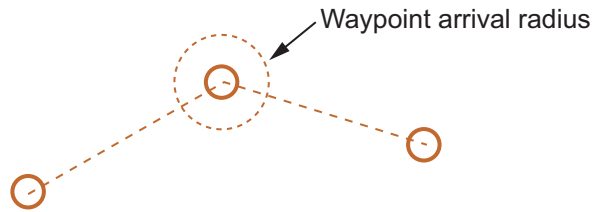


5.10.5 How to use the waypoint arrival distance function

The waypoint arrival distance function lets you know when you are within a preset distance from the next waypoint. When the waypoint arrival area is set, the next waypoint is shown circumscribed with a dashed orange-colored circle, whose radius is equivalent to waypoint arrival distance setting. When your vessel comes within the destination arrival radius, the system places the arrival radius marker on the next destination.

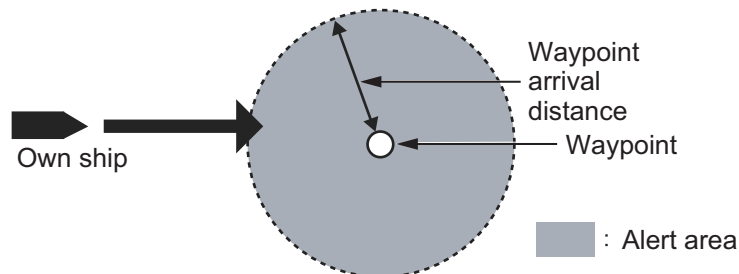


For type radars only, you can also set a waypoint arrival alert.

Note: To use this alert, set [2 NAV LINE DATA SOURCE] in the [NAV LINE•WPT] menu to [EXT DATA] or [INTERNAL DATA] before-hand. See section 5.9.1 for details.

To set and use the waypoint arrival area function, follow the procedure below.

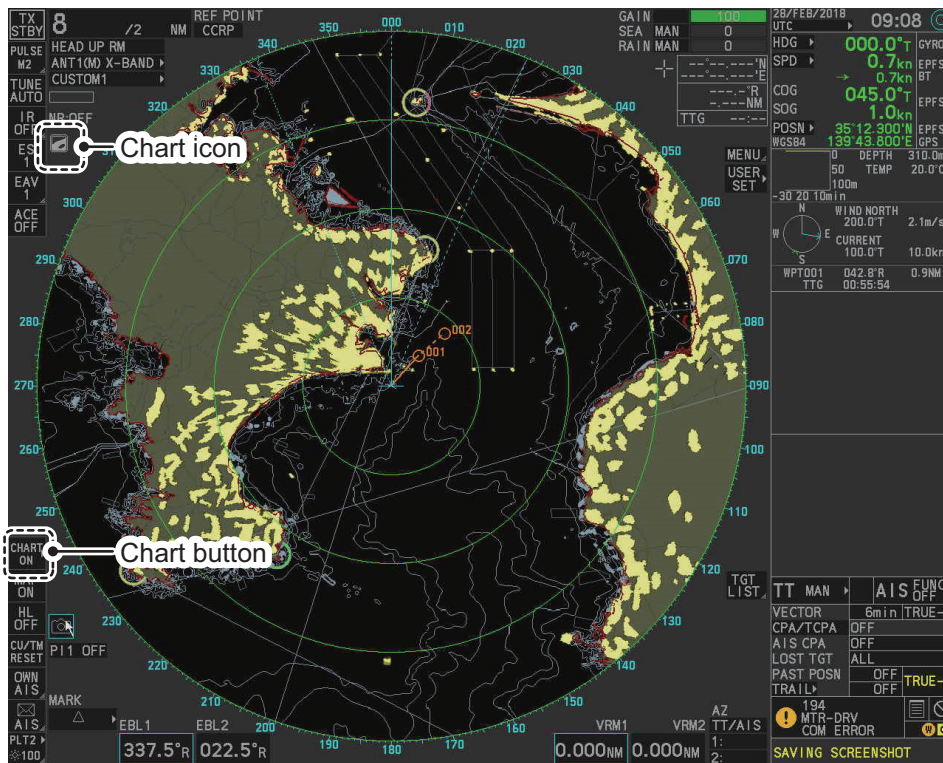
1. Open the menu.
2. Select [8 NAVLINE•WPT].
3. Select [0 NEXT]. The second page of the [NAVLINE•WPT] menu appears.
4. Select [2 WPT ARRIVAL DIST].
5. For B/W-type radars only, select [ON] to enable the arrival alert, or [OFF] to disable the arrival alert.



6. For all radar types, set the width (radius) of the arrival area.
7. Close the menu.

5.11 Chart Functions

Note: All chart functions are available only for A/B/W-types with Radar Plotter functionality.



5.11.1 How to show/hide the chart

The [CHART DISPLAY] menu item is [ON] as a factory default. There are two methods to show/hide the chart.

Show/hide the chart using the InstantAccess bar™

Click the Chart button to toggle between [CHART ON] (shows the chart) and [CHART OFF] (hide the chart).






Show/hide the chart from the menu

1. Open the menu.
2. Select [2 MARKS•CHART].
3. Select [0 NEXT] to show the next page of the menu.
4. Select [6 CHART DISPLAY].
5. Select [ON] to display the chart, or select [OFF] to hide the chart, then left-click.
6. Close the menu.



Chart Icons

The chart icon appears at the top-left section of the screen. The icon changes depending on the chart status, as shown below.

Chart Icons	Meaning
	Suitable chart scale.
	Unsuitable chart scale. Press the ZOOM IN or ZOOM OUT key to adjust the chart scale.
	No chart file.

5.11.2 How to align the chart position

When the radar target and the chart are not overlaid correctly, align the chart position.

Note 1: When you activate or deactivate the [MAP ALIGN] function, trails for both own ship and other ships are not reset.

Note 2: Chart alignments are not retained when the radar power is turned off.

1. Right-click the operational display area to show the [CURSOR MENU].
2. Select [MAP ALIGN]. The cursor is now highlighted and the [MAP ALIGN] function is active.
3. Left-click the map at the location you want to move. The map is now “anchored” to the cursor.
4. Move the cursor to align the radar map with the radar screen, then left-click. The indication "MAP ALIGN" appears on the right side of the operational display area.
5. Right-click to deactivate the [MAP ALIGN] function.

Display indications affected by map alignment

The following items are also re-aligned when the [MAP ALIGN] function is activated.

- Map marks
- Drop marks
- Anchor watch settings
- Target tracks
- AIS symbols
- EBL offsets (STAB GND mode only)
- Origin marks
- NAV lines and waypoints
- MOB marks
- Own ship tracks
- Latitude/Longitude Grid
- AIS symbol vector display
- Zoom window display (STAB GND mode only)
- Cursor position coordinates (when CURSOR L/L ALIGN is set to [ON] only)

Display indications unaffected by map alignment

The following items are not re-aligned when the [MAP ALIGN] function is activated.

- Radar echoes
- TT symbol vector display
- PI lines
- Own ship mark
- TT symbols
- EBL/VRM reference point
- OS coordinates ([POSN]) display
- Barge mark

How to disable the map alignment

1. Right-click the operational display area to show the [CURSOR MENU].
2. Select [MAP ALIGN], then left-click. The cursor is now highlighted and the [MAP ALIGN] function is active.
3. Press and hold the **left button**. The "MAP ALIGN" indication is cleared and the map alignment is cleared.
4. Right-click to deactivate the [MAP ALIGN] function.

5.11.3 How to select the chart type

You can select one of four types of charts, depending on your requirements.

1. Open the menu.
2. Select [2 MARKS•CHART].
3. Select [0 NEXT] to show the next page of the menu.
4. Select [5 CHANGE CHARTS].
5. Select either of the following charts, then left-click.
 [VECTOR]: Navigational chart (data by FURUNO).
 [FISHING]: Fishing chart that shows detailed depth contours.
 [C-MAP]: Select this when installing C-MAP chart data.
 [NAVIONICS]: Select this when installing Navionics chart data.
6. Close the menu.

Note: Depth contours for [FISHING] are drawn differently from navigational chart data (bathymetric chart data). The [FISHING] chart does not have the latest shallow information, so select [VECTOR] when sailing into/out of port or sailing along coastlines.

5.11.4 Chart settings menu

Below is the explanation about the each item of [CHART SETTINGS].

1. Open the menu.
2. Select [2 MARKS•CHART].
3. Select [3 CHART SETTINGS].
 The [CHART SETTINGS] menu has four pages.

CHART SETTINGS (1/4)	CHART SETTINGS (2/4)	CHART SETTINGS (3/4)	CHART SETTINGS (4/4)
1 BACK	1 BACK	1 BACK	1 BACK
2 LAND COLOR	2 BUOY	2 ALARM AREA	2 SMALL VESSEL SERVICE
3	OFF/ON	OFF/ON	OFF/ON
3 LAND CONTOUR COLOR	3 DEPTH LINES/CURRENT	3 LIGHT SECTOR	3 MARINE FARM
9	OFF/ON	OFF/ON	OFF/LINE/ LINE+SYMBOL
4 BACKGROUND COLOR	4 LANDMARKS	4 MOUNTAIN TOP	4 OTHER INFO AREAS
1	OFF/ON	OFF/ON	OFF/ON
5 CHARACTER(IMPORTANT)	5 OBSTACLES	5 LANDSCAPE	5 SOUNDINGS
OFF/ON	OFF/ON	OFF/ON	OFF/ON
6 CHARACTER(OTHER)	6 OBST IN SAFE AREA	6 FOG SIGNAL	6 ROUTES
OFF/ON	OFF/ON	OFF/ON	OFF/ON
7 PLACE NAME	7 FISHING EQUIPMENT	7 SIGNALS	
OFF/ON	OFF/ON	OFF/ON	
8 NAV AIDS	8 COMP	8 SERVICE	
OFF/ON	OFF/ON	OFF/ON	
9 LIGHT BEACON	9 WATER QUALITY	9 HARBOR FACILITIES	
OFF/ON	OFF/ON	OFF/ON	
0 NEXT	0 NEXT	0 NEXT	

Page 4

Page 1

Page 2

Page 3

4. Select a menu item to change the settings, then left-click.

5. VIDEO PLOTTER OPERATION

5. Change the settings, then left-click.
6. Close the menu after changing the settings.

A description for each item is listed below.

[LAND COLOR]: Selects color for land from nine available colors.

[LAND CONTOUR COLOR]: Selects color for edge from 15 available colors.

[BACKGROUND COLOR]: Selects color for background from six available colors. Change the background color when targets and chart lines are hard to see.

[CHARACTER(IMPORTANT)]: Turns important text on or off.



















[CHARACTER(OTHER)]: Turns other text on or off.

[PLACE NAME]: Turns geographical name on or off.

[NAV AIDS]: Turns navigational data display on or off for navigational aids ([LIGHT BEACON] on page 1, through to [ROUTES] on page 4). Each navigational aid can be turned on or off individually. To show the data for a navigational aid, the individual setting must also be set to [ON].

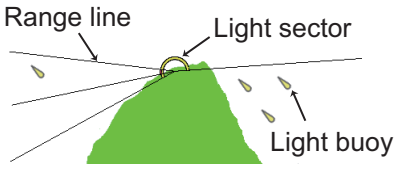

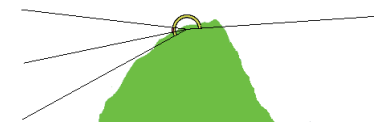
Note: When [NAV AIDS] is set to [OFF], no navigational aid data is displayed, regardless of the individual setting for each navigational aid.

Navigational aid data (see following tables): Turns each mark on or off. To display [MARINE FARM], select [LINE] or [LINE+SYMBOL].

Mark name	Display example	Mark name	Display example	Mark name	Display example
[LIGHT BEACON]		[BUOY]		[DEPTH LINES / CURRENT]	
[LAND-MARKS]		[OBSTACLES]		[OBST IN SAFE AREA]	
[FISHING EQUIPMENT]		[COMP]	Mud	[WATER QUALITY]	
[ALARM AREA]		[MOUNTAIN TOP]	312 M 274 M 181 M	[LANDSCAPE]	
[FOG SIGNAL]		[SIGNALS]		[SERVICE]	
[HARBOR FACILITIES]		[SMALL VESSEL SERVICE]		[MARINE FARM]	
[OTHER INFO AREAS]	Nr 	[SOUNDINGS]	74 98 87 82	[ROUTES]	

Note: If the text is displayed with a mark, the text is difficult to see depending on the background.

The mark display for light sector differs according to the setting of light beacon. For details, see the table below.

	[LIGHT SECTOR] set to [ON].	[LIGHT SECTOR] set to [OFF].
[LIGHT BEACON] set to [ON].	<p>Light sector and range lines are displayed (lines for range are long).</p> 	<p>Only light sector is displayed (lines for range are short).</p> 
[LIGHT BEACON] set to [OFF].	<p>Light sector and range lines are displayed (range lines are long).</p> 	<p>Light sector is not displayed.</p>

5.11.5 How to show/hide land mass emphasis

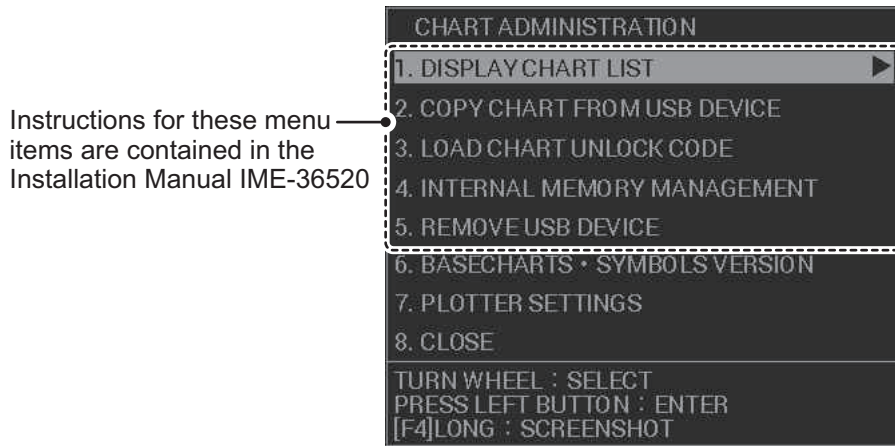
[LAND MASS EMPHASIS] sets whether to highlight the outer edge of land masses on the display.

1. Open the menu.
2. Select [2 MARKS•CHART].
3. Select [0 NEXT].
4. Select [4 EMPHASIZE LAND MASS].
5. Select [OFF] to disable the emphasis. There are three levels of emphasis available; a higher setting gives a thicker emphasis line around the land mass.
6. Close the menu.

5.11.6 How to check your charts/symbol versions

You can check the version of your charts and symbols from the [CHART ADMINISTRATION] menu.

1. Open the menu.
2. Select [9 INITIAL SETTINGS].
3. Select [8 UPDATE CHART]. The confirmation message "OTHER FUNCTIONS WILL STOP DURING THE CHART UPDATE. ARE YOU SURE?" appears.
4. Select [RUN] to access the [CHART ADMINISTRATION] menu.



5. Select [6 BASECHARTS • SYMBOLS VERSION]. The version information for your charts and symbols appears.
6. Right-click to go back to the [CHART ADMINISTRATION] menu.
7. Select [7 CLOSE]. The confirmation message [CLOSE CHART ADMINISTRATION AND RESTART THE SYSTEM?] appears.
8. Select [RUN]. The system restarts.

6. MAINTENANCE, TROUBLE-SHOOTING

Periodic checks and maintenance are important for proper operation of any electronic system. This chapter contains maintenance and troubleshooting instructions to be followed to obtain optimum performance and the longest possible life of the equipment. Before attempting any maintenance or troubleshooting procedure please review the safety information below.

WARNING



Do not open the equipment.

Hazardous voltage which can cause electrical shock exists inside the equipment. Only qualified personnel should work inside the equipment.



Turn off the radar power switch before servicing the antenna unit. Post a warning sign near the switch indicating it should not be turned on while the antenna unit is being serviced.

Prevent the potential risk of being struck by the rotating antenna.



A transmitting radar antenna emits electromagnetic waves, which can be harmful, particularly to the eyes.

Never look directly into the antenna aperture from a close distance while the radar is in operation, or expose yourself to the transmitting radar at a close distance.



Wear a safety belt and hard hat when working on the antenna unit.

Serious injury or death can result if someone falls from the radar antenna mast.

NOTICE

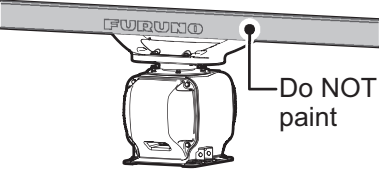
Do not apply paint, anti-corrosive sealant or contact spray to coating or plastic parts of the equipment.

Those items contain organic solvents that can damage coating and plastic parts, especially plastic connectors.

6.1 Periodic Maintenance Schedule

Regular maintenance is essential to good performance. A regular maintenance program should be established and should at least include the items in the table below.

