

18. TT AND AIS DISPLAYS

Tracked targets and AIS targets can be overlaid on the chart. Only the differences between the radar and chart TT and AIS displays are described here.

The data of received radar-tracked targets must have reference to ground. If the data does not meet that criteria, target vectors are not shown and the indications COG and SOG in the TT info data box show [missing].

18.1 TT Display

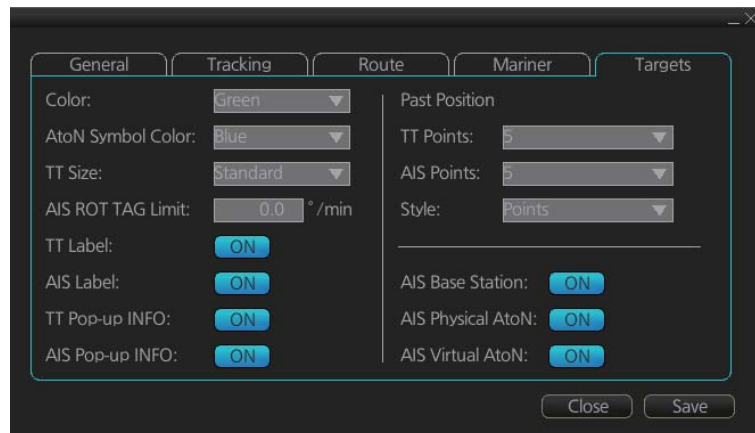
18.1.1 TT symbols

Refer to paragraph 3.7.1.

18.1.2 TT symbol color and size

Do the following to select TT symbol color and size. Note that the color of the AIS symbol is also changed.

1. Click the [DISP], [SET] and [Symbol DISP] buttons on the InstantAccess bar to show the [Symbol Display] menu.
2. Click the [Targets] tab.

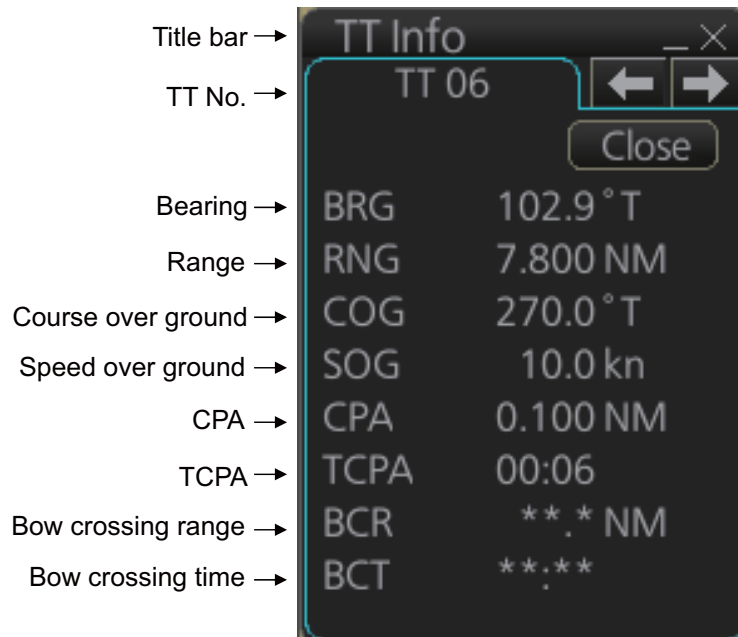


3. Select the color among, green, blue, black, magenta and brown, with the [Color] pull-down list.
4. Select the size from standard or small, with the [TT Size] pull-down list.

18.1.3 How to display tracked target data

Control Unit: Put the cursor on a target then push the **TARGET DATA** key.

Trackball module: Click the target for which you want to show its data.



To erase data from a data box, click the appropriate close data button.

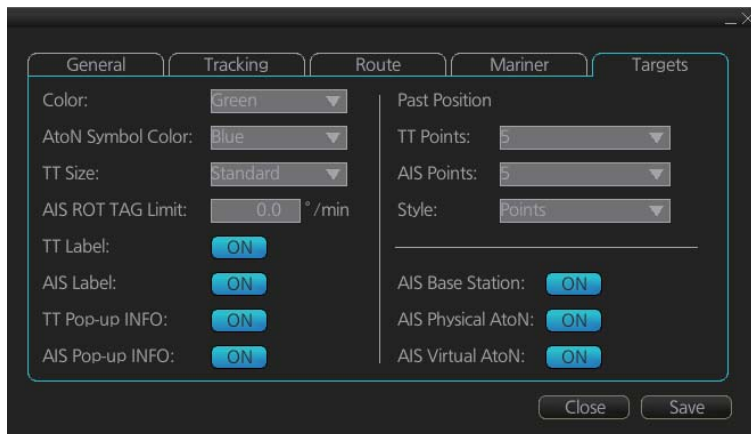
The basic target data display for a TT consists of the following information:

- Target's number. Target numbering starts from "01". When a target is erased the number will not be reused until the power is re-set or more than 200 targets are acquired.
- Bearing (BRG) and distance (RNG) of the target from own ship
- True speed (SOG) and true course (COG) of the target
- CPA and TCPA. A negative TCPA value means that you have already passed the closest point and the TT is going away from own ship.
- Bow Crossing Range (BCR) and Bow Crossing Time (BCT)

18.1.4 Past position point attributes

You can define past position point attributes for tracked targets by points and style.

1. Click the [DISP], [SET] and [Symbol DISP] buttons on the InstantAccess bar to show the [Symbol Display] menu.
2. Click the [Targets] tab.

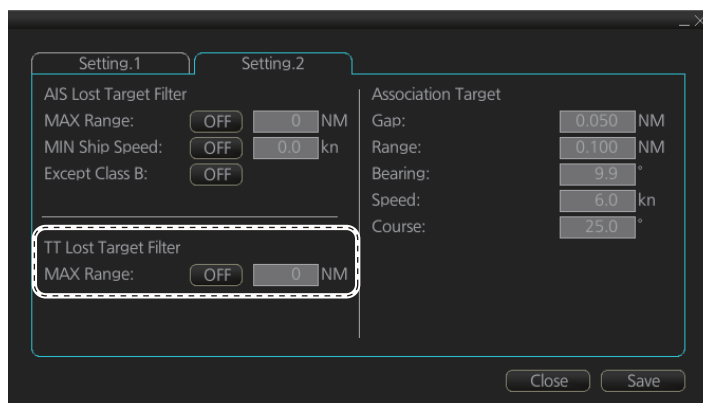


3. At [TT Points], select the number of points to show.
4. At [Style], select the style for the past position points. The choices are [Points] and [Points and Dots].

18.1.5 How to set the TT lost target filter

If you are in a congested area the lost target alert may sound against many AIS targets. In this case, you can prevent the alarm from sounding against TT that are beyond a certain range and/or smaller than a specific length.

1. Open the MENU and select [TT/AIS] and [Setting] then click the [Setting.2] tab.



2. In the [TT Lost Target Filter] window, set the maximum range to track a target. [Max Range]: The maximum range at which to track a lost target. A tracked target not within this range is not tracked.
3. Click the [ON/OFF] button to show ON or OFF as appropriate.

18.1.6 TT recording functions

Tracked target information is saved to the [Danger Targets] log. See section 19.5.

18.2 AIS Display

18.2.1 AIS symbols

Refer to section 4.3.

18.2.2 Voyage data

Before you embark on a voyage, set your navigation status, ETA, destination, draught and crew, on the [Voyage Data] page in the [NAV Status] menu. The data entered here is reflected to the AIS transponder.

Note: [Persons], the total number of persons onboard, should be set at the AIS transponder. Some AIS transponders may not accept this input from the radar.

1. Open the MENU then click both [NAV Status] in the [TT/AIS] menu and the [Voyage Data] tab.

The screenshot shows a software window with two tabs: 'Own Ship' and 'Voyage Data'. The 'Voyage Data' tab is selected. It contains the following fields:

- Navigational Status:** A dropdown menu currently showing 'Not defined'.
- Persons:** An input field containing the number '0'.
- MAX Draught:** An input field containing '0.0' followed by a unit 'm'.
- ETA:** An input field showing a time '00 : 00' and a date '01 Jan 2000'.
- Destination:** An empty text input field.

At the bottom right of the window, there are two buttons: 'Close' and 'Save'.

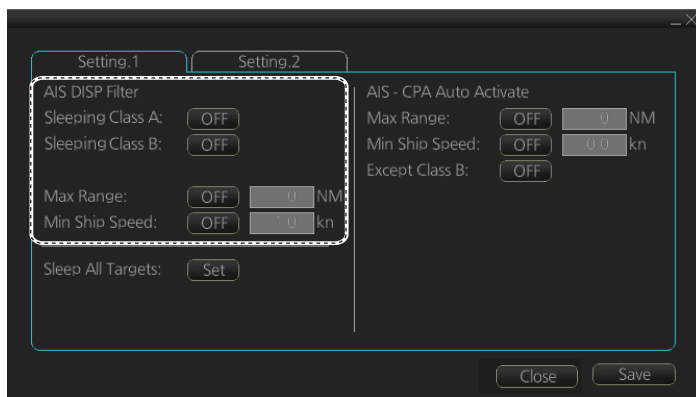
2. Click the [Navigational Status] drop-down list then select your navigational status, from the list below.

