FURUNO

For version 05.xx

# Adjustment Manual
# CHART RADAR

## Model FAR-3015/3210(-BB)/3310/3025/3220(-BB)/3320/ FAR-3220W-BB/3320W/3035S/3230S(-BB)/3330S/ FAR-3230SW-BB/3330SW/3035S-NXT/3230S-SSD(-BB)/ FAR-3330S-SSD/3025-NXT/3220-NXT(-BB)/3320-NXT

**(Product Name: Marine Radar)**




FURUNO ELECTRIC CO., LTD.

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 Printed in Japan

A : JAN. 2025
B : AUG. 20, 2025

Pub. No. AME-36940-B

(YOTA) FAR-3000series

0001004662 0

# 1. SETTING UP THE EQUIPMENT

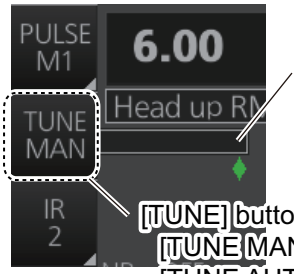
**Note:** After completing the settings and adjustments, copy the setting data to a USB flash memory, referring to the Operator's Manual. This will allow easy restoration of setting data after the SPU Board is replaced, etc.

## 1.1 Radar Installation Menu

The [RADAR INSTALLATION] menu has various items for adjustment of the radar. To show this menu, press the **MENU** key five times while pressing and holding the **1 HL OFF** key.

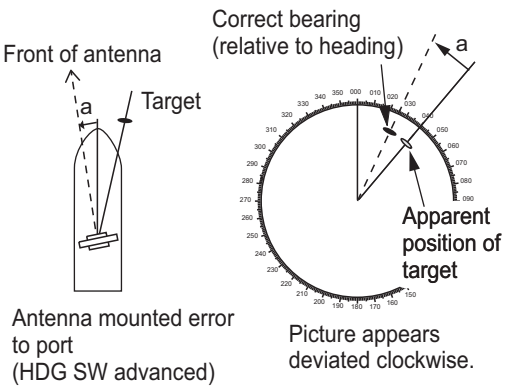

**Tuning initialization**

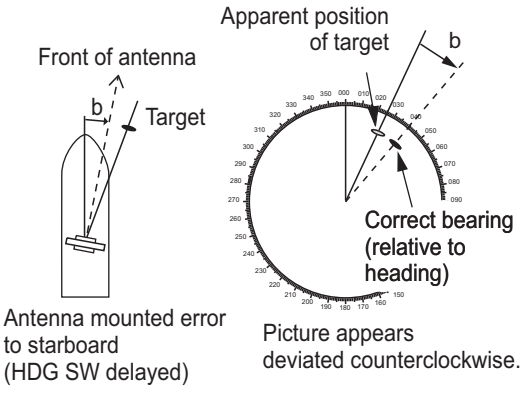
Right click the [TUNE] button on the InstantAccess bar™ then select [Tune Initialize] to start initialization. "TUNE IN" appears during the initialization.




## 1.2 How to Align the Heading

You have mounted the antenna unit facing straight ahead in the direction of the bow. Therefore, a small but conspicuous target dead ahead visually must appear on the heading line (zero degrees).



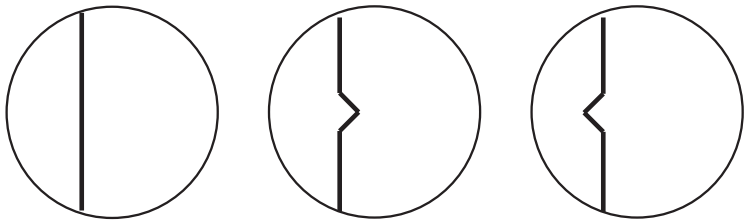

In practice, you will probably observe some small bearing error on the display because of the difficulty in achieving accurate initial positioning of the antenna unit. The following adjustment will compensate for this error.

1. Select a stationary target echo at a range between 0.125 and 0.25 NM, preferably near the heading line.
2. Operate the EBL control to bisect the target echo.
3. Read the target bearing.
4. Measure the bearing of the stationary target on a navigation chart and calculate the difference between the actual bearing and apparent bearing on the radar screen.
5. Show the [RADAR INSTALLATION] menu.
6. Select [1 ECHO ADJ] followed by [2 HD ALIGN].
7. Key in the bearing difference. The setting range is 0° to 359.9°.
8. Confirm that the target echo is displayed at the correct bearing on the screen.

## 1.3 How to Adjust the Sweep Timing

Sweep timing differs with respect to the length of the signal cable between the antenna unit and the processor unit. Adjust sweep timing at installation to prevent the following symptoms:

- The echo of a "straight" target (for example, pier), on the 0.25 NM range, appears on the display as being pulled inward or pushed outward. See the figure below.



(1) Correct (2) Target pushed inward (3) Target pushed outward

- The range of target echoes is also be incorrectly shown.

1. Transmit on the 0.25 NM range.
2. Adjust the radar picture controls to display the picture properly.
3. Select a target echo which should be displayed straightly.
4. Show the [RADAR INSTALLATION] menu, then select [1 ECHO ADJ] followed by [3 TIMING ADJ].
5. Set a value which displays the target straightly. The setting range is 0 to 4095. The default settings for each radar are shown below:
   - Default for magnetron radar: [325]
   - Default for solid state radar: [43]

# 1.4 How to Suppress Main Bang

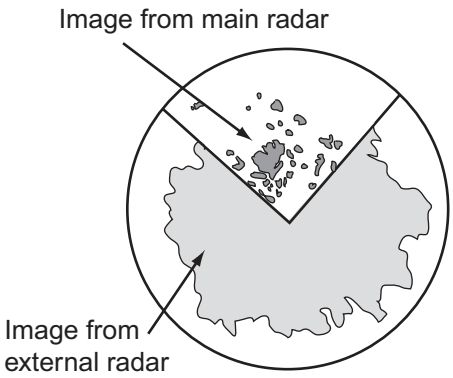
Main bang is the clutter at the center of the screen that you typically see on the radar display, and it may mask close-in targets. If main bang appears at the screen center, suppress it as follows.

1. Transmit the radar on a long range and then wait ten minutes.
2. Adjust the gain to show a slight amount of noise on the display.
3. Select the 0.25 NM range, and turn off the **A/C SEA** control.
4. Show the [RADAR INSTALLATION] menu, then select [1 ECHO ADJ] followed by [4 MBS].
5. Set a value that causes the main bang to just disappear. The setting range is 0 to 255.

# 1.5 Dual Radar Display

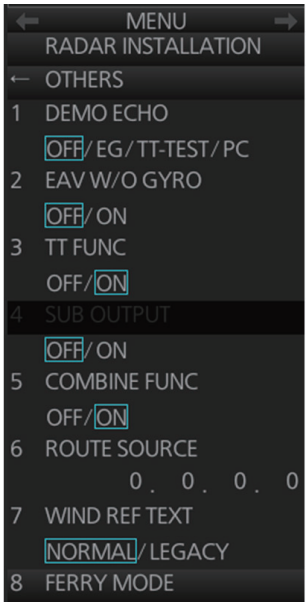
The dual radar display shows radar images from two radar sources on one radar display. Any combination of X- and S-band radars is possible.

**Note:** The [RADAR INSTALLATION] menu is inoperative (grayed out on the installation menu) when the dual radar display is active.




## 1.5.1 How to enable, disable the dual radar display

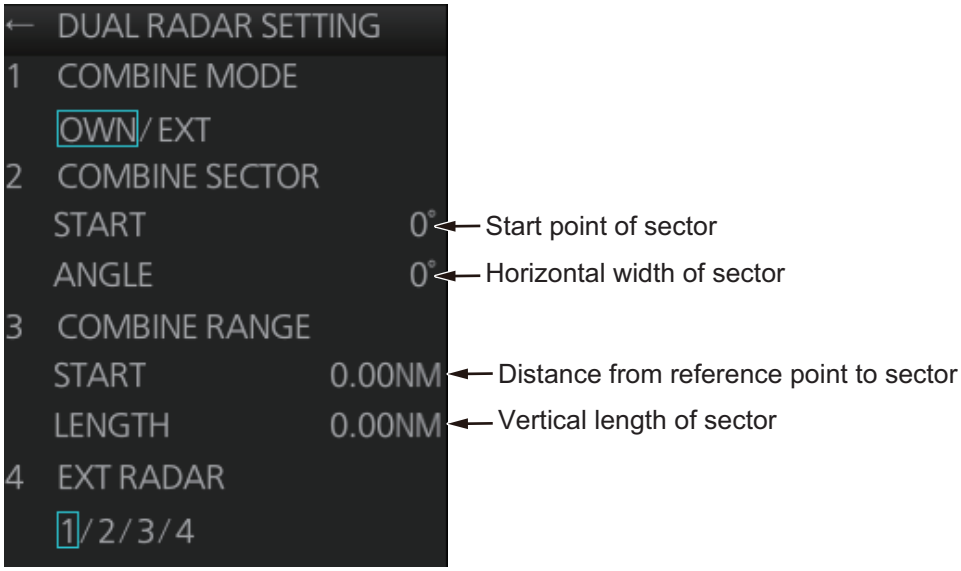
1. Open the [RADAR INSTALLATION] menu, then select [OTHERS] menu.
2. Select [5 COMBINE FUNC].
3. Select [OFF] or [ON] as appropriate.



## 1.5.2 How to set the width and length for the picture from the external radar

If two FAR-3xxx series radars are to be used for the dual radar display, set the same display area on each radar to ensure proper performance.

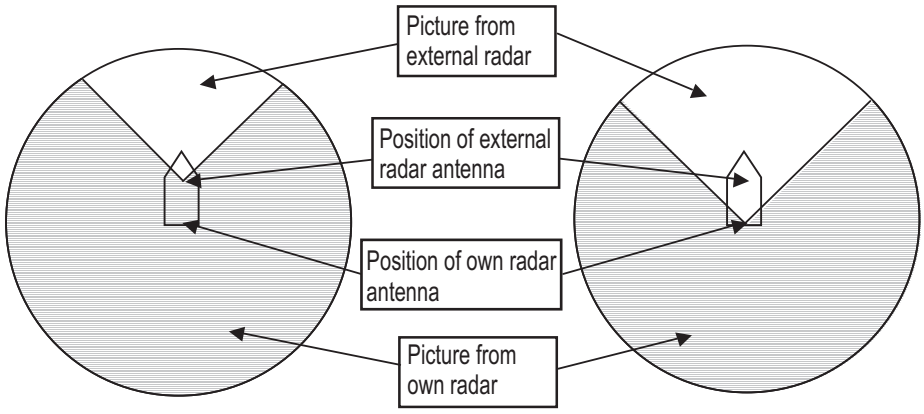
1. Open the [RADAR INSTALLATION] menu, then select [2 SCANNER], [6 DUAL RADAR SETTING] to show the [DUAL RADAR SETTING] menu.




2. Select [1 COMBINE MODE] to select which radar to set as reference point.
3. Select [OWN] or [EXT] as appropriate.
   **[OWN]**: Set own radar's antenna as the reference point and set display area of own radar. The area outside that set here is where the image from the external radar is displayed.
   **[EXT]**: Set the external radar's antenna as the reference point and set the display area of the external radar. The area outside that set here is where the image from own radar is displayed.

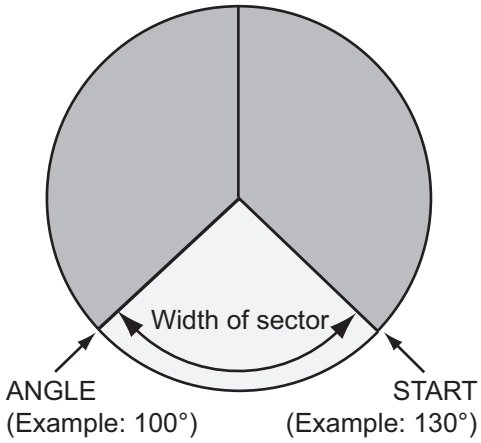
| Radar selected for COMBINE MODE: External | |
|---|---|
| START: | 315° |
| ANGLE: | 90° |
| START: | 00.00 nm |
| LENGTH: | 99.99 nm |

| Radar selected for COMBINE MODE: Own | |
|---|---|
| START: | 45° |
| ANGLE: | 270° |
| START: | 00.00 nm |
| LENGTH: | 99.99 nm |

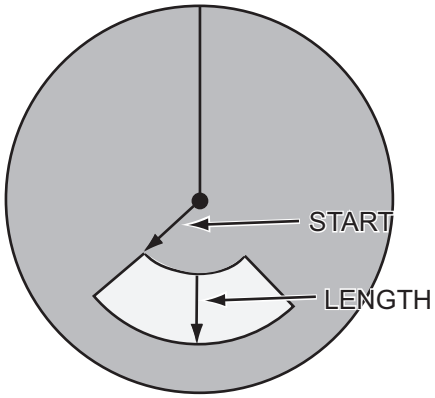



4. Select [2 COMBINE SECTOR] to set the width of the sector.

5. Use the scrollwheel to set [START] and [ANGLE], referring to the example below. Spin the scrollwheel to set and push it to confirm.
   A solid green line marks the dual radar display area.
   - **[START]**: Start point of the sector (in degrees, 000-359).
   - **[ANGLE]**: Horizontal width of the sector (in degrees, 000-359).




6. Select [3 COMBINE RANGE] to set the vertical width of the sector.
7. Use the scrollwheel to set [START] and [LENGTH], referring to the example below. Spin the scrollwheel to set and push it to confirm.
   - **[START]**: Distance from reference point to sector
   - **[LENGTH]**: Vertical length of sector




<Example> START: 01.00 nm
LENGTH: 02.00 nm

## 1.5.3 How to select the external radar (image source) to use

The dual radar display works best with two FAR-3xxx radars. Other makes or models can be used, however performance may vary.

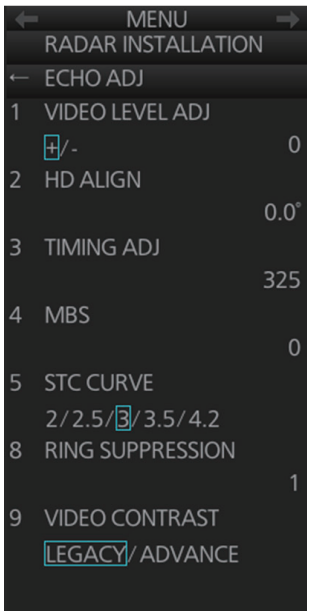
1. From the [RADAR INSTALLATION] menu, select [2 SCANNER], [6 DUAL RADAR SETTING].
2. Select [4 EXT RADAR].
3. Select required radar no. (Only the numbers of radar set on the [RADAR INSTALLATION] menu are valid.)
   **Note 1:** The dual radar will not function if a radar incompatible to the dual radar function is selected.
   **Note 2:** The dual radar display is designed to be used with two FAR-3xxx series radars. Other makes or models can be used, however performance may vary.
4. Press the **MENU** key to close the menu.

# 1.6 Other Settings

This section describes the menu items not previously described.

## 1.6.1 [ECHO ADJ] menu

Open the main menu then select [9 RADAR INSTALLATION]→ [1 ECHO ADJ] to open the [ECHO ADJ] menu.




**[1 VIDEO LEVEL ADJ]**

Adjust the video level manually. Set the radar as follows:

- Interference Rejector (IR): 2
- Echo Stretch (ES): OFF
- Echo Averaging (EAV): OFF
- Gain: 80
- Range: 24 NM
- Pulse Length: Long

Select [+] or [-]. Rotate the scrollwheel so that noise just disappears from the screen. The setting range is 0 to 32. After completion of the adjustment the radar goes into standby. If the noise does not disappear, switch to [-]([+]) and try again.

**[5 STC CURVE]**

Use the default setting. Change the setting according to sea condition. The larger the number the greater the STC effect.

**[8 RING SUPPRESSION]**

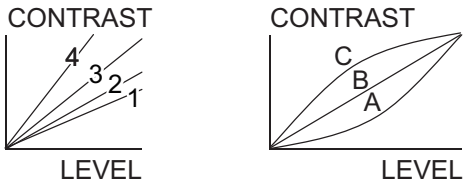
Remove “ring” noise which appears with the waveguide-type radar. Adjust so the rings disappear at the range of 0.125 NM. The setting range is 0 to 255.

**[9 VIDEO CONTRAST]**

Select [LEGACY] for FAR-3xxx series radar only.

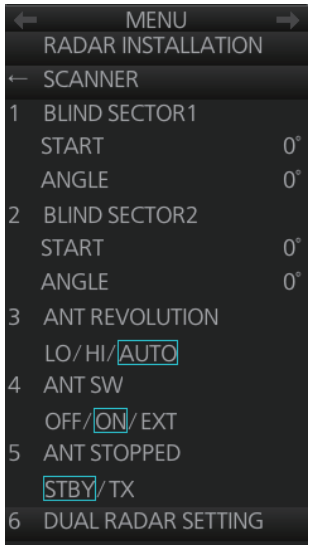
**Note:** The [ADVANCE] setting is not available at this time.

**[VIDEO CONTRAST] set to [LEGACY] at installation:**



## 1.6.2 [SCANNER] menu

Open the main menu then select [9 RADAR INSTALLATION]→ [2 SCANNER] to open the [SCANNER] menu.




### [1 BLIND SECTOR1], [2 BLIND SECTOR2]

Set area(s) where to prevent transmission. Heading must be properly aligned (see section 1.2) before setting any blind sector. For example, set the area where an interfering object at the rear of the antenna would produce a dead sector (area where no echoes appear) on the display. To enter an area, enter start bearing relative to the heading and dead sector angle. To erase the area, enter 0 for both the [START] and [ANGLE] sections. The setting range of [START] is 0° to 359° and [ANGLE] is 0° to 180°.

**Note:** Turn off a stern blind sector when adjusting the PM gain, to display the echo from the performance monitor properly.

### [3 ANT REVOLUTION]

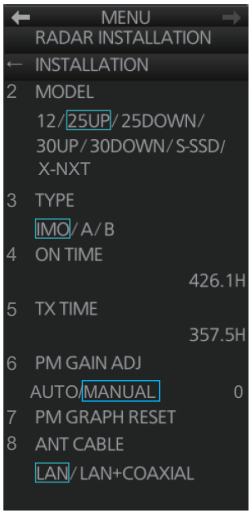
For HSC only. Select [LO] for 36 rpm, [HI] for 42 rpm. [AUTO] sets the normal rotation speed to 36 rpm and switches the rotation speed to 42 rpm when the short pulse is selected.

**Note:** Select [OFF] at [ANT SW] to prevent antenna rotation. [ANT STOPPED] prevents transmission while the antenna is stopped in STBY.

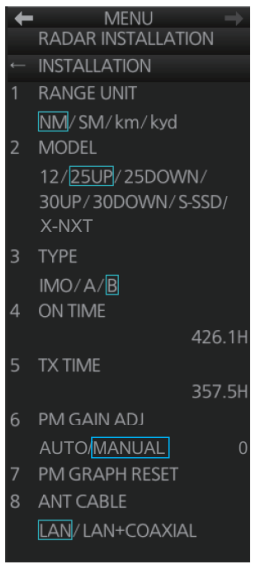
## 1.6.3 [INSTALLATION] menu

Open the main menu then select [9 RADAR INSTALLATION]→ [3 INSTALLATION] to open the [INSTALLATION] menu.

*IMO-/A-type radars*




*B-type radar*




### [1 RANGE UNIT]

**For the B-type radar**, select the range unit, NM, SM, KM or kyd then push the left button.

### [2 MODEL]

Confirm the model of your radar. This menu is set automatically according to the antenna. If this setting is different from your model, the radar will not function properly.