Interval	Check Point	Checks and measures	Remarks
As required	The LCD will in time accumulate a layer of dust which tends to dim the picture	Check that dust or dirt is not on the display. Wipe it carefully to prevent scratching. For difficult to remove dirt or salt deposits, use a cloth made wet with water and neutral detergent (less than 1% detergent). Squeeze the cloth dry then clean the display. When the display is clean, gently wipe the display with a clean, soft, dry cloth, to prevent scratching.	
	Processor unit cleanliness	Dust and dirt may be removed with a soft cloth.	Do not use chemical-based cleaners to clean the processor unit. They can remove paint and markings.
3 to 6 months	Exposed nuts and bolts on antenna unit	Check for corroded or loosened nuts and bolts. If necessary, clean and repaint them thickly. Replace if heavily corroded.	Sealing compound can be used instead of paint. Apply a small amount of grease between nuts and bolts for easy removal in future.
	Antenna radiator	Check for dirt and cracks on radiator surface. Thick dirt should be wiped off with soft cloth dampened with fresh water. If a crack is found, apply a slight amount of sealing compound or adhesive as a temporary remedy, then call for repair.	Do not use chemical-based cleaners for cleaning. They can remove paint and markings. If you need to remove ice from the antenna unit, use a wooden or plastic head hammer. Cracks on the unit may cause water ingress, causing serious damages to internal circuits.
	Terminal strips and plugs in antenna unit (TECHNICIANS only)	Open antenna cover to check terminal strip and plug connections inside. Also check the rubber gasket of antenna covers for deterioration.	When closing antenna covers in position, be careful not to catch loose wires between covers and unit.
	Adhesive (marine sealant) on nuts and bolts	Check for deteriorations such as splits and peeling. Re-apply as required. For areas with extensive deterioration, remove the existing adhesive before re-applying a fresh coat.	Adhesive deterioration can result in water leakage, which can cause corrosion.
6 months to one year	Terminal strips, sockets, earth terminal on processor unit (TECHNICIANS only)	Check for loose connections. Check contacts and plugs for proper seating, etc.	

Interval	Check Point	Checks and measures	Remarks
Every year	Antenna Unit	Check the antenna unit for corrosion and paint peeling.	<p>If corrosion or paint peeling is found, paint the affected area. Do not paint the antenna (see below), only paint the scanner.</p>  <p>Note: Painting the antenna may result in reduced performance and/or damage to the antenna.</p>
5 years	Antenna Unit	If the grease dries out, the V-ring may break, allowing water to leak inside the antenna unit.	Have a qualified technician apply the grease oil to the antenna rotary.

6.2 How to Replace the Fuse

Fuses are located as shown in the tables below. Each fuse protects the equipment from reverse polarity of the ship's mains and equipment fault. If a fuse blows, find the cause before replacing it. Use the correct fuse. Using the wrong fuse will damage the equipment and void the warranty.

WARNING

Use the proper fuse.

Use of the wrong fuse can cause fire or electrical shock.

Note: For monitor units MU-190/MU-190HD/MU-192HD/MU-231/MU-270W, see the monitor's operator manual for fuse details.

For all AC-powered configurations

Note: This fuse is located on the front of the processor unit.

Radars Model(s)	Type	Code No.
FAR-2218(-BB)/FAR-2228(-BB)/ FAR-2228-NXT(-BB)/FAR-2238S(-BB)/ FAR-2238S-NXT(-BB)/FAR-2318/ FAR-2328/FAR-2328-NXT/FAR-2328W/ FAR-2338SW/FAR-2338S/FAR-2338S-NXT/ FAR-2018-MARK-2/FAR-2028-MARK-2	FGBO-A 250V 7A PBF	000-178-084-10

For DC-powered configurations

Radars Model(s)	Type	Code No.
FAR-2218(-BB)/FAR-2228(-BB)/ FAR-2228-NXT(-BB)/FAR-2318/FAR-2328/ FAR-2328-NXT/FAR-2018-MARK-2/ FAR-2028-MARK-2	FGBO 125V 20A	000-155-780-10

For configurations with the High Speed Kit installed

Note: This fuse is located on the front of the processor unit.

Radars Model(s)	Type	Code No.
FAR-2238S(-BB)/FAR-2238S-NXT(-BB)/ FAR-2338SW/FAR-2338S/FAR-2338S-NXT/	FGBO-A 250V 3A PBF	000-155-841-10

For configurations with the Deicer Kit installed

Note: For FAR-2018/2028-MARK-2, this fuse is located inside the deicer unit. For other radars, this fuse is located inside the scanner unit.

Radars Model(s)	Type	Code No.
FAR-2218(-BB)/FAR-2228(-BB)/ FAR-2228-NXT(-BB)/FAR-2238S(-BB)/ FAR-2238S-NXT(-BB)/FAR-2318/ FAR-2328/FAR-2328-NXT/FAR-2328W/ FAR-2338SW/FAR-2338S/FAR-2338S-NXT/ FAR-2018-MARK-2/FAR-2028-MARK-2	FGBO-A 250V 3A PBF	000-155-841-10

6.3 Life Expectancy of Major Parts

This radar has consumable parts, and the table that follows shows the estimated life expectancy for the consumable parts. Request a FURUNO agent or dealer to replace the consumable parts, to get the best performance and longest possible life from the equipment.

Note: The expected lifetimes are typical values. Actual lifetime depends on usage and ambient temperature.

Part	Type	Life expectancy	Remarks
Antenna Unit			
Magnetron ^{*1}	FNE1201	5,000 hours	Check number of hours used at TX time.
	MG5436	5,000 hours	
	MG5223F	7,000 hours	
Motor ^{*2}	BV2-K155	-	For S-Band radar
	BV2-K156	-	For X-Band radar
Monitor Unit			
Bezel & LCD assembly	Refer to the Operator's Manual for the Monitor Unit.		

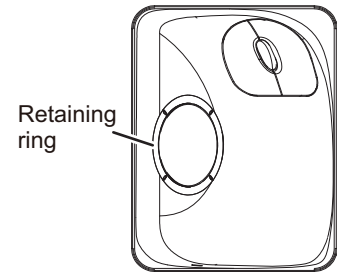
*1: The magnetron is a consumable item. The effectiveness of your magnetron will decrease over time, causing lower-than-normal signal strength and loss of echoes. Magnetrons should be changed regularly. The table above shows the typical life-span of a magnetron used under normal conditions.

*2: Lifetime of the motor varies greatly depending on usage environment. Regularly request the maintenance by a service technician. Even if there is no trouble or error, it is recommended to replace the motor every five years.

6.4 Trackball Maintenance

If the cursor skips or moves abnormally, clean the trackball using the procedure below.

1. Turn the retaining ring counterclockwise 45° to unlock it.
2. Remove the retaining ring and ball.
3. Clean the ball with a soft, lint-free cloth, then blow carefully into the ball-cage to dislodge dust and lint.
4. Look for a build-up of dirt on the metal rollers. If dirty, clean the rollers using a cotton swab moistened lightly with isopropyl-rubbing alcohol.
5. Make sure that fluff from the swab is not left on the rollers.
6. Replace the ball and retaining ring. Be sure the retaining ring is not inserted reversely.



6.5 Easy Troubleshooting

This section provides troubleshooting procedures that the user can follow to restore normal operation. If you cannot restore normal operation, do not attempt to check inside any unit. Any repair work is best left to a qualified technician.

Problem	Possible cause	Remedy
Key beep inaudible.	Key beep turned off.	Adjust key beep level in the [OPERATION] menu, referring to section 1.10.
Picture not updated or picture freeze. 30 seconds after the picture freezes, the buzzer sounds, the ALARM ACK key blinks and alarm signal is output.	Video freeze.	Turn the power off and on again to restore normal operation.
Power is ON but nothing appears on monitor.	Brilliance is too low.	Adjust the brilliance, referring to section 1.3.
Marks, indications and noise appear but no echo.	Tx high voltage protection circuit has activated.	Reset the power to restore normal operation.
Range changed but radar picture does not change.	Defective range key or video freeze up.	Adjust the range with the control unit, or the [RANGE] box several times. If that does not work try to turn the power off and on again to see if the problem might be video freeze up. If unsuccessful, replacement of keypad may be required.
Only two PI lines when six lines are wanted	Incorrect setting of PI line interval	Adjust PI line interval, referring to section 1.40.3. Also, the setting for number of PI lines to display may be inappropriate. Check the menu setting for number of PI lines, referring to section 1.40.2.

Problem	Possible cause	Remedy
Range rings are not displayed	Range rings are turned off	Try turning on the range rings with [RANGE RING] in the [NAVTOOL] menu. If they do not appear, their brilliance may be too low. Adjust their brilliance in the [BRILL] menu.
Tracked target not tracked correctly	Poor definition of targets in sea clutter	Adjust A/C SEA and A/C RAIN referring to section 1.20 and section 1.21.
Tuning adjusted but poor sensitivity	Second trace echo rejector on or dirt on radiator face	<ul style="list-style-type: none"> • Disable the second trace echo rejector, referring to section 1.29. • Clean the radiator face.

6.6 Advanced-level Troubleshooting

This section describes how to cure hardware and software troubles that should be carried out by qualified service personnel.

Note 1: This radar equipment contains complex modules in which fault diagnosis and repair down to component level are not practicable by users.

Note 2: When replacement of the MAIN board is necessary, the previous settings can be transferred to new MAIN board as follows:

- Save your settings to a SD-card, referring to section section 1.55.
- After replacing the MAIN board, load the entire contents of the SD-card to the radar, referring to section section 1.55 for the procedure.

Problem	Possible cause	Remedy
Cannot turn power on.	<ol style="list-style-type: none"> 1) Blown fuse. 2) Mains voltage/polarity. 3) Power supply board (PWR1 and/or PWR2) inside the Processor unit. 	<ol style="list-style-type: none"> 1) Replace blown fuse. 2) Correct wiring and input voltage. 3) Replace the faulty power supply board.
Brilliance adjusted but no picture.	MAIN board - inside the Processor unit.	Replace MAIN board.
Antenna not rotating.	<ol style="list-style-type: none"> 1) Antenna drive mechanism 2) MTR-DRV board 	<ol style="list-style-type: none"> 1) Replace antenna drive mechanism. 2) Replace the MTR-DRV board.
Data and marks not displayed in Transmit status	MAIN board - inside the Processor unit.	Replace MAIN board.
Adjust GAIN with A/C SEA set at minimum. Marks and indications appear but no noise or echo.	<ol style="list-style-type: none"> 1) IF amplifier 2) Signal cable between antenna and processor unit 	<ol style="list-style-type: none"> 1) Replace IF amplifier. 2) Check continuity and isolation of coaxial cable. Note: Disconnect the plug and lugs at both ends of coaxial cable before checking it by ohmmeter.

Problem	Possible cause	Remedy
Marks, indications and noise appear but no echo (transmission leak representing own ship position is absent)	<ol style="list-style-type: none"> 1) TX high voltage protection circuit has activated. 2) Magnetron 3) MD board inside the antenna. 4) SPU board inside the antenna. 	<ol style="list-style-type: none"> 1) Reset power to restore normal operation. 2) Check magnetron current. Replace magnetron. 3) Replace MD board. 4) Replace SPU board.
Picture not updated or picture freeze-up	<ol style="list-style-type: none"> 1) Rotary Encoder inside the antenna unit. 2) SPU board inside the antenna. 3) Video freeze-up 	<ol style="list-style-type: none"> 1) Check the connection of signal cables. 2) Replace SPU board. 3) Turn the radar off, then on.
Incorrect orientation of picture	<ol style="list-style-type: none"> 1) Rotary Encoder inside the antenna unit 2) SPU board inside the antenna unit. 3) MTR-DRV board inside the antenna unit. 	If the message "LOST HEADLINE" appears in orange letters inside the alert box, the heading signal is lost or interrupted. Check the heading line signal cable and board connections. If there is no problem with cables or connections, replace the faulty board.
Cannot operate radar from on-screen boxes	MAIN board - inside the Processor unit.	Replace MAIN board.
Radar is properly tuned but poor sensitivity	<ol style="list-style-type: none"> 1) Deteriorated magnetron 2) Detuned MIC 3) Dirt on radiator face 4) Water ingress to the waveguide or other feeder line 5) Second trace echo rejection is ON 	<ol style="list-style-type: none"> 1) With the radar transmitting on 48 nm range, check magnetron current. If current is below normal, magnetron may be defective. Replace it. 2) Check MIC detecting current. If it is below normal value, MIC may have become detuned. MIC must be tuned. 3) Clean the radiator surface. 4) Remove water from the feeder line. 5) Disable the second-trace echo rejector referring to section 1.29.
Range changed but radar picture not changing	<ol style="list-style-type: none"> 1) Defective range key 2) SPU board inside the antenna. 3) Video freeze up 	<ol style="list-style-type: none"> 1) Adjust the range with the control unit, or the [RANGE] box several times. If unsuccessful, replacement of keypad may be required. 2) Replace SPU board. 3) Turn off and on radar.
Interference rejector is inoperative (interference rejection level not displayed)	SPU board inside the antenna.	Replace SPU board.
Echo stretch is ineffective (neither ES1, ES2 nor ES3 is displayed)	SPU board inside the antenna.	Replace SPU board.
Range rings are not displayed	<ol style="list-style-type: none"> 1) Adjust the brilliance of range rings on the BRILL menu to see if intensity is increased 2) MAIN board 	<ol style="list-style-type: none"> 1) Replace associated circuit board if unsuccessful. 2) Replace MAIN board.

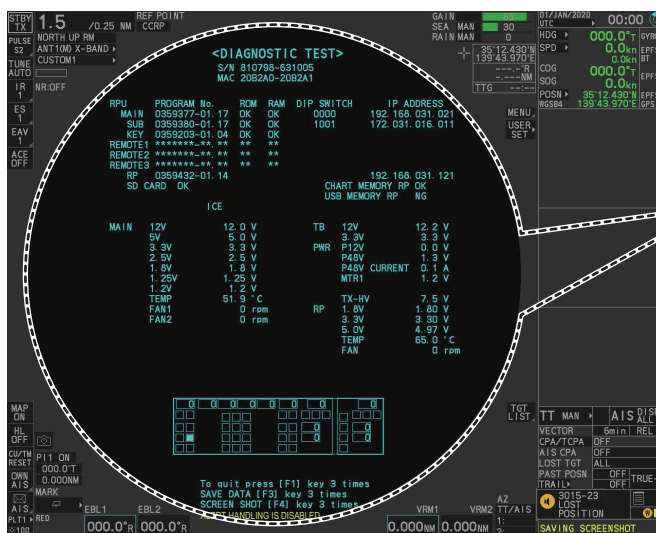
Problem	Possible cause	Remedy
Poor discrimination in range	Sea clutter control not functioning properly	Improper setting of A/C SEA. If A/C SEA is seen only at very close range, suspect inaccurate frequency of reference oscillator.
True motion orientation not working correctly	1) Incorrect menu setting 2) Speed entry incorrect 3) TM display inaccurate	1) Referring to section 1.30, select TM orientation mode. 2) Enter correct own ship speed referring to section 1.12. 3) Make sure that speed and compass inputs are accurate.
Target not tracked correctly	Poor definition of targets in sea clutter	Adjust A/C SEA and A/C RAIN referring to section 1.20 and section 1.21.
Buttons on trackball module operated but no response	Trackball module	Replace trackball module.
Picture is not updated with each sweep.	Motor/gears	Check the motor and gears. Replace if worn.

6.7 Diagnostics

A diagnostic test program is provided to test major circuit boards in the control unit, processor unit and card I/F unit. During the test, alerts cannot be acknowledged and the buzzer does not sound. Further, the normal radar picture is not visible. Take extra caution regarding your surroundings when conducting the test.

Proceed as follows to execute the diagnostic test:

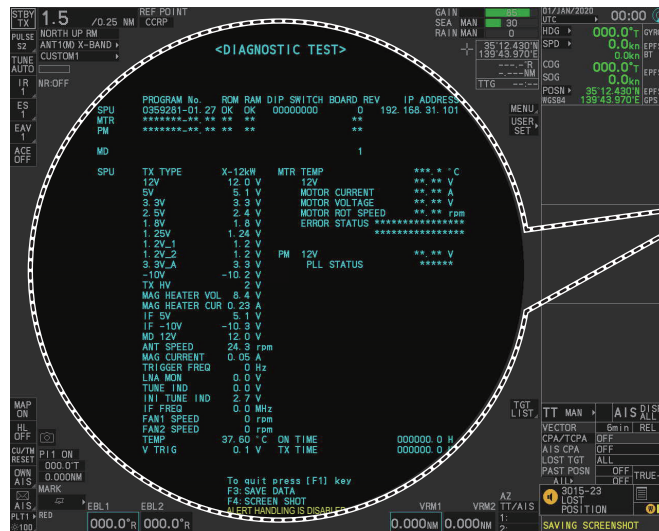
1. Open the [MAIN MENU].
2. Select [9 INITIAL SETTINGS].
3. Select [7 TESTS].
4. Select [2 DIAGNOSTIC TEST]. The system begins a diagnostic test. The Processor Unit is tested first and the test results appear after a few moments.



Processor Unit and Control Unit diagnostic test results appear here.

You can save a screenshot to a SD Card if there is a SD Card inserted into the Processor Unit. Press the **F4** key three times to save a screenshot. A keyboard test is available at the bottom of the test results, also. Press each key on the control unit to highlight the corresponding area on-screen. Press the same key again to remove the highlight.