- [Underway using engine]
- [At anchor]
- [Not under command]
- [Restricted maneuverability]
- [Constrained by her draught]
- [Moored]
- [Aground]
- [Engaged in fishing]
- [Under way sailing]
- [Reserved for high speed craft]
- [Reserved for wing in ground]
- [Reserved for future use] (x3)
- [AIS-SART (active)]
- [Not defined]

3. Enter ship's draught (0.0 - 25.5 (m)) at [MAX Draught].
4. Enter your ETA at [ETA].
Day: two digits
Month: Three-character abbreviation
Year: Four digits
5. Enter your destination at [Destination], using a maximum of 20 characters.
6. Click the [Save] button to save the settings.

18.2.3 How to filter AIS targets

1. Right-click [AIS] on the [TT/AIS] page in the [NAV Tools/Overlay box], select [Setting] and open the [Setting.1] page.
(The [Setting.1] page can also be opened from the menu (MENU → [TT/AIS] → [Setting] → [Setting.1].))



2. In the [AIS DISP Filter] window, set each item referring to the description below.
 - Click the buttons of [Sleeping Class A] and [Sleeping Class B] to show [OFF] or [ON] to hide or show those targets.
 - Set the maximum range with [Max Range]. Any target beyond the range set here will not be displayed.
 - Set the ship speed for AIS targets, with [Min Ship Speed]. Any AIS target whose speed is lower than that set here will not be displayed.
3. Click the [Save] button to save settings. Click the [Close] button to close the dialog box.

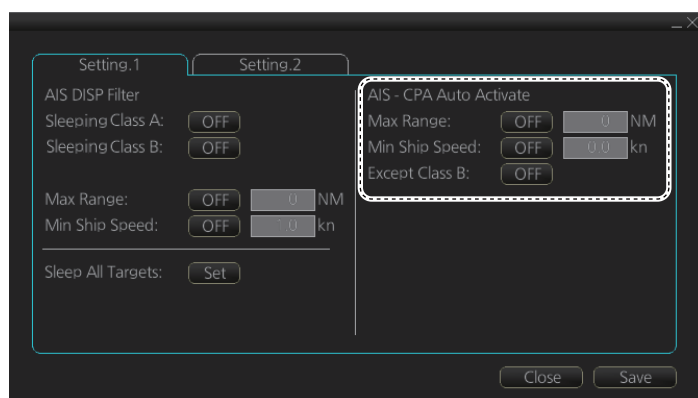
Note: AIS and tracked target viewing limitations are as follows:

AIS and tracked targets are displayed on top of chart 1:1,000,001 for S57 charts.

18.2.4 How to set conditions for automatic activation of sleeping targets

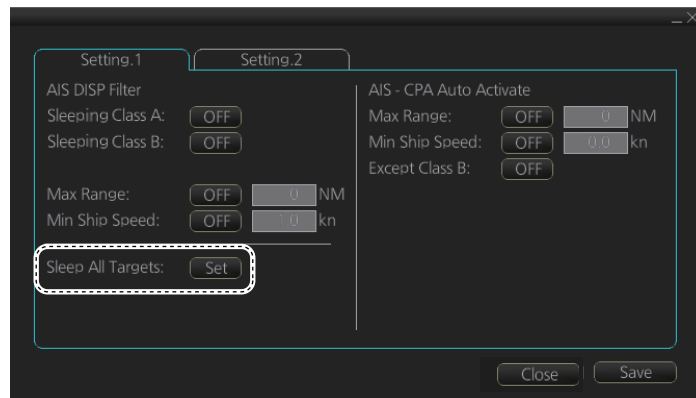
The AIS target automatic activation feature is turned on or off from the [TT/AIS] page in the [Overlay/NAV Tools] box. Set the conditions for automatic activation as shown below. The CPA/TCPA alarm must be active to get automatic activation of AIS targets.

Right-click [AIS] on the [TT/AIS] page in the [NAV Tools/Overlay box], select [Setting] and open the [Setting.1] page.



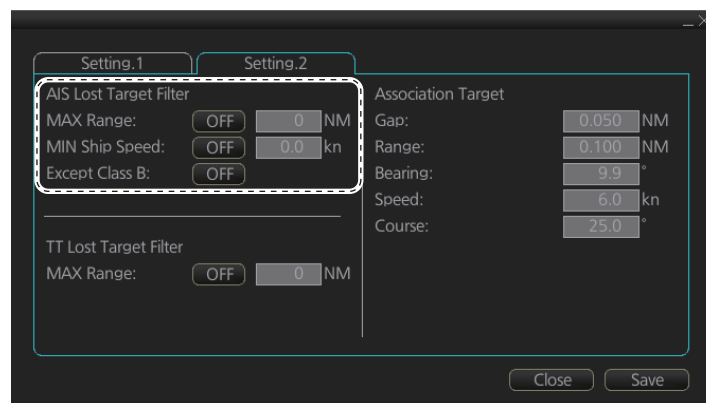
18.2.5 How to sleep all activated targets

You can sleep all activated targets. Right-click [AIS] on the [TT/AIS] page in the [NAV Tools/Overlay box], select [Setting] and open the [Setting.1] page. Click the [Sleep All Targets] button to sleep all activated targets.



18.2.6 How to set the AIS lost target filter

You can select what AIS targets to exclude from the AIS lost target alert, on the [Setting.2] page in the [TT/AIS] menu.



[Max Range]: Set the max. range at which a target must be to be declared a lost target.

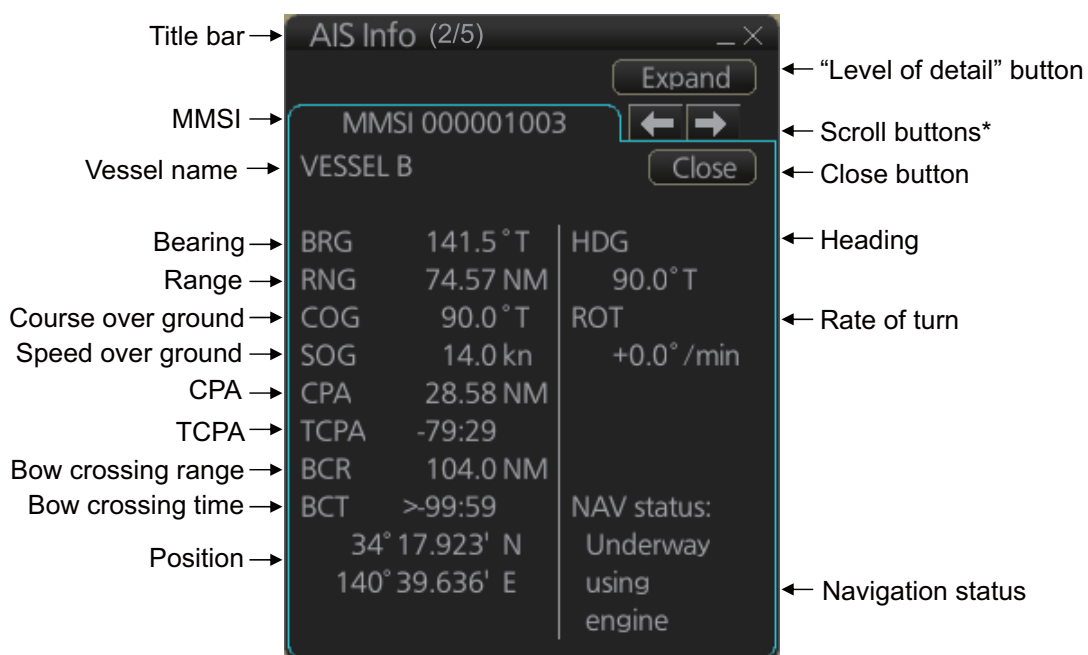
[Min Ship Speed]: A tracked target whose speed is slower than set here does not trigger the lost target alarm.

[Except Class B]: Exclude class B AIS targets from the AIS lost target alert.

18.2.7 How to display AIS target data

Normal data

Put the cursor on an AIS target then push the left button.



*: Scroll buttons appear when there are multiple AIS targets.

Expanded data

Put the cursor on a desired AIS target then push the left button. Click the [Expand] button (level of detail) on the [AIS Info] box to show expanded AIS data.

The screenshot shows the 'AIS Info (2/5)' window with the following data:

Field	Value
MMSI	MMSI 000001003
Vessel name	VESSEL B
Bearing	BRG 141.6° T
Range	RNG 74.82 NM
Course over ground	COG 90.0° T
Speed over ground	SOG 14.0 kn
CPA	CPA 33.86 NM
TCPA	TCPA -78:41
Bow cross range	BCR 121.1 NM
Bow cross time	BCT >99:59
Position	34° 17.922' N 140° 39.777' E
Position sensor	POS sensor: GPS
Position sensor accuracy (HIGH, LOW)	POS ACC.: HIGH
Call sign	Call sign: CALL2
IMO No.	IMO No.: IMO2222222
Length	Length: 300m
Width	Width: 11m
Draught	Ship draught: 12.2m
Destination	Destination: DESTINATION2
ETA	ETA: 31/DEC 23:59
AIS version no.	AIS version: 1
Ship & Cargo type	Ship & Cargo type: Reserved for future use Carrying DG, HS, or MP, IMO hazard or pollutant category Y
Association condition	Association: OFF

Navigation status: Underway using engine

*: Scroll buttons appear when there are multiple AIS targets.

18.2.8 How to display own ship data

You can see own ship's data on the [Own Ship] page in the [NAV Status] menu. Open the menu then click both [NAV Status] in the [TT/AIS] menu and the [Own Ship] tab.