- [12]: For FAR-3015/3210(-BB)/3310
- [25UP]: FAR-3025/3220(-BB)/3320
- [25DOWN]: For FAR-3220W-BB/3320W
- [30UP]: For FAR-3035S/3230S(-BB)/3330S
- [30DOWN]: For FAR-3230SW-BB/3330SW

- [S-SSD]: For FAR-3035S-NXT/3230S-SSD(-BB)/3330S-SSD
- [X-NXT]: For FAR-3025-NXT/3220-NXT(-BB)/3320-NXT

**[3 TYPE]**

Select the type of radar: [IMO], [A] or [B].
[IMO]: IMO specifications
[A]: Near-IMO specifications
[B]: Non-Japanese fishing vessel specifications

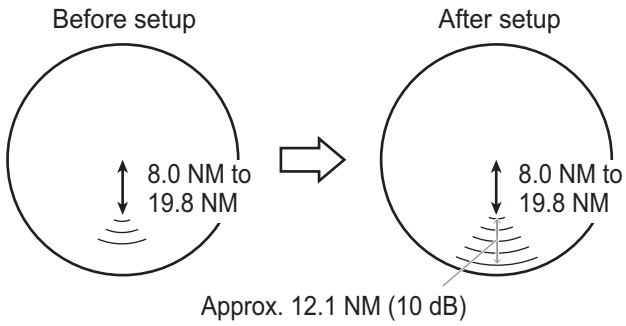
**Note:** Reboot the processor unit when this setting is changed.

**[4 ON TIME], [5 TX TIME]**

These items show the number of hours the radar has been turned on and transmitted, respectively. Value can be changed; for example, after replacing the magnetron for magnetron radar. [TX TIME] can be reset to 0.

**[6 PM GAIN ADJ]**

Adjust the performance monitor, automatically or manually, whenever the magnetron is replaced. For automatic adjustment, no further operation is required; close the menu at the completion of the adjustment. For manual do as follows to adjust the performance monitor gain.




Ex: When [ARC] is set to [5]
(The location of arcs changes with the setting of [ARC] in [PERFORMANCE MON] in the [ECHO] menu.)

1. Adjust the **GAIN** control so that a slight amount of white noise appears on the screen. Arcs for the performance monitor appear on the screen.
2. Select [PM GAIN ADJ] then spin the scrollwheel so that the outer arc faintly appears. The setting range is 0 to 255. Wait at least eight scans then right click to set.
   **Note:** Turn off a stern blind sector before adjusting the PM gain, to display the echo from the performance monitor properly.
   - Range: 24 NM
   - Pulse Length: Long
   - A/C SEA: OFF (turn off manually)
   - A/C RAIN: OFF (turn off manually)
   - Echo Averaging (EAV): OFF
   - Video Contrast: 2-B

**[7 PM GRAPH RESET]**

Select this item to reset all PM graphs, after replacing the magnetron. The message shown to the right appears. Click the [OK] button to reset the PM graphs.


**Note:** After the PM graphs are reset, perform PM gain adjustment, as previously outlined in "[6 PM GAIN ADJ]" on page 8

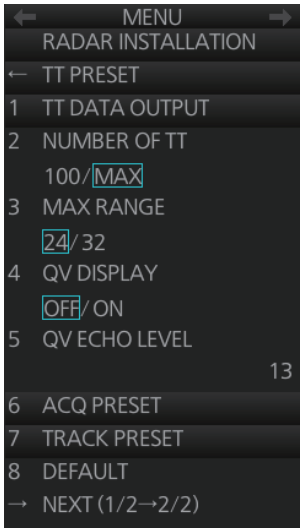
**[8 ANT CABLE]**

Select the method of connection between the radar sensor and the processor unit. [LAN] (LAN cable only) or [LAN+COAXIAL] (LAN and coaxial cables). Select [LAN+COAXIAL] when the optional LAN Signal Converter is installed.

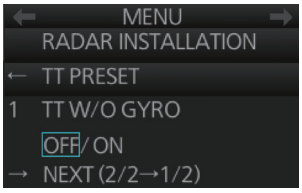
## 1.6.4 [TT PRESET] menu

Open the main menu then select [9 RADAR INSTALLATION]→ [4 TT PRESET] to open the [TT PRESET] menu.

*Page 1*



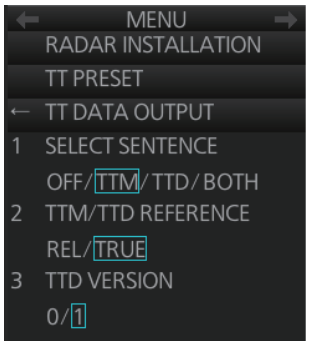

*Page 2*




**[1 TT DATA OUTPUT]**

Show the [TT DATA OUTPUT] menu.

**Note:** Confirm the data input configuration for the equipment which will receive the TT (target tracking) sentence BEFORE setting this menu.




- [SELECT SENTENCE]: Select the sentence that is output the TT target data.
  [OFF]: For no output of the TT data.
  [TTM]: For connected equipment which can receive the TTM sentence.
  [TTD]: For connected equipment which can receive the TTD sentence.
  [BOTH]: For connected equipment which can receive both TTM and TTD sentences.
  **Note:** This setting is valid for LAN connection only. For serial connection, the output sentence is determined on the [Common Installation Setting] menu, this setting is invalid. See the Instruction Manual (TIE-36940). for details. For both LAN and serial connections, set the baudrate to 38,400 bps.
- [TTM/TTD REFERENCE]: Set the output format for tracked target's bearing. [REL] (Target bearing from own ship, degree relative, target course, degree relative), or [TRUE] (Target bearing, degree true, target course, degree true).
- [TTD VERSION]: For TTD sentence, select the required protocol version for the connected equipment for TTD output ([0]: ver. 0 only, [1]: ver. 0 and ver. 1).
  **Note:** If the connected equipment is FMD-3xxx, select [1].

### [2 NUMBER OF TT]

Set the number of targets that can be acquired, [100] or [MAX] (200). For FAR-2xx7 radar, select [100].

### [3 MAX RANGE]

Select the maximum target tracking range, 24 or 32 nm.

### [4 QV DISPLAY]

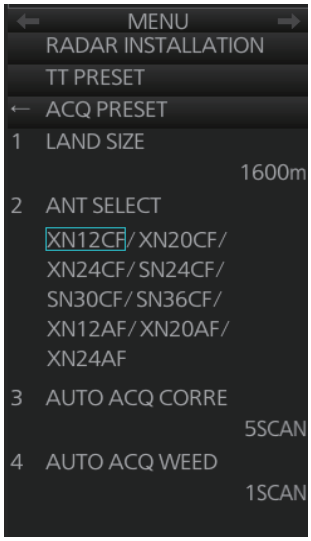
[OFF]: Normal picture,
[ON]: Quantized video. The normal picture is in effect whenever the power is turned on regardless of this setting.

### [5 QV ECHO LEVEL]

Set the detection level of echoes. The setting range is 1 to 31.

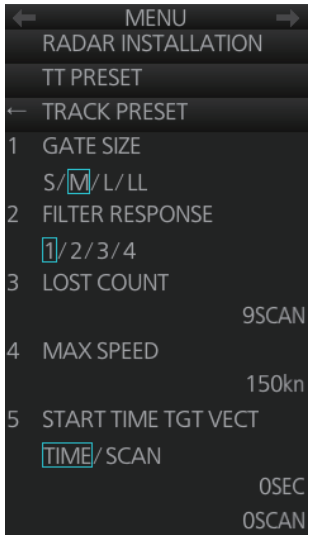
### [6 ACQ PRESET]

Show the [ACQ PRESET] menu.




- [LAND SIZE]: Set the land size in units of 100 m. The setting range is 100 to 3000 m. A target whose length is equal to or greater than the length set here is judged as a land target.
- [ANT SELECT]: Set the antenna radiator type of your radar. The size of the echo changes with radiator size. Select the correct radiator type to ensure proper performance.
- [AUTO ACQ CORRE]: Set the correlation count of automatic acquisition. The setting range is 3 to 10.
- [AUTO ACQ WEED]: Set the cancel count of automatic acquisition. The setting range is 1 to 5.

### [7 TRACK PRESET]




- **[GATE SIZE]**: Set the gate size among [S], [M], [L] or [LL].
- **[FILTER RESPONSE]**: Set the filter response function. The setting range is 1 to 4.
  1: Filter response is improved.
  4: Filter stability is improved.
- **[LOST COUNT]**: Set the number of scans to allow before a target is declared a lost target. The setting range is 1 to 20.
- **[MAX SPEED]**: No use.
- **[START TIME TGT VECT]**: Set the number of seconds or number of scans to wait before showing the vector for a newly acquired target. Select [TIME] or [SCAN] then enter value.

**[8 DEFAULT]**

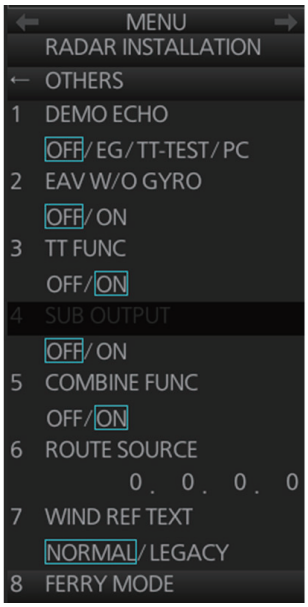
Restore the default settings for the [RADAR INSTALLATION] menu settings.

**[1 TT W/O GYRO] (page 2)**

TT can be used without a gyro. Select [ON] to use TT without a gyro.

## 1.6.5 [OTHERS] menu

Open the main menu then select [9 RADAR INSTALLATION]→ [5 OTHERS] to open the [OTHERS] menu.




**[1 DEMO ECHO]**

Select the type of demonstration echo to use. [EG] (Echo Generator), [TT-TEST] or [PC]. Select [OFF] to deactivate the demonstration echo feature.

**[2 EAV W/O GYRO]**

The each averaging feature can be used without a gyro-compass. Select [ON] to use the feature without a gyro-compass.

**[3 TT FUNC]**

Activate or deactivate the TT function.

**[4 SUB OUTPUT]**

- Magnetron radar: No use.
- Solid state radar: If the digital signal can be out-put in the analog format to the sub monitor, select [ON].

**[5 COMBINE FUNC]**

Enables, disables the dual radar display. Select [ON] to enable the dual radar display.

**[6 ROUTE SOURCE]**

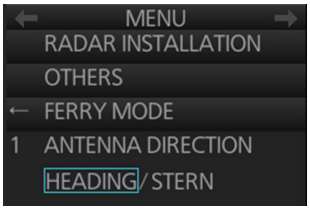
Set the IP address when receiving route information from a route source other than FMD-3xxx.

**[7 WIND REF TEXT]**

Select the format of the wind information on the [NAV data] box. For the wind reference, set on the [WIND STB] (Main menu→[4 INFORMATION BOX]→[2 SET NAV DATA]→[6 WIND STB]) menu.

**[8 FERRY MODE]**

Select the direction in which the antenna was installed (oriented) at [ANTENNA DIRECTION].



# 1.7 Network Transmission Setting Between ECDIS and Radar

Connect the ECDIS and FAR-3xxx series radar with the LAN cable to show the radar echo and TT symbols on the ECDIS chart display, and show the ECDIS route and user chart symbols on the radar display.

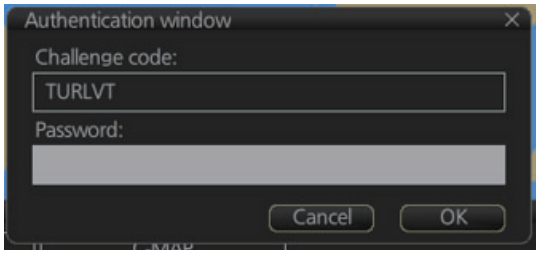
1. Press the **MENU** key five times while holding down the [1 HL OFF] key.
2. Select [9 RADAR INSTALLATION] → [4 TT PRESET] → [1 TT DATA OUTPUT] → [2 TTM/TTD PREFERENCE] and then select [TRUE].
3. On the ECDIS, open the [Common Installation Setting] menu.
4. Open the [Own Ship Setting] menu on the ECDIS to select [Radar Antenna] on the menu bar.
5. For one antenna unit, check [RAS001]. For two antenna units, check [RAS001] and [RAS002].

# 1.8 Forwarding Distance

Set the forwarding distance* as follows. The configuration can be copied to other units connected to the network after saving the configuration.

*: The distance the ship travels straight after the steering control.

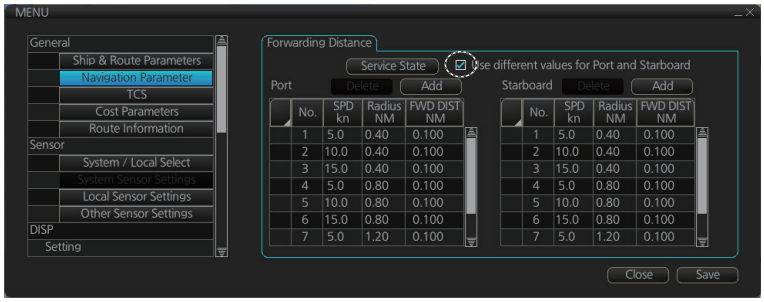
1. In the chart mode, press **Ctrl**, **Shift** and **t** keys simultaneously on the control unit or keyboard. A dialog box as shown in the figure to the right appears.




2. Generate a one-time password from the challenge code on the screen, enter the generated password and click the [OK] button.
   **Note:** The edit mode remains enabled until you press **Ctrl**, **Shift** and **t** keys simultaneously or reboot the unit.
3. Click [MENU] in the chart mode to open the menu.
4. Click [Navigation Parameter] to show the [Navigation Parameter] setting window.


5. Enter [SPD kn] (ship speed), [Radius NM] (turning radius) and [FWD DIST NM] (forwarding distance*).

6. When [FWD DIST NM] is different between port and starboard sides, check the checkbox of [Use different values for Port and Starboard] and then enter each setting value.




7. Click the [Save] button to save the configuration.

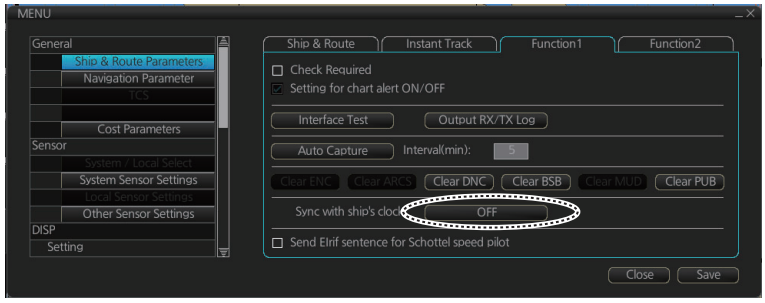
## 1.9 Synchronization With Ship's Clock

The time (UTC) received from the GPS is shown. If the ZDA sentence is input from the ship's clock, the time synchronized with the ship's clock can be shown.

Do as follows to activate the synchronization with the ship's clock.

**Note:** The local time setting is not available when the synchronization with ship's clock is active.

1. In the chart mode, press **Ctrl**, **Shift** and **t** keys simultaneously on the control unit or keyboard. A dialog box for entry of password appears.
2. Generate a one-time password from the challenge code on the screen, enter the generated password and click the [OK] button.
   **Note:** The edit mode remains enabled until you press **Ctrl**, **Shift** and **t** keys simultaneously or reboot the unit.
3. Click [MENU] to open the menu.
4. Click [Ship & Route Parameters], then click the [Function1] tab.

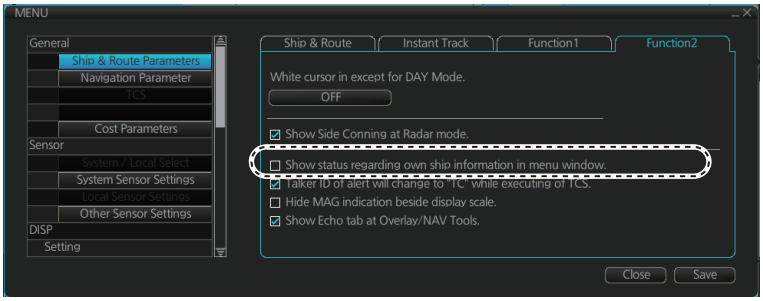



5. Click the [OFF] button of [Sync with ship's clock] to set "ON".
6. Click the [Save] button to save the configuration.

## 1.10 How to Change the Display Color for Sensor Data Based on Integrity

The following procedure shows how to change the color of the data in the sensor information box based on the results of the Integrity Check. For the Integrity Check, see the Operator's Manual for the Chart Radar.

1. In the chart mode, press **Ctrl**, **Shift** and **t** keys simultaneously on the control unit or keyboard. A dialog box for entry of password appears.
2. Generate a one-time password from the challenge code on the screen, enter the generated password and click the [OK] button.
   **Note:** The edit mode remains enabled until you press **Ctrl**, **Shift** and **t** keys simultaneously or reboot the unit.
3. Click [MENU] to open the menu.
4. Click [Ship & Route Parameters], then click the [Function2] tab.




5. Check the checkbox of [Show status regarding own ship information in menu window.].
6. Click the [Save] button to save the configuration.

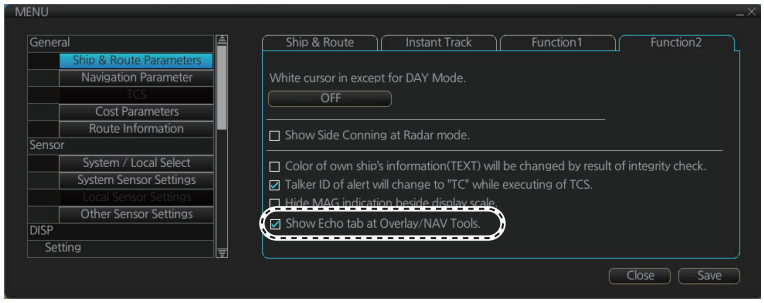
## 1.11 How to display the [Echo] page

To overlay the radar image on the chart mode, display the [Echo] page in the [Overlay/NAV Tools] box. For details, see the Operator's Manual for the Chart Radar.

**Note 1:** For B-type radar, the [Echo] page is not available regardless of this setting.

**Note 2:** In radar mode, set the radar to transmit to show the radar image on the chart mode.

1. In the chart mode, press **Ctrl**, **Shift** and **t** keys simultaneously on the control unit or keyboard. A dialog box for entry of password appears.
2. Generate a one-time password from the challenge code on the screen, enter the generated password and click the [OK] button.
   **Note:** The edit mode remains enabled until you press **Ctrl**, **Shift** and **t** keys simultaneously or reboot the unit.
3. Click [MENU] to open the menu.
4. Click [Ship & Route Parameters], then click the [Function2] tab.




5. Check the checkbox of [Show Echo tab at Overlay/NAV Tools].
6. Click the [Save] button to save the configuration.

## 1.12 Web Setting Menu

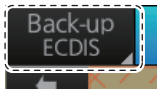
The setup of the Back-up ECDIS must be completed by a FURUNO approved service engineer. For details, see the Instruction Manual (TIE-36940).

## 1.13 How to Set Up the Back-up ECDIS

The set up of the back-up ECDIS must be completed by a FURUNO approved service engineer. For details, see the Instruction Manual (TIE-36940).

When Back-up ECDIS mode is active, the following changes occur:

- Own Ship Look-ahead Area function is fixed to ON and cannot be disabled.
- The talker for some route-related sentences and alerts changes to "EI".
- Display Mode button changes to show "Back-up ECDIS".
- Some information sent to a VDR (ECDIS display source information and LAN images) is sent with the prefix "EI" instead of "RA" and the equipment number changes as outlined in section 1.2.1 of the Instruction Manual.




## 1.14 ICE Mode

The ICE mode function helps to identify “sea ice” on a radar echo easily. To activate this function, a paid unlock code is required. To purchase an unlock code, contact your dealer.