- Press the **F1** key three times to show the results for antenna test.



Antenna diagnostic test results appear here.

You can save a screenshot to a SD Card if there is a SD Card inserted into the Processor Unit. Press the **F4** key three times to save a screenshot.

- Press the **F1** key to close the test results and complete the test.

Diagnostic test results

The following table lists each test result along with the normal value range for each item. "OK" appears for normal operation. If "NG" (No Good) appears, corresponding components may be defective.

Also, if a connected fan or PCB shows the check results as asterisks, it is an indication that the fan or PCB has failed, or is disconnected.

If there are any components which are suspected to be defective, or any test does not complete satisfactorily, consult your dealer for advice.

Tested item	Normal value or Description	
	Magnetron Radar	Solid State Radar
MAIN (Processor Unit) test		
[PROGRAM No.]	Shows the program version number.	
[ROM]	OK	
[RAM]	OK	
[DIP SWITCH]	Shows the DIP SWITCH settings.	
[IP ADDRESS]	Shows the IP address for the Processor Unit.	
[SD CARD]	OK	
[SD CARD RP]	(Not currently used)	
[HSC]	Shown only for systems with the optional High Speed Conversion kit.	
[RMS]	Shown only when Remote Maintenance Service is enabled.	
[ICE]	Shown only when Ice Mode is enabled.	
[MAIN]	[12V]	10.8 to 13.2 V
	[5V]	4.7 to 5.3 V
	[3.3V]	3.0 to 3.6 V
	[2.5V]	2.3 to 2.7 V
	[1.8V]	1.6 to 2.0 V
	[1.25V]	1.13 to 1.38 V

6. MAINTENANCE, TROUBLESHOOTING

Tested item		Normal value or Description		
		Magnetron Radar	Solid State Radar	
[MAIN]	[1.2V]	1.0 to 1.3 V		
	[TEMP]	-15 to +70°C		
	[FAN1]	3700 to 5700 rpm		
	[FAN2]	3700 to 5700 rpm		
	[FAN3]	<ul style="list-style-type: none"> • X/S-Band radars with 24 rpm config: Not shown • S-Band radars with 42 rpm (HSC) config: 3700 to 5700 rpm 		
[TB]	[12V]	10.8 to 13.2 V		
	[3.3V]	3.0 to 3.6 V		
[PWR]	[P12V]	10.8 to 13.2 V		
	[P48V]	46 to 50 V		
	[P48 V CURRENT]	0 to 3 A		
	[MTR1]	45.1 to 51.3 V		
	[MTR2]	<ul style="list-style-type: none"> • X/S-Band radars with 24 rpm config: Not shown • S-Band radars with 42 rpm (HSC) config: 45.1 to 51.3 V 		
	[TX HV]	500 to 570 V		
RP Board (For A/B/W-types with Radar Plotter functionality only)				
[PROGRAM No.]		Shows the program version number.		
[IP ADDRESS]		Shows the IP address of the RP board.		
[CHART MEMORY RP]		OK		
[USB MEMORY RP]		OK		
RP	[1.8V]	1.6 to 2.0 V		
	[3.3V]	3.0 to 3.6 V		
	[5.0V]	4.7 to 5.3 V		
	[TEMP]	-15 to +90°C		
	[FAN]	3700 to 5700 rpm		
SPU (Antenna)				
[PROGRAM No.]		Shows the program version number.		
[ROM]		OK		
[RAM]		OK		
[DIP SWITCH]		Shows the DIP SWITCH settings. (For FAR-2018/2028-MARK-2, "00000000" is shown)		
[BOARD REV]		Shows the revision number for each PCB.		
[IP ADDRESS]		Shows the IP address for the SPU board.		
[SPU] (other than FAR-2018/2028-MARK-2)	[TX TYPE]	X-12kW/X-25kW/S-30kW	S-Solid/X-Solid	
	[12V]	11.4 to 12.6 V		
	[5V]	4.75 to 5.25 V		
	[3.3V]	3.18 to 3.42 V		
	[2.5V]	2.4 to 2.6 V		
	[1.8V]	1.71 to 1.89 V		
	[1.25V]	1.19 to 1.31 V		
	[1.2V_1]	1.14 to 1.26 V		
	[1.2V_2]	1.14 to 1.26 V		
	[3.3V_A]	3.18 to 3.42 V		
	[-10V]	-10.5 to -9.5 V	"not connect"	
	[TX HV]	500 to 560 V	"not connect"	

Tested item		Normal value or Description	
		Magnetron Radar	Solid State Radar
[SPU] (other than FAR-2018/2028-MARK-2)	[MAG HEATER VOL]	<ul style="list-style-type: none"> • X-Band, 12 kW: 8.1 to 8.6 V or 6.8 to 7.3 V • X-Band, 24 kW: 7.0 to 7.5 V or 5.7 to 6.2 V • S-Band: 7.4 to 7.9 V or 6.3 to 6.8 V 	"not connect"
	[MAG HEATER CUR]	<ul style="list-style-type: none"> • X-Band: 0.5 to 0.6 A • S-Band: 1.1 to 1.4 A 	"not connect"
	[IF 5V]	4.75 to 5.25 V	"not connect"
	[IF -10V]	-10.5 to -9.5 V	"not connect"
	[MD 12V]	11.4 to 12.6 V	"not connect"
	[ANT SPEED]	<ul style="list-style-type: none"> • 24 rpm antennas: 22 to 26 rpm • 42 rpm antennas: 40 to 44 rpm 	
	[MAG CURRENT]	<ul style="list-style-type: none"> • X-Band: 5.0 to 12.0 • S-Band: 6.0 to 10.0 	"not connect"
	[TRIGGER FREQ]	<ul style="list-style-type: none"> • STBY: 0 Hz • [2ND ECHO REJ]=[OFF], TT range*= 24NM: S1: 2640 to 3360 Hz, S2: 2640 to 3360 Hz, M1: 1320 to 1680 Hz, M2: 1060 to 1340 Hz, M3: 880 to 1120 Hz, L: 530 to 670 Hz • [2ND ECHO REJ]=[OFF], TT range*= 32NM: S1: 1940 to 2460 Hz, S2: 1940 to 2460 Hz, M1: 1320 to 1680 Hz, M2: 1060 to 1340 Hz, M3: 880 to 1120 Hz, L: 530-670 • [2ND ECHO REJ]=[ON]: S1: 2640 to 3360 Hz, S2: 2640 to 3360 Hz, M1: 440 to 560 Hz, M2: 440 to 560, M3: 440 to 560 Hz, L: 440 to 560 Hz *: Maximum TT range is set at installation.	
	[LNA MON]	0.5 to 1.5 V	not connect
	[TUNE IND]	2.0 to 3.0 V	not connect
	[INI TUNE IND]	2.0 to 3.0 V	not connect
	[IF FREQ]	<ul style="list-style-type: none"> • Pulse length = [S1], [S2]: 0.0 MHz • Pulse length = other than the above settings: 55.0 to 65.0 MHz 	not connect
	[FAN1 SPEED]	3000 to 5000 rpm	not connect
	[FAN2 SPEED]	3000 to 5000 rpm	not connect
	[TEMP]	-40 to +70 °C	
	[V TRIG]	10.0 to 18.0 V	not connect
	[ON TIME]	Shows the total operating time.	
[TX TIME]	Shows the total transmission time.		
[SPU] (FAR-2018/2028-MARK-2)	[TX TYPE]	X-12kW/X-25kW	-
	[12V]	11.4 to 12.6 V	-
	[5V]	4.75 to 5.25 V	-
	[2.5V]	2.4 to 2.6 V	-
	[1.8V]	1.71 to 1.89 V	-
	[1.8V_A]	1.71 to 1.89 V	-
	[-5V]	-5.5 to -4.65 V	-
	[TX HV]	500 to 560 V	-

6. MAINTENANCE, TROUBLESHOOTING

Tested item		Normal value or Description	
		Magnetron Radar	Solid State Radar
[SPU] (FAR-2018/ 2028- MARK-2)	[ANT SPEED]	<ul style="list-style-type: none"> • 24 rpm antennas: 22 to 26 rpm • 42 rpm antennas: 40 to 45 rpm 	-
	[MAG CURRENT]	5.0 to 12.0	-
	[TRIGGER FREQ]	<ul style="list-style-type: none"> • STBY: 0 Hz • [2ND ECHO REJ]=[OFF], TT range*= 24NM: S1: 2640 to 3360 Hz, S2: 2640 to 3360 Hz, M1: 1320 to 1680 Hz, M2: 1060 to 1340 Hz, M3: 880 to 1120 Hz, L: 530 to 670 Hz • [2ND ECHO REJ]=[OFF], TT range*= 32NM: S1: 1940 to 2460 Hz, S2: 1940 to 2460 Hz, M1: 1320 to 1680 Hz, M2: 1060 to 1340 Hz, M3: 880 to 1120 Hz, L: 530 to 670 Hz • [2ND ECHO REJ]=[ON]: S1: 2640 to 3360 Hz, S2: 2640 to 3360 Hz, M1: 440 to 560 Hz, M2: 440 to 560 Hz, M3: 440 to 560 Hz, L: 440 to 560 Hz *: Maximum TT range is set at installation.	
	[LNA MON]	0.5 to 1.5 V	-
	[TUNE IND]	1.8 to 3.3 V	-
	[INI TUNE IND]	1.8 to 3.3 V	-
	[IF FREQ]	<ul style="list-style-type: none"> • Pulse length = [S1], [S2]: 0.0 MHz • Pulse length = other than the above settings: 55.0 to 65.0 MHz 	-
	[FAN1 SPEED]	not connect	-
	[FAN2 SPEED]	3000 to 5000 rpm	-
	[TEMP]	-40 to +70 °C	-
	[V TRIG]	10.0 to 18.0 V	-
	[ON TIME]	Shows the total operating time.	
[TX TIME]	Shows the total transmission time.		
[MTR] (other than FAR- 2018/ 2028- MARK-2)	[TEMP]	Ambient Temperature: less than +20 °C	
	[12V]	9 to 15 V	
	[MOTOR CURRENT]	<ul style="list-style-type: none"> • X-Band, 24 rpm: 0.8 A • X-Band, 42 rpm: 1.2 A • S-Band, 24 rpm: 1.3 A • S-Band, 42 rpm: 2 A 	<ul style="list-style-type: none"> • 24 rpm: 1.3 A • 42 rpm: 2 A
	[MOTOR VOLTAGE]	43 to 53 Volts (33 to 53 volts for antenna units installed on the foremast.)	
	[MOTOR ROT SPEED]	0 (STBY)/24/36/42	
	[ERROR STATUS]	Blank indicates no errors. When an error is found, the relevant error code appears.	

Tested item		Normal value or Description	
		Magnetron Radar	Solid State Radar
[MTR] (FAR-2018/ 2028- MARK-2)	[TEMP]	Ambient Temperature: less than +30 °C	
	[12V]	9 to 15 V	
	[MOTOR CURRENT]	<ul style="list-style-type: none"> • X-Band, 24 rpm: 0.8 A • X-Band, 42 rpm: 1.2 A 	-
	[MOTOR VOLTAGE]	43 to 53 Volts (33 to 53 volts for antenna units installed on the foremast.)	
	[MOTOR ROT SPEED]	0 (STBY)/24/36/43	
	[ERROR STATUS]	Blank indicates no errors. When an error is found, the relevant error code appears.	
	[MAG HEATER VOL]	<ul style="list-style-type: none"> • 12 kW, STBY/S1/S2: 7.85 to 8.75 V • 12 kW, M1/M2/M3/L: 6.55 to 7.45 V • 25 kW, STBY/S1/S2: 6.75 to 7.65 V • 25 kW, M1/M2/M3/L: 5.45 to 6.35 V 	-
	[MAG HEATER CUR]	0.485 to 0.655 A	-
[PM]	[50V]	49 to 50.4 V	-
	[12V]	9 to 15 Volts	
	[PLL STATUS]	<p>For X-Band (with board revision number 1 or earlier) and S-Band (with board revision number 0): UNLOCK</p> <p>For X-Band (with board revision number 2 or later) and S-Band (with board revision number 1 or later):</p> <ul style="list-style-type: none"> • PM activated: LOCK • PM inactive: UNLOCK 	<ul style="list-style-type: none"> • PM activated: LOCK • PM inactive: UNLOCK

6.8 Sentence Monitor

You can check which sentences input to the radar.

1. Open the [MAIN MENU].
2. Select [9 INITIAL SETTINGS].
3. Select [7 TESTS].
4. Select [3 SENTENCE MONITOR].
5. Select the item you want to check.
All sentences input to the radar for the selected item appear on the screen. Press the **F3** key to save the sentence information to the SD Card.

SENTENCE MONITOR	
1	BACK
2	HDG
3	GPS
4	LOG
5	AIS
6	AMS
7	ECDIS
8	LAN1
9	LAN2

Press the **F4** key to save a screenshot to the SD Card.

Note: If a SD Card is not connected to the Processor Unit, you cannot save sentence information or screenshots.

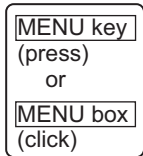
6. Press the **F1** key to close the sentence information.
7. Repeat steps 5 and 6 to view other sentence information as required.
8. Close the menu.

6.9 Fallback Arrangements

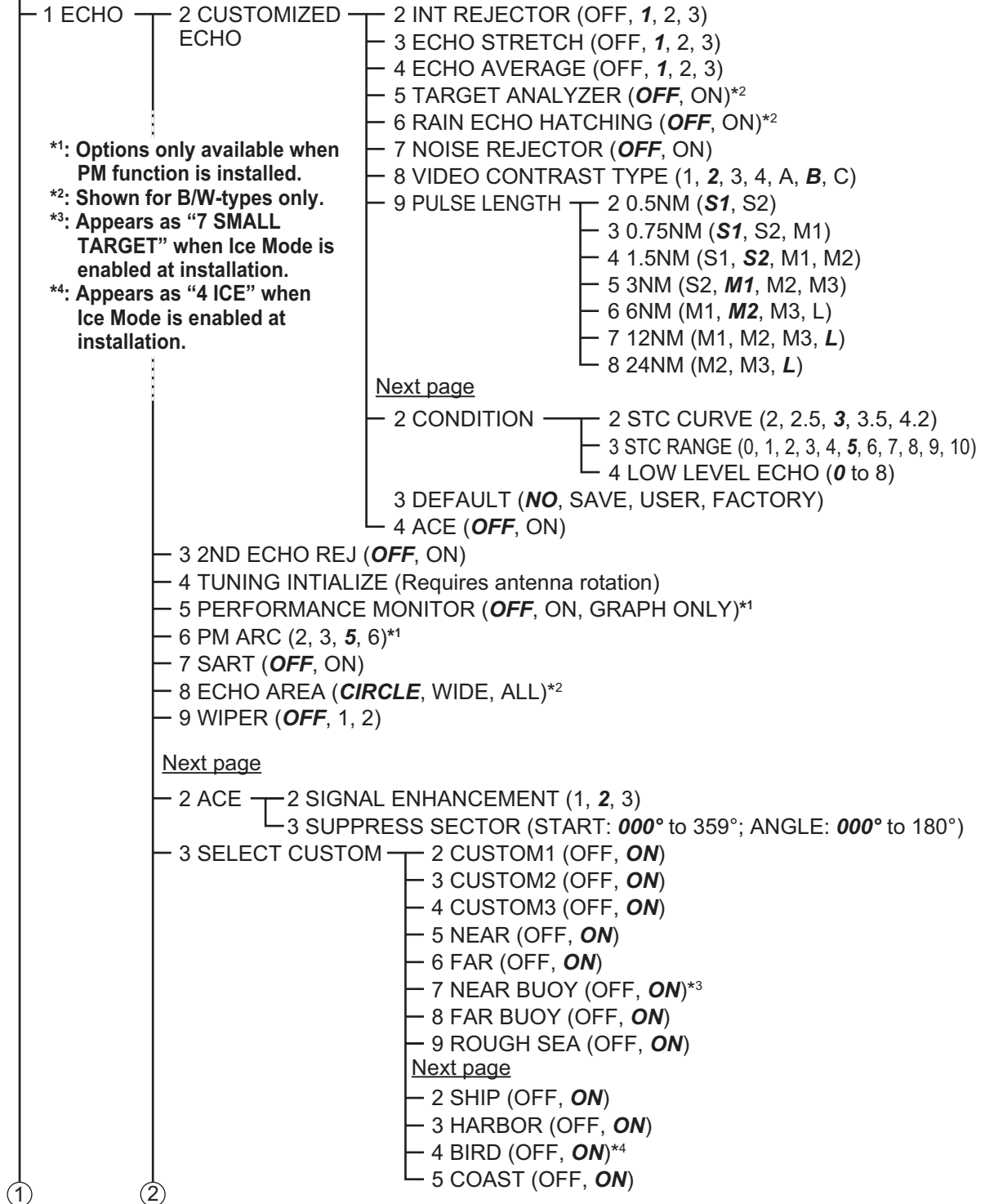
If the top priority sensor (for example EPFS1) cannot be used, this equipment automatically uses the second priority sensor (for example, EPFS2) when multiple sensors (EPFS1 and EPFS2 for example) are installed. When there is no fallback sensor available, each function is limited as follows:

Sensor	Function limitations
Heading sensor	<ul style="list-style-type: none"> The [HDG] indication reads "****.*°" The orientation mode is automatically set to [HEAD-UP]. TT, AIS, radar map and echo averaging are disabled.
Speed sensor	When [LOG(WT)] is selected: <ul style="list-style-type: none"> The sensor used is automatically switched in the following priority order: EPFS(BT) → LOG(BT). The SPD indication reads "****.* kn" when both EPFS(BT) and LOG(BT) cannot be used.
	When [LOG(BT)] is selected: <ul style="list-style-type: none"> The sensor used is automatically switched in the following priority order: EPFS(BT) → LOG(WT). The SPD indication reads "****.* kn" when both EPFS(BT) and LOG(WT) cannot be used.
	When [EPFS(BT)] is selected: <ul style="list-style-type: none"> The sensor used is automatically switched in the following priority order: LOG(BT) → LOG(WT). The SPD indication reads "****.* kn" when both LOG(BT) and LOG(WT) cannot be used.
COG/SOG sensor	<ul style="list-style-type: none"> When the EPFS sensor cannot be used, the values of COG and SOG are calculated from HDG and LOG(BT). Additionally when the heading sensor cannot be used, the values of SOG is calculated from LOG(BT). The COG indication reads "****.*°".
Position sensor	<ul style="list-style-type: none"> The POSN indication reads all asterisks. AIS and radar map are disabled.

