT/
RANGE/SPEED

TGT LIST menu

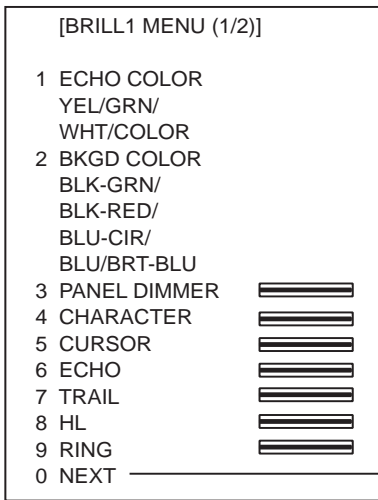
- [TRAIL MENU]
- 1 TRAIL MODE
REL/TRUE
 - 2 TRAIL GRAD
SINGLE/MULTI
 - 3 NARROW TRAIL
OFF/1/2
 - 4 TRAIL LEVEL
1/2/3/4
 - 5 TRAIL RESTART
OFF/ON
 - 6 TRAIL COPY
OFF/ON
 - 7 OS TRAIL
OFF/ON
 - 8 TRAIL LENGTH
NORMAL/12/24H/48H
 - 9 TRAIL HIDE*
START: 00:00
END: 00:00
 - 0 [TRAIL COLOR]*

TRAIL menu

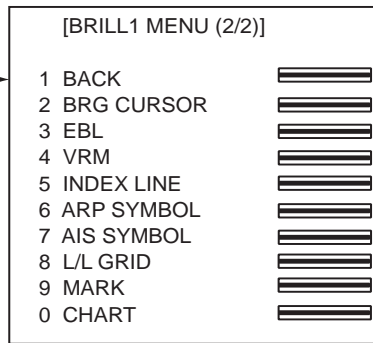
- [TRAIL COLOR]
- 1 BACK
 - 2 COLOR SHIFT
NO/YES
 - 3 TRAIL COLOR
1: FUCHSIA
2: MAROON
3: RED
4: PURPLE
5: YELLOW
6: LIME
7: GREEN
8: OLIVE
9: TEAL
10: CYAN
11: BLUE
12: NAVY

TRAIL COLOR menu

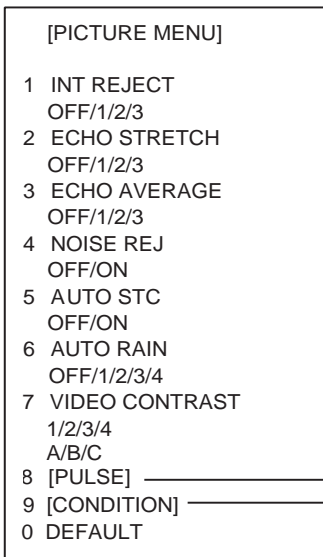
* Shown when 8 TRAIL LENGTH is set to other than "NORMAL".



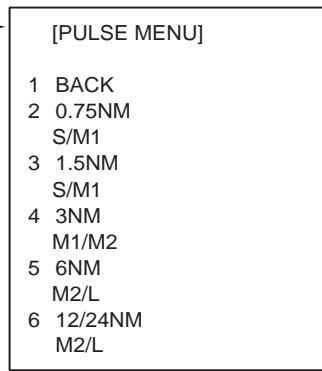
BRILL menu, page 1



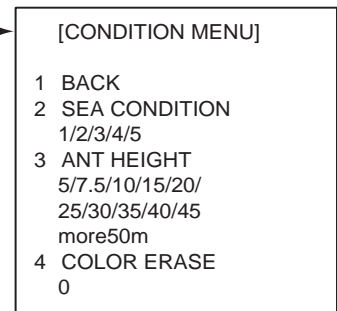
BRILL menu, page 2



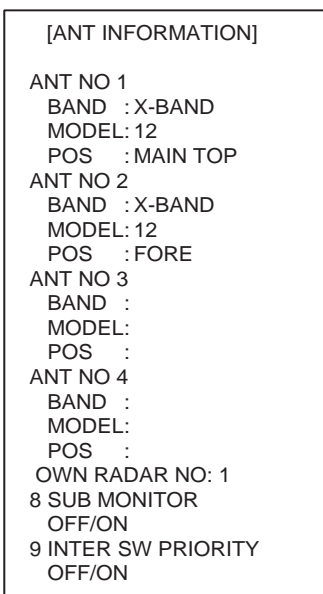
PICTURE menu



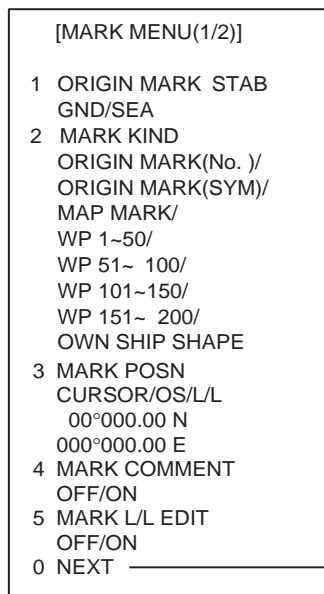
PULSE menu



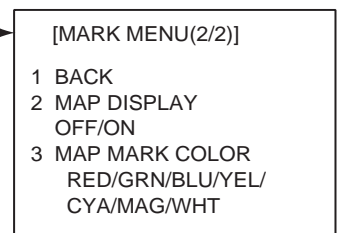
CONDITION menu



ANTENNA INFORMATION



MARK menu, page 1/2



MARK menu, page 2/2

ECF

(Elemental Chlorine Free)

The paper used in this manual
is elemental chlorine free.

FURUNO ELECTRIC CO., LTD.

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

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

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

• FURUNO Authorized Distributor/Dealer

All rights reserved. Printed in Japan

Pub. No. OME-35221-B

(DAMI) FAR2157/2167DS(FISH)

A : FEB . 2007

B : OCT . 14, 2009



* 0 0 0 1 6 4 2 5 1 1 *