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# APPX. 1 DIGITAL INTERFACE

## Digital Interface

**<Input sentences>**

ABK, ACN (ACM), ALC, ALF, ALR, ARC, CUR, DBT, DDC, DPT, DTM, EVE, GGA, GLL, GNS, HBT, HCR, HDT, MTW, MWD, MWV, NRM, NRX, NSR, RMC, RRT, SRP, THS, VBW, VDM, VDO, VDR, VHW, VLW, VSD, VTG, ZDA

**<Output sentences>**

ABM, ALC, ALF, ALR, ARC, BBM, DDC, EVE, HBT, OSD, RRT, RSD, RTE, SRP, TLB, TTD, TTM, VSD, WPL

**Note:** When this radar system has Back-up ECDIS enabled and Back-up ECDIS mode is active, the talker for some route-related sentences and alerts changes to "EI".

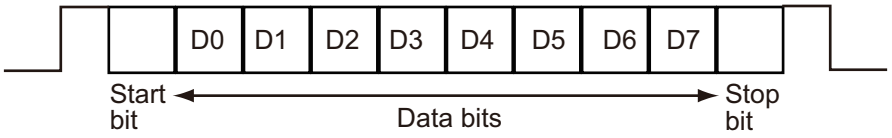
**<Transmission interval>**

25 s for HBT

**<Data reception>**

Data is received in serial asynchronous form in accordance with the standard referenced in IEC 61162-2 or IEC 61162-1 Ed.5.

The following parameters are used:
Baud rate: 38,400 bps (HDT, THS, !AIVDM, !AIVDO, !AIABK, $AIALR). The baud rate of all other sentences is 4800 bps
Data bits: 8 (D7 = 0), Parity: none, Stop bits: 1




## Data Sentences

**<Input sentences>**

ABK - UAIS Addressed and binary broadcast acknowledgment

$--ABK,xxxxxxxxx,x,x.x,x,x*hh<CR><LF>
1 2 3 4 5

1. MMSI of the addressed AIS unit (9 digits)
2. AIS channel of reception (No use)
3. Message ID (6, 8, 12, 14)
4. Message sequence number (0 to 9)
5. Type of acknowledgement (See below)
   0 = Message (6 or 12) successfully received by the addressed AIS unit
   1 = Message (6 or 12) was broadcast, but not ACK by addressed AIS unit
   2 = message could not be broadcast (quantity of encapsulated data exceeds five slots)
   3 = requested broadcast of message (8, 14 or 15) has been successfully completed
   4 = late reception of message (7 or 13) ACK that was addressed to this AIS unit (own ship and referenced a valid transaction)
   5 = message has been read and acknowledged on a display unit.

## ACN (ACM) - Alert command

$--ACN,hhmmss.ss,aaa,x.x,x.x,ca,a*hh<CR><LF>
$--ACM,hhmmss.ss,aaa,x.x,x.x,ca,a*hh<CR><LF>
1 2 3 4 5 6

1. Time (No use)
2. Manufacturer mnemonic code (3 digit alphanumeric code, null)
3. Alert identifier (0, 1 to 999 or 10000 to 9999999)
4. Alert instance (0 to 999999, null)
5. Alert command (A=ACK from ext. equipment, Q=Request from ext. equipment, O=Responsibility transfer, S=Silence from ext. equipment)
6. Sentence status flag (C should not be null field. Sentence without C is not a command.)

Information about the use of ACN vs ACM

The alert command sentence formatter ACM is defined in IEC 61924-2 Ed. 1. After Ed. 1 was released, the ACM is used by other criteria and the IEC technical corrigendum adopted the sentence formatter ACN to replace the ACM. However, equipment released before the adoption of the ACN may use ACM. This equipment uses both ACN and ACM.

## ALC - Cyclic alert list

$--ALC,xx,xx,xx,x.x, aaa,x.x,x.x,x.x,’’’’’’’’’*hh<CR><LF>
1 2 3 4 5 6 7 8 9

1. Total number of sentences for this message (01 to 99)
2. Sentence number (01 to 99)
3. Sequential message identifier (00 to 99)
4. Number of alert entries (0 to 3)
5. Manufacturer mnemonic code (FEC, null)
6. Alert identifier (1 to 999 or 10000 to 9999999)
7. Alert instance (1 to 999999, null)
8. Revision counter (1 to 99)
9. Additional alert entries (see Note)

Alert entry 1
See Note

Note: Alert entry 0 to n: Each alert entry consists of
- Manufacturer Identifier (see ALF Manufactuer)
- Alert Identifier (see ALF Alert identifier)
- Alert instance (see ALF instance)
- Revision counter (see ALF revision counter)

Each entry identifies a certain alert with a certain state.
It is not allowed that an alert entry is split between two ALC sentences.

## ALF - Alert sentence

$--ALF,x,x,x,hhmmss.ss,a,a,a,aaa,x.x,x.x,x.x,x,c--c*hh<CR><LF>
1 2 3 4 5 6 7 8 9 10 11 12 13

1. Total number of ALF sentences for this message (1, 2)
2. Sentence number (1, 2)
3. Sequential message identifier (0 to 9)
4. Time of last change (hh=00 to 23, mm=00 to 59, ss.ss=00.00 to 59.99)
5. Alert category (A=Alert category A, B=Alert category B, C=Alert category C, null)
6. Alert priority (A=Alarm, W=Warning, C=Caution, null when #2 is 2)
7. Alert state (V=Not ACKed, S=Silence, A=ACked, O/U=Resolved, Not ACKed, N=Normal state, null when #2 is 2)
8. Manufacturer mnemonic code (FEC, null)
9. Alert identifier (1 to 999 or 10000 to 9999999)
10. Alert instance (1 to 999999, null)
11. Revision counter (1 to 99)
12. Escalation counter (0 to 2)
13. Alert text (max. 18 characters)

## ALR - Set alarm state

$--ALR,hhmmss.ss,xxx,A,A,c—c*hh<CR><LF>
1 2 3 4 5

1. Time of alarm condition change, UTC (000000.00 to 235959.99)
2. Unique alarm number (identifier) at alarm source (000 to 999, null)
3. Alarm condition (A=threshold exceeded, V=not exceeded)
4. Alarm acknowledge state (A=acknowledged, V=not acknowledged)
5. Alarm description text (alphanumeric characters, max. 32)

## ARC - Alert command refused

$--ARC,hhmmss.ss,aaa,x.x,x.x,c*hh<CR><LF>
1 2 3 4 5

1. Release time of the alert command refused (000000.00 to 235959.99)
2. Used for proprietary alerts, defined by the manufacturer (FEC, null)
3. The alert identifier (1 to 999 or 10000 to 9999999)
4. The alert instance (1 to 999999, null)
5. Refused alert command (A=acknowledge, Q=request/repeat information, O=responsibility transfer, S=silence)

## CUR - Current

$--CUR,A,x,x.x,x.x,x.x,a,x.x,x.x,x.x,a,a*hh<CR><LF>
1 2 3 4 5 6 7 8 9 1011

1. Validity of data (A=valid, V=not valid)
2. Data set number (0 to 9)
3. Layer number (0.0 to 3.0)
4. Current depth in meters (0.00 to 99.99)
5. Current direction in degrees (0.00 to 360.00)
6. Direction reference in use (true or relative)
7. Current speed in knots (0.00 to 99.99)
8. Reference layer depth in meters (No use)
9. Heading (0 to 360.00)
10. Heading reference in use (true or magnetic)
11. Speed reference (B=Bottom track W=Water track P=Positioning system)

## DBT - Depth below transducer

$--DBT,xxxx.x,f,xxxx.x,M,xxxx.x,F*hh<CR><LF>
1 2 3 4 5 6

1. Water depth (0.00 to 99999.99)
2. feet
3. Water depth (0.00 to 99999.99)
4. Meters
5. Water depth (0.00 to 99999.99)
6. Fathoms

## DDC - Display dimming control

$--DDC,a,xx,a,a*hh<CR><LF>
1 2 3 4

1. Display dimming preset (D=Daytime, K=Dusk, N=Nightime, null)
2. Brightness percentage (00 to 99, null)
3. Color palette (No use)
4. Sentences status flag (C)

## DPT - Depth

$--DPT,x.x,x.x,x.x*hh<CR><LF>
1 2 3

1. Water depth relative to the transducer, meters (0.00 to 99999.99)
2. Offset from transducer, meters (No use)
3. Maximum range scale in use (No use)

## DTM - Datum reference

$--DTM,ccc,a,x.x,a,x.x,a,x.x,ccc*hh<CR><LF>
1 2 3 4 5 6 7 8

1. Local datum (W84=WGS84, W72=WGS72, S85=SGS85, P90=PE90, 999=User defined null)
2. Local datum subdivision code (No use)
3. Lat offset, min (No use)
4. N/S (No use)
5. Lon offset, min (No use)
6. E/W (No use)
7. Altitude offset, meters (No use)
8. Reference datum (No use)

## EVE - General event message

$--EVE,hhmmss.ss,c--c,c--c*hh <CR><LF>
1 2 3

1. Event time (000000.00 to 235959.99)
2. Tag code used for identification of source of event
3. Event description

## GGA - Global positioning system fix data

$--GGA,hhmmss.ss,llll.ll,a,yyyyy.yy,a,x,xx,x.x,x.x,M,x.x,M,x.x,xxxx*hh<CR><LF>
1 2 3 4 5 6 7 8 9 10 11 12 13 14

1. UTC of position (no use)
2. Latitude (0000.00000 to 9000.00000)
3. N/S
4. Longitude (0000.00000 to 18000.00000)
5. E/W
6. GPS quality indicator (1 to 8)
7. Number of satellite in use (No use)
8. Horizontal dilution of precision (0.0 to 999.9)
9. Antenna altitude above/below mean sealevel (No use)
10. Unit, m (No use)
11. Geoidal separation (No use)
12. Unit, m (No use)
13. Age of differential GPS data (0.0 to 999.99)
14. Differential reference station ID (No use)

## GLL - Geographic position, latitude/longitude

$--GLL,llll.ll,a,yyyyy.yy,a,hhmmss.ss,a,x*hh<CR><LF>
1 2 3 4 5 6 7

1. Latitude (0000.00000 to 9000.00000)
2. N/S
3. Longitude (0000.00000 to 18000.00000)
4. E/W
5. UTC of position (No use)
6. Status (A=data valid V=data invalid)
7. Mode indicator (A=Autonomous D=Differential E=Estimated M=Manual input S=Simulator)

## GNS - GNSS fix data

$--GNS,hhmmss.ss,llll.ll,a,yyyyy.yy,a,c--c,xx,x.x,x.x,x.x,x.x,x.x,a*hh<CR><LF>
1 2 3 4 5 6 7 8 9 10 11 1213

1. UTC of position (no use)
2. Latitude (0000.00000 to 9000.00000)
3. N/S
4. Longitude (0000.00000 to 18000.00000)
5. E/W
6. Mode indicator (A=Autonomous, D=Differential, E=Estimated Mode, F=Float RTK, M=Manual Input Mode, N=No fix, P=Precise, R=Real Time Kinematic, S=Simulator Mode)
7. Total number of satellites in use (No use)
8. HDOP (0.00 to 999.99)
9. Antenna altitude, meters (No use)
10. Geoidal separation (No use)
11. Age of differential data (0.00 to 99.99)
12. Differential reference station ID (No use)
13. Navigational status indicator (S=Safe, C=Caution, U=Unsafe, V=Not valid)

## HBT - Heartbeat supervision sentence

$--HBT,x.x,A,x*hh<CR><LF>
1 2 3

1. Configured repeat interval (0 to 999, null)
2. Equipment status (A=Normal V=System fail)
3. Sequential sequence identifier (0 to 9)

## HCR- Heading correction report

$--HCR,x.x,a,a,x.x*hh<CR><LF>
1 2 3 4

1. Heading, degrees true (0.00 to 360.00)
2. Mode indicator (A=Autonomous, E=Estimated(dead reckoning), M=Manual input, S=Simulator mode, V=Data not valid (including standby)
3. Correction state (A=Both Speed/latitude and dynamic correction included in heading, D=Dynamic correction included in heading, S=Speed/latitude correction included in heading, N=No correction included in heading, V=Not available, reporting device does not know about correction state)
4. Correction value (-180.0 to 180.0, null)

## HDT - Heading, true

$--HDT,xxx.x,T*hh<CR><LF>
1 2

1. Heading, degrees (0.00 to 360.00)
2. True (T)

## MTW - Water temperature

$--MTW,x.x,C*hh<CR><LF>
1

1. Water temperature, degrees C (-100.000 to 100.000)

## MWD - Wind direction and speed

$--MWD,x.x,T,x.x,M,x.x,N,x.x,M*hh<CR><LF>
1 2 3 4

1. Wind direction, 0 to 359 degrees True
2. Wind direction, 0 to 359 degrees Magnetic
3. Wind speed, knots
4. Wind speed, meters/second

## MWV - Wind speed and angle

$--MWV,x.x,a,x.x,a,A*hh<CR><LF>
1 2 3 4 5

1. Wind angle, degrees (0.00 to 360.00)
2. Reference (R/T)
3. Wind speed (0.00 to 9999.99)
4. Wind speed units (K=km/h M=m/s N=knots S=mph)
5. Status (A=data valid V=data invalid)

## NRM - NAVTEX receiver mask

$--NRM,x,x,hhhhhhhh,hhhhhhhh,a*hh<CR><LF>
1 2 3 4 5

1. Function code (0 to 3)
2. Frequency table index (1 to 3)
3. Transmitter coverage area mask (00000000 to 02FFFFFF)
4. Message type mask (00000000 to 02FFFFFF)
5. Sentence status flag (R=Status report of current settings, C=Configuration command to change settings)

## NRX - NAVTEX received message

$--NRX,xxx,xxx,xx,aaxx,x,hhmmss.ss,xx,xx,xxxx,xxxx,xxxx,A,c--c*hh<CR><LF>
1 2 3 4 5 6 7 8 9 10 11 12 13

1. Number of sentences (001 to 999)
2. Sentence number (001 to 999)
3. Sequential message ID (00 to 99)
4. Navtex message code (aaxx aa:AA to ZZ xx:00 to 99, null)
5. Frequency table index (0 = not received over air, 1 = 490 kHz, 2 = 518 kHz, 3 = 4209.5 kHz, 4 to 9 = reserved, null)
6. UTC of receipt of message (no use)
7. Day (01 to 31, null)
8. Month (01 to 12, null)
9. Year (0000 to 9999, null)
10. Total number of characters in this series of NRX sentences (1 to 8000, null)
11. Total number of bad characters (1 to 8000, null)
12. Status indication (A/V, null)
13. Message body (English alphanumeric characters)

## NSR - Navigation Status Report

$--NSR, a, A, a, A, a, A, a, A, a, A, a, A *hh<CR><LF>
1 2 3 4 5 6 7 8 9 10111213

1. Integrity of heading (P, F, D, N)
2. Plausibility of heading (A, V, N)
3. Integrity of position (P, F, D, N)
4. Plausibility of position (A, V, N)
5. Integrity of STW (P, F, D, N)
6. Plausibility of STW (A, V, N)
7. Integrity of SOG and COG (P, F, D, N)
8. Plausibility of SOG and COG (A, V, N)
9. Integrity of depth (P, F, D, N)
10. Plausibility of depth (A, V, N)
11. Mode of STW (W, E, M, N)
12. Integrity of time (P, F, D, N)
13. Plausibility of time (A, V, N)

## RMC - Recommended minimum specific GPS/TRANSIT data

$GPRMC,hhmmss.ss,A,llll.ll,a,yyyyy.yy,a,x.x,x.x,ddmmyy,x.x,a,a,a*hh<CR><LF>
1 2 3 4 5 6 7 8 9 10 111213

1. UTC of position fix (No use)
2. Status (A=data valid, V=navigation receiver warning)
3. Latitude (0000.00000 to 9000.00000)
4. N/S
5. Longitude (00000.00000 to 18000.00000)
6. E/W
7. Speed over ground, knots (0.00 to 99.94)
8. Course over ground, degrees true (0.0 to 360.0)
9. Date (No use)
10. Magnetic variation, degrees (No use)
11. E/W (No use)
12. Mode indicator (A= Autonomous mode, D= Differential mode, S= Simulator, F=Float RTK P=Precise, R=Real time kinematic E=Estimated (DR) M=Manual
13. Navigational status indication (S=Safe C=Caution U=Unsafe V=Navigational status not valid)

## RRT - Report Route Transfer

$--RRT, a, c-c, c-c, c-c, a, a *hh <CR><LF>
1 2 3 4 5 6

1. Reported transfer type.
   (M=Monitored route, A=Alternative route for editing, Q=Query for transmitting any monitored or alternative route for editing)
2. Name of transferred route. (Max. 30 characters, null)
3. Version of transferred route. (Max. 20 characters, null)
4. ID of current waypoint for monitored route. (Max. 10 characters, null)
5. File transfer statues of transferred route.
   (A=Successful reception of the route file transfer, E=Error in reception of the route file transfer)
6. Status of the intended application of the transferred route.
   (A=Content of the received route accepted and valid, V=Content of received route rejected, P=Pending, application level has not yet evaluated the received route, N=Not applicable).

## SRP - System function ID

$--SRP,x,hhhhhhhhhhhh,c--c*hh<CR><LF>
1 2 3

1. Instance number for interface redundancy (i.e. number of physical port for identical SFI), null if interface redundancy not in use. The instance numbers shall be ordinal with no skipping (1, 2, 3,…).
2. Reported MAC address used by SFI, 48bit hexadecimal number, for example 32613C4EB605
3. Reported IP address used by SFI as text string, for example 239.192.0.1

## THS - True heading and status

$--THS,xxx.x,a*hh<CR><LF>
1 2

1. Heading, degrees True (0.00 to 360.00)
2. Mode indicator (A=Autonomous E=Estimated M=Manual input S=Simulator V=Data not valid)

## VBW - Dual ground/water speed

$--VBW,x.x,x.x,x,x.x,x.x,x,x.x,x.x,x,x.x,x*hh<CR><LF>
1 2 3 4 5 6 7 8 9 10

1. Longitudinal water speed, knots (-99.949 to 99.949)
2. Transverse water speed, knots (-99.949 to 99.949, null)
3. Status: water speed, A=data valid V=data invalid
4. Longitudinal ground speed, knots (-99.949 to 99.949)
5. Transverse ground speed, knots (-99.949 to 99.949, null)
6. Status: ground speed, A=data valid V=data invalid
7. Stern transverse water speed, knots (-99.949 to 99.949)
8. Status: stern water speed, A=data valid V=data invalid
9. Stern transverse ground speed, knots (-99.949 to 99.949)
10. Status: stern ground speed, A=data valid V=data invalid

## VDM - UAIS VHF data-link message

!AIVDM,x,x,x,x,s--s,x*hh<CR><LF>
1 2 3 4 5 6

1. Total number of sentences needed to transfer the message (1 to 9)
2. Message sentence number (1 to 9)
3. Sequential message identifier (0 to 9, null)
4. AIS channel Number (A, B, null)
5. Encapsulated ITU-R M.1371 radio message (1 to 62 bytes)
6. Number of fill-bits (0 to 5)

## VDO - UAIS VHF data-link own vessel report

!AIVDO,x,x,x,x,s--s,x*hh<CR><LF>
1 2 3 4 5 6

1. Total number of sentences needed to transfer the message (1 to 9)
2. Message sentence number (1 to 9)
3. Sequential message identifier (0 to 9, null)
4. AIS channel Number (A, B, C, D, null)
5. Encapsulated ITU-R M.1371 radio message (1 to 62 bytes)
6. Number of fill-bits (0 to 5)

## VDR - Set and drift

$--VDR,x.x,T,x.x,M,x.x,N*hh <CR><LF>
1 2 3 4 5 6

1. Direction, degrees (0.00 to 360.00)
2. T=True (fixed)
3. Direction, degrees (0.00 to 360.00, null)
4. M=Magnetic (fixed)
5. Current speed (0 to 99.99)
6. N=Knots (fixed)