Own Ship		Voyage Data	
MMSI:	457804356	Length(LOA):	223.2 m
Name:	FURUNO Voyager	Width:	31.8 m
Call Sign:	JZ5890312	Ref Bow:	3.3 m
Type:	0	Ref Port:	2.8 m
Description:	All ships of this type		

18.3 Association

An AIS-equipped ship is usually displayed by two symbols on the chart for radar display. This is because the AIS ship position is measured by a GPS navigator (L/L) whereas the radar detects the same ship by PPI principle (range and bearing relative to own ship radar antenna).

To avoid the presentation of two target symbols for the same physical target, use the "association" function. If target data from both AIS and TT are available and if the association criteria are fulfilled, either the AIS or TT symbol is presented according to the association method selected.

Association will not happen between AIS and TT if the AIS target is sleeping or the AIS target is lost.

All association settings, including ON/OFF, can also be controlled from the radar mode, with the [TT/AIS] setting box (see section 4.14). All settings are mutually shared.

18.3.1 How to select association method

Click the location circled below to show "<" to select AIS symbol for associated target, or ">" to select TT symbol for associated target. This setting overrides the corresponding item on the [TT/AIS] menu. To turn off association, click the location to remove the arrow.

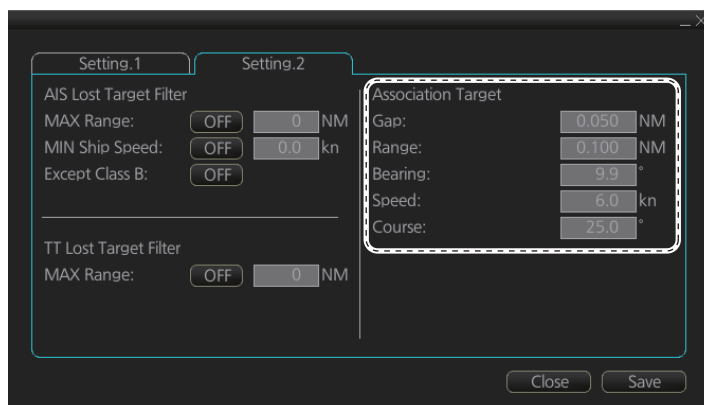
Overlay / NAV Tools		
TT/AIS		
TT	<	AIS
MAN		DISP ALL
Vector	3min	REL
CPA/TCPA	0.5NM	1min
AIS CPA	AUTO ACT ALL	
Lost TGT	FILT	
Past POSN	OFF	REL

Note: You can also select the method by right-clicking the location. Click desired association method.

Association: OFF
Association: TT
Association: AIS

18.3.2 How to set the conditions for association

To set the criteria for association, right-click [AIS] on the [TT/AIS] page in the [NAV Tools/Overlay] box, select [Setting] and open the [Setting.2] page. For setting details, see paragraph 4.14.2.



19. RECORDING FUNCTIONS

The chart radar records various voyage-related items like movement and position of own ship and dangerous radar targets (from Radar). These items are recorded in the following logs:

Event log: Records user events and position events.

NAV log: Records entire voyage (i.e., a sailing of a route from first point to the last, also MOB data), details (position, speed and course every minute), chart usage (information on charts used for display).

Target log: Records dangerous TT.

Alert log: Records alerts generated by the system.

Chart log: Records the install and update history for the ENC and C-MAP charts.

19.1 How to Record User, Position Events

19.1.1 User events

A user event is a comment about an event (weather, etc.). You can show user events on the chart area. Open the [Tracking] page of the [Symbol Display] menu show or hide the events.

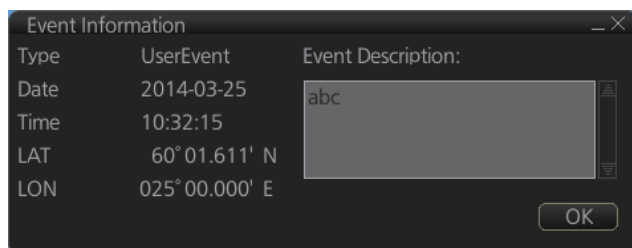
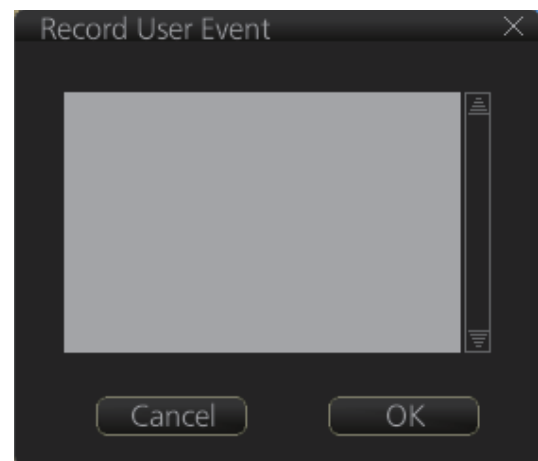
To record a user event:

1. Get into the Voyage planning mode then click the [Record], [Event Log] and [User Event] buttons on the InstantAccess bar to show the [Record User Event] window.
2. Enter a comment. Click the [OK] button to finish and close the text box.

An event marker (☒) appears at your position and the event is recorded to the [Voyage] log.

To view the comment entered for an event, put the cursor on the event then left click to show the [Event Information] window. The window shows the name of the event ([UserEvent]), time and date of entry, latitude and longitude position of the event and comment.

Note that the comment can be edited from this window. Edit the comment then click the [OK] button to save.



19.1.2 Position events

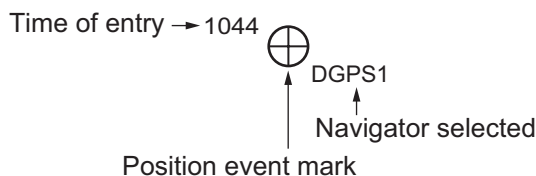
The operator may manually save positions to the [Event] log by position or LOP (Line of Position):

To record a position, get into the Voyage navigation mode or Voyage planning mode then do as follows:

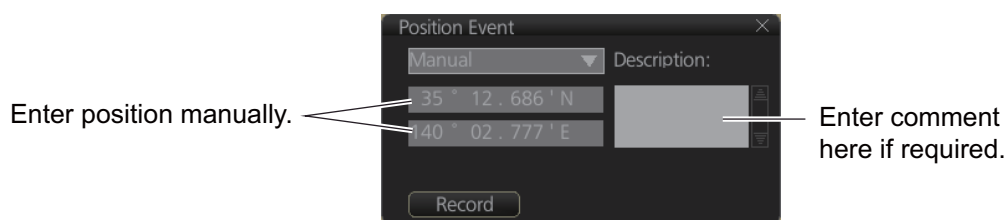
1. Click the [Record], [Event Log] and [POSN Event] buttons on the InstantAccess bar to show the [Position Event] dialog box.

2. At the list box at the top of the dialog box, select position type.
 [Manual]: Manual input of ship's position. Go to step 4.
 [LOP]: Latitude and longitude position of a fixed object at ship's position. Go to step 5.
 [Position]: Ship's position fed from navigator selected. Go to step 3.
3. For [Position], click the [Record] button.

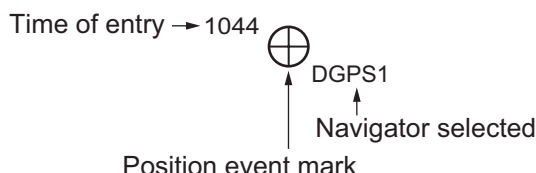
The position event mark appears at the ship's position. The position is recorded to the [Voyage] log.



- For [Manual], manually enter position, enter a comment if required, then click the [Record] button.



The position event mark appears at the manual input position. The position is recorded to the [Voyage] log.



- For [LOP], see the description below.

Position fixes defined by Line of Position (LOP)

A plotted line on which a vessel is located, determined by observation or measurement of the range or bearing to an aid to navigation or other charted element. Two or more simultaneous observations can be combined to produce an estimate of the ship's current position. If the position is based on only two observations, it is an "estimated position" (EP); otherwise it is called a fix. A maximum of 6 observations can be entered to obtain a fix.

Basic operation: Coordinates of the aid to navigation can be entered into dialog boxes or they can be selected graphically on the chart. Click on a charted object (beacon, light, buoy etc.). Description of the object appears above coordinate boxes.

Default values for bearing and range are approximated from ship's current position information. The time of observation is stopped when the object is selected (or when the [Add] button is clicked). Click the [Add] box to include the observation in the fix computation. The counter shows "new/1", at the input of the second observation. The word "new" indicates that the observation currently displayed is not yet included in the fix computation, and it appears as a dashed line or ring on the chart. The added observations can be edited or deleted after selecting them at the counter. When at least two measurements are entered, the EP or fix is computed and the coordinates are shown in the top part of the dialog. To show a position symbol on the chart, click the [Record] button. In the case of an EP, the letters EP are shown on the right side of the coordinates. If a valid position estimate cannot be obtained, a message is displayed under the coordinates. This may happen, for example, if the lines / circles have multiple crossings that are far apart, or if two lines are nearly parallel or don't intersect at all. The accuracy limit (estimated standard error) is 1.0 NM. If the estimate is valid, the [Record] box can be clicked to record the current position estimate in the [Voyage] log. Discrepancy between LOP result and ship position is also recorded in the log (this information may be viewed by Info query on the position event symbol on the chart - which is displayed if position event display is on in chart display settings).