APPX. 1 MENU TREE



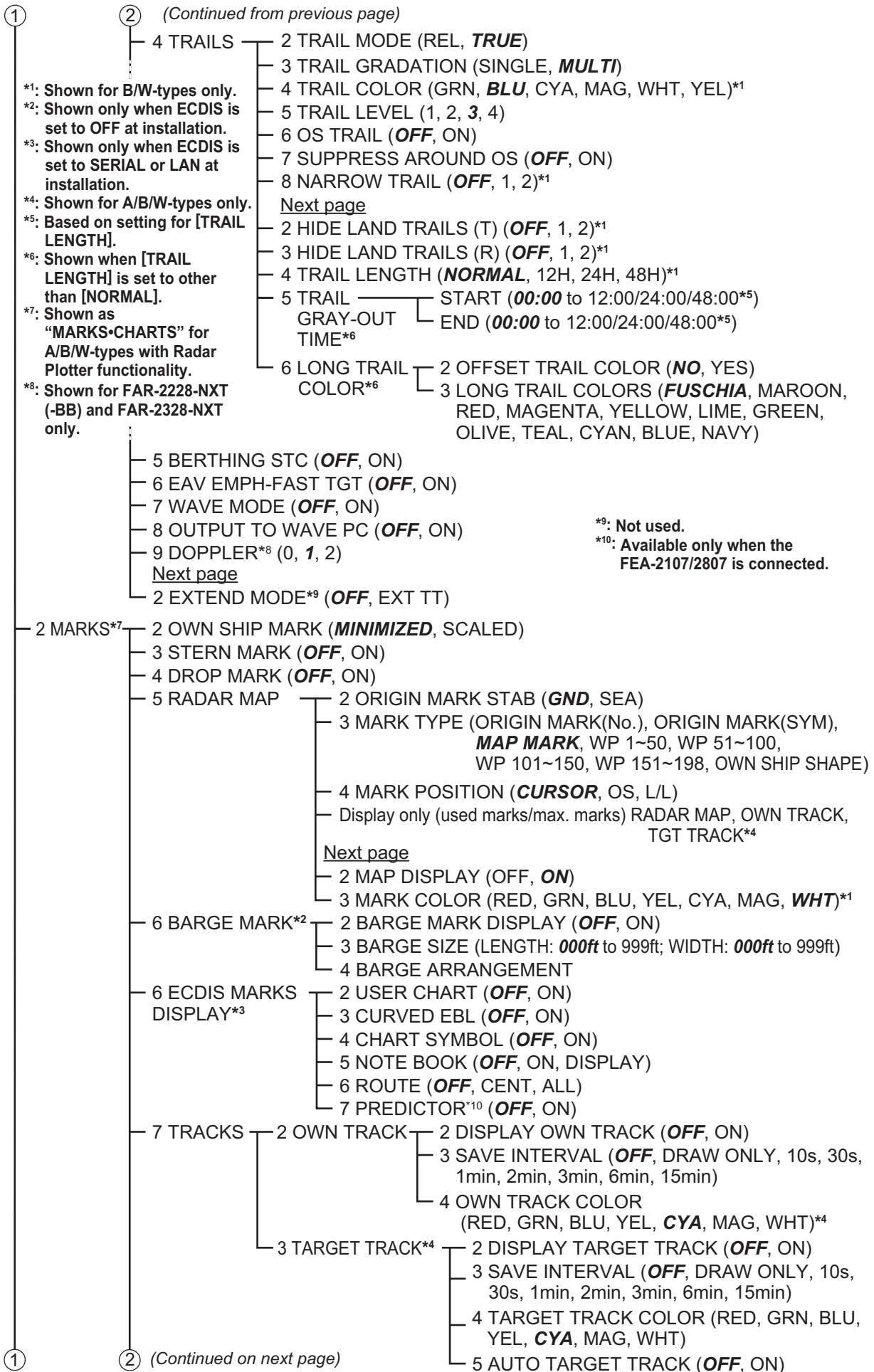
Default settings are listed in ***Bold Italic*** font.



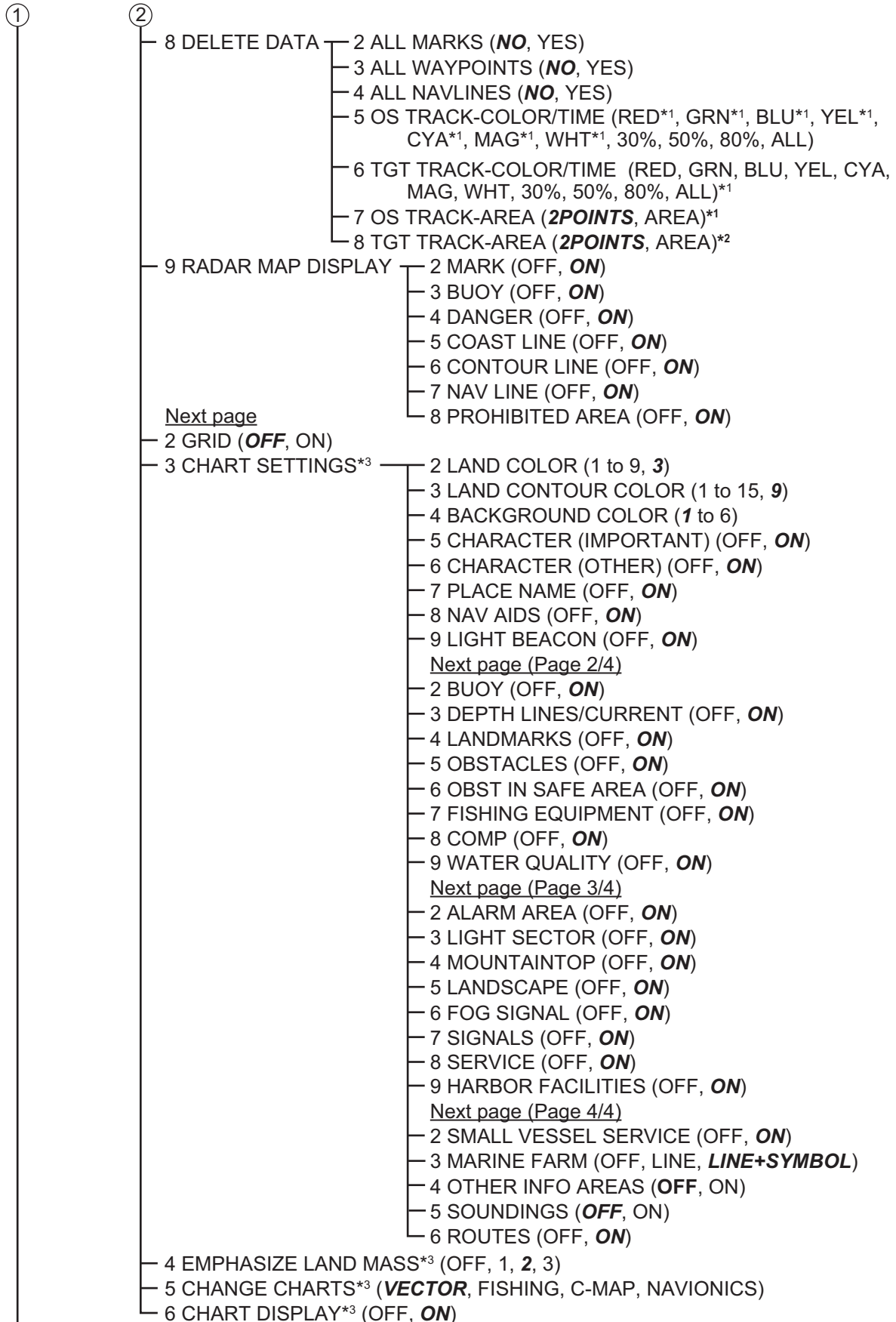
①

②

APPX. 1 MENU TREE



(Continued from previous page)



①

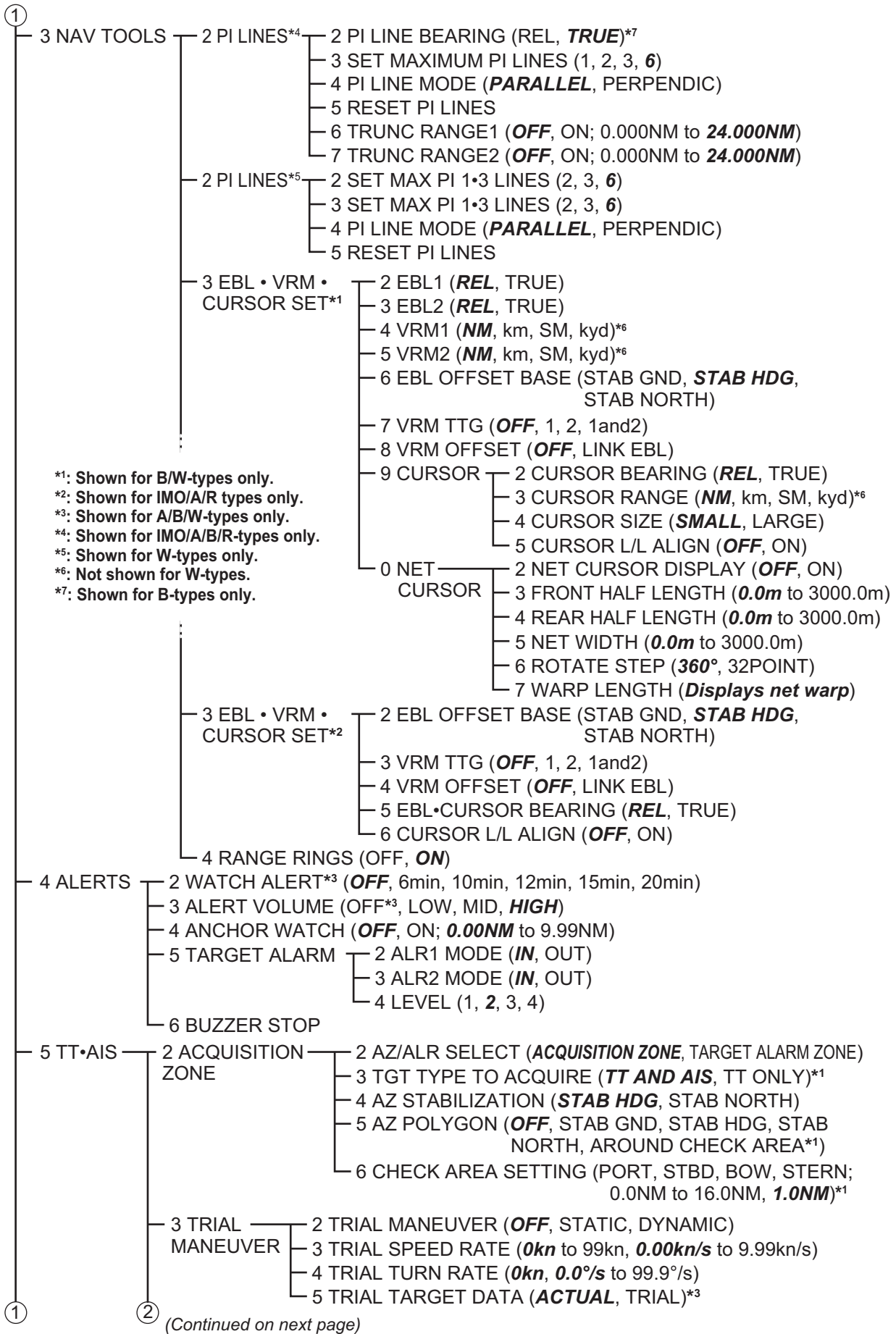
(Continued on next page)

*1: Shown for A/B/W-types only.

*2: Shown for B/W-types only.

*3: Shown for A/B/W-types with Radar Plotter functionality only.

APPX. 1 MENU TREE



*1: Shown for B/W-types only.

*2: Shown for IMO/A/R types only.

*3: Shown for A/B/W-types only.

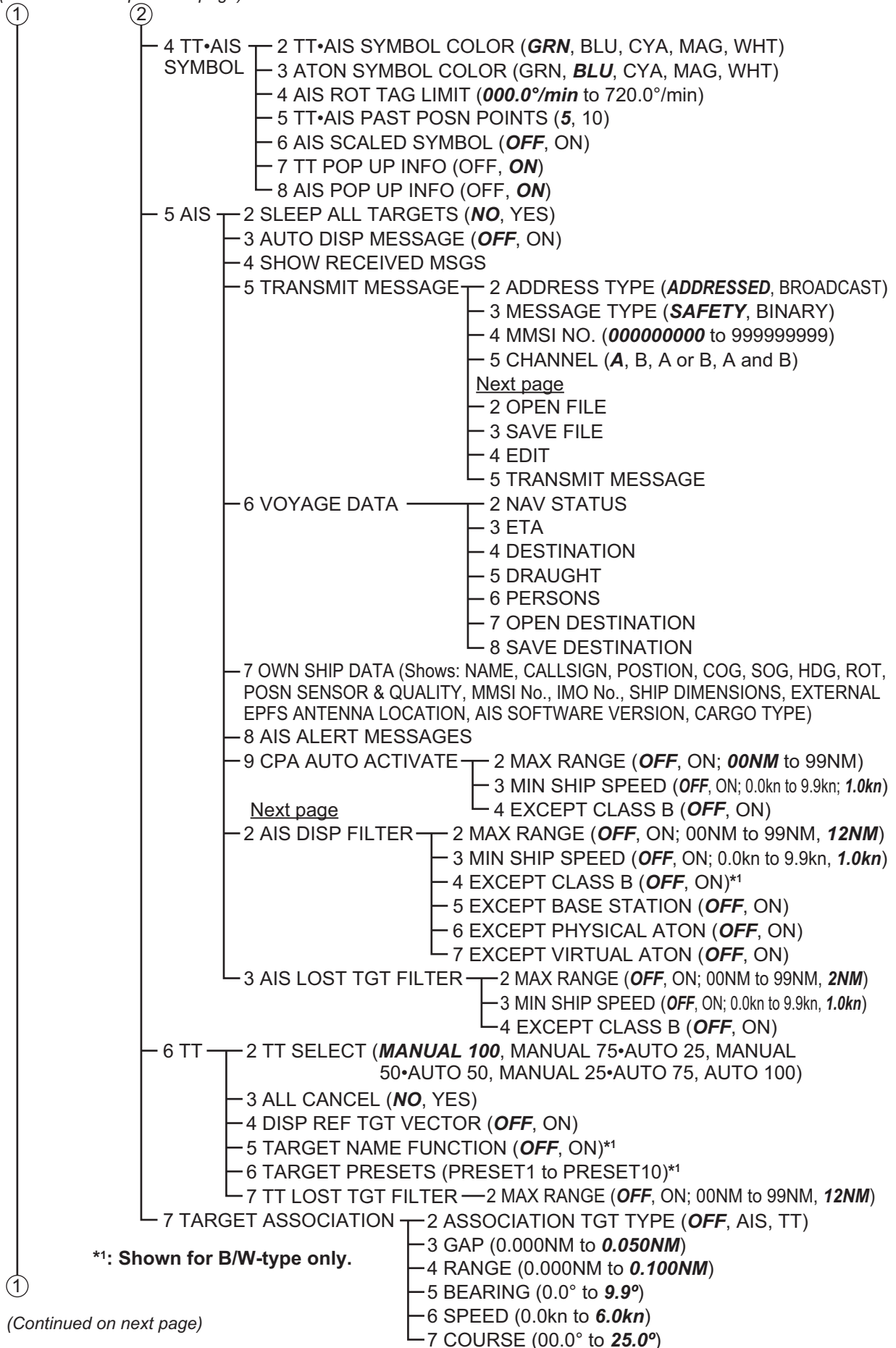
*4: Shown for IMO/A/B/R-types only.

*5: Shown for W-types only.

*6: Not shown for W-types.