## VHW - Water speed and headings

$--VHW,x.x,T,x.x,M,x.x,N,x.x,K*hh <CR><LF>
1 2 3 4 5 6 7 8

1. Heading, degrees (No use)
2. T=True (No use)
3. Heading, degrees (No use)
4. M=Magnetic (No use)
5. Speed (-99.94 to 99.94)
6. N=Knots (fixed)
7. Speed (-99.94 to 99.94)
8. K=km/h (fixed)

### VLW - Dual ground/water distance

$--VLW,x.x,N,x.x,N,x.x,N,x.x,N*hh<CR><LF>
1 2 3 4 5 6 7 8

1. Total cumulative water distance (0.0 to 999999.999)
2. N=Nautical miles
3. Water distance since reset (0.000 to 999999.999)
4. N=Nautical miles
5. Total cumulative ground distance (no use)
6. N=Nautical miles (no use)
7. Ground distance since reset (no use)
8. N=Nautical miles (no use)

### VSD- AIS voyage static data

$--VSD,x.x,x.x,x.x,c--c,hhmmss.ss,xx,xx,x.x,x.x*hh<CR><LF>
1 2 3 4 5 6 7 8 9

1. Type of ship and cargo category (0 to 255, null)
2. Maximum present static draught (0 to 25.5 meters, null)
3. Persons on-board (0 to 8191, null)
4. Destination (1 to 20 characters, null)
5. Estimated UTC of arrival at destination (000000.00 to 235959.99, null, 246000.00)
6. Estimated day of arrival at destination (00 to 31 (UTC), null)
7. Estimated month of arrival at destination (00 to 12 (UTC), null)
8. Navigational status (0 to 15, null)
9. Regional application flags (null)

### VTG - Course over ground and ground speed

$--VTG,x.x,T,x.x,M,x.x,N,x.x,K,a*hh <CR><LF>
1 2 3 4 5 6 7 8 9

1. Course over ground, degrees (0.00 to 360.00)
2. T=True (fixed)
3. Course over ground, degrees (No use)
4. M=Magnetic (No Use)
5. Speed over ground, knots (0.00 to 99.94)
6. N=Knots (fixed)
7. Speed over ground, km/h (0.00 to 99.94)
8. K=km/h (fixed)
9. Mode indicator (A=Autonomous, D=Differential, E=Estimated (dead reckoning), M=Manual input, S=Simulator, P=Precision)

### ZDA - Time and date

$--ZDA,hhmmss.ss,xx,xx,xxxx,xx,xx*hh<CR><LF>
1 2 3 4 5 6

1. UTC (000000.00 to 235960.99)
2. Day (01 to 31)
3. Month (01 to 12)
4. Year (UTC, 1970 to 2037)
5. Local zone, hours (No use)

## <Output sentences>

### ABM - UAIS Addressed binary and safety related message

!--ABM,x,x,x,xxxxxxxxx,x,xx,s--s,x*hh<CR><LF>
1 2 3 4 5 6 7 8

1. Total number of sentences needed to transfer the message (1 to 9)
2. Message sentence number (1 to 9)
3. Message sequence identifier (0 to 3)
4. The MMSI of destination AIS unit for the ITU-R M.1371 message (9 digits)
5. AIS channel for broadcast of the radio message (0 to 3)
6. VDL message number (6 or 12), see ITU-R M.1371
7. Encapsulated data (1 to 60 bytes)
8. Number of fill-bits (0 to 5)

ALC - (See input sentence on page AP-2.)

ALF - (See input sentence on page AP-2.)

ALR - (See input sentence on page AP-2.)

## ARC - Alert command refused

$--ARC,hhmmss.ss,aaa,x.x,x.x,c*hh<CR><LF>
1 2 3 4 5

1. Release time of the alert command refused (000000.00 to 235959.99)
2. Used for proprietary alerts, defined by the manufacturer (FEC, null)
3. The alert identifier (1 to 999 or 10000 to 9999999)
4. The alert instance (1 to 999999, null)
5. Refused alert command (A=acknowledge, Q=request/repeat information, O=responsibility transfer, S=silence)

## BBM - UAIS broadcast binary message

!--BBM,x,x,x,x,xx,s--s,x*hh<CR><LF>
1 2 3 4 5 6 7

1. Total number of sentences needed to transfer the message (1 to 9)
2. Sentence number (1 to 9)
3. Sequential Message identifier (0 to 9)
4. AIS channel for broadcast of the radio message (0 to 3)
5. ITU-R M.1371 message ID (8 or 14)
6. Encapsulated data (1 to 60 bytes)
7. Number of fill-bits, 0 to 5

## DDC - Display dimming control

$--DDC,a,xx,a,aa*hh<CR><LF>
1 2 3 4

1. Display dimming preset (null)
2. Brightness percentage (00 to 99)
3. Color palette preset (null)
4. Sentences status flag (R=report of current settings, C=configuration command)

## EVE - General event message

$--EVE,hhmmss.ss,c--c,c--c*hh<CR><LF>
1 2 3

1. Event time (000000.00 to 235959.99)
2. Tag code used for identification of source of event (RA0001 to RA0010, EI0001 to EI0016, IN0001 to IN0016, II0001 to II0016)
3. Event description (OPERATION)

**Note**: This sentence is output after input has been detected from either the trackball or the keyboard.

HBT - (See input sentence on page AP-4.)

## OSD- Own ship data

$--OSD,53.21,A,57.89,R,12.52,R,45.67,6.78,N*hh<CR><LF>
1 2 3 4 5 6 7 8 9

1. Heading, degrees true (0.00 to 359.99, null)
2. Heading status (A=data valid, V=data invalid)
3. Vessel course, degrees true (0.00 to 359.99, null)
4. Course reference (B=Bottom tracking log, M=Manually entered, W=Water referenced, R=Radar tracking (of fixed target), P=Positioning system ground reference, null)
5. Vessel speed (0.00 to 999.99, null)
6. Speed reference (B/M/W/R/P, null)
7. Vessel set, degrees true, manually entered (0.00 to 359.99, null)
8. Vessel drift (speed), manually entered (0.00 to 99.99, null)
9. Speed units (N=Knots)

RRT - (See input sentence on page AP-6.)

## RSD - Radar system data

$RARSD,x.x,x.x,x.x,x.x,x.x,x.x,x.x,x.x,x.x,x.x,x.x,x.x,N,H*hh <CR><LF>
1 2 3 4 5 6 7 8 9 10 11 1213

1. Origin 1 range, from own ship (0.000 to 999) (see note 2)
2. Origin 1 bearing, degrees from 0 (0.0 to 359.9) (see note 2)
3. Variable range marker 1(VRM1), range (0.000 to 999)
4. Bearing line 1(EBL1), degrees from 0 (0.0 to 359.9)
5. Origin 2 range (0.000 to 999.9) (see note 2)
6. Origin 2 bearing (0.0 to 359.9)(see note 2)
7. VRM2,.9 range (0.000 to 999)
8. EBL2, degrees (0.0 to 360.0)
9. Cursor range, from own ship (0.000 to 999)
10. Cursor bearing, degrees clockwise from 0 (0.0 to 359.9)
11. Range scale in use (0.0625 to 120)
12. Range units (K/N/S)
13. Display rotation (see note 1)

**Note:**

1 Display rotation:
C=Course-up, course-over-ground up, degrees true
H=Head-up, ship's heading(center-line) 0 up
N=North-up, true north is 0 up

2 Origin 1 and origin 2 are located at the stated range and bearing from own ship and provide for two independent sets of variable range markers (VRM) and electronic bearing lines (EBL) originating away from own ship position.

## RTE - Routes

$--RTE,x.x,x.x,a,c--c,c--c,• •,c--c*hh <CR><LF>
1 2 3 4 5 • • 6

1. Total number of sentences being transmitted (1 to n/null)
2. Sentence number (1 to n/null)
3. Message mode (c/w/null)
4. Route identifier/null
5. Waypoint identifier/null • • Additional waypoint indentifiers
6. Waypoint “n” identifier (alphabet or null)

## SRP - (See input sentence on page AP-6.)

## TLB - Target label

$--TLB,x.x,c--c,x.x,c--c,…,x.x,c--c*hh<CR><LF>
1 2 3 3

1. Target number “n” reported by the device (1 to 1023)
2. Label assigned to target “n” (TT=000 - 999, AIS=000000000 - 999999999)
3. Additional label pairs

## TTD - Tracked Target Data

!RATTD,xx,xx,x,s--s,x*hh<CR><LF>
1 2 3 4 5

1. Total hex number of sentences need to transfer the message (01)
2. Hex sentence number (01)
3. Sequential message identifier (0)
4. Encapsulated trancked target data (6 bit binary-converted data)
5. Number of fill bits (0 to 5)

### TTM - Tracked target message

$RATTM,05,12.34,23.4,R,45.67,123.4,T,1.23,8.23,N,c--c,T,R,hhmmss.ss,M*hh<CR><LF>
1 2 3 4 5 6 7 8 9 10 11 1213 14 15

1. Target number (00 to 999)
2. Target distance from own ship (0.000 to 99.999)
3. Bearing from own ship,degrees (0.0 to 359.9)
4. True or Relative (T)
5. Target speed (0.00 to 999.99, null)
6. Target course, degrees (0.0 to 359.9, null)
7. True or Relative
8. Distance of closet point of approach (0.00 to 99.99, null)
9. Time to CPA, min., "-" increasing (-99.99 to 99.99, null)
10. Speed/distance units (N=NM)
11. Target name (null)
12. Target status (L=Lost Q=Acquiring T=Tracking)
13. Reference target (R, null otherwise)
14. UTC of data (null)
15. Type of acquisition (A=Automatic M=Manual )

### VSD - UAIS Voyage static data

$--VSD,x.x,x.x,x.x,c--c,hhmmss.ss,xx,xx,x.x,x.x*hh<CR><LF>
1 2 3 4 5 6 7 8 9

1. Type of ship and cargo category (0 to 255, null)
2. Maximum present static draught (0 to 25.5 meters, null)
3. Persons on-board (0 to 8191, null)
4. Destination (1 to 20 characters, null)
5. Estimated UTC of arrival at destination (000000.00 to 235959.99, null, 246000.00)
6. Estimated day of arrival at destination (00 to 31 (UTC), null)
7. Estimated month of arrival at destination (00 to 12 (UTC), null)
8. Navigational status (0 to 15, null)
9. Regional application flags (null)

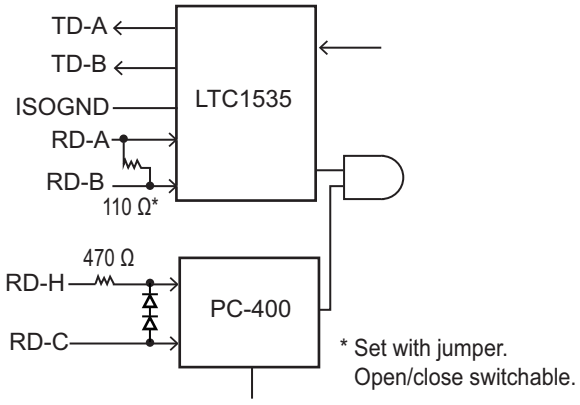
### WPL - Waypoint location

$--WPL,llll.ll,a,yyyyy.yy,a,c--c*hh<CR><LF>
1 2 3 4 5

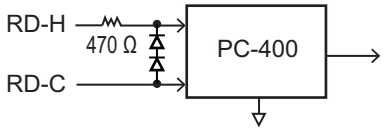
1. Waypoint latitude (0000.00000 to 9000.00000)
2. N/S
3. Waypoint longitude (00000.00000 to 18000.00000)
4. E/W
5. Waypoint identifier (No use)

## Serial Interface

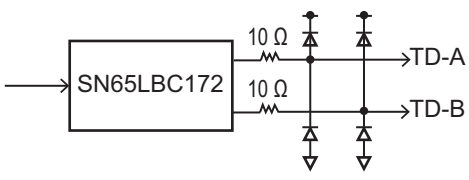
*Processor Unit: IEC 61162-2/1 input/output*
*Sensor Adapter: IEC 61162-2/1 input/output*




*Processor Unit: IEC 61162-1 input*
*Sensor Adapter: IEC 61162-1 input*




*Processor Unit: IEC 61162-1 output*
*Sensor Adapter: IEC 61162-1 output*



# APPX. 2 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.* |
|---|---|---|---|
| Critical Point | 3038, × | Lost Target | 3052, × |
| Target Capacity | 3042, × | HUB Link ERR | 10433, × |
| | 3043, × | HUB Flow ERR | 10436, × |
| New Target | 3048, × | HUB overload | 10439, × |

*: "×" indicates instance number.

Alerts which are not acknowledge within the set time limit are repeated as warning level, with the exception of the Alert "Anchor Watch". The Alert "Anchor Watch" is escalated from waring level to alarm level if the alert is not acknowledged within the set time. The default escalation time is as follows. If you require to change the escalation time, see the Operator's Manual.

- IEC62923-2 standard alert: 270 s (fixed)
- Other than IEC62923-2 standard alert: 60 s (adjustable)
- "Anchor Watch": 120 s (fixed)
  The escalation time for "Anchor Watch" is based on IEC61174 and time limit cannot be changed.

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

**Note 1:** The ALR format is not BAM-compliant and shall not be used for new installations. It may be used for retrofitting on ships-in-operation only.

**Note 2:** You can change the priority for some alerts to [Warning] from the [Chart Alerts] page (see the Operator's Manual).

**Note 3:** When this unit is assigned as a backup ECDIS, the following ALF alerts are output with the EI talker. (3015, 3024, 3031, 3032, 3035, 3038, 10645, 10703, 10801, 13035)

**Note 4:** None of the alerts support responsibility transfer.

## Priority: Alarm, Warning, Caution

| Alert ID | | Alert title | Alert Message | Priority & Category |
|---|---|---|---|---|
| ALF | ALR | | | |
| 3042, 1 | 523 | TT TGT Full (Auto) | Cancel non-dangerous TT manually | Warning Cat: A |
| | | **Meaning**: 100% of capacity for automatically acquired TT is used.<br>**Remedy**: The number of acquired TT target became 100% of its limit. Stop tracking unnecessary TT targets. | | |
| 3042, 2 | 525 | TT TGT Full (MAN) | Cancel non-dangerous TT manually | Warning Cat: A |
| | | **Meaning**: 100% of capacity for manually acquired TT is used.<br>**Remedy**: The number of acquired TT target became 100% of its limit. Stop tracking unnecessary TT targets. | | |

| Alert ID | | Alert title | Alert Message | Priority & Category |
|---|---|---|---|---|
| ALF | ALR | | | |
| 3042, 3 | 531 | AIS Display Full | Adjust [AIS DISP FILTER] settings | Warning<br>Cat: A |
| | | **Meaning**: 100% of maximum number of target which can be displayed is used.<br>**Remedy**: The number of AIS target became 100% of that can be displayed. Change the display number using filter function. | | |
| 3042, 4 | 533 | AIS CPTY Full | Adjust [AIS DISP FILTER] settings | Warning<br>Cat: A |
| | | **Meaning**: 100% of memory capacity for AIS targets is filled.<br>**Remedy**: Memory for AIS targets is filled 100%. Cancel unnecessary targets. | | |
| 3042, 5 | 535 | Active AIS Full | Sleep non-dangerous AIS manually | Warning<br>Cat: A |
| | | **Meaning**: 100% of capacity for active AIS is used.<br>**Remedy**: The number of active AIS became 100% of its limit. Change the unnecessary targets to sleep mode. | | |
| 3043, 1 | 522 | TT TGT 95% (Auto) | Cancel non-dangerous TT manually | Caution<br>Cat: B |
| | | **Meaning**: Appears when capacity for automatically tracked targets is full.<br>**Remedy**: Remove TT symbol manually because the capacity for TT is 95%. | | |
| 3043, 2 | 524 | TT TGT 95% (MAN) | Cancel non-dangerous TT manually | Caution<br>Cat: B |
| | | **Meaning**: Appears when capacity for manually tracked targets is full.<br>**Remedy**: Remove TT symbol manually because the capacity for TT is 95%. | | |
| 3043, 3 | 530 | AIS Display 95% | Adjust [AIS DISP FILTER] settings | Caution<br>Cat: B |
| | | **Meaning**: 95% of maximum number of target which can be displayed is used.<br>**Remedy**: The number of AIS target became 95% of that can be displayed. Change the display number using filter function. | | |
| 3043, 4 | 532 | AIS Capacity 95% | Adjust [AIS DISP FILTER] settings | Caution<br>Cat: B |
| | | **Meaning**: 95% of memory capacity for AIS targets is filled.<br>**Remedy**: Memory for AIS targets is filled 95%. Cancel unnecessary targets. | | |
| 3043, 5 | 534 | Active AIS 95% | Sleep non-dangerous AIS manually | Caution<br>Cat: B |
| | | **Meaning**: 95% of capacity for active AIS is used.<br>**Remedy**: The number of active AIS became 95% of its limit. Change the unnecessary targets to sleep mode. | | |
| 3043, 7 | 547 | AIS DATREP Full | Adjust [AIS DISP FILTER] settings | Caution<br>Cat: B |
| | | **Meaning**: 100% of memory capacity for AIS data report is filled.<br>**Remedy**: Adjust the settings on the [DISP FILTER] menu. | | |
| 3043, 8 | 548 | AIS SART Full | Adjust [AIS DISP FILTER] settings | Caution<br>Cat: B |
| | | **Meaning**: 100% of memory capacity for AIS locating device is filled.<br>**Remedy**: Adjust the settings on the [DISP FILTER] menu. | | |
| 3043, 9 | 549 | AIS SYN TGT Full | Adjust [AIS DISP FILTER] settings | Caution<br>Cat: B |
| | | **Meaning**: 100% of memory capacity for AIS synthetic target is filled.<br>**Remedy**: Adjust the settings on the [DISP FILTER] menu. | | |
| 3044, - | 519 | CPA/TCPA | Take evasive action if necessary | Alarm<br>Cat: A |
| | | **Meaning**: Target is within CPA/TCPA threshold, danger of collision.<br>**Remedy**: Take evasive action if necessary. Adjust CPA/TCPA settings. | | |

| Alert ID | | Alert title | Alert Message | Priority & Category |
|---|---|---|---|---|
| ALF | ALR | | | |
| 3048, 1 | 521 | TT New Target | Confirm TT new targets | Warning<br>Cat: A |
| | | **Meaning**: The system detected a new TT target.<br>**Remedy**: Check the target details and take appropriate action. | | |
| 3048, 2 | 529 | AIS New Target | Confirm AIS new targets | Warning<br>Cat: A |
| | | **Meaning**: The system detected a new AIS target.<br>**Remedy**: Check the target details and take appropriate action. | | |
| 3052, 1 | 527 | TT Target Lost | Check lost TGT. ACQ TGT if necessary | Warning<br>Cat: A |
| | | **Meaning**: The system lost a TT target.<br>**Remedy**: Confirm that the target is lost, then acknowledge the alert. | | |
| 3052, 2 | 528 | REF Target Lost | Check lost TGT. ACQ TGT if necessary | Warning<br>Cat: A |
| | | **Meaning**: The system lost a reference target.<br>**Remedy**: Confirm that the target is lost, then acknowledge the alert. If the target was used as a speed reference, acquire a new reference target. | | |
| 3052, 3 | 537 | AIS Target Lost | Confirm AIS lost targets | Warning<br>Cat: A |
| | | **Meaning**: The system lost an AIS target.<br>**Remedy**: Confirm that the target is lost, then acknowledge the alert. | | |
| 3052, 5 | 552 | AIS AtoN Lost | Confirm AIS lost AtoNs. | Warning<br>Cat: A |
| | | **Meaning**: The system lost an AIS AtoN.<br>**Remedy**: Confirm that the AIS AtoN is lost, then acknowledge the alert. | | |
| 3052, 6 | 553 | AIS SART Lost | Confirm AIS lost locating devices. | Warning<br>Cat: A |
| | | **Meaning**: The system lost an AIS locating device.<br>**Remedy**: Confirm that the AIS SART is lost, then acknowledge the alert. | | |
| 3003, 1 | 541 | AIS MSG Send ERR | Check AIS transponder or network | Caution<br>Cat: B |
| | | **Meaning**: AIS message transmission failed.<br>**Remedy**: Check the connection with AIS. | | |
| 3006, - | 760 | Datum Mismatch | Check the GPS sensor status | Caution<br>Cat: B |
| | | **Meaning:** Datum mismatch between EPFS and chart.<br>**Remedy**: Match the datum. | | |
| 3008, 2 | 729 | LOST ISW FUNC | Use radar as standalone | Warning<br>Cat: B |
| | | **Meaning**: Interswitch function had to be stopped. (Only displayed when Interswitch is active.)<br>**Remedy**: Use the radar as a standalone. | | |
| 3008, 3 | 910 | LOST WAVE FUNC | Check wave analysis PC or network | Warning<br>Cat: B |
| | | **Meaning**: Wave analysis function has a problem.<br>**Remedy**: Check connection with wave analysis PC, or disable WAVE mode. | | |
| 3008, 100 | 691 | Route Failure | Route monitoring stops | Warning<br>Cat: B |
| | | **Meaning:** Route monitoring is stopped because distance from route is more than set value of Max XTD.<br>**Remedy**: Start route monitoring after approaching the monitoring route. | | |