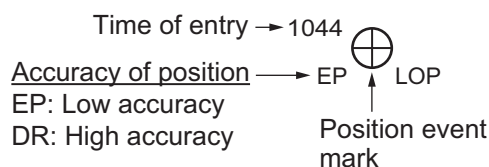
19. RECORDING FUNCTIONS

Time transfer: If the observations are not simultaneous, they should be transferred to a common time. Transferring is based on dead reckoning of ship movement. If a position line (or ring) is transferred, the letters TPL are shown beside its timestamp on the chart. The method of transfer may be selected in the bottom of the dialog. [Transfer to latest] transfers the measurements as if they were all made at the time of the newest measurement. [Continuous transfer] transfers all measurements to real time. [Transfer off] can be used to check where the measurement origins are. The position estimate and the record function follow the same logic, which means that Transfer off shows a position that has no relevance and Transfer to latest sends an old position to the [Voyage] log (timestamp in the log does not match the position).

If you are satisfied with the position shown in the latitude and longitude fields, then click the [Record] button to save the position observation to the Voyage log. If you wish you can also enter latitude and longitude values manually.

Timeouts: The observations cannot be used long after they were made because dead reckoning is inaccurate.

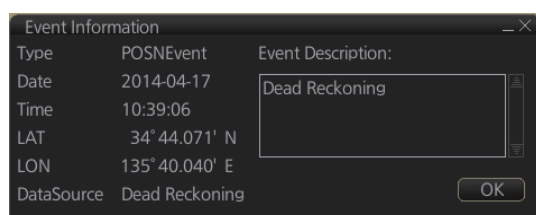
Click the [Record] button to put a position event at the LOP-calculated position. The position is recorded to the [Voyage] log.



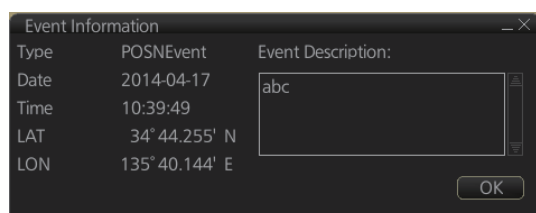
How to find position event information

You can find information about a position event by putting the cursor on the event mark then left click. The [Event Position] window shows event type (position event), time of entry, event position, name of sensor ([Position] only), comment (automatic for [LOP] and [Position]; user-entered comment* for [Manual]), and position line data ([LOP] only).

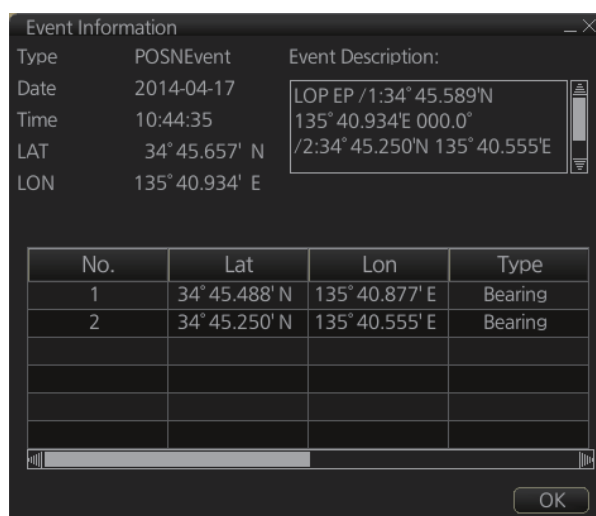
*Comment cannot be changed from this window.



Position event: Position



Position event: Manual



Position event: LOP

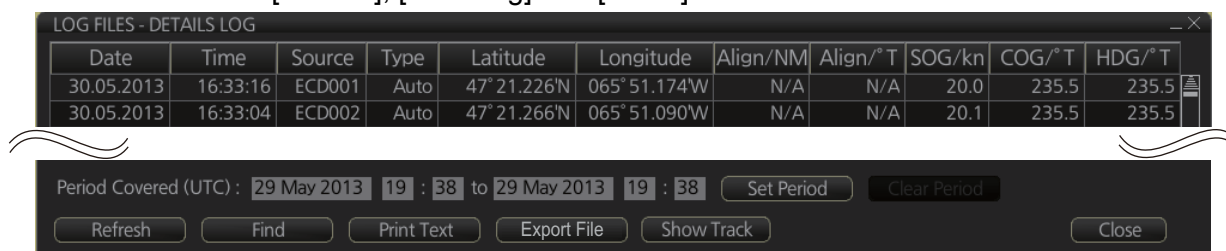
19.2 Details Log

The [Details] log contains voyage information, recorded once per minute.

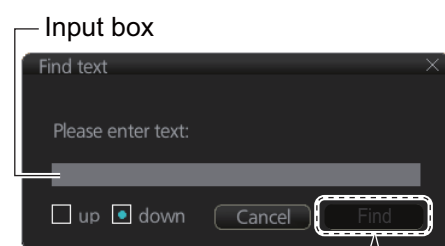
- [Date]
- [Time]
- [Source]: No. of unit which generated log
- [Type]: Type of position data
 - [Auto]: Automatic input of position
- [Latitude], [Longitude]: Position as output by selected sensor
- [Align/NM], [Align/°T]: Range, bearing offset, if used
- [SOG/kn]: Speed over the ground
- [COG/°T]: Course over the ground
- [HDG/°T]: Heading
- [CORR/°T]: Gyro correction value, if used

How to view the Details log

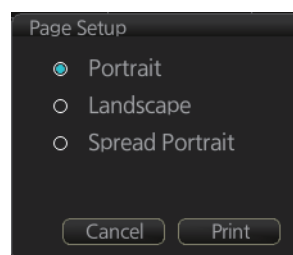
Click the [Record], [NAV Log] and [Detail] buttons on the InstantAccess bar.



- **To show the logs of a specific period**, enter the period to show with [Period Covered (UTC)] then click the [Set Period] button. Use the [Clear Period] button to display all logs.
- **To refresh the log**, click the [Refresh] button.
- **To search the log**, do as follows:
 - 1) Click the [Find] button to show the [Find text] box.
 - 2) Click the input box then enter the text to search.
 - 3) Select the search direction with the up or down radio button.
 - 4) Click the [Find] button. The first matching text is highlighted in yellow at the top of the screen.
 - 5) To continue the search click the [Find] button. To cancel the search, click the [Cancel] button.
- **To print the log**, click the [Print Text] button. Select printing format then click the [Print] button. [Spread Portrait] prints two pages of data on one page.
- **To show track for the period selected**, click the [Show Track] button. Use the [Hide Track] button to erase the track.
- **To export the log**, click the [Export File] button. The file is named DetailsLogYYYYMMDDhhmmss.csv.



Input text in box and [Find] button appears.



19.3 Voyage Log

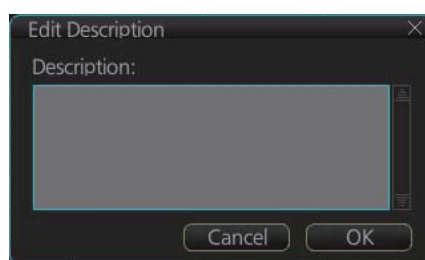
The [Voyage] log records all voyage-related data of the past three months. Recorded events are:

- [Date]: Date of entry
- [Time]: Time of entry
- [Source]: No. of unit which generated log
- [Type]: Log entry types
 - [Auto]: Automatic entry of ship position, in 1 to 4 hr intervals, set by operator.
 - [Ship]: Logged if speed or course exceed operator-set values.
 - [MOB]: MOB position, entered with [MOB] button.
 - [User]: Operator-entered position. The information entered in the [Description] box is logged.
 - [Posdev]: Operator-entered GPS position or LOP. The information entered in the [Description] box is logged.
- [Latitude], [Longitude]: Latitude and longitude position
- [SOG/kn], [COG/°T], [HDG/°T]: Speed over the ground, course over the ground, heading.
- [CORR/°T]: Offset bearing, if used
- [Wind/kn], [Wind/°T]: Wind speed and angle
- [Dist/NM]: Offset distance
- [Depth/m]: Depth in meters
- [Description]: The latitude and longitude position and bearing (or distance) of a maximum of three objects are automatically recorded to each log entry. An object whose position accuracy is low is not recorded. If an object has both a bearing and distance, separate entries are made.

L/L position, bearing of object (no.1)

LOP DR /1:35 ° 20.743' N 139 ° 44.925' E 123.4 ° /2:35 ° 20.482' N 139 ° 48.658' E 214.9 ° /3:35 ° 17.437' N 139 ° 44.820' E 3.07NM
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If desired the description can be edited. Click the applicable Description block to show the [Edit Description] box. Edit the description as required then click the [OK] button.

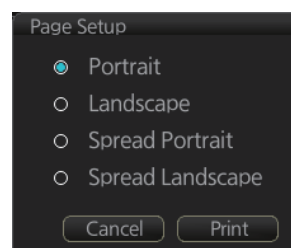


How to view the Voyage log

To open the Voyage log, click the [Record], [NAV Log] and [Voyage] buttons on the InstantAccess bar.