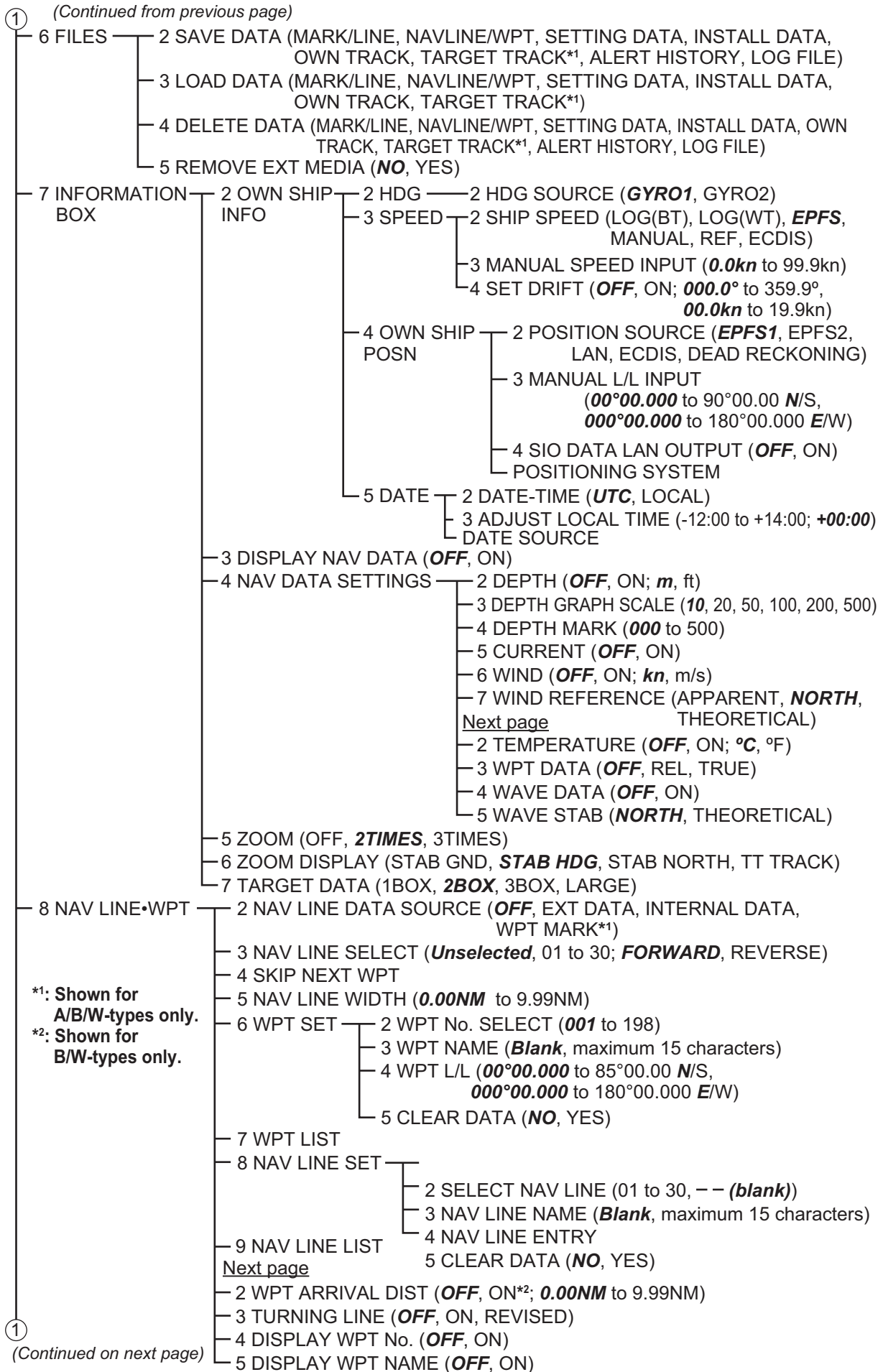
*7: Shown for B-types only.

(Continued from previous page)

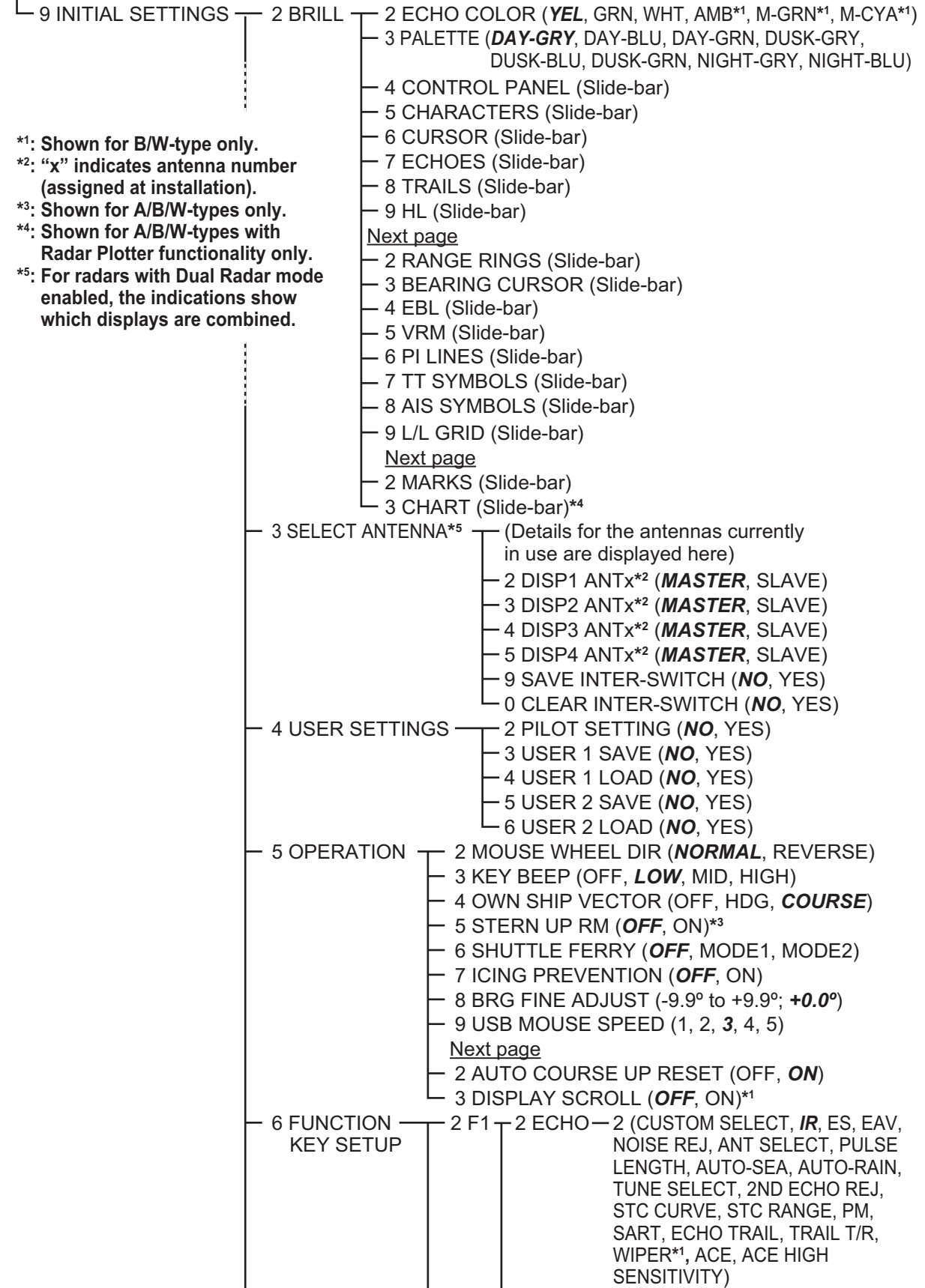


*1: Shown for B/W-type only.

(Continued on next page)



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(Continued on next page) ②

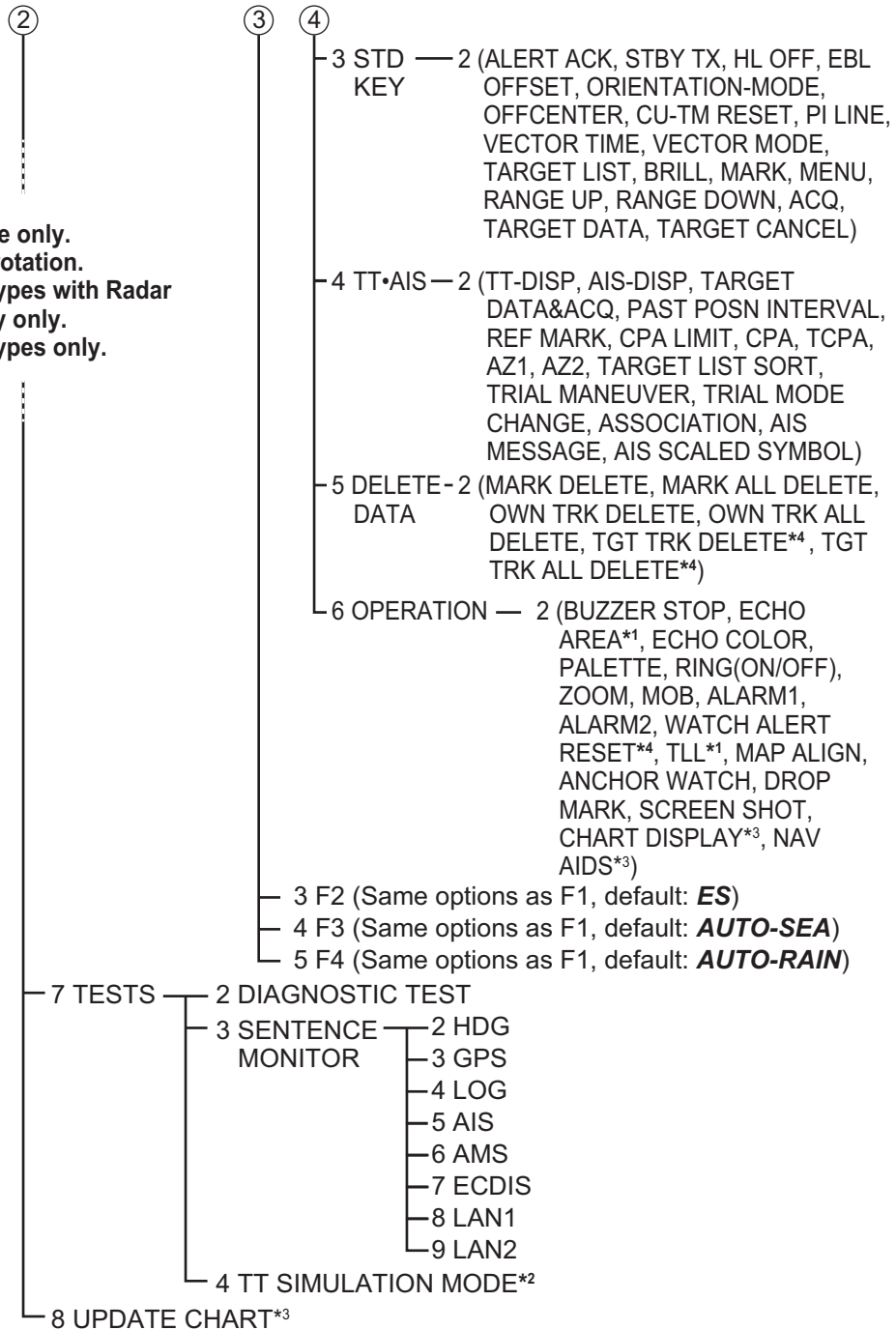
③

④

APPX. 1 MENU TREE

(Continued from previous page)

- *1: Shown for B/W-type only.
- *2: Requires antenna rotation.
- *3: Shown for A/B/W-types with Radar Plotter functionality only.
- *4: Shown for A/B/W-types only.



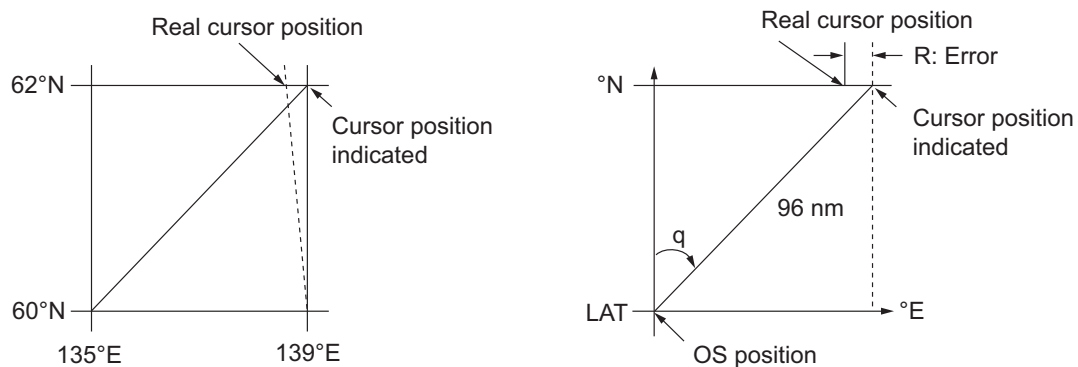
CURSOR MENU (Right-click the operational display area to show this menu)

- 2 ↓ (scrolls selection cursor downwards)
(TARGET DATA / ACQ, TARGET CANCEL, TT TGT DATA / ACQ, REF MARK, EBL OFFSET, OFF CENTER, ZOOM, TARGET TRACK ON*4, TARGET TRACK OFF*4, MARK DELETE, OWN TRACK DELETE, TGT TRACK DELETE*4, MAP ALIGN, TRAIL ERASER*1)
- 8 ↑ (scrolls selection cursor upwards)
Next page
- 2 TGT DATA/ACQ SETTING (**ANY**, TT ONLY, AIS ONLY)
- 3 TGT CANCEL SETTING (**ANY**, TT ONLY, AIS ONLY)

APPX. 2 LONGITUDE ERROR TABLE (96 NM SCALE)

The longitude lines concentrate on the north pole and south pole, namely, 1 nm is equivalent to 1 minute at 0 degree latitude, 2 minutes at 60 degrees latitude, 3 minutes at 70 degrees latitude and so on. For this reason, a longitude error occurs on the radar display.

For example, when own ship is at 60°N and 135°E, even if the cursor indication is 62°N and 139°E, the real cursor position is deviated to the left (west) side. The table below shows the longitude error, represented from 0° to 90° at 96 nm from the radar center (own ship).



		(nm)								
LAT \ q	5°	10°	15°	20°	25°	30°	35°	40°	45°	
75°	0.2256	0.4444	0.6496	0.8350	0.9950	1.1248	1.2202	1.2786	1.2980	
70°	0.21980213	0.43290201	0.632803	0.8134132	0.96923215	1.09551918	1.1884382	1.24517456	1.26402037	
65°	0.21229339	0.41810678	0.61115946	0.78556318	0.93600295	1.05790007	1.14755221	1.20224625	1.22034042	
60°	0.20316898	0.40012949	0.58486463	0.75173456	0.89565021	1.0122297	1.09793265	1.15016811	1.16737294	
55°	0.19249832	0.37910698	0.55411863	0.71218478	0.84848102	0.95885565	1.03998717	1.08933651	1.10552105	
50°	0.18036264	0.35519924	0.51915545	0.66721485	0.79485438	0.89818413	0.97406698	1.02021439	1.03525547	
45°	0.16685429	0.32858822	0.48024119	0.61716701	0.73517843	0.83067689	0.90076355	0.94332783	0.95711098	
40°	0.15207608	0.29947644	0.437672	0.56242216	0.66990732	0.7568477	0.82060477	0.85926197	0.87168229	
35°	0.13614047	0.26808546	0.39177186	0.53339693	0.59953781	0.67725844	0.73420069	0.76865661	0.77961957	
30°	0.11916876	0.2346542	0.3428901	0.44054055	0.52460545	0.59251483	0.6422089	0.67220131	0.68162348	
25°	0.10129001	0.19943707	0.29139874	0.37433139	0.44568053	0.50326182	0.54532952	0.57063015	0.57843983	
20°	0.08264056	0.16270211	0.23768966	0.30527334	0.36336372	0.41017869	0.44429984	0.46471615	0.47085389	
15°	0.06336208	0.12472888	0.18217162	0.23389198	0.27828148	0.31397386	0.33988878	0.35526538	0.35968447	
10°	0.04360137	0.0858064	0.12526714	0.16073056	0.19108136	0.21537949	0.23289096	0.24311083	0.24577764	
5°	0.02350833	0.04623087	0.0674093	0.08634588	0.10242699	0.11514595	0.1241207	0.12910605	0.13000029	
0°	0.00323737	0.0063035	0.00903844	0.01130406	0.01299309	0.01403609	0.0144058	0.0141187	0.01323356	

APPX. 2 LONGITUDE ERROR TABLE (96 NM SCALE)

(nm)

LAT \ q	50°	55°	60°	65°	70°	75°	80°	85°	90°
75°	1.2780	1.2192	1.1233	0.9933	0.8332	0.6479	0.4431	0.2249	0
70°	1.24442563	1.18701379	1.09356117	0.96694117	0.81103484	0.3061092	0.43117887	0.21881975	0
65°	1.20131324	1.14577786	1.05546143	0.93315023	0.78260251	0.60843159	0.41596331	0.21107193	0
60°	1.14905813	1.09582188	1.00932899	0.89225746	0.74821409	0.58162173	0.397582	0.20171772	0
55°	1.08805799	1.03752602	0.95551494	0.84457408	0.70813132	0.55038538	0.37617487	0.19082831	0
50°	1.0187708	0.97133397	0.89442885	0.79046297	0.66265924	0.51496026	0.35190481	0.17848659	0
45°	0.94174265	0.89774948	0.82653562	0.73033596	0.61214392	0.47561599	0.32495654	0.16478648	0
40°	0.85754099	0.81733258	0.75235195	0.66465066	0.55696981	0.43265198	0.29553516	0.14983224	0
35°	0.76681293	0.73069528	0.63744242	0.59390696	0.49755683	0.38639524	0.26386458	0.13373769	0
30°	0.67024897	0.63849695	0.58741521	0.51864327	0.43435714	0.33719779	0.23018583	0.11662531	0
25°	0.568584	0.54143927	0.49791741	0.43943239	0.36785173	0.28543407	0.19475522	0.09862535	0
20°	0.46259176	0.44026091	0.40463016	0.35687717	0.29854675	0.23149802	0.15784242	0.07987479	0
15°	0.35307892	0.3357319	0.30826343	0.2716059	0.22696965	0.17580013	0.11972833	0.06051633	0
10°	0.2487894	0.22864776	0.20955062	0.18426754	0.15366517	0.1187643	0.08070304	0.0406973	0
5°	0.12684572	0.11982348	0.10624302	0.09552679	0.0791912	0.04106355	0.04106355	0.02056855	0
0°	0.01184713	0.01008727	0.008104	0.00605903	0.00411455	0.00111154	0.00111154	0.00028325	0

APPX. 3 ALERT LIST

This radar provides aggregated header alerts for presentation of an aggregation on the AMS (Alert Management System). The following table shows the aggregate header alerts along with the corresponding ALF alert number.