| Alert ID | | Alert title | Alert Message | Priority & Category |
|---|---|---|---|---|
| ALF | ALR | | | |
| 3015, 1 | 720 | Lost Headline | Execute the self test | Warning<br>Cat: B |
| | | **Meaning**: There is a problem with the heading signal from the radar antenna.<br>**Remedy**: Check connections between the radar antenna and the processor unit. If the problem appears to be caused by the radar antenna, contact your local dealer for service. | | |
| 3015, 2 | 721 | Lost Azimuth SIG | Execute the self test | Warning<br>Cat: B |
| | | **Meaning**: There is a problem with the azimuth signal from the radar antenna.<br>**Remedy**: Check connections between the radar antenna and the processor unit. If the problem appears to be caused by the radar antenna, contact your local dealer for service. | | |
| 3015, 3 | 722 | Lost Trigger SIG | Execute the self test | Warning<br>Cat: B |
| | | **Meaning**: There is a problem with the trigger signal from the radar antenna.<br>**Remedy**: Check connections between the radar antenna and the processor unit. If the problem appears to be caused by the radar antenna, contact your local dealer for service. | | |
| 3015, 4 | 723 | Lost Video SIG | Execute the self test | Warning<br>Cat: B |
| | | **Meaning**: There is a problem with the video signal from the radar antenna.<br>**Remedy**: Check connections between the radar antenna and the processor unit. If the problem appears to be caused by the radar antenna, contact your local dealer for service. | | |
| 3015, 5 | 724 | Lost RPU Gyro | Check RPU gyro sensors or network | Warning<br>Cat: B |
| | | **Meaning**: There is a problem with the gyro signal from the radar antenna.<br>**Remedy**: Check connections between the radar antenna and the processor unit. If the problem appears to be caused by the radar antenna, contact your local dealer for service. | | |
| 3015, 6 | 725 | Lost Echo SIG | Execute the self test | Warning<br>Cat: B |
| | | **Meaning**: There is a problem with the echo signal from the radar antenna.<br>**Remedy**: Check connections between the radar antenna and the processor unit. If the problem appears to be caused by the radar antenna, contact your local dealer for service. | | |
| 3015, 8 | 727 | Lost Radar ANT | Check connection with radar antenna | Warning<br>Cat: B |
| | | **Meaning**: There is a problem communicating with the SPU board in the radar antenna.<br>**Remedy**: Check connections between the radar antenna and the processor unit. If the problem appears to be caused by the radar antenna, contact your local dealer for service. | | |
| 3015, 9 | 770 | Lost SPU | Execute the self test | Warning<br>Cat: B |
| | | **Meaning**: There is a problem with the SPU board in the radar antenna.<br>**Remedy**: For detailed information, conduct a [Self Test]. | | |
| 3015, 10 | 771 | Lost MTR-DRV | Execute the self test | Warning<br>Cat: B |
| | | **Meaning**: There is a problem communicating with the MTR-DRV board in the radar antenna.<br>**Remedy**: For detailed information, conduct a [Self Test]. | | |

| Alert ID | | Alert title | Alert Message | Priority & Category |
|---|---|---|---|---|
| ALF | ALR | | | |
| 3015, 11 | 773 | Lost RF-CONV | Execute the self test | Warning<br>Cat: B |
| | | **Meaning**: There is a problem with the RF-Converter board in the radar antenna.<br>**Remedy**: For detailed information, conduct a [Self Test]. | | |
| 3015, 12 | 774 | Lost PSU | Execute the self test | Warning<br>Cat: B |
| | | **Meaning**: There is a problem with the PSU-Control board in the power supply unit.<br>**Remedy**: For detailed information, conduct a [Self Test]. | | |
| 3015, 13 | 775 | Lost HPA | Execute the self test | Warning<br>Cat: B |
| | | **Meaning**: There is a problem with the HPA board in the radar antenna.<br>**Remedy**: For detailed information, conduct a [Self Test]. | | |
| 3015, 14 | 781 | Lost MTR-DRV COM | Execute the self test | Warning<br>Cat: B |
| | | **Meaning**: There is a problem communicating with the SPU board in the radar antenna.<br>**Remedy**: Check connections between the radar antenna and the processor unit. If the problem appears to be caused by the radar antenna, contact your local dealer for service. | | |
| 3015, 15 | 783 | Lost RF-CONV COM | Execute the self test | Warning<br>Cat: B |
| | | **Meaning**: There is a problem communicating with the RF-Converter board in the radar antenna.<br>**Remedy**: Check connections between the radar antenna and the processor unit. If the problem appears to be caused by the radar antenna, contact your local dealer for service. | | |
| 3015, 16 | 784 | Lost PSU COM | Check connection with PSU-Control | Warning<br>Cat: B |
| | | **Meaning**: There is a problem communicating with PSU-Control board in the power supply unit.<br>**Remedy**: For detailed information, conduct a [Self Test]. | | |
| 3015, 21 | 170 | Lost Position | Check position sensor status | Warning<br>Cat: B |
| | | **Meaning**: All position data has been lost for more than 30 seconds.<br>**Remedy**: Check the connection with GPS sensors and sensor status. | | |
| 3015, 22 | 272 | Lost UTC Signal | Check position sensor status | Warning<br>Cat: B |
| | | **Meaning**: Time data of all available GPS sensor has been not available for more than 3 seconds.<br>**Remedy**: Check the connection with GPS sensors and sensor status. | | |
| 3015, 23 | 277 | Lost Wind Signal | Check wind sensor or sensor status | Warning<br>Cat: B |
| | | **Meaning**: Wind speed/direction data of all available WIND sensors has been not available for more than 3 seconds.<br>**Remedy**: Check the connection with wind sensors and sensor status. | | |
| 3015, 24 | 279 | Lost COG/SOG SIG | Check position sensor status | Warning<br>Cat: B |
| | | **Meaning**: COG/SOG data of all available GPS sensor has been not available for more than 3 seconds.<br>**Remedy**: Check the connection with GPS sensors and sensor status. | | |

| Alert ID | | Alert title | Alert Message | Priority & Category |
|---|---|---|---|---|
| ALF | ALR | | | |
| 3015, 25 | 284 | Lost LOG(BT) SIG | Check speed sensor or sensor status | Warning Cat: B |
| | | **Meaning**: SOG data of all available LOG (ground speed) sensors has been not available for more than 3 seconds.<br>**Remedy**: Check the connection with LOG sensors and sensor status. | | |
| 3015, 26 | 450 | Lost Heading SIG | Check heading sensor or sensor status | Warning Cat: B |
| | | **Meaning**: Heading data of all available heading sensor has been not available for more than 2 seconds.<br>**Remedy**: Check the connection with heading sensors and sensor status. | | |
| 3015, 27 | 453 | Lost SDME Signal | Check speed sensor or sensor status | Warning Cat: B |
| | | **Meaning**: Speed data from all available SDME has been not available for more than 3 seconds.<br>**Remedy**: Check the connection with SDME and sensor status. | | |
| 3015, 28 | 278 | Lost LOG(WT) SIG | Check speed sensor or sensor status | Warning Cat: B |
| | | **Meaning:** STW data of all available LOG (water speed) sensors has been not available for more than 3 seconds.<br>**Remedy**: Check the connection with LOG sensors and sensor status. | | |
| 3015, 30 | 380 | Lost AIS COM | Check connection with AIS | Warring Cat: B |
| | | **Meaning**: Data from AIS has been discontinued for more than set time. (Set at installation) Default: 60 seconds. AIS is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with AIS and network. | | |
| 3016, 19 | 801 | Lost PM | Execute the self test | Caution Cat: B |
| | | **Meaning**: There is a problem communicating with the PM board in the radar antenna.<br>**Remedy**: For detailed information, conduct a [Self Test]. | | |
| 3016, 20 | 805 | Lost PM BOARD | Execute the self test | Caution Cat: B |
| | | **Meaning**: There is a problem communicating with the MTR-DRV board in the radar antenna.<br>**Remedy**: Check connections between the radar antenna and the processor unit. If the problem appears to be caused by the radar antenna, contact your local dealer for service. | | |
| 3016, 24 | 382 | Lost COG/SOG SIG | Check position sensor status | Caution Cat: B |
| | | **Meaning**: COG/SOG data of all available GPS sensor has been not available for more than 3 seconds.<br>**Remedy**: Check the connection with all GPS. | | |
| 3016, 25 | 383 | Lost LOG (BT) SIG | Check speed sensor or sensor status | Caution Cat: B |
| | | **Meaning**: SOG data of all available LOG (ground speed) sensors has been not available for more than 3 seconds.<br>**Remedy**: Check that the sensor is powered. | | |

| Alert ID | | Alert title | Alert Message | Priority & Category |
|---|---|---|---|---|
| ALF | ALR | | | |
| 3016, 28 | 384 | Lost LOG(WT) SIG | Check speed sensor or sensor status | Caution Cat: B |
| | | **Meaning:** STW data of all available LOG (water speed) sensors has been not available for more than 3 seconds. **Remedy**: Check the connection with all LOG sensors. | | |
| 3016, 30 | 381 | Lost AIS COM | Check connection with AIS | Caution Cat: B |
| | | **Meaning**: Data from AIS has been discontinued for more than set time. (Set at installation) Default: 60 seconds. AIS is turned off, or there is a problem with network. **Remedy**: Check the connection with AIS and network. | | |
| 3024, 1 | 172 | Off Track Alarm | Make XTD smaller | Alarm Cat: A |
| | | **Meaning**: Deviation is big between planning course and current heading. While monitoring route, ship position deviates XTD Limit. **Remedy**: Reconfirm XTD Limit or keep own ship inside of channel limit. | | |
| 3031, 1 | 171 | Safety Contour | Crossing safety contour. Take helm | Alarm Cat: A |
| | | **Meaning**: When a check area is set, the vessel entered a shallower area than the threshold set in [Safety Contour]. **Remedy**: Reconfirm Safety Contour setting or change the course. | | |
| 3031, 2 | 496 | Anchor Watch | Dragging anchor. Be careful it | Alarm Cat: A |
| | | **Meaning:** While anchor watch alert function is enabled, ship's position has been outside of alarm area centering certain position for more than 3 seconds. **Remedy**: Be careful of dragging anchor. | | |
| 3032, 2 | 495 | Anchor Watch | Dragging anchor. Be careful it | Warning Cat: A |
| | | **Meaning:** While anchor watch alert function is enabled, ship's position has been outside of alarm area centering certain position for more than 3 seconds. **Remedy**: Be careful of dragging anchor. | | |
| 3035, 1 | 620 | USR CHT Danger | Watch crossing user chart danger | Warning Cat: A |
| | | **Meaning**: A User Chart Danger Area that is set to Warning/Caution in chart alert is detected inside the check area. **Remedy**: Be careful of the object mentioned, on ship's direction. | | |
| 3035, 2 | 621 | Separation Zone | Crossing traffic separation zone | Warning Cat: A |
| | | **Meaning**: A Traffic Separation Zone that is set to Warning/Caution in chart alert is detected inside the check area. **Remedy**: Be careful of the object mentioned, on ship's direction. | | |
| 3035, 3 | 622 | ITZ | Watch crossing inshore traffic zone | Warning Cat: A |
| | | **Meaning**: An Inshore Traffic Zone that is set to Warning/Caution in chart alert is detected inside the check area. **Remedy**: Be careful of the object mentioned, on ship's direction. | | |
| 3035, 4 | 623 | Restricted Area | Watch crossing restricted area | Warning Cat: A |
| | | **Meaning**: A Restricted Area that is set to Warning/Caution in chart alert is detected inside the check area. **Remedy**: Be careful of the object mentioned, on ship's direction. | | |

| Alert ID | | Alert title | Alert Message | Priority & Category |
|---|---|---|---|---|
| ALF | ALR | | | |
| 3035, 5 | 624 | Caution Area | Watch crossing caution area | Warning Cat: A |
| | | **Meaning**: A Caution Area that is set to Warning/Caution in chart alert is detected inside the check area.<br>**Remedy**: Be careful of the object mentioned, on ship's direction. | | |
| 3035, 6 | 625 | OFS PROD Area | Crossing offshore production area | Warning Cat: A |
| | | **Meaning**: An Offshore Production Area that is set to Warning/Caution in chart alert is detected inside the check area.<br>**Remedy**: Be careful of the object mentioned, on ship's direction. | | |
| 3035, 7 | 626 | MIL PRAC Area | Watch crossing military practice area | Warning Cat: A |
| | | **Meaning**: A Military Protection Area that is set to Warning/Caution in chart alert is detected inside the check area.<br>**Remedy**: Be careful of the object mentioned, on ship's direction. | | |
| 3035, 8 | 627 | SPL Landing Area | Watch crossing seaplane landing area | Warning Cat: A |
| | | **Meaning**: A Seaplane Landing Area that is set to Warning/Caution in chart alert is detected inside the check area.<br>**Remedy**: Be careful of the object mentioned, on ship's direction. | | |
| 3035, 9 | 628 | SM Transit Lane | Watch crossing submarine transit lane | Warning Cat: A |
| | | **Meaning**: A Submarine Transit Lane that is set to Warning/Caution in chart alert is detected inside the check area.<br>**Remedy**: Be careful of the object mentioned, on ship's direction. | | |
| 3035, 10 | 629 | Anchorage Area | Watch crossing anchorage area | Warning Cat: A |
| | | **Meaning**: An Anchorage Area that is set to Warning/Caution in chart alert is detected inside the check area.<br>**Remedy**: Be careful of the object mentioned, on ship's direction. | | |
| 3035, 11 | 630 | Marine Farm | Crossing marine farm/aquaculture | Warning Cat: A |
| | | **Meaning**: A Marine Farm/Aquaculture that is set to Warning/Caution in chart alert is detected inside the check area.<br>**Remedy**: Be careful of the object mentioned here, on ship's direction. | | |
| 3035, 12 | 631 | PSSA Area | Watch crossing PSSA Area | Warning Cat: A |
| | | **Meaning**: A PSSA Area that is set to Warning/Caution in chart alert is detected inside the check area.<br>**Remedy**: Be careful of the object mentioned, on ship's direction. | | |
| 3035, 13 | 632 | ATBA | Watch crossing areas to be avoided | Warning Cat: A |
| | | **Meaning**: An Areas to be Avoided that is set to Alarm in chart alert is detected inside the check area.<br>**Remedy**: Be careful of the object mentioned, on ship's direction. | | |
| 3035, 14 | 645 | NAV Hazard | Watch crossing navigational hazard | Warning Cat: A |
| | | **Meaning**: One or more navigational hazards detected by the Look-ahead function.<br>**Remedy**: Adjust course as necessary. | | |

| Alert ID | | Alert title | Alert Message | Priority & Category |
|---|---|---|---|---|
| ALF | ALR | | | |
| 3036, 1 | 594 | USR CHT Danger | Watch crossing user chart danger | Caution Cat: B |
| | | **Meaning**: A User Chart Danger Area that is set to Warning/Caution in chart alert is detected inside the check area.<br>**Remedy**: Be careful of the object mentioned here, on ship's direction. | | |
| 3036, 2 | 595 | Separation Zone | Crossing traffic separation zone | Caution Cat: B |
| | | **Meaning**: A Traffic Separation Zone that is set to Warning/Caution in chart alert is detected inside the check area.<br>**Remedy**: Be careful of the object mentioned here, on ship's direction. | | |
| 3036, 3 | 596 | ITZ | Watch crossing inshore traffic zone | Caution Cat: B |
| | | **Meaning**: An Inshore Traffic Zone that is set to Warning/Caution in chart alert is detected inside the check area.<br>**Remedy**: Be careful of the object mentioned here, on ship's direction. | | |
| 3036, 4 | 597 | Restricted Area | Watch crossing restricted area | Caution Cat: B |
| | | **Meaning**: A Restricted Area that is set to Warning/Caution in chart alert is detected inside the check area.<br>**Remedy**: Be careful of the object mentioned here, on ship's direction. | | |
| 3036, 5 | 598 | Caution Area | Watch crossing caution area | Caution Cat: B |
| | | **Meaning**: A Caution Area that is set to Warning/Caution in chart alert is detected inside the check area.<br>**Remedy**: Be careful of the object mentioned here, on ship's direction. | | |
| 3036, 6 | 599 | OFS PROD Area | Crossing offshore production area | Caution Cat: B |
| | | **Meaning**: A Military Protection Area that is set to Warning/Caution in chart alert is detected inside the check area.<br>**Remedy**: Be careful of the object mentioned here, on ship's direction. | | |
| 3036, 7 | 600 | MIL PRAC Area | Watch crossing military practice area | Caution Cat: B |
| | | **Meaning**: A Seaplane Landing Area that is set to Warning/Caution in chart alert is detected inside the check area.<br>**Remedy**: Be careful of the object mentioned here, on ship's direction. | | |
| 3036, 8 | 601 | SPL Landing Area | Watch crossing seaplane landing area | Caution Cat: B |
| | | **Meaning**: A Seaplane Landing Area that is set to Warning/Caution in chart alert is detected inside the check area.<br>**Remedy**: Be careful of the object mentioned here, on ship's direction. | | |
| 3036, 9 | 602 | SM Transit Lane | Watch crossing submarine transit lane | Caution Cat: B |
| | | **Meaning**: A Submarine Transit Lane that is set to Warning/Caution in chart alert is detected inside the check area.<br>**Remedy**: Be careful of the object mentioned here, on ship's direction. | | |
| 3036, 10 | 603 | Anchorage Area | Watch crossing anchorage area | Caution Cat: B |
| | | **Meaning**: An Anchorage Area that is set to Warning/Caution in chart alert is detected inside the check area.<br>**Remedy**: Be careful of the object mentioned here, on ship's direction. | | |