LOG FILES - VOYAGE LOG									
Date	Time	Source	Type	Latitude	Longitude	SOG/kn	COG/° T	HDG/° T	CORR/° T
30.05.2013	15:38:18	ECD001	Auto	47° 30.529'N	065° 27.930'W	19.9	243.3	243.2	N/A
30.05.2013	13:29:08	ECD002	Auto	47° 43.856'N	064° 27.605'W	20.0	260.4	260.4	N/A

- **To show the logs of a specific period**, enter the period to show with [Period Covered (UTC)] then click the [Set Period] button. Use the [Clear Period] button to display all logs.
- **To refresh the log**, click the [Refresh] button.
- **To search the log**, do as follows:
 - 1) Click the [Find] button to show the [Find text] box.
 - 2) Click the input box then enter the text to search.
 - 3) Select the search direction with the up or down radio button.
 - 4) Click the [Find] button. The first matching text is highlighted in yellow at the top of the screen.
 - 5) To continue the search click the [Find] button. To cancel the search, click the [Cancel] button.
- **To print the log**, click the [Print Text] button. Select printing format then click the [Print] button. [Spread Portrait] and [Spread Landscape] print two pages of data on one page.
- **To show track for the period selected**, click the [Show Track] button. Use the [Hide Track] button to erase the track.
- **To export the log**, click the [Export File] button. The file is named VoyageLogYYYYMMDDhhmmss.csv.



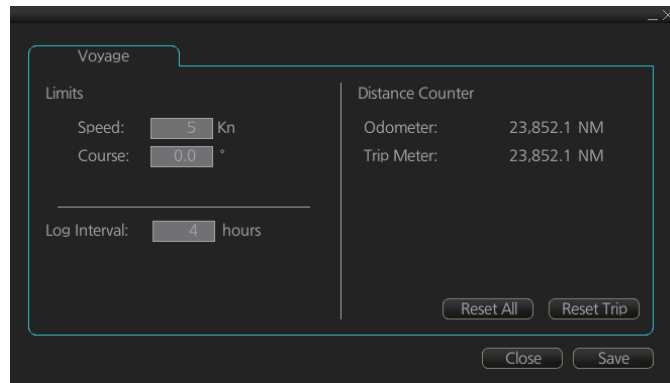
19.3.1 How to set conditions of logging

The operator can set the conditions for automatic voyage logging. When your speed or course equals the amount set here, an entry is made in the [Voyage] log:

- Define the amount of course and speed change which creates a log entry.
- Set the interval of logging, regardless of speed and course change.

To set the conditions of logging, do as follows:

1. Open the menu and select the [Voyage] menu from the [NAVI Log] menu.



2. Set desired limits for speed, course and log interval.

[Speed]: 1 - 10 kn, 1 kn interval

[Course]: 0 - 30°, 1° interval

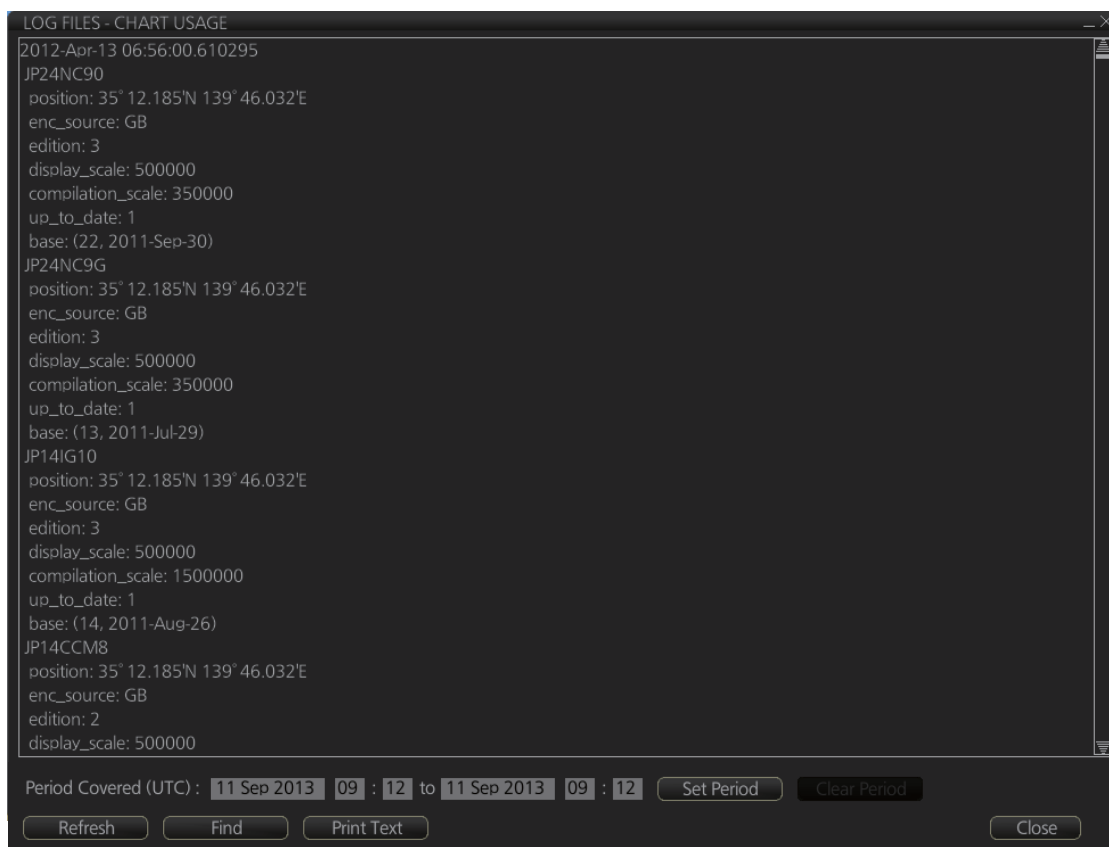
[Log Interval]: 1 - 4 hr, 1 hr interval

When your speed or course changes by the amount set here, an entry is made in the [Voyage] log, at the interval selected.

19.4 Chart Usage Log

The [Chart Usage] log stores which charts were used in chart alerts. To open the log, click [Record], [NAV Log] and [Chart Usage] on the InstantAccess bar. The following information is recorded in the chart usage log:

- Date and time chart was displayed
- Chart ID
- Center position of display (Lat, Lon)
- Chart source
- Chart edition
- Display scale
- Compilation scale
- The latest update included to chart
- Chart base



- **To show the logs of a specific period**, enter the period to show with [Period Covered (UTC)] then click the [Set Period] button. Use the [Clear Period] button to display all logs.
- **To refresh the log**, click the [Refresh] button.
- **To search the log**, do as follows:
 - 1) Click the [Find] button to show the [Find text] box.
 - 2) Click the input box then enter the text to search.
 - 3) Select the search direction with the up or down radio button.
 - 4) Click the [Find] button. The first matching text is highlighted in yellow at the top of the screen.
 - 5) To continue the search click the [Find] button. To cancel the search, click the [Cancel] button.
- **To print the log**, click the [Print Text] button.

19.5 Danger Targets Log

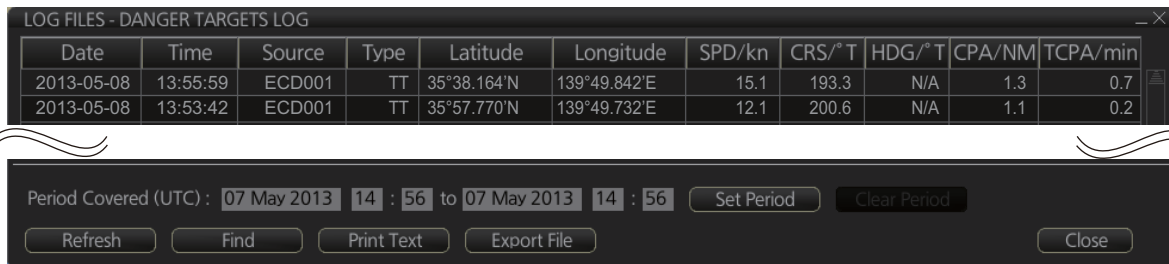
The [Danger Targets] log stores information about dangerous targets that are received from a radar (TTs) and/or targets that are received from an AIS transponder (AIS targets).

If a TT or AIS target is within the set CPA (Closest Point of Approach) and TCPA (Time to CPA), information of all TTs (including non-dangerous targets) are recorded into the danger target log. This data is as follows:

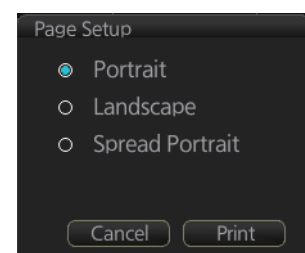
- [Date]: Date of entry
- [Time]: Time of entry
- [Source]: Unit which generated log
- [Type]: Type of dangerous target
- [Latitude], [Longitude]: Latitude and longitude position of dangerous target
- [SPD/kn]: Speed of dangerous target
- [CRS/°T]: Course of dangerous target
- [HDG/°T]: Heading of dangerous target
- [CPA/NM], [TCPA/min]: CPA and TCPA of dangerous target
- [Index]: Radar target no. (TT), MMSI (AIS)

How to view the danger targets log

To open the [Danger Targets] log, click the [Record], [Target Log] and [Danger Target] buttons on the InstantAccess bar.



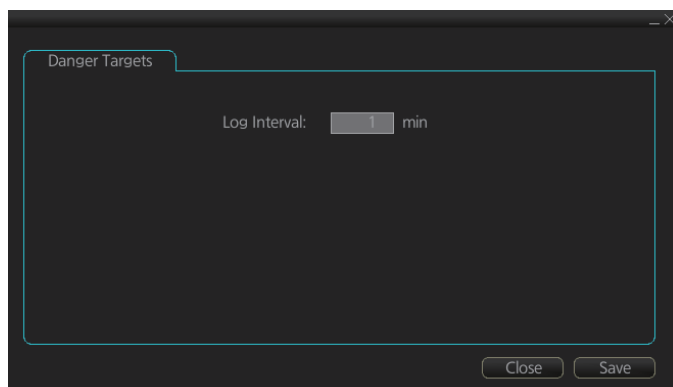
- **To show the logs of a specific period**, enter the period to show with [Period Covered (UTC)] then click the [Set Period] button. Use the [Clear Period] button to display all logs.
- **To refresh the log**, click the [Refresh] button.
- **To search the log**, do as follows:
 - 1) Click the [Find] button to show the [Find text] box.
 - 2) Click the input box then enter the text to search.
 - 3) Select the search direction, with the up or down radio button.
 - 4) Click the [Find] button. Matching text is highlighted in yellow at the top of the screen.
 - 5) To continue the search click the [Find] button. To cancel the search, click the [Cancel] button.
- **To print the log**, click the [Print Text] button.
- **To export the log**, click the [Export File] button. The file is named DangerTargetLogYYYYMMDDhhmmss.csv.