Aggregated Alert Name	ALF No.*	Aggregated Alert Name	ALF No.*
TARGET CAPACITY	3042, x	LOST RADAR FUNC	3008, x
TARGET CAPACITY	3043, x	LOST SIGNAL	3015, x
NEW TARGET	3048, x	LOST SIGNAL	3016, x
LOST TARGET	3052, x	WRONG SETTING	3019, x

*: "x" indicates instance number.

The following table lists the possible alerts for this equipment. Each alert is listed with priority and category. This equipment can output alerts in ALF or ALR format. The alert number depends on the output format and may differ between formats.

Note: Highlighted alerts have no aggregated alert name.

ALF format alerts

Alert ID	Alert title	Alert Message	Priority & Category
3042, 1	TT TGT FULL(AUTO)	"CANCEL NON-DANGEROUS TT TARGETS MANUALLY"	Warning Cat: A
	Meaning: Automatically acquired target capacity has reached 100%. Remedy: Press the ALARM ACK key. Remove TT symbols manually.		
3042, 2	TT TGT FULL(MAN)	"CANCEL NON-DANGEROUS TT TARGETS MANUALLY"	Warning Cat: A
	Meaning: Manually acquired target capacity has reached 100%. Remedy: Press the ALARM ACK key. Remove TT symbols manually.		
3042, 3	AIS DISPLAY FULL	"ADJUST [AIS DISP FILTER] SETTINGS"	Warning Cat: A
	Meaning: AIS display capacity has reached 100% (350 targets). Remedy: Press the ALARM ACK key. Adjust [AIS DISP FILTER] settings to decrease the number of targets displayed.		
3042, 4	AIS CPTY FULL	"ADJUST [AIS DISP FILTER] SETTINGS"	Warning Cat: A
	Meaning: AIS capacity has reached 100% (1200 targets). Remedy: Press the ALARM ACK key. Adjust [AIS DISP FILTER] settings to decrease the number of targets displayed.		
3042, 5	ACTIVE AIS FULL	"SLEEP NON-DANGEROUS AIS TARGETS MANUALLY"	Warning Cat: A
	Meaning: Active AIS target capacity has reached 100% (50 targets). Remedy: Press the ALARM ACK key. Sleep all unnecessary AIS targets.		
3043, 1	TT TGT 95%(AUTO)	"SLEEP NON-DANGEROUS AIS TARGETS MANUALLY"	Caution Cat: B
	Meaning: Automatically acquired target capacity has reached 95%. Remedy: Press the ALARM ACK key. Remove TT symbols manually.		

APPX. 3 ALERT LIST

Alert ID	Alert title	Alert Message	Priority & Category
3043, 2	TT TGT 95%(MAN)	"CANCEL NON-DANGEROUS TT TARGETS MANUALLY"	Caution Cat: B
	Meaning: Manually acquired target capacity has reached 95%. Remedy: Press the ALARM ACK key. Remove TT symbols manually.		
3043, 3	AIS DISPLAY 95%	"ADJUST [AIS DISP FILTER] SETTINGS"	Caution Cat: B
	Meaning: AIS display capacity has reached 95% (333 targets). Remedy: Press the ALARM ACK key. Adjust [AIS DISP FILTER] settings to decrease the number of targets displayed.		
3043, 4	AIS CAPACITY 95%	"ADJUST [AIS DISP FILTER] SETTINGS"	Caution Cat: B
	Meaning: AIS capacity has reached 95% (1140 targets). Remedy: Press the ALARM ACK key. Adjust [AIS DISP FILTER] settings to decrease the number of targets displayed.		
3043, 5	AIS CPTY FULL	"ADJUST [AIS DISP FILTER] SETTINGS"	Caution Cat: B
	Meaning: AIS capacity has reached 100% (1200 targets). Remedy: Press the ALARM ACK key. Adjust [AIS DISP FILTER] settings to decrease the number of targets displayed.		
3043, 6	ACTIVE AIS 95%	"SLEEP NON-DANGEROUS AIS TARGETS MANUALLY"	Caution Cat: B
	Meaning: Active AIS target capacity has reached 95% (48 targets). Remedy: Press the ALARM ACK key. Sleep all unnecessary AIS targets.		
3044	CPA/TCPA	"TAKE EVASIVE ACTION IF NECESSARY"	Alarm Cat: A
	Meaning: Target is within CPA/TCPA threshold, danger of collision. Remedy: Press the ALARM ACK key. Take evasive action if necessary. Adjust CPA/TCPA settings.		
3048, 1	TT NEW TARGET	"CONFIRM TT NEW TARGETS"	Warning Cat: A
	Meaning: A new TT target has entered the Acquisition Zone. Remedy: Press the ALARM ACK key. Confirm location of new target.		
3048, 2	AIS NEW TARGET	"CONFIRM AIS NEW TARGETS"	Warning Cat: A
	Meaning: A new AIS target has entered the Acquisition Zone. Remedy: Press the ALARM ACK key. Confirm location of new target.		
3052, 1	TT TARGET LOST	"CHECK LOST TGT. ACQ TARGET IF NECESSARY"	Warning Cat: A
	Meaning: TT target is lost. Remedy: Press the ALARM ACK key. Lost target indication (blinking in red) is removed.		
3052, 2	REF TARGET LOST	"CHECK LOST TGT. ACQ TARGET IF NECESSARY"	Warning Cat: A
	Meaning: REF targets is lost. Remedy: Press the ALARM ACK key. Lost target indication (blinking in red) is removed.		
3052, 3	AIS TARGET LOST	"CONFIRM AIS LOST TARGETS"	Warning Cat: A
	Meaning: AIS target is lost. Remedy: Press the ALARM ACK key. Lost target indication (blinking in red) is removed.		
3003	AIS MSG SEND ERR	"UNABLE TO TRANSMIT AIS MESSAGE. CHECK AIS"	Caution Cat: B
	Meaning: Unable to transmit AIS binary message. Remedy: Press the ALARM ACK key. Check power and connection to AIS unit.		

Alert ID	Alert title	Alert Message	Priority & Category
3008, 1	LOST ISW FUNC	"USE RADAR AS STANDALONE"	Warning Cat: B
	Meaning: Interswitch function had to be stopped. (Only displayed when Interswitch is active.) Remedy: Press the ALARM ACK key. Use the radar as a standalone.		
3008, 2	LOST WAVE FUNC	"CHECK CONNECTION WITH WAVE ANALYSIS PC"	Warning Cat: B
	Meaning: Wave analysis function has a problem. Remedy: Press the ALARM ACK key. Check connection with wave analysis PC, or disable WAVE mode.		
3015, 1	LOST HEAD-LINE	"EXECUTE THE DIAGNOSTIC TEST"	Warning Cat: B
	Meaning: Heading marker signal interrupted/lost. Remedy: Press the ALARM ACK key. Restore signal or rectify reason for signal loss.		
3015, 2	LOST AZI-MUTH SIG	"EXECUTE THE DIAGNOSTIC TEST"	Warning Cat: B
	Meaning: Antenna azimuth signal is interrupted/lost. Remedy: Press the ALARM ACK key. Restore signal or rectify reason for signal loss.		
3015, 3	LOST TRIGGER SIG	"EXECUTE THE DIAGNOSTIC TEST"	Warning Cat: B
	Meaning: Antenna trigger interrupted/lost Remedy: Press the ALARM ACK key. Restore signal or rectify reason for signal loss.		
3015, 4	LOST VIDEO SIG	"EXECUTE THE DIAGNOSTIC TEST"	Warning Cat: B
	Meaning: Video signal interrupted/lost. Remedy: Press the ALARM ACK key. Restore signal or rectify reason for signal loss.		
3015, 5	LOST CTRL UNIT	"CHECK CONNECTION WITH CONTROL UNIT"	Warning Cat: B
	Meaning: Control Unit (RCU-014/015/016) signal interrupted/lost. Remedy: Press the ALARM ACK key. Restore signal or rectify reason for signal loss.		
3015, 6	LOST TUNE IND	"INITIALIZE TUNING AGAIN"	Warning Cat: B
	Meaning: TUNE error due to faulty settings or malfunction. Remedy: Press the ALARM ACK key. Restore signal or rectify reason for signal loss.		
3015, 7	LOST RADAR ANT	"CHECK CONNECTION WITH RADAR ANTENNA"	Warning Cat: B
	Meaning: Signal between processor and antenna interrupted/lost. Remedy: Press the ALARM ACK key. Restore signal or rectify reason for signal loss.		
3015, 8	LOST MTR-DRV	"EXECUTE THE DIAGNOSTIC TEST"	Warning Cat: B
	Meaning: Signal between antenna's SPU and MTR-DRV interrupted/lost. Remedy: Press the ALARM ACK key. Restore signal or rectify reason for signal loss.		
3015, 9	LOST RF-CONV* ¹	"EXECUTE THE DIAGNOSTIC TEST"	Warning Cat: B
	Meaning: Signal between antenna's SPU and RF-CONVERTER interrupted/lost. Remedy: Press the ALARM ACK key. Restore signal or rectify reason for signal loss.		
3015, 10	LOST RP BOARD* ⁵	"EXECUTE THE DIAGNOSTIC TEST"	Warning Cat: B
	Meaning: Signal between MAIN board and RP board in the processor is interrupted or lost. Remedy: Press the ALARM ACK key. Restore signal or rectify reason for signal loss.		

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Alert ID	Alert title	Alert Message	Priority & Category
3015, 11	LOST TUNE GATE*2	"EXECUTE THE DIAGNOSTIC TEST"	Warning Cat: B
	Meaning: No tune gate signal from the FAR-2x58 antenna. Remedy: Press the ALARM ACK key. Consult your local dealer for service.		
3015, 12	LOST TX-HV VOLT*2	"EXECUTE THE DIAGNOSTIC TEST"	Warning Cat: B
	Meaning: The antenna voltage is below 300 V (For FAR-2x58/2x68DS). Remedy: Press the ALARM ACK key. Turn the PSU-019 power on. If the problem persists, consult your local dealer for service.		
3015, 20	LOST GYRO SIGNAL	"CHECK HEADING SENSOR OR SENTENCE MONITOR"	Warning Cat: B
	Meaning: No heading information received from gyrocompass for five seconds. Remedy: Press the ALARM ACK key. Restore the signal to remove this indication.		
3015, 21	LOST LOG(WT) SIG	"CHECK SPEED SENSOR OR SENTENCE MONITOR"	Warning Cat: B
	Meaning: No speed through water data received for thirty seconds when [LOG(WT)] is set as speed reference. Remedy: Press the ALARM ACK key. Use a different sensor if necessary.		
3015, 22	LOST LOG(BT) SIG	"CHECK SPEED SENSOR OR SENTENCE MONITOR"	Warning Cat: B
	Meaning: No speed over ground data received for thirty seconds when [LOG(BT)] is set as speed reference. Remedy: Press the ALARM ACK key. Use a different sensor if necessary.		
3015, 23	LOST POSITION	"CHECK POSITION SENSOR OR SENTENCE MONITOR"	Warning Cat: B
	Meaning: EPFS Error. No position data received from EPFS device for thirty seconds. Remedy: Press the ALARM ACK key. Restore the signal. This indication cannot be erased if the position signal is missing. The indication is automatically removed when the signal is restored.		
3015, 24	LOST DATUM	"CHECK POSITION SENSOR OR SENTENCE MONITOR"	Warning Cat: B
	Meaning: DTM sentence not received for thirty seconds, or erroneous data received. Remedy: Press the ALARM ACK key. Use the WGS-84 datum.		
3015, 25	LOST UTC SIGNAL	"CHECK POSITION SENSOR OR SENTENCE MONITOR"	Warning Cat: B
	Meaning: UTC error. No date or time data received for thirty seconds. No ZDA sentence input. Remedy: Press the ALARM ACK key. Restore the signal to remove this indication.		
3015, 26	LOST AIS COM	"CHECK AIS OR SENTENCE MONITOR"	Warning Cat: B
	Meaning: No AIS data received for thirty seconds. Remedy: Press the ALARM ACK key. Check power and connection to AIS unit.		
3015, 27	LOST COG/SOG SIG	"CHECK POSITION SENSOR OR SENTENCE MONITOR"	Warning Cat: B
	Meaning: No COG/SOG data received from EPFS device for thirty seconds when [EPFS] is set as speed reference. Remedy: Press the ALARM ACK key. Restore the signal. This indication cannot be erased if the COG/SOG signal is missing. The indication is automatically removed when the signal is restored.		

Alert ID	Alert title	Alert Message	Priority & Category
3015, 28	LOST ECDIS COM	"CHECK ECDIS OR SENTENCE MONITOR"	Warning Cat: B
	Meaning: No ECDIS data received for thirty seconds when [ECDIS] is set as speed reference. Remedy: Press the ALARM ACK key. Check power and connection to ECDIS unit.		
3016, 13	LOST PM BOARD	"EXECUTE THE DIAGNOSTIC TEST"	Caution Cat: B
	Meaning: Signal between antenna's SPU and PM interrupted/lost. Remedy: Press the ALARM ACK key. Restore signal or rectify reason for signal loss.		
3016, 21	LOST LOG(WT) SIG	"CHECK SPEED SENSOR OR SENTENCE MONITOR"	Caution Cat: B
	Meaning: No speed through water data received for thirty seconds when [LOG(WT)] is NOT set as speed reference. Remedy: Press the ALARM ACK key. Use a different sensor if necessary.		
3016, 22	LOST LOG(BT) SIG	"CHECK SPEED SENSOR OR SENTENCE MONITOR"	Caution Cat: B
	Meaning: No speed over ground data received for thirty seconds when [LOG(BT)] is set as speed reference. Remedy: Press the ALARM ACK key. Use a different sensor if necessary.		
3016, 26	LOST AIS COM	"CHECK AIS OR SENTENCE MONITOR"	Caution Cat: B
	Meaning: No AIS data received for thirty seconds when AIS function is OFF. Remedy: Press the ALARM ACK key. Check power and connection to AIS unit.		
3016, 27	LOST COG/SOG SIG	"CHECK POSITION SENSOR OR SENTENCE MONITOR"	Caution Cat: B
	Meaning: No COG/SOG data received from EPFS device for thirty seconds when [EPFS] NOT is set as speed reference. Remedy: Press the ALARM ACK key. Restore the signal. This indication cannot be erased if the COG/SOG signal is missing. The indication is automatically removed when the signal is restored.		
3019, 1	WRONG IP ADDR	"CHECK IP SETTINGS AND ASSIGN A UNIQUE IP"	Caution Cat: B
	Meaning: LAN1 IP address is in use by other equipment. Remedy: Press the ALARM ACK key. Check the IP settings and assign a unique IP address.		
3019, 2	WRONG IP (LAN2)	"CHECK IP SETTINGS AND ASSIGN A UNIQUE IP"	Caution Cat: B
	Meaning: LAN2 IP address is in use by other equipment. Remedy: Press the ALARM ACK key. Check the IP settings and assign a unique IP address.		
3019, 3	RP VER MISMATCH*5	"CONSULT YOUR LOCAL DEALER FOR SW UPDATE"	Caution Cat: B
	Meaning: MAIN board and RP board software versions do not match. Remedy: Press the ALARM ACK key. Consult you local dealer for a software update.		
3019, 4	WRONG POSN INT	"CHECK THE OUTPUT SETTINGS FOR EPFS DEVICE"	Caution Cat: B
	Meaning: Position signal interval cycle has exceeded 10 seconds for a period. Remedy: Press the ALARM ACK key. Check the output settings for the connected EPFS device. Adjust output interval (cycle) as required.		