| Alert ID | | Alert title | Alert Message | Priority & Category |
|---|---|---|---|---|
| ALF | ALR | | | |
| 3036, 11 | 604 | Marine Farm | Crossing marine farm/aquaculture | Caution<br>Cat: B |
| | | **Meaning**: A Marine Farm/Aquaculture that is set to Warning/Caution in chart alert is detected inside the check area.<br>**Remedy**: Be careful of the object mentioned here, on ship's direction. | | |
| 3036, 12 | 605 | PSSA Area | Watch crossing PSSA Area | Caution<br>Cat: B |
| | | **Meaning**: A PSSA Area that is set to Warning/Caution in chart alert is detected inside the check area.<br>**Remedy**: Be careful of the object mentioned here, on ship's direction. | | |
| 3036, 13 | 606 | ATBA | Watch crossing areas to be avoided | Caution<br>Cat: B |
| | | **Meaning**: An Areas to be Avoided that is set to Alarm in chart alert is detected inside the check area.<br>**Remedy**: Be careful of the object mentioned here, on ship's direction. | | |
| 3036, 14 | 607 | NAV Hazard | Watch crossing navigational hazard | Caution<br>Cat: B |
| | | **Meaning**: One or more navigational hazards detected by the Look-ahead function.<br>**Remedy**: Adjust course as necessary. | | |
| 3038, 1<br>to<br>3038, 199 | - | WPT xx Approach (xx: waypoint number) | Take helm if needed | Warning<br>Cat: A |
| | | **Meaning**: The wheel over point is soon being approached.<br>**Remedy**: Be careful that WPT is approaching. Take helm if needed. | | |
| 3038, 10000 | - | Critical Area | Confirm description of notes | Warning<br>Cat: A |
| | | **Meaning**: The critical area is soon being approached.<br>**Remedy**: Be careful that critical area is approaching. Confirm description of notes. | | |
| 10303, 1 | 030 | Lost SA1 COM | Check sensor adapter or network | Caution<br>Cat: B |
| | | **Meaning**: Communication error with this sensor adapter is detected. 30 seconds timeout. This sensor adapter is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with No.1 sensor adapter and network. | | |
| 10303, 2 | 031 | Lost SA2 COM | Check sensor adapter or network | Caution<br>Cat: B |
| | | **Meaning**: Communication error with this sensor adapter is detected. 30 seconds timeout. This sensor adapter is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with No.2 sensor adapter and network. | | |
| 10303, 3 | 032 | Lost SA3 COM | Check sensor adapter or network | Caution<br>Cat: B |
| | | **Meaning**: Communication error with this sensor adapter is detected. 30 seconds timeout. This sensor adapter is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with No.3 sensor adapter and network. | | |
| 10303, 4 | 033 | Lost SA4 COM | Check sensor adapter or network | Caution<br>Cat: B |
| | | **Meaning**: Communication error with this sensor adapter is detected. 30 seconds timeout. This sensor adapter is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with No.4 sensor adapter and network. | | |

| Alert ID | | Alert title | Alert Message | Priority & Category |
|---|---|---|---|---|
| ALF | ALR | | | |
| 10303, 5 | 034 | Lost SA5 COM | Check sensor adapter or network | Caution<br>Cat: B |
| | | **Meaning**: Communication error with this sensor adapter is detected. 30 seconds timeout. This sensor adapter is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with No.5 sensor adapter and network. | | |
| 10303, 6 | 035 | Lost SA6 COM | Check sensor adapter or network | Caution<br>Cat: B |
| | | **Meaning**: Communication error with this sensor adapter is detected. 30 seconds timeout. This sensor adapter is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with No.6 sensor adapter and network. | | |
| 10303, 7 | 036 | Lost SA7 COM | Check sensor adapter or network | Caution<br>Cat: B |
| | | **Meaning**: Communication error with this sensor adapter is detected. 30 seconds timeout. This sensor adapter is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with No.7 sensor adapter and network. | | |
| 10303, 8 | 037 | Lost SA8 COM | Check sensor adapter or network | Caution<br>Cat: B |
| | | **Meaning**: Communication error with this sensor adapter is detected. 30 seconds timeout. This sensor adapter is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with No.8 sensor adapter and network. | | |
| 10303, 9 | 038 | Lost SA9 COM | Check sensor adapter or network | Caution<br>Cat: B |
| | | **Meaning**: Communication error with this sensor adapter is detected. 30 seconds timeout. This sensor adapter is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with No.9 sensor adapter and network. | | |
| 10303, 10 | 039 | Lost SA10 COM | Check sensor adapter or network | Caution<br>Cat: B |
| | | **Meaning**: Communication error with this sensor adapter is detected. 30 seconds timeout. This sensor adapter is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with No.10 sensor adapter and network. | | |
| 10303, 11 | 094 | Lost SA11 COM | Check sensor adapter or network | Caution<br>Cat: B |
| | | **Meaning**: Communication error with No.11 sensor adapter is detected. 30 seconds timeout. No.11 sensor adapter is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with No.11 sensor adapter and network. | | |
| 10303, 12 | 095 | Lost SA12 COM | Check sensor adapter or network | Caution<br>Cat: B |
| | | **Meaning**: Communication error with No.12 sensor adapter is detected. 30 seconds timeout. No.12 sensor adapter is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with No.12 sensor adapter and network. | | |
| 10303, 13 | 096 | Lost SA13 COM | Check sensor adapter or network | Caution<br>Cat: B |
| | | **Meaning**: Communication error with No.13 sensor adapter is detected. 30 seconds timeout. No.13 sensor adapter is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with No.13 sensor adapter and network. | | |

| Alert ID | | Alert title | Alert Message | Priority & Category |
|---|---|---|---|---|
| ALF | ALR | | | |
| 10303, 14 | 097 | Lost SA14 COM | Check sensor adapter or network | Caution<br>Cat: B |
| | | **Meaning**: Communication error with No.14 sensor adapter is detected. 30 seconds timeout. No.14 sensor adapter is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with No.14 sensor adapter and network. | | |
| 10303, 15 | 098 | Lost SA15 COM | Check sensor adapter or network | Caution<br>Cat: B |
| | | **Meaning**: Communication error with No.15 sensor adapter is detected. 30 seconds timeout. No.15 sensor adapter is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with No.15 sensor adapter and network. | | |
| 10303, 16 | 099 | Lost SA16 COM | Check sensor adapter or network | Caution<br>Cat: B |
| | | **Meaning**: Communication error with No.16 sensor adapter is detected. 30 seconds timeout. No.16 sensor adapter is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with No.16 sensor adapter and network. | | |
| 10332, - | 331 | Lost SEL Gyro | Selected Gyro status missing | Warning<br>Cat: B |
| | | **Meaning**: When connected with Double Gyro System, instrument produced by YDK Technologies, “Double Gyro” status cannot be acquired.<br>**Remedy**: If the error frequently occurs, contact FURUNO and inform frequency of occurrence. | | |
| 10403, 1 | 255 | Lost Gyro 1 COM | Check the gyro status | Caution<br>Cat: B |
| | | **Meaning**: Data from this gyro has been discontinued for more than set time. (Set at installation) Default: 60 seconds. This gyro is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with this gyro and network. | | |
| 10403, 2 | 256 | Lost Gyro 2 COM | Check the gyro status | Caution<br>Cat: B |
| | | **Meaning**: Data from this gyro has been discontinued for more than set time. (Set at installation) Default: 60 seconds. This gyro is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with this gyro and network. | | |
| 10403, 3 | 257 | Lost Gyro 3 COM | Check the gyro status | Caution<br>Cat: B |
| | | **Meaning**: Data from this gyro has been discontinued for more than set time. (Set at installation) Default: 60 seconds. This gyro is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with this gyro and network. | | |
| 10403, 4 | 258 | Lost Gyro 4 COM | Check the gyro status | Caution<br>Cat: B |
| | | **Meaning**: Data from this gyro has been discontinued for more than set time. (Set at installation) Default: 60 seconds. This gyro is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with this gyro and network. | | |

| Alert ID | | Alert title | Alert Message | Priority & Category |
|---|---|---|---|---|
| ALF | ALR | | | |
| 10403, 5 | 259 | Lost Gyro 5 COM | Check the gyro status | Caution<br>Cat: B |
| | | **Meaning**: Data from this gyro has been discontinued for more than set time. (Set at installation) Default: 60 seconds. This gyro is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with this gyro and network. | | |
| 10403, 11 | 391 | Lost ROT Gyro1 | Check the ROT gyro status | Caution<br>Cat: B |
| | | **Meaning**: Data from this ROT gyro has been discontinued for more than set time. (Set at installation) Default: 60 seconds.<br>**Remedy**: Check the connection with this ROT gyro. | | |
| 10403, 12 | 392 | Lost ROT Gyro2 | Check the ROT gyro status | Caution<br>Cat: B |
| | | **Meaning**: Data from this ROT gyro has been discontinued for more than set time. (Set at installation) Default: 60 seconds.<br>**Remedy**: Check the connection with this ROT gyro. | | |
| 10403, 13 | 393 | Lost ROT Gyro3 | Check the ROT gyro status | Caution<br>Cat: B |
| | | **Meaning**: Data from this ROT gyro has been discontinued for more than set time. (Set at installation) Default: 60 seconds.<br>**Remedy**: Check the connection with this ROT gyro. | | |
| 10403, 21 | 290 | Lost GPS1 COM | Check the GPS status | Caution<br>Cat: B |
| | | **Meaning**: Ship position data from this GPS has been discontinued for more than set time. (Set at installation) Default: 60 seconds. This GPS is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with this GPS and network. | | |
| 10403, 22 | 291 | Lost GPS2 COM | Check the GPS status | Caution<br>Cat: B |
| | | **Meaning**: Ship position data from this GPS has been discontinued for more than set time. (Set at installation) Default: 60 seconds. This GPS is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with this GPS and network. | | |
| 10403, 23 | 292 | Lost GPS3 COM | Check the GPS status | Caution<br>Cat: B |
| | | **Meaning**: Ship position data from this GPS has been discontinued for more than set time. (Set at installation) Default: 60 seconds. This GPS is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with this GPS and network. | | |
| 10403, 24 | 293 | Lost GPS4 COM | Check the GPS status | Caution<br>Cat: B |
| | | **Meaning**: Ship position data from this GPS has been discontinued for more than set time. (Set at installation) Default: 60 seconds. This GPS is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with this GPS and network. | | |
| 10403, 25 | 294 | Lost GPS5 COM | Check the GPS status | Caution<br>Cat: B |
| | | **Meaning**: Ship position data from this GPS has been discontinued for more than set time. (Set at installation) Default: 60 seconds. This GPS is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with this GPS and network. | | |

| Alert ID | | Alert title | Alert Message | Priority & Category |
|---|---|---|---|---|
| ALF | ALR | | | |
| 10403, 26 | 295 | Lost GPS6 COM | Check the GPS status | Caution<br>Cat: B |
| | | **Meaning**: Ship position data from this GPS has been discontinued for more than set time. (Set at installation) Default: 60 seconds. This GPS is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with this GPS and network. | | |
| 10403, 27 | 296 | Lost GPS7 COM | Check the GPS status | Caution<br>Cat: B |
| | | **Meaning**: Ship position data from this GPS has been discontinued for more than set time. (Set at installation) Default: 60 seconds. This GPS is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with this GPS and network. | | |
| 10403, 28 | 297 | Lost GPS8 COM | Check the GPS status | Caution<br>Cat: B |
| | | **Meaning**: Ship position data from this GPS has been discontinued for more than set time. (Set at installation) Default: 60 seconds. This GPS is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with this GPS and network. | | |
| 10403, 29 | 298 | Lost GPS9 COM | Check the GPS status | Caution<br>Cat: B |
| | | **Meaning**: Ship position data from this GPS has been discontinued for more than set time. (Set at installation) Default: 60 seconds. This GPS is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with this GPS and network. | | |
| 10403, 30 | 299 | Lost GPS10 COM | Check the GPS status | Caution<br>Cat: B |
| | | **Meaning**: Ship position data from this GPS has been discontinued for more than set time. (Set at installation) Default: 60 seconds. This GPS is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with this GPS and network. | | |
| 10403, 41 | 280 | Lost SDME1 COM | Check the SDME status | Caution<br>Cat: B |
| | | **Meaning**: Speed data from this SDME sensor has been discontinued for more than set time. (Set at installation) Default: 60 seconds. This SDME sensor is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with this SDME sensor and network. | | |
| 10403, 42 | 281 | Lost SDME2 COM | Check the SDME status | Caution<br>Cat: B |
| | | **Meaning**: Speed data from this SDME sensor has been discontinued for more than set time. (Set at installation) Default: 60 seconds. This SDME sensor is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with this SDME sensor and network. | | |
| 10403, 43 | 282 | Lost SDME3 COM | Check the SDME status | Caution<br>Cat: B |
| | | **Meaning**: Speed data from this SDME sensor has been discontinued for more than set time. (Set at installation) Default: 60 seconds.This SDME sensor is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with this SDME sensor and network. | | |

| Alert ID | | Alert title | Alert Message | Priority & Category |
|---|---|---|---|---|
| ALF | ALR | | | |
| 10403, 51 | 235 | Lost Depth1 COM | Check the echo sounder status | Caution Cat: B |
| | | **Meaning**: Input of depth data from this echo sounder has been discontinued for more than set time. (Set at installation) Default: 60 seconds. This echo sounder is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with this echo sounder and network. | | |
| 10403, 52 | 236 | Lost Depth2 COM | Check the echo sounder status | Caution Cat: B |
| | | **Meaning**: Input of depth data from this echo sounder has been discontinued for more than set time. (Set at installation) Default: 60 seconds. This echo sounder is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with this echo sounder and network. | | |
| 10403, 53 | 237 | Lost Depth3 COM | Check the echo sounder status | Caution Cat: B |
| | | **Meaning**: Input of depth data from this echo sounder has been discontinued for more than set time. (Set at installation) Default: 60 seconds. This echo sounder is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with this echo sounder and network. | | |
| 10403, 61 | 300 | Lost Rudder1 COM | Check the rudder status | Caution Cat: B |
| | | **Meaning**: Rudder data from this rudder sensor has been discontinued for more than set time. (Set at installation) Default: 60 seconds. This rudder sensor is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with this rudder sensor and network. | | |
| 10403, 62 | 301 | Lost Rudder2 COM | Check the rudder status | Caution Cat: B |
| | | **Meaning**: Rudder data from this rudder sensor has been discontinued for more than set time. (Set at installation) Default: 60 seconds. This rudder sensor is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with this rudder sensor and network. | | |
| 10403, 63 | 302 | Lost Rudder3 COM | Check the rudder status | Caution Cat: B |
| | | **Meaning**: Rudder data from this rudder sensor has been discontinued for more than set time. (Set at installation) Default: 60 seconds. This rudder sensor is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with this rudder sensor and network. | | |
| 10403, 71 | 303 | Lost HCS1 COM | Check the autopilot status | Caution Cat: B |
| | | **Meaning**: Data from this HCS has been discontinued for more than set time. (Set at installation) Default: 60 seconds. This HCS is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with this HCS and network. | | |
| 10403, 72 | 304 | Lost HCS2 COM | Check the autopilot status | Caution Cat: B |
| | | **Meaning**: Data from this HCS has been discontinued for more than set time. (Set at installation) Default: 60 seconds. This HCS is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with this HCS and network. | | |

| Alert ID | | Alert title | Alert Message | Priority & Category |
|---|---|---|---|---|
| ALF | ALR | | | |
| 10403, 81 | 305 | Lost VDR COM | Check the VDR status | Caution<br>Cat: B |
| | | **Meaning**: Sentence from VDR has been discontinued for more than set time. (Set at installation) Default: 180 seconds VDR is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with VDR and network. | | |
| 10403, 91 | 306 | Lost BNWAS1 COM | Check the BNWAS status | Caution<br>Cat: B |
| | | **Meaning**: Caution Sentence from BNWAS1 has been discontinued for more than set time. (Set at installation) Default: 180 seconds BNWAS is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with BNWAS1 and network. | | |
| 10403, 92 | 307 | Lost BNWAS2 COM | Check the BNWAS status | Caution<br>Cat: B |
| | | **Meaning**: Caution Sentence from BNWAS2 has been discontinued for more than set time. (Set at installation) Default: 180 seconds BNWAS is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with BNWAS2 and network. | | |
| 10403, 93 | 308 | Lost BNWAS3 COM | Check the BNWAS status | Caution<br>Cat: B |
| | | **Meaning**: Caution Sentence from BNWAS3 has been discontinued for more than set time. (Set at installation) Default: 180 seconds BNWAS is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with BNWAS3 and network. | | |
| 10403, 101 | 360 | Lost WIND1 COM | Check the wind sensor status | Caution<br>Cat: B |
| | | **Meaning**: Data from this wind sensor has been discontinued for more than set time. (Set at installation) Default: 60 seconds. This wind sensor is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with this wind sensor. | | |
| 10403, 102 | 361 | Lost WIND2 COM | Check the wind sensor status | Caution<br>Cat: B |
| | | **Meaning**: Data from this wind sensor has been discontinued for more than set time. (Set at installation) Default: 60 seconds. This wind sensor is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with this wind sensor. | | |
| 10403, 103 | 362 | Lost WIND3 COM | Check the wind sensor status | Caution<br>Cat: B |
| | | **Meaning**: Data from this wind sensor has been discontinued for more than set time. (Set at installation) Default: 60 seconds. This wind sensor is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with this wind sensor. | | |
| 10403, 111 | 370 | Lost CURRENT COM | Check the water current sensor status | Caution<br>Cat: B |
| | | **Meaning**: Data from water current has been discontinued for more than set time. (Set at installation) Default: 60 seconds. Water current sensor is turned off, or there is a problem with network. Check the connection with water current and network.<br>**Remedy**: Check the connection with water current sensor and network. | | |

| Alert ID | | Alert title | Alert Message | Priority & Category |
|---|---|---|---|---|
| ALF | ALR | | | |
| 10403, 121 | 371 | Lost TEMP COM | Check water temperature sensor status | Caution<br>Cat: B |
| | | **Meaning**: Data from water temp. has been discontinued for more than set time. (Set at installation) Default: 60 seconds. Water temp sensor is turned off, or there is a problem with network.<br>**Remedy**: Check the connection with water temp sensor and network. | | |
| 10403, 141 | 390 | Lost NAVTEX COM | Check the NAVTEX status | Caution<br>Cat: B |
| | | **Meaning**: Data from NAVTEX has been discontinued for more than set time. (Set at installation) Default: 180 seconds. NAVTEX is turned off, or there is a problem with network<br>**Remedy**: Check the connection with NAVTEX and network. | | |
| 10432, - | 431 | HUB-3000 Error | Check HUB-3000 connections | Warning<br>Cat: B |
| | | **Meaning**: A network error has occurred between the HUB-3000 and one or more connected units.<br>**Remedy**: Check network connections between the processor unit and networked units. | | |
| 10433, 1 to 10433, 128 | - | HUB Link ERR | Check connection of HUBXX port Y. | Caution<br>Cat: B |
| | | **Meaning**: An illegal Link down or Link up was detected at HUB-3000.<br>**Remedy**: Check connection of HUBXX port Y. | | |
| 10436, 1 to 10436, 128 | - | HUB Flow ERR | Check the device on HUBXX port Y. | Caution<br>Cat: B |
| | | **Meaning**: The HUB-3000 port is overloaded.<br>**Remedy**: Check the device on HUBXX port Y. | | |
| 10439, 1 to 10439, 16 | - | HUB overload | Check devices connected to HUBXX. | Caution<br>Cat: B |
| | | **Meaning**: The HUB-3000 CPU is overloaded.<br>**Remedy**: Check devices connected to HUBXX. | | |
| 10452, - | 330 | Conflict Gyro | Double Gyro Status Conflict | Warning<br>Cat: B |
| | | **Meaning**: When connected with Double Gyro System, instrument produced by YDK Technologies, two gyro has been displayed “Selected” status for 3 seconds.<br>**Remedy**: If the error frequently occurs, contact FURUNO and inform frequency of occurrence. | | |
| 10492, - | 500 | Watch Alert | Reset timer or turn off the function | Warning<br>Cat: B |
| | | **Meaning**: Watch alert interval reached.<br>**Remedy**: ACK the alert, check the radar display. | | |
| 10503, 1 | 851 | GPS1 Banned | Reset filter or check sensor status | Caution<br>Cat: B |
| | | **Meaning**: Own ship position data from this GPS is determined abnormal by integrity check.<br>**Remedy**: Reset the filter to confirm that it isn't a temporal error value. If the data is normal, it is reusable. However, if it's continually removed, there is a possibility that correct data is not received from sensor. In this case, contact FURUNO. | | |