19.5.1 How to set the conditions for logging danger targets

The operator may set Closest Point of Arrival (CPA), Time for CPA (TCPA) and Log interval for viewing dangerous TT and AIS targets on the chart radar display.

1. Open the menu and select the [RECORD], [Target Log], [Danger Target] menus.



2. Set how often to record dangerous TTs and AIS targets with [Log interval].

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20. ALERTS

20.1 What is an Alert?

“Alert” is a generic name for a notice to any unusual or potentially dangerous situation generated within the system.

Alerts are classified according to priority and category.

Alert priority

There are three alert priorities: alarm, warning and caution.

Alarm: Situations or conditions which require immediate attention, decision and (if necessary) action by the bridge team to avoid any kind of hazardous situation and to maintain the safe navigation of the ship.

Warning: Situations or conditions which require immediate attention for precautionary reasons, to make the bridge team aware of conditions which are not immediately hazardous, but may become so.

Caution: Awareness of a condition which continues to require attention out of the ordinary consideration of the situation or of given information.

Alert category

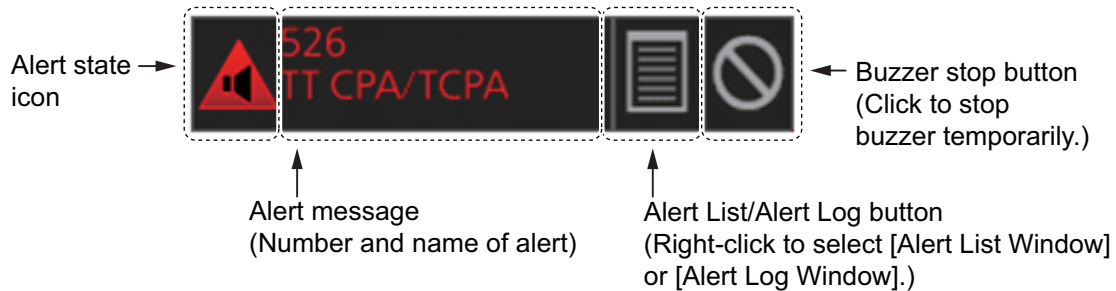
An alert is further classified by category, A, B or C, according to its degree of severity or source.

Category	Description
A	Category A alerts include alerts indicating <ul style="list-style-type: none">• Danger of collision• Danger of grounding
B	Category B alerts are alerts where no additional information for decision support is necessary. Category B alerts are all alerts not falling under category A.
C	IAS (Integrated Automation System) generated engine alert

20.2 Alert Box

When an alert is generated, the related alert message and alert state icon appear in the [Alert] box, which is at the bottom right corner on the screen. An audible alarm is additionally generated for alarms and warnings.

In addition to the alert message and alert state icon, the [Alert] box has the buzzer stop button and provides access to the [Alert List] and [Alert Log].



Alert state icon: The state of an alert is shown with an icon. See page 20-4.











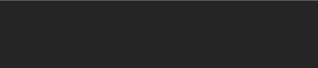
Alert message: The number and name of all active alerts appear in the message area, with the alert of the highest priority on top always. The color of both the message and the background change according to alert priority and alert state. See the table on the next page.

An alert can be acknowledged from the [Alert] box or [Alert List]. An alert remains in the [Alert] box and [Alert List] until it is acknowledged and rectified. See section 20.5.

Alert List/Alert Log button: Right-click to select [Alert List Window] or [Alert Log Window]. The background color of the button is light blue when the list or log is open. See sections 20.5 and 20.6 for a description of the list and log.










Buzzer stop button: Click to temporarily silence the buzzer, which sounds against alarms and warnings. See page 20-4.

Alert message display format

Alert indication	Priority of alert	Alert state	Display state
 526 TT CPA/TCPA  Displayed alternately  526 TT CPA/TCPA	Alarm	- Not acknowledged/Not rectified. OR - Not acknowledged/Rectified.	Black characters on red background. Flashing interval <ul style="list-style-type: none"> • 0.5 s, 0.5 s (Not rectified) • 3 s, 1 s (Rectified) Red characters on gray background.
 526 TT CPA/TCPA	Alarm	Acknowledged/Not rectified.	Red characters on gray background.
 008 Fan 2 No Rotati..  Displayed alternately  008 Fan2 No Rotati..	Warning	- Not acknowledged/Not rectified. OR Not acknowledged/Rectified.	Black characters on yellow-orange background. Flashing interval <ul style="list-style-type: none"> • 0.5 s, 0.5 s (Not rectified) • 3 s, 1 s (Rectified) Yellow-orange characters on gray background.
 008 Fan2 No Rotati..	Warning	Acknowledged/Not rectified.	Yellow-orange characters on gray background.
 362 Wind Sensor 3..	Caution	Not rectified.	Yellow characters on gray background.
	Alarm/ Warning	Acknowledged/Rectified.	No display.
	Caution	Rectified.	No display.




Alert state icons

The table shows the icons used to indicate the various alert states for the alarm, warning and caution alerts.

Icon	Alert state	Icon description
Alert priority: Alarm		
	Not acknowledged/Not rectified	Red triangle with black loudspeaker in center of triangle. Flashing every 0.5 s.
	Not acknowledged/Not rectified, Buzzer temporarily silenced	Red triangle with crossed out black loudspeaker in center of triangle. Flashing every 0.5 s.
	Acknowledged/Not rectified	Red triangle with black exclamation point in center of triangle.
	Not acknowledged/Rectified	Red triangle with black check mark in center of triangle. The icon flashes 3 s, goes off 1 s, repeats the sequence.
Alert priority: Warning		
	Not acknowledged/Not rectified	Yellow-orange circle with black loudspeaker in center of circle. Flashing every 0.5 s.
	Not acknowledged/Not rectified, Buzzer temporarily silenced	Yellow-orange circle with crossed out black loudspeaker in center of circle. Flashing every 0.5 s.
	Acknowledged/Not rectified	Yellow-orange circle with black exclamation point in center of circle.
	Not acknowledged/Rectified	Yellow-orange circle with black check mark in center of circle. The icon flashes 3 s, goes off 1 s, repeats the sequence.
Alert priority: Caution		
	Caution	Steadily displayed yellow square with black exclamation point in center of square.

Buzzer stop button

The color of both the background and the icon change according to alert state.

Button state	Description
	No alert generated. The background is gray and the icon is grayed out.
	An alarm or warning is being acknowledged. The background is gray and the icon is white.
	Button clicked to silence buzzer temporarily. The background is light-blue and the icon is black.

20.3 How to Temporarily Silence the Buzzer for an Alarm or Warning

When the buzzer for an alarm or warning sounds, you can temporarily silence it by doing one of the following:

- Click the buzzer stop button in the [Alert] box.
- In the [Alert List], click the [Silence] button.

The buzzer is stopped and the alert state changes. An alert message remains in the [Alert] box and [Alert List] until acknowledged and rectified. If an alarm or warning is not acknowledged within 30 seconds, the buzzer sounds again.



20.4 How to Acknowledge an Alarm or Warning

When an alarm or warning is generated, the buzzer sounds and the name of the alert appears and flashes in the [Alert] box and [Alert List].

To acknowledge the alert, do one of the following:

- Press the **ALARM ACK** key.
- In the [Alert] box or [Alert List], click the unacknowledged alert.

After acknowledgement, the buzzer and the flashing for the alert message are stopped and the priority of the alert changes as shown in the table below. The alert message remains on the display until rectified.

Priority no.		Priority of alert		Alert state
High		1	Alarm	Not acknowledged/Not rectified
		2	Warning	Not acknowledged/Not rectified
		3	Alarm	Not acknowledged/Rectified
		4	Warning	Not acknowledged/Rectified
Low		5	Alarm	Acknowledged/Not rectified
		6	Warning	Acknowledged/Not rectified
		7	Caution	Not rectified

Unacknowledged warnings

If a warning (Alert 150 "Early Course Change Indication" and 151 "Actual Course Change Indication") is not acknowledged within 30 seconds then the priority changes to alarm. If a warning (except for Alert 150 and 151) is not acknowledged within 60 seconds, the warning is generated again.

Category of alert and place of alert acknowledgement

The place of alert acknowledgement depends on the category of the alert.