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Alert ID	Alert title	Alert Message	Priority & Category
3032	ANCHOR WATCH	"CONFIRM OWN SHIP LOCATION"	Warning Cat: B
	Meaning: Ship position outside set anchor watch zone. Remedy: Press the ALARM ACK key. Confirm Own Ship location and adjust as necessary.		
52795	SELECT SART MODE* ³	"SART SIGNAL DETECTED. SELECT SART MODE"	Warning Cat: A
	Meaning: A SART signal was detected. Remedy: Press the ALARM ACK key. Show the SART marks on the radar display ([7 SART] set to [ON]).		
52782	ARRIVED AT WPT* ⁴	"SET NEXT WPT, IF NECESSARY"	Warning Cat: B
	Meaning: Ship has entered the destination arrival alert zone. Remedy: Press the ALARM ACK key. Set next waypoint, if necessary.		
52785	XTD LIM EX-CEEDED* ⁴	"CHECK COURSE AND ADJUST AS NECESSARY"	Warning Cat: B
	Meaning: Cross-track error, ship is off-course. Remedy: Press the ALARM ACK key. Check course and adjust as necessary.		
52792	CHART MEMORY ERR* ⁵	"CHECK PROCESSOR UNIT"	Warning Cat: B
	Meaning: An error has occurred while loading chart data. Remedy: Press the ALARM ACK key. Have a qualified technician check the processor unit.		

- *1. This alert appears only for FAR-2228-NXT(-BB) and FAR-2328-NXT.
- *2. This alert appears only for For FAR-2x58/2x68DS.
- *3. This alert appears only for FAR-2228-NXT(-BB) and FAR-2328-NXT. Keep in mind the following points:
 - This alert can occur when this equipment receives interference simultaneously from multiple radars.
 - This alert may not occur under the bad weather conditions such as at rain.
- *4. This alert is output only on B/W-type radars.
- *5. This alert is output only on A/B/W-types with radar plotter functionality.

ALF format indications

The following indications are shown by this equipment when ALF format is in use. The indications have no category, are not subject to responsibility transfer and are not output as ALF sentences.

Note: Indications also appear in the ALERT BOX on the screen and on the ALERT LIST.

ID	Title	Message
52001, 4	RPU:HIGH TEMP	"CONDUCT A DIAGNOSTIC TEST WHILE THE ERROR IS PRESENT. SUPPLY THE TEST RESULTS TO YOUR LOCAL DEALER."
	Meaning: Temperature in the RPU is above the recommended limit. Remedy: Press the ALARM ACK key. Lower the temperature.	
52001, 11	MD TYPE MISMATCH	"CONDUCT A DIAGNOSTIC TEST WHILE THE ERROR IS PRESENT. SUPPLY THE TEST RESULTS TO YOUR LOCAL DEALER."
	Meaning: Unable to detect the MD board bandwidth. Remedy: Press the ALARM ACK key. Check connections to the antenna.	
52001, 12	PM TYPE MISMATCH	"CONDUCT A DIAGNOSTIC TEST WHILE THE ERROR IS PRESENT. SUPPLY THE TEST RESULTS TO YOUR LOCAL DEALER."
	Meaning: Unable to detect the MD board bandwidth. Remedy: Press the ALARM ACK key. Check connections to the antenna.	
52001, 21	MTR-DRV:HIGH TEMP	"CONDUCT A DIAGNOSTIC TEST WHILE THE ERROR IS PRESENT. SUPPLY THE TEST RESULTS TO YOUR LOCAL DEALER."
	Meaning: MTR-DRV board temperature is above the recommended limit. Remedy: Press the ALARM ACK key. Lower the temperature.	
52001, 22	MTR-DRV:OVER CURRENT	"CONDUCT A DIAGNOSTIC TEST WHILE THE ERROR IS PRESENT. SUPPLY THE TEST RESULTS TO YOUR LOCAL DEALER."
	Meaning: MTR-DRV board power input from the motor is outside recommended rating. Remedy: Press the ALARM ACK key. Have a qualified technician check the motor.	
52001, 23	MTR-DRV:MTR PWR ERR	"CONDUCT A DIAGNOSTIC TEST WHILE THE ERROR IS PRESENT. SUPPLY THE TEST RESULTS TO YOUR LOCAL DEALER."
	Meaning: MTR-DRV board motor's voltage is outside recommended rating. Remedy: Press the ALARM ACK key. Have a qualified technician check the motor.	
52001, 24	MTR-DRV:P12V ERR	"CONDUCT A DIAGNOSTIC TEST WHILE THE ERROR IS PRESENT. SUPPLY THE TEST RESULTS TO YOUR LOCAL DEALER."
	Meaning: Voltage in the +12V line of the MTR-DRV motor is outside recommended rating. Remedy: Press the ALARM ACK key. Have a qualified technician check the power supply.	
52001, 25	MTR-DRV:HALL SENSOR ERR	"CONDUCT A DIAGNOSTIC TEST WHILE THE ERROR IS PRESENT. SUPPLY THE TEST RESULTS TO YOUR LOCAL DEALER."
	Meaning: Error in the hall sensor signal detected by the MTR-DRV board. Remedy: Press the ALARM ACK key. Have a qualified technician check the hall sensor.	
52001, 26	MTR-DRV:ANT LOCK	"CHECK THE SCANNER FOR OBSTRUCTIONS. IF THERE ARE NONE, SUPPLY THE TEST RESULTS TO YOUR LOCAL DEALER."
	Meaning: Antenna lock detected by the MTR-DRV board. Remedy: Press the ALARM ACK key. Unlock the antenna.	

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ID	Title	Message
52001, 27	MTR-DRV:PWR SUPPLY ERR	"CONDUCT A DIAGNOSTIC TEST WHILE THE ERROR IS PRESENT. SUPPLY THE TEST RESULTS TO YOUR LOCAL DEALER."
Meaning: MTR-DRV board detected an drop in power. Remedy: Press the ALARM ACK key. Have a qualified technician check the power supply.		
52001, 28	MTR-DRV:BRAKE-R ERR	"CONDUCT A DIAGNOSTIC TEST WHILE THE ERROR IS PRESENT. SUPPLY THE TEST RESULTS TO YOUR LOCAL DEALER."
Meaning: MTR-DRV board detected an error in the brake resistance. Remedy: Press the ALARM ACK key. Have a qualified technician check the antenna brake.		
52001, 29	MTR-DRV:OVER LOAD	"CONDUCT A DIAGNOSTIC TEST WHILE THE ERROR IS PRESENT. SUPPLY THE TEST RESULTS TO YOUR LOCAL DEALER."
Meaning: MTR-DRV board detected an overload. Remedy: Press the ALARM ACK key. Have a qualified technician check the motor.		
52001, 31	PM:P12V ERROR	"CONDUCT A DIAGNOSTIC TEST WHILE THE ERROR IS PRESENT. SUPPLY THE TEST RESULTS TO YOUR LOCAL DEALER."
Meaning: Voltage in the +12V line of the PM board is outside recommended rating. Remedy: Press the ALARM ACK key. Have a qualified technician check the power supply.		
52001, 32	PM:PLL UNLOCK	"CONDUCT A DIAGNOSTIC TEST WHILE THE ERROR IS PRESENT. SUPPLY THE TEST RESULTS TO YOUR LOCAL DEALER."
Meaning: PM board's PLL is unlocked. Remedy: Press the ALARM ACK key. Have a qualified technician check the PM board.		
52001, 41	RFC:P6V ERROR	"CONDUCT A DIAGNOSTIC TEST WHILE THE ERROR IS PRESENT. SUPPLY THE TEST RESULTS TO YOUR LOCAL DEALER."
Meaning: Voltage in the +6V line of the RF-Converter is outside rating. Remedy: Press the ALARM ACK key. Have a qualified technician check the power.		
52001, 42	RFC:P48V ERROR	"CONDUCT A DIAGNOSTIC TEST WHILE THE ERROR IS PRESENT. SUPPLY THE TEST RESULTS TO YOUR LOCAL DEALER."
Meaning: Voltage in the +48V line of the RF-Converter is outside rating. Remedy: Press the ALARM ACK key. Have a qualified technician check the power.		
52001, 43	RFC:IF PLL UNLOCK	"CONDUCT A DIAGNOSTIC TEST WHILE THE ERROR IS PRESENT. SUPPLY THE TEST RESULTS TO YOUR LOCAL DEALER."
Meaning: PLL lock on the IF side of the RF-Converter is unlocked. Remedy: Press the ALARM ACK key. Have a qualified technician check the RF-Converter.		
52001, 44	RFC:PLL UNLOCK	"CONDUCT A DIAGNOSTIC TEST WHILE THE ERROR IS PRESENT. SUPPLY THE TEST RESULTS TO YOUR LOCAL DEALER."
Meaning: PLL lock on the RF side of the RF-Converter is unlocked. Remedy: Press the ALARM ACK key. Have a qualified technician check the RF-Converter.		

ID	Title	Message
52001, 45	RFC:OUTPUT SIG LVL ERR	"CONDUCT A DIAGNOSTIC TEST WHILE THE ERROR IS PRESENT. SUPPLY THE TEST RESULTS TO YOUR LOCAL DEALER."
	Meaning: Signal output from the RF-Converter is outside the recommended rating. Remedy: Press the ALARM ACK key. Have a qualified technician check the RF-Converter.	
52001, 46	RFC:INPUT SIG LVL ERR	"CONDUCT A DIAGNOSTIC TEST WHILE THE ERROR IS PRESENT. SUPPLY THE TEST RESULTS TO YOUR LOCAL DEALER."
	Meaning: Signal input from the RF-Converter is outside the recommended rating. Remedy: Press the ALARM ACK key. Have a qualified technician check the RF-Converter.	
52001, 47	HPA:OUTPUT SIG LVL ERR	"CONDUCT A DIAGNOSTIC TEST WHILE THE ERROR IS PRESENT. SUPPLY THE TEST RESULTS TO YOUR LOCAL DEALER."
	Meaning: Signal output from the HPA board is outside the recommended rating. Remedy: Press the ALARM ACK key. Have a qualified technician check the HPA board.	
52001, 48	HPA:OUTPUT PK CRR ERR	"CONDUCT A DIAGNOSTIC TEST WHILE THE ERROR IS PRESENT. SUPPLY THE TEST RESULTS TO YOUR LOCAL DEALER."
	Meaning: Peak current detected in the signal output from the HPA board. Remedy: Press the ALARM ACK key. Have a qualified technician check the HPA board.	
52001, 51	HPA:HIGH TEMP	"CONDUCT A DIAGNOSTIC TEST WHILE THE ERROR IS PRESENT. SUPPLY THE TEST RESULTS TO YOUR LOCAL DEALER."
	Meaning: Excessively high temperature detected on the HPA board. Remedy: Press the ALARM ACK key. Have a qualified technician check the HPA board.	
52001, 52	VSWR ERROR	"CONDUCT A DIAGNOSTIC TEST WHILE THE ERROR IS PRESENT. SUPPLY THE TEST RESULTS TO YOUR LOCAL DEALER."
	Meaning: Abnormal VSWR detected by the RF Converter. Remedy: Press the ALARM ACK key. Have a qualified technician check the antenna.	
52002, 1	RPU:FAN1 NO ROTATE	"CONDUCT A DIAGNOSTIC TEST WHILE THE ERROR IS PRESENT. SUPPLY THE TEST RESULTS TO YOUR LOCAL DEALER."
	Meaning: The FAN1 in the processor unit is stopped or disconnected. Remedy: Press the ALARM ACK key. Have a qualified technician check the processor unit.	
52002, 2	RPU:FAN2 NO ROTATE	"CONDUCT A DIAGNOSTIC TEST WHILE THE ERROR IS PRESENT. SUPPLY THE TEST RESULTS TO YOUR LOCAL DEALER."
	Meaning: The FAN2 in the processor unit is stopped or disconnected. Remedy: Press the ALARM ACK key. Have a qualified technician check the processor unit.	
52002, 3	RPU:FAN3 NO ROTATE	"CONDUCT A DIAGNOSTIC TEST WHILE THE ERROR IS PRESENT. SUPPLY THE TEST RESULTS TO YOUR LOCAL DEALER."
	Meaning: The FAN3 in the processor unit is stopped or disconnected. Remedy: Press the ALARM ACK key. Have a qualified technician check the processor unit.	

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ID	Title	Message
52002, 4	RPU:FAN(RP) NO ROTATE*1	"CONDUCT A DIAGNOSTIC TEST WHILE THE ERROR IS PRESENT. SUPPLY THE TEST RESULTS TO YOUR LOCAL DEALER."
	Meaning: The RPU fan on the RP board in the processor unit is stopped or disconnected. Remedy: Press the ALARM ACK key. Have a qualified technician check the processor unit.	
52002, 5	RPU:RP HW ERROR*1, *3	"IN SAFE WATERS, REBOOT THE SYSTEM. IF THE ERROR OCCURS FREQUENTLY, SUPPLY THE TEST RESULTS TO YOUR LOCAL DEALER."
	Meaning: The RP board has stopped working. Charts and marks cannot be displayed. Remedy: Press the ALARM ACK key. Have a qualified technician check the processor unit.	
52002, 6	RSB FAN1 NO ROTATE*4	"CONDUCT A DIAGNOSTIC TEST WHILE THE ERROR IS PRESENT. SUPPLY THE TEST RESULTS TO YOUR LOCAL DEALER."
	Meaning: Fan1 in the antenna unit is stopped or disconnected. Remedy: Press the ALARM ACK key. Have a qualified technician check the processor unit.	
52002, 7	RSB FAN2 NO ROTATE*5	"CONDUCT A DIAGNOSTIC TEST WHILE THE ERROR IS PRESENT. SUPPLY THE TEST RESULTS TO YOUR LOCAL DEALER."
	Meaning: Fan2 in the antenna unit is stopped or disconnected. Remedy: Press the ALARM ACK key. Have a qualified technician check the processor unit.	
52601, 10	LOST WAVE UNIT*1	"CHECK CONNECTION WITH WAVE ANALYSIS PC, OR DISABLE WAVE MODE".
	Meaning: Wave data not received from wave analysis PC, when WAVE mode is enabled. Remedy: Press the ALARM ACK key. Check connection with wave analysis PC, or disable WAVE mode.	
52602, 1	POSN SOURCE CHG	"POSITION SOURCE USING IN SYSTEM CHANGES TO OTHER SOURCE."
	Meaning: Positioning sensor input lost, automatically changed sensors. Remedy: Press the ALARM ACK key. The indication is automatically removed when the signal is restored or a different sensor is selected.	
52602, 2	SPD SOURCE CHG	"SPEED SOURCE USING IN SYSTEM CHANGES TO OTHER SOURCE."
	Meaning: Speed sensor input lost, automatically changed sensors. Remedy: Press the ALARM ACK key. The indication is automatically removed when the signal is restored or a different sensor is selected.	
52602, 3	HDG SOURCE CHG	"HEADING SOURCE USING IN SYSTEM CHANGES TO OTHER SOURCE."
	Meaning: Heading sensor input lost, automatically changed sensors. Remedy: Press the ALARM ACK key. The indication is automatically removed when the signal is restored or a different sensor is selected.	
52740, 1	ISW: NO SIGNAL	"SELECTED RADAR HAS PROBLEM. USE RADAR AS STANDALONE."
	Meaning: Selected radar has an error. (Only displayed when Interswitch is active.) Remedy: Press the ALARM ACK key. Use radar as standalone or restore the external radar to normal operating condition.	

ID	Title	Message
52740, 2	ISW: NO RADAR	"COMMUNICATION WITH SELECTED RADAR HAS INTERRUPTED/LOST. USE RADAR AS STANDALONE."
	Meaning: Communication with selected radar interrupted or lost. (Only displayed when Interswitch is active.) Remedy: Press the ALARM ACK key. Use radar as standalone or check connection and power to the external radar.	
52740, 3	ISW: STBY* ²	"SELECTED RADAR ENTERED STANDBY MODE. SET SELECTED RADAR TO TX MODE."
	Meaning: Selected radar entered standby mode. Remedy: Press the ALARM ACK key. Check transmission status of the selected radar.	
52740, 4	ISW: NO SENSOR* ²	"SELECTED RADAR HAS PROBLEM. USE RADAR AS STANDALONE."
	Meaning: No heading data was received from the selected radar for more than five seconds. Remedy: Press the ALARM ACK key. Check heading data input status for the selected radar.	
52793, 1	LOST WV UTC SIG	"CHECK THAT DATA INPUT TO WAVE ANALYZER IS CORRECT, OR DISABLE WAVE MODE."
	Meaning: With the wave radar active ([4 WAVE DATA] set to [ON]), the wave analysis PC has an error in time/date input. Remedy: Press the ALARM ACK key. Check that data input to Wave Analyzer is correct, or disable WAVE mode.	
52793, 2	LOST WV COG/SOG	"CHECK THAT DATA INPUT TO WAVE ANALYZER IS CORRECT, OR DISABLE WAVE MODE."
	Meaning: With the wave radar active ([4 WAVE DATA] set to [ON]), the wave analysis PC has an error in speed data input. Remedy: Press the ALARM ACK key. Check that data input to Wave Analyzer is correct, or disable WAVE mode.	
52793, 3	LOST WV WIND SIG	"CHECK THAT DATA INPUT TO WAVE ANALYZER IS CORRECT, OR DISABLE WAVE MODE."
	Meaning: With the wave radar active ([4 WAVE DATA] set to [ON]), the wave analysis PC has an error in speed data input. Remedy: Press the ALARM ACK key. Check that data input to Wave Analyzer is correct, or disable WAVE mode.	
52793, 4	LOST WV RADAR ANT	"CHECK THE CONNECTION WITH SELECTED RADAR IS CORRECT, OR DISABLE WAVE MODE."
	Meaning: With the wave radar active ([4 WAVE DATA] set to [ON]), the wave analysis PC has an error in speed data input. Remedy: Press the ALARM ACK key. Check that data input to Wave Analyzer is correct, or disable WAVE mode.	
52793, 5	LOST WV GYRO SIG	"CHECK THAT DATA INPUT TO WAVE ANALYZER IS CORRECT, OR DISABLE WAVE MODE."
	Meaning: With the wave radar active ([4 WAVE DATA] set to [ON]), the wave analysis PC has an error in speed data input. Remedy: Press the ALARM ACK key. Check that data input to Wave Analyzer is correct, or disable WAVE mode.	