| Alert ID | | Alert title | Alert Message | Priority & Category |
|---|---|---|---|---|
| ALF | ALR | | | |
| 10503, 2 | 852 | GPS2 Banned | Reset filter or check sensor status | Caution<br>Cat: B |
| | | **Meaning**: Own ship position data from this GPS is determined abnormal by integrity check.<br>**Remedy**: Reset the filter to confirm that it isn't a temporal error value. If the data is normal, it is reusable. However, if it's continually removed, there is a possibility that correct data is not received from sensor. In this case, contact FURUNO. | | |
| 10503, 3 | 853 | GPS3 Banned | Reset filter or check sensor status | Caution<br>Cat: B |
| | | **Meaning**: Own ship position data from this GPS is determined abnormal by integrity check.<br>**Remedy**: Reset the filter to confirm that it isn't a temporal error value. If the data is normal, it is reusable. However, if it's continually removed, there is a possibility that correct data is not received from sensor. In this case, contact FURUNO. | | |
| 10503, 4 | 854 | GPS4 Banned | Reset filter or check sensor status | Caution<br>Cat: B |
| | | **Meaning**: Own ship position data from this GPS is determined abnormal by integrity check.<br>**Remedy**: Reset the filter to confirm that it isn't a temporal error value. If the data is normal, it is reusable. However, if it's continually removed, there is a possibility that correct data is not received from sensor. In this case, contact FURUNO. | | |
| 10503, 5 | 855 | GPS5 Banned | Reset filter or check sensor status | Caution<br>Cat: B |
| | | **Meaning**: Own ship position data from this GPS is determined abnormal by integrity check.<br>**Remedy**: Reset the filter to confirm that it isn't a temporal error value. If the data is normal, it is reusable. However, if it's continually removed, there is a possibility that correct data is not received from sensor. In this case, contact FURUNO. | | |
| 10503, 6 | 856 | GPS6 Banned | Reset filter or check sensor status | Caution<br>Cat: B |
| | | **Meaning**: Own ship position data from this GPS is determined abnormal by integrity check.<br>**Remedy**: Reset the filter to confirm that it isn't a temporal error value. If the data is normal, it is reusable. However, if it's continually removed, there is a possibility that correct data is not received from sensor. In this case, contact FURUNO. | | |
| 10503, 7 | 857 | GPS7 Banned | Reset filter or check sensor status | Caution<br>Cat: B |
| | | **Meaning**: Own ship position data from this GPS is determined abnormal by integrity check.<br>**Remedy**: Reset the filter to confirm that it isn't a temporal error value. If the data is normal, it is reusable. However, if it's continually removed, there is a possibility that correct data is not received from sensor. In this case, contact FURUNO. | | |
| 10503, 8 | 858 | GPS8 Banned | Reset filter or check sensor status | Caution<br>Cat: B |
| | | **Meaning**: Own ship position data from this GPS is determined abnormal by integrity check.<br>**Remedy**: Reset the filter to confirm that it isn't a temporal error value. If the data is normal, it is reusable. However, if it's continually removed, there is a possibility that correct data is not received from sensor. In this case, contact FURUNO. | | |

| Alert ID | | Alert title | Alert Message | Priority & Category |
|---|---|---|---|---|
| ALF | ALR | | | |
| 10503, 9 | 859 | GPS9 Banned | Reset filter or check sensor status | Caution<br>Cat: B |
| | | **Meaning**: Own ship position data from this GPS is determined abnormal by integrity check.<br>**Remedy**: Reset the filter to confirm that it isn't a temporal error value. If the data is normal, it is reusable. However, if it's continually removed, there is a possibility that correct data is not received from sensor. In this case, contact FURUNO. | | |
| 10503, 10 | 860 | GPS10 Banned | Reset filter or check sensor status | Caution<br>Cat: B |
| | | **Meaning**: Own ship position data from this GPS is determined abnormal by integrity check.<br>**Remedy**: Reset the filter to confirm that it isn't a temporal error value. If the data is normal, it is reusable. However, if it's continually removed, there is a possibility that correct data is not received from sensor. In this case, contact FURUNO. | | |
| 10503, 11 | 871 | Gyro1 Banned | Reset filter or check sensor status | Caution<br>Cat: B |
| | | **Meaning**: Heading data from this Gyro is determined abnormal by integrity check.<br>**Remedy**: Reset the filter to confirm that it isn't a temporal error value. If the data is normal, it is reusable. However, if it's continually removed, there is a possibility that correct data is not received from sensor. In this case, contact FURUNO. | | |
| 10503, 12 | 872 | Gyro2 Banned | Reset filter or check sensor status | Caution<br>Cat: B |
| | | **Meaning**: Heading data from this Gyro is determined abnormal by integrity check.<br>**Remedy**: Reset the filter to confirm that it isn't a temporal error value. If the data is normal, it is reusable. However, if it's continually removed, there is a possibility that correct data is not received from sensor. In this case, contact FURUNO. | | |
| 10503, 13 | 873 | Gyro3 Banned | Reset filter or check sensor status | Caution<br>Cat: B |
| | | **Meaning**: Heading data from this Gyro is determined abnormal by integrity check.<br>**Remedy**: Reset the filter to confirm that it isn't a temporal error value. If the data is normal, it is reusable. However, if it's continually removed, there is a possibility that correct data is not received from sensor. In this case, contact FURUNO. | | |
| 10503, 14 | 874 | Gyro4 Banned | Reset filter or check sensor status | Caution<br>Cat: B |
| | | **Meaning**: Heading data from this Gyro is determined abnormal by integrity check.<br>**Remedy**: Reset the filter to confirm that it isn't a temporal error value. If the data is normal, it is reusable. However, if it's continually removed, there is a possibility that correct data is not received from sensor. In this case, contact FURUNO. | | |
| 10503, 15 | 875 | Gyro5 Banned | Reset filter or check sensor status | Caution<br>Cat: B |
| | | **Meaning**: Heading data from this Gyro is determined abnormal by integrity check.<br>**Remedy**: Reset the filter to confirm that it isn't a temporal error value. If the data is normal, it is reusable. However, if it's continually removed, there is a possibility that correct data is not received from sensor. In this case, contact FURUNO. | | |

| Alert ID | | Alert title | Alert Message | Priority & Category |
|---|---|---|---|---|
| ALF | ALR | | | |
| 10503, 21 | 861 | SDME1 Banned | Reset filter or check sensor status | Caution<br>Cat: B |
| | | **Meaning**: Own ship speed data from this SDME is determined abnormal by integrity check.<br>**Remedy**: Reset the filter to confirm that it isn't a temporal error value. If the data is normal, it is reusable. However, if it's continually removed, there is a possibility that correct data is not received from sensor. In this case, contact FURUNO. | | |
| 10503, 22 | 862 | SDME2 Banned | Reset filter or check sensor status | Caution<br>Cat: B |
| | | **Meaning**: Own ship speed data from this SDME is determined abnormal by integrity check.<br>**Remedy**: Reset the filter to confirm that it isn't a temporal error value. If the data is normal, it is reusable. However, if it's continually removed, there is a possibility that correct data is not received from sensor. In this case, contact FURUNO. | | |
| 10503, 23 | 863 | SDME3 Banned | Reset filter or check sensor status | Caution<br>Cat: B |
| | | **Meaning**: Own ship speed data from this SDME is determined abnormal by integrity check.<br>**Remedy**: Reset the filter to confirm that it isn't a temporal error value. If the data is normal, it is reusable. However, if it's continually removed, there is a possibility that correct data is not received from sensor. In this case, contact FURUNO. | | |
| 10503, 31 | 881 | ROT Gyro1 Banned | Reset filter or check sensor status | Caution<br>Cat: B |
| | | **Meaning**: Heading data from this ROT Gyro is determined abnormal by integrity check.<br>**Remedy**: Reset the filter to confirm that it isn't a temporal error value. If the data is normal, it is reusable. However, if it's continually removed, there is a possibility that correct data is not received from sensor. In this case, contact FURUNO. | | |
| 10503, 32 | 882 | ROT Gyro2 Banned | Reset filter or check sensor status | Caution<br>Cat: B |
| | | **Meaning**: Heading data from this ROT Gyro is determined abnormal by integrity check.<br>**Remedy**: Reset the filter to confirm that it isn't a temporal error value. If the data is normal, it is reusable. However, if it's continually removed, there is a possibility that correct data is not received from sensor. In this case, contact FURUNO. | | |
| 10503, 33 | 883 | ROT Gyro3 Banned | Reset filter or check sensor status | Caution<br>Cat: B |
| | | **Meaning**: Heading data from this ROT Gyro is determined abnormal by integrity check.<br>**Remedy**: Reset the filter to confirm that it isn't a temporal error value. If the data is normal, it is reusable. However, if it's continually removed, there is a possibility that correct data is not received from sensor. In this case, contact FURUNO. | | |
| 10512, 1 | 900 | No POSN for FILT | Reset filter or check sensor status | Warning<br>Cat: B |
| | | **Meaning**: No valid position sensor is available for filter. (Banned or connection error)<br>**Remedy**: Check the connection with all GPS. | | |
| 10512, 2 | 901 | No SOG for FILT | Reset filter or check sensor status | Warning<br>Cat: B |
| | | **Meaning**: No valid COG/SOG sensor is available for filter. (Banned or connection error)<br>**Remedy**: Check the connection with all GPS. | | |

| Alert ID | | Alert title | Alert Message | Priority & Category |
|---|---|---|---|---|
| ALF | ALR | | | |
| 10512, 3 | 902 | No STW for FILT | Reset filter or check sensor status | Warning<br>Cat: B |
| | | **Meaning**: No valid CTW/STW sensor is available for filter. (Banned or connection error)<br>**Remedy**: Check the connection with all GPS. | | |
| 10512, 4 | 903 | No HDG for FILT | Reset filter or check sensor status | Warning<br>Cat: B |
| | | **Meaning**: No valid heading sensor is available for filter. (Banned or connection error)<br>**Remedy**: Check the connection with all heading sensors. | | |
| 10543, - | 539 | AIS MSG Received | AIS message is received. Check it | Caution<br>Cat: B |
| | | **Meaning**: AIS message is received.<br>**Remedy**: Check the AIS message. | | |
| 10603, 1 | 273 | Lost Bow Depth | Check the depth sensor status | Caution<br>Cat: B |
| | | **Meaning**: Depth data of all available depth sensors (Bow) has been not available for more than 3 seconds.<br>**Remedy**: Check the connection with all echo sounders. | | |
| 10603, 2 | 274 | Lost MID Depth | Check the depth sensor status | Caution<br>Cat: B |
| | | **Meaning**: Depth data of all available depth sensors (Midship) has been not available for more than 3 seconds.<br>**Remedy**: Check the connection with all echo sounders. | | |
| 10603, 3 | 275 | Lost Stern Depth | Check the depth sensor status | Caution<br>Cat: B |
| | | **Meaning:** Depth data of all available depth sensors (Stern) has been not available for more than 3 seconds.<br>**Remedy**: Check the connection with all echo sounders. | | |
| 10603, 5 | 285 | Lost HDG MAG | Check the magnetic compass status | Caution<br>Cat: B |
| | | **Meaning:** Heading data of all available magnetic gyro has been not available for more than 3 seconds.<br>**Remedy**: Check the connection with all magnetic gyro. | | |
| 10645, - | 644 | Actual UKC Limit | Watch and avoid grounding | Warning<br>Cat: A |
| | | **Meaning**: Actual depth is outside the preset UKC limit.<br>**Remedy**: Check depth, adjust heading accordingly. | | |
| 10703, - | 700 | RT version > 1 | RT is rejected. Check connected units | Caution<br>Cat: B |
| | | **Meaning**: Received route transfer sentence (RTZ) is a higher version than this system.<br>**Remedy**: Check route details. Some route details may not be displayed correctly. | | |
| 10712, - | 728 | ANT VER Mismatch | Consult local dealer for SW update | Warning<br>Cat: B |
| | | **Meaning:** Software version not correct.<br>**Remedy**: Update the radar software. If the problem persists, consult your dealer. | | |

| Alert ID | | Alert title | Alert Message | Priority & Category |
|---|---|---|---|---|
| ALF | ALR | | | |
| 10752, 3 | 755 | Select SART Mode | Signal detected. Select SART mode | Warning<br>Cat: B |
| | | **Meaning**: A SART signal was detected. This alert appears only for X-band solid state radars.<br>**Remedy**: Show the SART marks on the radar display.<br>**Note:** Keep in mind the following points:<br>• This alert can occur when this equipment receives interference simultaneously from multiple radars.<br>• This alert may not occur under the bad weather conditions such as at rain. | | |
| 10801, - | 485 | Depth Limit | Watch and avoid grounding | Alarm<br>Cat: A |
| | | **Meaning**: Actual depth is outside the echo alarm limit.<br>**Remedy**: Check depth, adjust heading accordingly. | | |
| 10903, - | 905 | Audit log fail | Check the audit log. | Caution<br>Cat: B |
| | | **Meaning**: The event to be audited could not be saved in the audit log.<br>**Remedy**: Check the audit log. | | |
| 10906, - | 906 | Network over-load | Check other devices in the network. | Caution<br>Cat: B |
| | | **Meaning**: The LAN interface is overloaded.<br>**Remedy**: Check other devices in the network. | | |
| 13035, 1 | 634 | UKC Limit | Watch and avoid grounding | Warning<br>Cat: A |
| | | **Meaning**: Measured depth from echo sounder is less than set UKC limit value.<br>**Remedy**: Be careful that measured depth is less than UKC limit. | | |
| 13035, 2 | 635 | Non-official ENC | Install official ENC charts | Warning<br>Cat: A |
| | | **Meaning**: When Non-official ENC is set to Warning/Caution in chart alert, the non-official chart area is detected inside the check area.<br>**Remedy**: Install official ENC charts. | | |
| 13035, 3 | 636 | No Vector Chart | Install vector charts | Warning<br>Cat: A |
| | | **Meaning**: When No Vector Chart is set to Warning/Caution in chart alert, the No Vector Chart area is detected inside the check area.<br>**Remedy**: Install vector charts. | | |
| 13035, 4 | 637 | Not Up-to-date | Install latest charts | Warning<br>Cat: A |
| | | **Meaning**: When Not Up to Date is set to Warning/Caution in chart alert, a chart area that is not up-to date is detected inside the check area.<br>**Remedy**: Install the latest charts. | | |
| 13035, 5 | 638 | Permit Expired | Update chart permits | Warning<br>Cat: A |
| | | **Meaning**: When Permit Expired is set to Warning/Caution in chart alert, a chart area that has an expired permit is detected inside the check area.<br>**Remedy**: Update chart permits. | | |
| 13035, 6 | 646 | Sounding UKC LIM | Watch and avoid grounding | Warning<br>Cat: A |
| | | **Meaning**: Chart depth for one or more legs is outside of UKC threshold.<br>**Remedy**: Adjust course accordingly. | | |

| Alert ID | | Alert title | Alert Message | Priority & Category |
|---|---|---|---|---|
| ALF | ALR | | | |
| 13035, 7 | 647 | Too Many Dangers | Change route geometry | Warning<br>Cat: A |
| | | **Meaning**: Selected route has too many dangerous objects in one or more legs.<br>**Remedy**: Shorten the route or the look-ahead area. | | |
| 13036, 1 | 608 | UKC Limit | Watch and avoid grounding | Caution<br>Cat: B |
| | | **Meaning**: Measured depth from echo sounder is less than set UKC limit value.<br>**Remedy**: Be careful that measured depth is less than UKC limit. | | |
| 13036, 2 | 609 | Non-official ENC | Install official ENC charts | Caution<br>Cat: B |
| | | **Meaning**: When Non-official ENC is set to Warning/Caution in chart alert, the non-official chart area is detected inside the check area.<br>**Remedy**: Install official ENC charts. | | |
| 13036, 3 | 611 | No Vector Chart | Install vector charts | Caution<br>Cat: B |
| | | **Meaning**: When No Vector Chart is set to Warning/Caution in chart alert, the No Vector Chart area is detected inside the check area.<br>**Remedy**: Install vector charts. | | |
| 13036, 4 | 612 | Not Up-to-date | Install latest charts | Caution<br>Cat: B |
| | | **Meaning**: When Not Up to Date is set to Warning/Caution in chart alert, a chart area that is not up-to date is detected inside the check area.<br>**Remedy**: Install the latest charts. | | |
| 13036, 5 | 613 | Permit Expired | Update chart permits | Caution<br>Cat: B |
| | | **Meaning**: When Permit Expired is set to Warning/Caution in chart alert, a chart area that has an expired permit is detected inside the check area.<br>**Remedy**: Update chart permits. | | |
| 13036, 6 | 614 | Sounding UKC LIM | Watch and avoid grounding | Caution<br>Cat: B |
| | | **Meaning**: Chart depth for one or more legs is outside of UKC threshold.<br>**Remedy**: Adjust course accordingly. | | |
| 13036, 7 | 615 | Too Many Dangers | Change route geometry | Caution<br>Cat: B |
| | | **Meaning**: Selected route has too many dangerous objects in one or more legs.<br>**Remedy**: Shorten the route or the look-ahead area. | | |

## Priority: Indication

All indications are in category “B”. The indications 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].

| Alert ID | | Alert title | Alert Message |
|---|---|---|---|
| ALF | ALR | | |
| 10001, 1 | 001 | Main Monitor Fan1 Rotation Speed Lowering | There is a problem with No.1 Fan of FURUNO Monitor. Please exchange it |
| | | **Meaning**: For FURUNO monitor: Connected to COM1 (Main Monitor). Fan1 rotation speed is below threshold.<br>**Remedy**: If the error frequently occurs, contact FURUNO and inform frequency of occurrence. | |
| 10001, 2 | 002 | Main Monitor Fan2 Rotation Speed Lowering | There is a problem with No.2 Fan of FURUNO Monitor. Please exchange it |
| | | **Meaning**: For FURUNO monitor: Connected to COM1 (Main Monitor). Fan2 rotation speed is below threshold.<br>**Remedy**: If the error frequently occurs, contact FURUNO and inform frequency of occurrence. | |
| 10001, 3 | 003 | Main Monitor Fan3 Rotation Speed Lowering | There is a problem with No.3 Fan of FURUNO Monitor. Please exchange it |
| | | **Meaning**: For FURUNO monitor: Connected to COM1 (Main Monitor). Fan3 rotation speed is below threshold.<br>**Remedy**: If the error frequently occurs, contact FURUNO and inform frequency of occurrence. | |
| 10001, 4 | 004 | Main Monitor Fan4 Rotation Speed Lowering | There is a problem with No.4 Fan of FURUNO Monitor. Please exchange it |
| | | **Meaning**: For FURUNO monitor: Connected to COM1 (Main Monitor). Fan4 rotation speed is below threshold.<br>**Remedy**: If the error frequently occurs, contact FURUNO and inform frequency of occurrence. | |
| 10001, 5 | 014 | Sub Monitor Fan1 Rotation Speed Lowering | There is a problem with No.1 Fan of FURUNO Monitor. Please exchange it |
| | | **Meaning**: For FURUNO monitor: Connected to COM2 (Sub Monitor). Fan1 rotation speed is below threshold.<br>**Remedy**: If the error frequently occurs, contact FURUNO and inform frequency of occurrence. | |
| 10001, 6 | 015 | Sub Monitor Fan2 Rotation Speed Lowering | There is a problem with No.2 Fan of FURUNO Monitor. Please exchange it |
| | | **Meaning**: For FURUNO monitor: Connected to COM2 (Sub Monitor). Fan2 rotation speed is below threshold.<br>**Remedy**: If the error frequently occurs, contact FURUNO and inform frequency of occurrence. | |
| 10001, 7 | 016 | Sub Monitor Fan3 Rotation Speed Lowering | There is a problem with No.3 Fan of FURUNO Monitor. Please exchange it |
| | | **Meaning**: For FURUNO monitor: Connected to COM2 (Sub Monitor). Fan3 rotation speed is below threshold.<br>**Remedy**: If the error frequently occurs, contact FURUNO and inform frequency of occurrence. | |