Category	Where the alert is generated	Place of alert acknowledgement
A	Equipment that generated the alert.	Equipment that generated the alert.
B	Equipment that generated the alert.	Equipment that generated the alert or AMS.
C	IAS (Integrated Automation System) generated engine alert	—

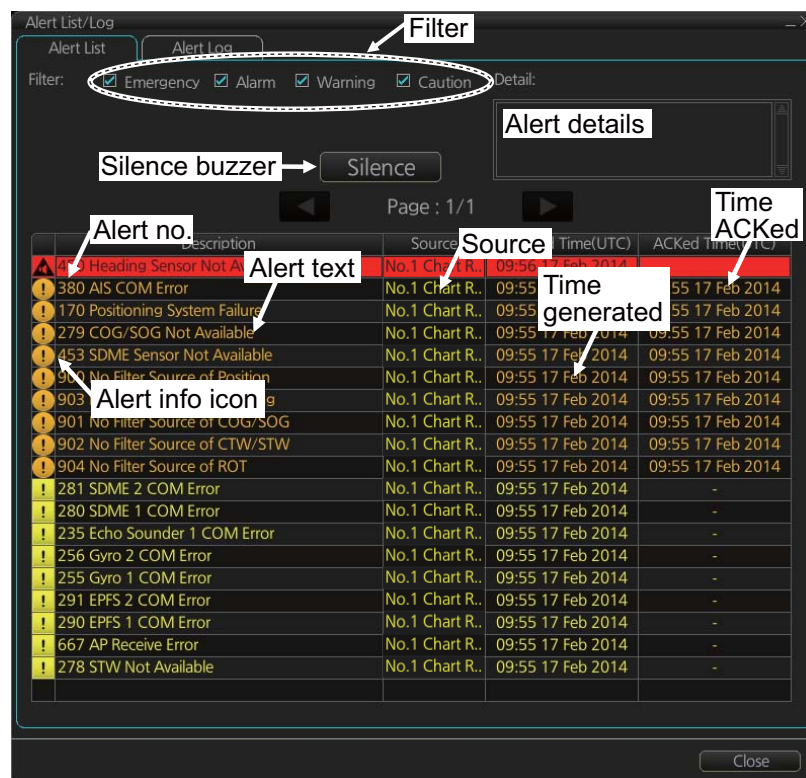
20.5 Alert List

The [Alert List] displays all active alerts, with unacknowledged alerts at the top, in priority order. To display the list, right-click the [Alert List/Alert Log] button in the [Alert] box then select [Alert List/Log Window]. The ZDA sentence is required to display the time in the list.

Note: The [Alert List] cannot be opened while the radar is transmitting.

The list shows

- Alert no.
- Alert text
- Source of alert
- Time (UTC) alert was generated
- Time (UTC) alert was acknowledged
- Details about the alert selected



The background color of an unacknowledged alarm is red and flashing and unacknowledged warning is yellow-orange and flashing. An acknowledged alert is displayed steadily, in red for alarm and yellow-orange for warning. A caution is displayed steadily in yellow.

The [Filter] checkboxes at the top of the window let you select what alerts to view. Check or uncheck the boxes to show or hide the corresponding alerts.

To find details about an alert, click the applicable alert info icon at the left side of the window to show the details in the [Detail] box at the top of the window. The box shows the reason for the alert, how to handle the alert, etc.

An individual alarm or warning can be acknowledged by clicking it.

The [Silence] button silences the buzzer.

How the alert list is updated after acknowledgement, rectification

When you acknowledge an alert, its display method on the [Alert] list changes according to alert category and alert state. Acknowledged and rectified alerts are immediately removed from the list.

No.	Alert priority	Alert state	Display after acknowledgement	Display after rectification
1	Alarm	Not acknowledged/Not rectified	5	2
2		Not acknowledged/Rectified	8	—
3	Warning	Not acknowledged/Not rectified	6	4
4		Not acknowledged/Rectified	9	—
5	Alarm	Acknowledged/Not rectified	—	8
6	Warning	Acknowledged/Not rectified	—	9
7	Caution	Not rectified	—	10
8	Alarm	Acknowledged/Rectified	—	—
9	Warning	Acknowledged/Rectified	—	—
10	Caution	Rectified	—	—

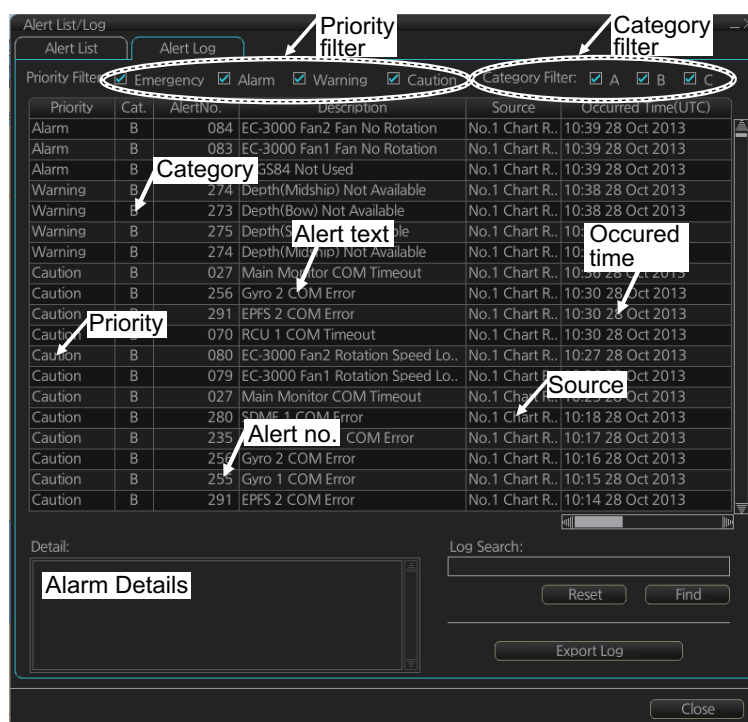
20.6 Alert Log

The [Alert] log stores and displays the latest 10,000 alerts. To display the log, right-click the [Alert List/Alert Log] button then select [Alert List/Log Window].

Note: The [Alert Log] cannot be opened while the radar is transmitting.

The log shows the following information for each alert:

- Priority of alert (Alarm, Warning, Caution)
- Category of alert (A, B or C)
- Alert no.
- Alert description
- Source of alert
- Occurred Time (UTC)
- ACKed Time (UTC)
- Rectified Time (UTC)
- Alert details



You can select what type of alerts to display with [Priority Filter] and [Category Filter] at the top of the list. The list can be sorted by [Priority], [Cat.], [Alert No.], [Description], [Occurred Time], [ACKed TTime] or [Rectified Time]. Click the corresponding column title to sort. To find detailed information about an alert, select it to show detailed information in the [Detail] box. To search the log, enter text in the [Log Search] box then click the [Find] button. You can save the contents of the log to a USB flash memory, in .dat format, by clicking the [Export Log] button.

20.7 Alert Reception from Connected Sensors

An "ALR receive and ACK transmit" communication is available for every serial line input. The ALR message from the sensor includes information about alerts from the sensor, and is presented through the normal alert system. When you acknowledge an alert, an ACK message is sent to the sensor to do remote acknowledge.

This interface is based on IEC 61162-1 and IEC 80/520/INF.

20.8 List of Alerts

Below is a list of all available alerts and their default priorities. The priority of Alerts 620 to 638 can be switched between Caution and Warning on the [Chart Alert] page (see paragraph 11.1.2).

No.	Text	Default priority
001	Fan1 Rotation Speed Lowering	Caution
002	Fan2 Rotation Speed Lowering	Caution
003	Fan3 Rotation Speed Lowering	Caution
004	Fan4 Rotation Speed Lowering	Caution
005	LCD Unit Lifetime Over	Warning
006	High Temperature Inside Monitor	Warning
007	Fan1 No Rotation	Warning
008	Fan2 No Rotation	Warning
009	Fan3 No Rotation	Warning
010	Fan4 No Rotation	Warning
011	RS485 Communication Timeout	Caution
012	No Signal	Caution
013	Sentence Syntax Error	Caution
014	Fan1 Rotation Speed Lowering	Caution
015	Fan2 Rotation Speed Lowering	Caution
016	Fan3 Rotation Speed Lowering	Caution
017	Fan4 Rotation Speed Lowering	Caution
018	LCD Unit Lifetime Over	Warning
019	High Temperature Inside Monitor	Warning
020	Fan1 No Rotation	Warning
021	Fan2 No Rotation	Warning
022	Fan3 No Rotation	Warning
023	Fan4 No Rotation	Warning
024	RS485 Communication Timeout	Caution
025	No Signal Caution	Caution

No.	Text	Default priority
026	Sentence Syntax Error	Caution
027	Main Monitor COM Timeout	Caution
028	Sub Monitor COM Timeout	Caution
030	Sensor Adapter 1 COM Timeout	Caution
031	Sensor Adapter 2 COM Timeout	Caution
032	Sensor Adapter 3 COM Timeout	Caution
033	Sensor Adapter 4 COM Timeout	Caution
034	Sensor Adapter 5 COM Timeout	Caution
035	Sensor Adapter 6 COM Timeout	Caution
036	Sensor Adapter 7 COM Timeout	Caution
037	Sensor Adapter 8 COM Timeout	Caution
038	Sensor Adapter 9 COM Timeout	Caution
039	Sensor Adapter 10 COM Timeout	Caution
070	RCU 1 COM Timeout	Caution
071	RCU 2 COM Timeout	Caution
072	RCU 3 COM Timeout	Caution
073	EC-3000 CPU Temp High	Caution
074	EC-3000 GPU Temp High	Caution
075	EC-3000 CPU Board Temp High	Caution
076	EC-3000 Remote 1 Temp High	Caution
077	EC-3000 Remote 2 Temp High	Caution
078	EC-3000 CPU Fan Rotation Speed Lowering	Caution
079	EC-3000 Fan1 Rotation Speed Lowering	Caution
080	EC-3000 Fan2 Rotation Speed Lowering	Caution
082	EC-3000 CPU Fan No Rotation	Warning
083	EC-3000 Fan1 Fan No Rotation	Warning
084	EC-3000 Fan2 Fan No Rotation	Warning
086	EC-3000 CPUboard 5V Power Error	Warning
087	EC-3000 CPUboard 3.3V Power Error	Warning
088	EC-3000 CPUboard 12V Power Error	Warning
089	EC-3000 CPUboard Battery Power Error	Caution
090	EC-3000 CPUboard Core Power Error	Caution
094	Sensor Adapter 11 COM Timeout	Caution
095	Sensor Adapter 12 COM Timeout	Caution
096	Sensor Adapter 13 COM Timeout	Caution
097	Sensor Adapter 14 COM Timeout	Caution
098	Sensor Adapter 15 COM Timeout	Caution
099	Sensor Adapter 16 COM Timeout	Caution
150	Early Course Change Indication	Warning
151	Actual Course Change Indication	Warning
170	Positioning System Failure	Warning
171	Crossing Safety Contour	Alarm
172	Off Track Alarm	Alarm
175	Different Geodetic Datum	Warning
176	System Malfunction	Warning
235	Echo Sounder 1 COM Error	Caution
236	Echo Sounder 2 COM Error	Caution
237	Echo Sounder 3 COM Error	Caution