*1: This indication is output only on A/B/W-types with radar plotter functionality.

*2: This indication appears only on A/B-type radars when Dual Radar mode is active and enabled.

*3: When this indication is rectified, the [Chart] button appears in yellow color. Click the [Chart] button to restore the system to normal operation.

*4. This indication appears only for FAR-2xx8, FAR-2xx8W and FAR-2xx8-NXT.

*5. This indication appears only for FAR-2xx8, FAR-2xx8W, FAR-2xx8S, FAR-2xx8SW and FAR-2xx8-NXT.

ALR format alerts

The Alert "CPA/TCPA" cannot be acknowledged from external equipment and must be acknowledged from the radar itself.

ALR Alert ID	Alert title	Alert description	Priority & Category
523	TT TGT FULL(AUTO)	"CANCEL NON-DANGEROUS TT TARGETS MANUALLY"	Warning Cat: A
	Meaning: Automatically acquired target capacity has reached 100%. Remedy: Press the ALARM ACK key. Remove TT symbols manually.		
525	TT TGT FULL(MAN)	"CANCEL NON-DANGEROUS TT TARGETS MANUALLY"	Warning Cat: A
	Meaning: Manually acquired target capacity has reached 100%. Remedy: Press the ALARM ACK key. Remove TT symbols manually.		
531	AIS DISPLAY FULL	"ADJUST [AIS DISP FILTER] SETTINGS"	Warning Cat: A
	Meaning: AIS display capacity has reached 100% (350 targets). Remedy: Press the ALARM ACK key. Adjust [AIS DISP FILTER] settings to decrease the number of targets displayed.		
533	AIS CPTY FULL	"ADJUST [AIS DISP FILTER] SETTINGS"	Warning Cat: A
	Meaning: AIS capacity has reached 100% (1200 targets). Remedy: Press the ALARM ACK key. Adjust [AIS DISP FILTER] settings to decrease the number of targets displayed.		
535	ACTIVE AIS FULL	"SLEEP NON-DANGEROUS AIS TARGETS MANUALLY"	Warning Cat: A
	Meaning: Active AIS target capacity has reached 100% (50 targets). Remedy: Press the ALARM ACK key. Sleep all unnecessary AIS targets.		
522	TT TGT 95%(AUTO)	"CANCEL NON-DANGEROUS TT TARGETS MANUALLY"	Caution Cat: B
	Meaning: Automatically acquired target capacity has reached 95%. Remedy: Press the ALARM ACK key. Remove TT symbols manually.		
524	TT TGT 95% (MAN)	"CANCEL NON-DANGEROUS TT TARGETS MANUALLY"	Caution Cat: B
	Meaning: Manually acquired target capacity has reached 95%. Remedy: Press the ALARM ACK key. Remove TT symbols manually.		
530	AIS DISPLAY 95%	"ADJUST [AIS DISP FILTER] SETTINGS"	Caution Cat: B
	Meaning: AIS display capacity has reached 95% (333 targets). Remedy: Press the ALARM ACK key. Adjust [AIS DISP FILTER] settings to decrease the number of targets displayed.		
532	AIS CAPACITY 95%	"ADJUST [AIS DISP FILTER] SETTINGS"	Caution Cat: B
	Meaning: AIS capacity has reached 95% (1140 targets). Remedy: Press the ALARM ACK key. Adjust [AIS DISP FILTER] settings to decrease the number of targets displayed.		

ALR Alert ID	Alert title	Alert description	Priority & Category
533	AIS CPTY FULL	"ADJUST [AIS DISP FILTER] SETTINGS"	Caution Cat: B
	Meaning: AIS capacity has reached 100% (1200 targets). Remedy: Press the ALARM ACK key. Adjust [AIS DISP FILTER] settings to decrease the number of targets displayed.		
534	ACTIVE AIS 95%	"SLEEP NON-DANGEROUS AIS TARGETS MANUALLY"	Caution Cat: B
	Meaning: Active AIS target capacity has reached 95% (48 targets). Remedy: Press the ALARM ACK key. Sleep all unnecessary AIS targets.		
516	CPA/TCPA	"TAKE EVASIVE ACTION IF NECESSARY"	Alarm Cat: A
	Meaning: Target is within CPA/TCPA threshold, danger of collision. Remedy: Press the ALARM ACK key. Take evasive action if necessary. Adjust CPA/TCPA settings.		
521	TT NEW TARGET	"CONFIRM TT NEW TARGETS"	Warning Cat: A
	Meaning: A new TT target has entered the Acquisition Zone. Remedy: Press the ALARM ACK key. Confirm location of new target.		
529	AIS NEW TARGET	"CONFIRM AIS NEW TARGETS"	Warning Cat: A
	Meaning: A new AIS target has entered the Acquisition Zone. Remedy: Press the ALARM ACK key. Confirm location of new target.		
527	TT TARGET LOST	"CHECK LOST TGT. ACQ TARGET IF NECESSARY"	Warning Cat: A
	Meaning: TT target is lost. Remedy: Press the ALARM ACK key. Lost target indication (blinking in red) is removed.		
528	REF TARGET LOST	"CHECK LOST TGT. ACQ TARGET IF NECESSARY"	Warning Cat: A
	Meaning: REF targets is lost. Remedy: Press the ALARM ACK key. Lost target indication (blinking in red) is removed.		
537	AIS TARGET LOST	"CONFIRM AIS LOST TARGETS"	Warning Cat: A
	Meaning: AIS target is lost. Remedy: Press the ALARM ACK key. Lost target indication (blinking in red) is removed.		
541	AIS MSG SEND ERR	"UNABLE TO TRANSMIT AIS MESSAGE. CHECK AIS"	Caution Cat: B
	Meaning: Unable to transmit AIS binary message. Remedy: Press the ALARM ACK key. Check power and connection to AIS unit.		
740	LOST ISW FUNC	"USE RADAR AS STANDALONE"	Warning Cat: B
	Meaning: Interswitch function had to be stopped. (Only displayed when Interswitch is active.) Remedy: Press the ALARM ACK key. Use the radar as a standalone.		
793	LOST WAVE FUNC	"CHECK CONNECTION WITH WAVE ANALYSIS PC"	Warning Cat: B
	Meaning: Wave analysis function has a problem. Remedy: Press the ALARM ACK key. Check connection with wave analysis PC, or disable WAVE mode.		
720	LOST HEADLINE	"EXECUTE THE DIAGNOSTIC TEST"	Warning Cat: B
	Meaning: Heading marker signal interrupted/lost. Remedy: Press the ALARM ACK key. Restore signal or rectify reason for signal loss.		

ALR Alert ID	Alert title	Alert description	Priority & Category
721	LOST AZIMUTH SIG	"EXECUTE THE DIAGNOSTIC TEST"	Warning Cat: B
	Meaning: Antenna azimuth signal is interrupted/lost. Remedy: Press the ALARM ACK key. Restore signal or rectify reason for signal loss.		
722	LOST TRIGGER SIG	"EXECUTE THE DIAGNOSTIC TEST"	Warning Cat: B
	Meaning: Antenna trigger interrupted/lost Remedy: Press the ALARM ACK key. Restore signal or rectify reason for signal loss.		
723	LOST VIDEO SIG	"EXECUTE THE DIAGNOSTIC TEST"	Warning Cat: B
	Meaning: Video signal interrupted/lost. Remedy: Press the ALARM ACK key. Restore signal or rectify reason for signal loss.		
70	LOST CTRL UNIT	"CHECK CONNECTION WITH CONTROL UNIT"	Warning Cat: B
	Meaning: Control Unit (RCU-014/015/016) signal interrupted/lost. Remedy: Press the ALARM ACK key. Restore signal or rectify reason for signal loss.		
48	LOST TUNE IND	"INITIALIZE TUNING AGAIN"	Warning Cat: B
	Meaning: TUNE error due to faulty settings or malfunction. Remedy: Press the ALARM ACK key. Restore signal or rectify reason for signal loss.		
727	LOST RADAR ANT	"CHECK CONNECTION WITH RADAR ANTENNA"	Warning Cat: B
	Meaning: Signal between processor and antenna interrupted/lost. Remedy: Press the ALARM ACK key. Restore signal or rectify reason for signal loss.		
781	LOST MTR-DRV	"EXECUTE THE DIAGNOSTIC TEST"	Warning Cat: B
	Meaning: Signal between antenna's SPU and MTR-DRV interrupted/lost. Remedy: Press the ALARM ACK key. Restore signal or rectify reason for signal loss.		
783	LOST RF-CONV*1	"EXECUTE THE DIAGNOSTIC TEST"	Warning Cat: B
	Meaning: Signal between antenna's SPU and RF-CONVERTER interrupted/lost. Remedy: Press the ALARM ACK key. Restore signal or rectify reason for signal loss.		
786	LOST RP BOARD*5	"EXECUTE THE DIAGNOSTIC TEST"	Warning Cat: B
	Meaning: Signal between MAIN board and RP board in the processor is interrupted or lost. Remedy: Press the ALARM ACK key. Restore signal or rectify reason for signal loss.		
787	LOST TUNE GATE*2	"EXECUTE THE DIAGNOSTIC TEST"	Warning Cat: B
	Meaning: No tune gate signal from the FAR-2x58 antenna. Remedy: Press the ALARM ACK key. Consult your local dealer for service.		
789	LOST TX-HV VOLT*2	"EXECUTE THE DIAGNOSTIC TEST"	Warning Cat: B
	Meaning: The antenna voltage is below 300 V (For FAR-2x58/2x68DS). Remedy: Press the ALARM ACK key. Turn the PSU-019 power on. If the problem persists, consult your local dealer for service.		
450	LOST GYRO SIGNAL	"CHECK HEADING SENSOR OR SENTENCE MONITOR"	Warning Cat: B
	Meaning: No heading information received from gyrocompass for five seconds. Remedy: Press the ALARM ACK key. Restore the signal to remove this indication.		

ALR Alert ID	Alert title	Alert description	Priority & Category
278	LOST LOG(WT) SIG*4	"CHECK SPEED SENSOR OR SENTENCE MONITOR"	Warning Cat: B
	Meaning: No speed through water data received for thirty seconds when [LOG(WT)] is set as speed reference. Remedy: Press the ALARM ACK key. Use a different sensor if necessary.		
284	LOST LOG(BT) SIG*5	"CHECK SPEED SENSOR OR SENTENCE MONITOR"	Warning Cat: B
	Meaning: No speed over ground data received for thirty seconds when [LOG(BT)] is set as speed reference. Remedy: Press the ALARM ACK key. Use a different sensor if necessary.		
170	LOST POSITION	"CHECK POSITION SENSOR OR SENTENCE MONITOR"	Warning Cat: B
	Meaning: EPFS Error. No position data received from EPFS device for thirty seconds. Remedy: Press the ALARM ACK key. Restore the signal. This indication cannot be erased if the position signal is missing. The indication is automatically removed when the signal is restored.		
469	LOST DATUM	"CHECK POSITION SENSOR OR SENTENCE MONITOR"	Warning Cat: B
	Meaning: DTM sentence not received for thirty seconds, or erroneous data received. Remedy: Press the ALARM ACK key. Use the WGS-84 datum.		
272	LOST UTC SIGNAL	"CHECK POSITION SENSOR OR SENTENCE MONITOR"	Warning Cat: B
	Meaning: UTC error. No date or time data received for thirty seconds. No ZDA sentence input. Remedy: Press the ALARM ACK key. Restore the signal to remove this indication.		
380	LOST AIS COM	"CHECK AIS OR SENTENCE MONITOR"	Warning Cat: B
	Meaning: No AIS data received for thirty seconds. Remedy: Press the ALARM ACK key. Check power and connection to AIS unit.		
279	LOST COG/SOG SIG	"CHECK POSITION SENSOR OR SENTENCE MONITOR"	Warning Cat: B
	Meaning: No COG/SOG data received from EPFS device for thirty seconds when [EPFS] is set as speed reference. Remedy: Press the ALARM ACK key. Restore the signal. This indication cannot be erased if the COG/SOG signal is missing. The indication is automatically removed when the signal is restored.		
50	LOST ECDIS COM	"CHECK ECDIS OR SENTENCE MONITOR"	Warning Cat: B
	Meaning: No ECDIS data received for thirty seconds when [ECDIS] is set as speed reference. Remedy: Press the ALARM ACK key. Check power and connection to ECDIS unit.		
782	LOST PM BOARD	"EXECUTE THE DIAGNOSTIC TEST"	Caution Cat: B
	Meaning: Signal between antenna's SPU and PM interrupted/lost. Remedy: Press the ALARM ACK key. Restore signal or rectify reason for signal loss.		
278	LOST LOG(WT) SIG*4	"CHECK SPEED SENSOR OR SENTENCE MONITOR"	Caution Cat: B
	Meaning: No speed through water data received for thirty seconds when [LOG(WT)] is NOT set as speed reference. Remedy: Press the ALARM ACK key. Use a different sensor if necessary.		

APPX. 3 ALERT LIST

ALR Alert ID	Alert title	Alert description	Priority & Category
284	LOST LOG(BT) SIG* ⁵	"CHECK SPEED SENSOR OR SENTENCE MONITOR"	Caution Cat: B
	Meaning: No speed over ground data received for thirty seconds when [LOG(BT)] is set as speed reference. Remedy: Press the ALARM ACK key. Use a different sensor if necessary.		
380	LOST AIS COM	"CHECK AIS OR SENTENCE MONITOR"	Caution Cat: B
	Meaning: No AIS data received for thirty seconds when AIS function is OFF. Remedy: Press the ALARM ACK key. Check power and connection to AIS unit.		
279	LOST COG/SOG SIG	"CHECK POSITION SENSOR OR SENTENCE MONITOR"	Caution Cat: B
	Meaning: No COG/SOG data received from EPFS device for thirty seconds when [EPFS] NOT is set as speed reference. Remedy: Press the ALARM ACK key. Restore the signal. This indication cannot be erased if the COG/SOG signal is missing. The indication is automatically removed when the signal is restored.		
784	WRONG IP ADDR	"CHECK IP SETTINGS AND ASSIGN A UNIQUE IP"	Caution Cat: B
	Meaning: LAN1 IP address is in use by other equipment. Remedy: Press the ALARM ACK key. Check the IP settings and assign a unique IP address.		
785	WRONG IP (LAN2)	"CHECK IP SETTINGS AND ASSIGN A UNIQUE IP"	Caution Cat: B
	Meaning: LAN2 IP address is in use by other equipment. Remedy: Press the ALARM ACK key. Check the IP settings and assign a unique IP address.		
788	RP VER MISMATCH* ⁵	"CONSULT YOUR LOCAL DEALER FOR SW UPDATE"	Caution Cat: B
	Meaning: MAIN board and RP board software versions do not match. Remedy: Press the ALARM ACK key. Consult you local dealer for a software update.		
729	WRONG POSN INT	"CHECK THE OUTPUT SETTINGS FOR EPFS DEVICE"	Caution Cat: B
	Meaning: Position signal interval cycle has exceeded 10 seconds for a period. Remedy: Press the ALARM ACK key. Check the output settings for the connected EPFS device. Adjust output interval (cycle) as required.		
495	ANCHOR WATCH	"CONFIRM OWN SHIP LOCATION"	Warning Cat: B
	Meaning: Ship position outside set anchor watch zone. Remedy: Press the ALARM ACK key. Confirm Own Ship location and adjust as necessary.		
755	SELECT SART MODE* ³	"SART SIGNAL DETECTED. SELECT SART MODE"	Warning Cat: A
	Meaning: A SART signal was detected. Remedy: Press the ALARM ACK key. Show the SART marks on the radar display ([7 SART] set to [ON]).		
790	ARRIVED AT WPT* ⁴	"SET NEXT WPT, IF NECESSARY"	Warning Cat: B
	Meaning: Ship has entered the destination arrival alert zone. Remedy: Press the ALARM ACK key. Set next waypoint, if necessary.		