| Alert ID | | Alert title | Alert Message |
|---|---|---|---|
| ALF | ALR | | |
| 10001, 8 | 017 | Sub Monitor Fan4 Rotation Speed Lowering | There is a problem with No.4 Fan of FURUNO Monitor. Please exchange it |
| | | **Meaning**: For FURUNO monitor: Connected to COM2 (Sub Monitor). Fan4 rotation speed is below threshold.<br>**Remedy**: If the error frequently occurs, contact FURUNO and inform frequency of occurrence. | |
| 10001, 9 | 011 | Main Monitor RS485 Communication Timeout | There is a problem with brightness control cable. Please exchange it |
| | | **Meaning**: For Main monitor: Connected to COM1. There has been no communication from processor unit through RS485 for 180 seconds. (No communication implies in completed sentence or checksum error.)<br>**Remedy**: Check the connection of brightness control cable. | |
| 10001, 10 | 024 | Sub Monitor RS485 Communication Timeout | There is a problem with brightness control cable. Please exchange it |
| | | **Meaning**: For Sub monitor: Connected to COM2. There has been no communication from processor unit through RS485 for 180 seconds. (No communication implies in completed sentence or checksum error.)<br>**Remedy**: Check the connection of brightness control cable. | |
| 10001, 11 | 012 | Main Monitor No Signal | There is a problem with video cable. Please exchange it |
| | | **Meaning**: For Main monitor: Connected to COM1. There has been no signal continuously for 60 seconds.<br>**Remedy**: Check the connection of video cable. | |
| 10001, 12 | 025 | Sub Monitor No Signal | There is a problem with video cable. Please exchange it |
| | | **Meaning**: For Sub monitor: Connected to COM2. There has been no signal continuously for 60 seconds.<br>**Remedy**: Check the connection of video cable. | |
| 10001, 13 | 013 | Main Monitor Sentence Syntax Error | There is a problem with brightness control cable. Please exchange it |
| | | **Meaning**: For Main monitor, connected to COM1, value of externally input sentence is out of range that defined by sentence.<br>**Remedy**: If the error frequently occurs, contact FURUNO and inform frequency of occurrence. | |
| 10001, 14 | 026 | Sub Monitor Sentence Syntax Error | There is a problem with brightness control cable. Please exchange it |
| | | **Meaning**: For Main monitor, connected to COM2, value of externally input sentence is out of range that defined by sentence.<br>**Remedy**: If the error frequently occurs, contact FURUNO and inform frequency of occurrence. | |
| 10001, 15 | 027 | Main Monitor COM Timeout | There is a problem with brightness control cable. Please exchange it |
| | | **Meaning**: Communication with MU is interrupted. 60 seconds timeout.<br>**Remedy**: Check the connection with the monitor. | |
| 10001, 16 | 028 | Sub Monitor COM Timeout | There is a problem with brightness control cable. Please exchange it |
| | | **Meaning**: Communication with MU is interrupted. 60 seconds timeout.<br>**Remedy**: Check the connection with the monitor. | |

| Alert ID | | Alert title | Alert Message |
|---|---|---|---|
| ALF | ALR | | |
| 10001, 17 | 073 | Processor Unit CPU Temp High | CPU board temperature is high in Processor Unit. Please turn off Processor Unit. If same error is occurred after a few minutes, please contact to service department of Furuno |
| | | **Meaning**: CPU temperature in processor unit exceeds threshold.<br>**Remedy**: Turn off Processor Unit. If same error occurs after a few minutes, contact FURUNO. | |
| 10001, 18 | 074 | Processor Unit GPU Temp High | CPU board temperature is high in Processor Unit. Please turn off Processor Unit. If same error is occurred after a few minutes, please contact to service department of Furuno |
| | | **Meaning**: GPU temperature in processor unit exceeds threshold.<br>**Remedy**: Turn off Processor Unit. If same error occurs after a few minutes, contact FURUNO. | |
| 10001, 19 | 075 | Processor Unit CPU Board Temp High | CPU board temperature is high in Processor Unit. Please turn off Processor Unit. If same error is occurred after a few minutes, please contact to service department of Furuno |
| | | **Meaning**: CPU temperature in processor unit exceeds threshold.<br>**Remedy**: Turn off Processor Unit. If same error occurs after a few minutes, contact FURUNO. | |
| 10001, 20 | 076 | Processor Unit Remote 1 Temp High | CPU board temperature is high in Processor Unit. Please turn off Processor Unit. If same error is occurred after a few minutes, please contact to service department of Furuno |
| | | **Meaning**: CPU temperature in this processor remote control unit exceeds threshold.<br>**Remedy**: Turn off Processor Unit. If same error occurs after a few minutes, contact FURUNO. | |
| 10001, 21 | 077 | Processor Unit Remote 2 Temp High | CPU board temperature is high in Processor Unit. Please turn off Processor Unit. If same error is occurred after a few minutes, please contact to service department of Furuno |
| | | **Meaning**: CPU temperature in this processor remote control unit exceeds threshold.<br>**Remedy**: Turn off Processor Unit. If same error occurs after a few minutes, contact FURUNO. | |
| 10001, 22 | 078 | Processor Unit CPU Fan Rotation Speed Lowering | There is a problem with a CPU Fan in Processor Unit. Please exchange it |
| | | **Meaning**: Rotation speed of CPU fan in processor unit is below threshold.<br>**Remedy**: If the error frequently occurs, contact FURUNO and inform frequency of occurrence. | |
| 10001, 23 | 079 | Processor Unit Fan1 Rotation Speed Lowering | There is a problem with No.1 Fan in Processor Unit. Please exchange it |
| | | **Meaning**: Rotation speed of CPU fan1 in processor unit is below threshold.<br>**Remedy**: If the error frequently occurs, contact FURUNO and inform frequency of occurrence. | |

| Alert ID | | Alert title | Alert Message |
|---|---|---|---|
| ALF | ALR | | |
| 10001, 24 | 080 | Processor Unit Fan2 Rotation Speed Lowering | There is a problem with No.2 Fan in Processor Unit. Please exchange it |
| | | **Meaning**: Rotation speed of CPU fan2 in processor unit is below threshold.<br>**Remedy**: If the error frequently occurs, contact FURUNO and inform frequency of occurrence. | |
| 10001, 25 | 081 | Processor Unit Fan3 Rotation Speed Lowering | There is a problem with No.3 Fan in Processor Unit. Please exchange it |
| | | **Meaning**: Rotation speed of CPU fan3 in processor unit is below threshold.<br>**Remedy**: If the error frequently occurs, contact FURUNO and inform frequency of occurrence. | |
| 10001, 26 | 089 | Processor Unit CPU board Battery Power Error | CPU board power voltage is abnormal in Processor Unit. Please turn off Processor Unit. If same error is occurred after a few minutes, please contact to service department of Furuno |
| | | **Meaning**: CPU board battery voltage in processor unit is out of threshold.<br>**Remedy**: Turn off Processor Unit. If same error occurs after a few minutes, contact FURUNO. | |
| 10001, 27 | 090 | Processor Unit CPU board Core Power Error | CPU board power voltage is abnormal in Processor Unit. Please turn off Processor Unit. If same error is occurred after a few minutes, please contact to service department of Furuno |
| | | **Meaning**: CPU board battery voltage in processor unit is out of threshold.<br>**Remedy**: Turn off Processor Unit. If same error occurs after a few minutes, contact FURUNO. | |
| 10001, 28 | 070 | RCU 1 COM Timeout | A communication error is detected with No.1 Remote Control Unit. Please check connection with No.1 Remote Control Unit |
| | | **Meaning**: Communication error with this remote control unit is detected. 40 seconds timeout.<br>**Remedy**: Check the connection with this remote control unit. | |
| 10001, 29 | 071 | RCU 2 COM Timeout | A communication error is detected with No.2 Remote Control Unit. Please check connection with No.2 Remote Control Unit |
| | | **Meaning**: Communication error with this remote control unit is detected. 40 seconds timeout.<br>**Remedy**: Check the connection with this remote control unit. | |
| 10001, 30 | 072 | RCU 3 COM Timeout | A communication error is detected with No.3 Remote Control Unit. Please check connection with No.3 Remote Control Unit |
| | | **Meaning**: Communication error with this remote control unit is detected. 40 seconds timeout.<br>**Remedy**: Check the connection with this remote control unit. | |
| 10001, 31 | 400 | Network Printer Not Available | Network printer is not available. Please check the printer status and connection |
| | | **Meaning**: When executing printout, network printer is not recognized, network printer connection is interrupted, or printer error such as paper shortage, paper jam and run out of ink occurs.<br>**Remedy**: Check that the printer is connected to network, or printer errors such as paper shortage, paper jam and run out of ink does not occur. | |

| Alert ID | | Alert title | Alert Message |
|---|---|---|---|
| ALF | ALR | | |
| 10001, 32 | 401 | Local Printer Not Available | Local printer is not available. Please check the printer status and connection |
| | | **Meaning**: When executing printout, local printer is not recognized, network printer connection is interrupted, or printer error such as paper shortage, paper jam and run out of ink occurs.<br>**Remedy**: Check that the printer is connected, or printer errors such as paper shortage, paper jam and run out of ink does not occur. | |
| 10002, 3 | 006 | Main Monitor High Temperature Inside Monitor | FURUNO Monitor internal temperature is high. Please turn off monitor |
| | | **Meaning**: Internal temperature exceeds threshold. Monitor: Connected to COM1 (Main Monitor).<br>**Remedy**: If the error frequently occurs, contact FURUNO and inform frequency of occurrence. | |
| 10002, 4 | 019 | Sub Monitor High Temperature Inside Monitor | FURUNO Monitor internal temperature is high. Please turn off monitor |
| | | **Meaning**: Internal temperature exceeds threshold. Monitor: Connected to COM2 (Sub Monitor).<br>**Remedy**: If the error frequently occurs, contact FURUNO and inform frequency of occurrence. | |
| 10002, 5 | 007 | Main Monitor Fan1 No Rotation | There is a problem with No.1 Fan of FURUNO Monitor. Please exchange it |
| | | **Meaning**: For FURUNO monitor: Connected to COM1 (Main Monitor). Fan1 rotation speed is below threshold.<br>**Remedy**: If the error frequently occurs, contact FURUNO and inform frequency of occurrence. | |
| 10002, 6 | 008 | Main Monitor Fan2 No Rotation | There is a problem with No.2 Fan of FURUNO Monitor. Please exchange it |
| | | **Meaning**: For FURUNO monitor: Connected to COM1 (Main Monitor). Fan2 rotation speed is below threshold.<br>**Remedy**: If the error frequently occurs, contact FURUNO and inform frequency of occurrence. | |
| 10002, 7 | 009 | Main Monitor Fan3 No Rotation | There is a problem with No.3 Fan of FURUNO Monitor. Please exchange it |
| | | **Meaning**: For FURUNO monitor: Connected to COM1 (Main Monitor). Fan3 rotation speed is below threshold.<br>**Remedy**: If the error frequently occurs, contact FURUNO and inform frequency of occurrence. | |
| 10002, 8 | 010 | Main Monitor Fan4 No Rotation | There is a problem with No.4 Fan of FURUNO Monitor. Please exchange it |
| | | **Meaning**: For FURUNO monitor: Connected to COM1 (Main Monitor). Fan4 rotation speed is below threshold.<br>**Remedy**: If the error frequently occurs, contact FURUNO and inform frequency of occurrence. | |
| 10002, 9 | 020 | Sub Monitor Fan1 No Rotation | There is a problem with No.1 Fan of FURUNO Monitor. Please exchange it |
| | | **Meaning**: For FURUNO monitor: Connected to COM2 (Sub Monitor). Fan1 rotation speed is below threshold.<br>**Remedy**: If the error frequently occurs, contact FURUNO and inform frequency of occurrence. | |

| Alert ID | | Alert title | Alert Message |
|---|---|---|---|
| ALF | ALR | | |
| 10002, 10 | 021 | Sub Monitor Fan2 No Rotation | There is a problem with No.2 Fan of FURUNO Monitor. Please exchange it |
| | | **Meaning**: For FURUNO monitor: COM2 (Sub Monitor). Fan2 rotation speed is below threshold.<br>**Remedy**: If the error frequently occurs, contact FURUNO and inform frequency of occurrence. | |
| 10002, 11 | 022 | Sub Monitor Fan3 No Rotation | There is a problem with No.3 Fan of FURUNO Monitor. Please exchange it |
| | | **Meaning**: For FURUNO monitor: COM2 (Sub Monitor). Fan3 rotation speed is below threshold.<br>**Remedy**: If the error frequently occurs, contact FURUNO and inform frequency of occurrence. | |
| 10002, 12 | 023 | Sub Monitor Fan4 No Rotation | There is a problem with No.4 Fan of FURUNO Monitor. Please exchange it |
| | | **Meaning**: For FURUNO monitor: Connected to COM2 (Sub Monitor). Fan4 rotation speed is below threshold.<br>**Remedy**: If the error frequently occurs, contact FURUNO and inform frequency of occurrence. | |
| 10002, 13 | 082 | Processor Unit CPU Fan No Rotation | There is a problem with a CPU Fan in Processor Unit. Please exchange it |
| | | **Meaning**: Rotation speed of fan in processor unit is below threshold.<br>**Remedy**: If the error frequently occurs, contact FURUNO and inform frequency of occurrence. | |
| 10002, 14 | 083 | Processor Unit Fan1 Fan No Rotation | There is a problem with No.1 Fan in Processor Unit. Please exchange it |
| | | **Meaning**: Rotation speed of fan1 in processor unit is below threshold.<br>**Remedy**: If the error frequently occurs, contact FURUNO and inform frequency of occurrence. | |
| 10002, 15 | 084 | Processor Unit Fan2 Fan No Rotation | There is a problem with No.2 Fan in Processor Unit. Please exchange it |
| | | **Meaning**: Rotation speed of fan2 in processor unit is below threshold.<br>**Remedy**: If the error frequently occurs, contact FURUNO and inform frequency of occurrence. | |
| 10002, 16 | 085 | Processor Unit Fan3 Fan No Rotation | There is a problem with No.3 Fan in Processor Unit. Please exchange it |
| | | **Meaning**: Rotation speed of fan3 in processor unit is below threshold.<br>**Remedy**: If the error frequently occurs, contact FURUNO and inform frequency of occurrence. | |
| 10002, 17 | 086 | Processor Unit CPU board 5v Power Error | CPU board power voltage is abnormal in Processor Unit. Please turn off Processor Unit. If same error is occurred after a few minutes, please contact to service department of Furuno |
| | | **Meaning**: 5 V power voltage of CPU board in processor unit is out of threshold.<br>**Remedy**: If the error frequently occurs, contact FURUNO and inform frequency of occurrence. | |
| 10002, 18 | 087 | Processor Unit CPU board 3.3V Power Error | CPU board power voltage is abnormal in Processor Unit. Please turn off Processor Unit. If same error is occurred after a few minutes, please contact to service department of Furuno |
| | | **Meaning**: 3.3 V power voltage of CPU board in processor unit is out of threshold.<br>**Remedy**: If the error frequently occurs, contact FURUNO and inform frequency of occurrence. | |

| Alert ID | | Alert title | Alert Message |
|---|---|---|---|
| ALF | ALR | | |
| 10002, 19 | 088 | Processor Unit CPU board 12V Power Error | CPU board power voltage is abnormal in Processor Unit. Please turn off Processor Unit. If same error is occurred after a few minutes, please contact to service department of Furuno |
| | | **Meaning**: 12 V power voltage of CPU board in processor unit is out of threshold.<br>**Remedy**: If the error frequently occurs, contact FURUNO and inform frequency of occurrence. | |
| 10050, 1 | 320 | Lost CH1 COM | Check the serial port status |
| | | **Meaning**: Input from processor unit serial ch.1 has been discontinued for more than certain time (Set at installation). Default: No timeout<br>**Remedy**: Check the status of the serial port. | |
| 10050, 2 | 321 | Lost CH2 COM | Check the serial port status |
| | | **Meaning**: Input from processor unit serial ch.2 has been discontinued for more than certain time (Set at installation). Default: No timeout<br>**Remedy**: Check the status of the serial port. | |
| 10050, 3 | 322 | Lost CH3 COM | Check the serial port status |
| | | **Meaning**: Input from processor unit serial ch.3 has been discontinued for more than certain time (Set at installation). Default: No timeout<br>**Remedy**: Check the status of the serial port. | |
| 10050, 4 | 323 | Lost CH4 COM | Check the serial port status |
| | | **Meaning**: Input from processor unit serial ch.4 has been discontinued for more than certain time (Set at installation). Default: No timeout<br>**Remedy**: Check the status of the serial port. | |
| 10050, 5 | 324 | Lost CH5 COM | Check the serial port status |
| | | **Meaning**: Input from processor unit serial ch.5 has been discontinued for more than certain time (Set at installation). Default: No timeout<br>**Remedy**: Check the status of the serial port. | |
| 10050, 6 | 325 | Lost CH6 COM | Check the serial port status |
| | | **Meaning**: Input from processor unit serial ch.6 has been discontinued for more than certain time (Set at installation). Default: No timeout<br>**Remedy**: Check the status of the serial port. | |
| 10050, 7 | 326 | Lost CH7 COM | Check the serial port status |
| | | **Meaning**: Input from processor unit serial ch.7 has been discontinued for more than certain time (Set at installation). Default: No timeout<br>**Remedy**: Check the status of the serial port. | |
| 10050, 8 | 327 | Lost CH8 COM | Check the serial port status |
| | | **Meaning**: Input from processor unit serial ch.8 has been discontinued for more than certain time (Set at installation). Default: No timeout<br>**Remedy**: Check the status of the serial port. | |
| 10312, - | 510 | Lost MODBUS COM | Check MODBUS status and connection |
| | | **Meaning**: Connection to the IAS (MODBUS) is lost or interrupted.<br>**Remedy**: Check connection. | |
| 10740, 1 | 730 | ISW: STBY | Selected radar entered standby mode. Set selected radar to TX mode |
| | | **Meaning:** The antenna unit selected with the Interswitch is in stand-by<br>**Remedy**: Set the antenna unit to transmit state. | |
| 10740, 2 | 740 | ISW: NO SIGNAL | Selected radar has problem. Use radar as stand-alone |
| | | **Meaning:** No video signal from the antenna unit selected with the Interswitch.<br>**Remedy**: Check the antenna unit. Use radar as standalone. | |

| Alert ID | | Alert title | Alert Message |
|---|---|---|---|
| ALF | ALR | | |
| 10740, 3 | 750 | ISW: NO RADAR | Communication with selected radar has interrupted/ lost. Use radar as standalone |
| | | **Meaning:** No communication from the antenna unit selected with the Inter-switch.<br>**Remedy**: Check that both the antenna unit and the processor unit are powered. Also check the wiring between the antenna unit and the processor unit. Use radar as standalone. | |
| 10807, - | 820 | NAVTEX Message Received | NAVTEX Message is received. Please check it |
| | | **Meaning:** NAVTEX message is received.<br>**Remedy**: Check the NAVTEX message. | |
| 10910, 1 | 911 | LOST WV UTC SIG | Check that data input to Wave Analyzer is correct |
| | | **Meaning**: An input error has occurred for time/date data.<br>**Remedy**: Check data input to the Wave Analysis software. | |
| 10910, 2 | 912 | LOST WV COG/SOG | Check that data input to Wave Analyzer is correct |
| | | **Meaning**: An input error has occurred for speed/course data.<br>**Remedy**: Check data input to the Wave Analysis software. | |
| 10910, 3 | 913 | LOST WV WIND SIG | Check that data input to Wave Analyzer is correct |
| | | **Meaning**: An input error has occurred for wind data.<br>**Remedy**: Check data input to the Wave Analysis software. | |
| 10910, 4 | 914 | LOST WV RADAR ANT | Check that data input to Wave Analyzer is correct |
| | | **Meaning**: An input error has occurred for radar data.<br>**Remedy**: Check data input to the Wave Analysis software. | |
| 10910, 5 | 915 | LOST WV GYRO SIG | Check that data input to Wave Analyzer is correct |
| | | **Meaning**: An input error has occurred for gyrocompass data.<br>**Remedy**: Check data input to the Wave Analysis software. | |