20. ALERTS

No.	Text	Default priority
255	Gyro 1 COM Error	Caution
256	Gyro 2 COM Error	Caution
257	Gyro 3 COM Error	Caution
258	Gyro 4 COM Error	Caution
259	Gyro 5 COM Error	Caution
260	Backup Navigator	Alarm
272	UTC Time Not Available	Warning
273	Depth(Bow) Not Available	Caution
274	Depth(Midship) Not Available	Caution
275	Depth(Stern) Not Available	Caution
277	Wind Speed/Direction Not Available	Warning
278	STW Not Available	Caution
279	COG/SOG Not Available	Warning
280	SDME 1 COM Error	Caution
281	SDME 2 COM Error	Caution
282	SDME 3 COM Error	Caution
284	SOG Not Available	Warning
290	EPFS 1 COM Error	Caution
291	EPFS 2 COM Error	Caution
292	EPFS 3 COM Error	Caution
293	EPFS 4 COM Error	Caution
294	EPFS 5 COM Error	Caution
295	EPFS 6 COM Error	Caution
296	EPFS 7 COM Error	Caution
297	EPFS 8 COM Error	Caution
298	EPFS 9 COM Error	Caution
310	Other Sensor 1 COM Error	Caution
311	Other Sensor 2 COM Error	Caution
312	Other Sensor 3 COM Error	Caution
313	Other Sensor 4 COM Error	Caution
314	Other Sensor 5 COM Error	Caution
315	Other Sensor 6 COM Error	Caution
316	Other Sensor 7 COM Error	Caution
317	Other Sensor 8 COM Error	Caution
318	Other Sensor 9 COM Error	Caution
319	Other Sensor 10 COM Error	Caution
320	EC-3000 Ch.01 COM Timeout	Caution
321	EC-3000 Ch.02 COM Timeout	Caution
322	EC-3000 Ch.03 COM Timeout	Caution
323	EC-3000 Ch.04 COM Timeout	Caution
324	EC-3000 Ch.05 COM Timeout	Caution
325	EC-3000 Ch.06 COM Timeout	Caution
326	EC-3000 Ch.07 COM Timeout	Caution
327	EC-3000 Ch.08 COM Timeout	Caution
360	Wind Sensor 1 COM Error	Caution
361	Wind Sensor 2 COM Error	Caution
362	Wind Sensor 3 COM Error	Caution
370	Water Current COM Error	Caution

No.	Text	Default priority
371	Water Temp COM Error	Caution
380	AIS COM Error	Warning
390	NAVTEX COM Error	Caution
400	Network Printer Not Available	Caution
401	Local Printer Not Available	Caution
411	Other Sensor 11 COM Error	Caution
412	Other Sensor 12 COM Error	Caution
413	Other Sensor 13 COM Error	Caution
414	Other Sensor 14 COM Error	Caution
415	Other Sensor 15 COM Error	Caution
416	Other Sensor 16 COM Error	Caution
417	Other Sensor 17 COM Error	Caution
418	Other Sensor 18 COM Error	Caution
419	Other Sensor 19 COM Error	Caution
420	Other Sensor 20 COM Error	Caution
421	Other Sensor 21 COM Error	Caution
422	Other Sensor 22 COM Error	Caution
423	Other Sensor 23 COM Error	Caution
424	Other Sensor 24 COM Error	Caution
425	Other Sensor 25 COM Error	Caution
426	Other Sensor 26 COM Error	Caution
427	Other Sensor 27 COM Error	Caution
428	Other Sensor 28 COM Error	Caution
429	Other Sensor 29 COM Error	Caution
430	Other Sensor 30 COM Error	Caution
450	Heading Sensor Not Available	Warning
451	Gyro CORR. Source Change	Caution
453	SDME Sensor Not Available	Warning
469	WGS84 Not Used	Warning
470	Datum Change	Caution
472	Position Source Change	Warning
473	Heading Source Change	Warning
474	COG/SOG Source Change	Warning
475	CTW/STW Source Change	Warning
485	Depth Limit	Alarm
495	Anchor Watch Error	Warning
500	Watch Alert	Warning
520	TT System Error	Warning
521	TT New Target	Warning
522	TT Auto ACQ 95%	Caution
523	TT Auto ACQ 100%	Warning
524	TT MAN ACQ 95%	Caution
525	TT MAN ACQ 100%	Warning
526	TT CPA/TCPA	Alarm
527	TT Lost	Warning
528	REF Target Lost	Warning
529	AIS New Target	Warning
530	AIS Target Display 95%	Caution

20. ALERTS

No.	Text	Default priority
531	AIS Target Display 100%	Warning
532	AIS Target Capacity 95%	Caution
533	AIS Target Capacity 100%	Warning
534	AIS Target Activate 95%	Caution
535	AIS Target Activate 100%	Warning
536	AIS CPA/TCPA	Alarm
537	AIS Lost	Warning
539	AIS Message Received	Caution
541	AIS Message Transmit Error	Caution
542	AIS Transmitting	Caution
543	No CPA/TCPA for AIS	Warning
550	Active AIS-SART/MOB/EPIRB	Warning
560	Association	Caution
620	User Chart Danger Area	Warning
621	Traffic Separation Zone	Warning
622	Inshore Traffic Zone	Warning
623	Restricted Area	Warning
624	Caution Area	Warning
625	Offshore Production Area	Warning
626	Military Practice Area	Warning
627	Seaplane Landing Area	Warning
628	Submarine Transit Lane	Warning
629	Anchorage Area	Warning
630	Marine Farm / Aquaculture	Warning
631	PSSA Area	Warning
632	Areas to be Avoided	Warning
633	Buoy	Warning
634	UKC Limit	Warning
635	Non-official ENC	Warning
636	No Vector Chart	Warning
637	Not Up-to-date	Warning
638	Permit Expired	Warning
640	Chartalign: Over 30 min	Caution
689	Drift Comp Error	Warning
690	TC Start Timeout	Alarm
691	RM Stop - Exceed Max XTE	Alarm
692	RM Stop - No Valid Sensor Data	Alarm
693	RM Stop - Other Causes	Alarm
720	No ANT Heading Signal	Warning
721	No ANT Azimuth Signal	Warning
722	No ANT Trigger Signal	Warning
723	No ANT Video Signal	Warning
724	No RPU Gyro Signal	Warning
725	No ANT Echo Signal	Warning
726	RF Unit COM Error	Warning
727	Radar Sensor COM Error	Warning
728	Radar Sensor SW Version Error	Warning
730	EXT Radar STBY	Caution

No.	Text	Default priority
740	EXT Radar No Signal	Warning
750	EXT Radar COM Error	Warning
760	Datum Mismatch	Warning
770	SPU Error	Warning
771	MTR-DRV Error	Warning
772	PM Error	Warning
773	RF-Converter Error	Warning
774	PSU-Control Error	Warning
820	NAVTEX Message Received	Caution
851	EPFS 1 Sensor Banned	Caution
852	EPFS 2 Sensor Banned	Caution
853	EPFS 3 Sensor Banned	Caution
854	EPFS 4 Sensor Banned	Caution
855	EPFS 5 Sensor Banned	Caution
856	EPFS 6 Sensor Banned	Caution
857	EPFS 7 Sensor Banned	Caution
858	EPFS 8 Sensor Banned	Caution
859	EPFS 9 Sensor Banned	Caution
860	EPFS 10 Sensor Banned	Caution
861	SDME 1 Sensor Banned	Caution
862	SDME 2 Sensor Banned	Caution
863	SDME 3 Sensor Banned	Caution
871	Gyro 1 Sensor Banned	Caution
872	Gyro 2 Sensor Banned	Caution
873	Gyro 3 Sensor Banned	Caution
874	Gyro 4 Sensor Banned	Caution
875	Gyro 5 Sensor Banned	Caution
881	ROT Gyro 1 Sensor Banned	Caution
882	ROT Gyro 2 Sensor Banned	Caution
883	ROT Gyro 3 Sensor Banned	Caution
891	Water Current Sensor Banned	Caution
900	No Filter Source of Position	Warning
901	No Filter Source of COG/SOG	Warning
902	No Filter Source of CTW/STW	Warning
903	No Filter Source of Heading	Warning
904	No Filter Source of ROT	Warning
950	HBT Timeout	Caution

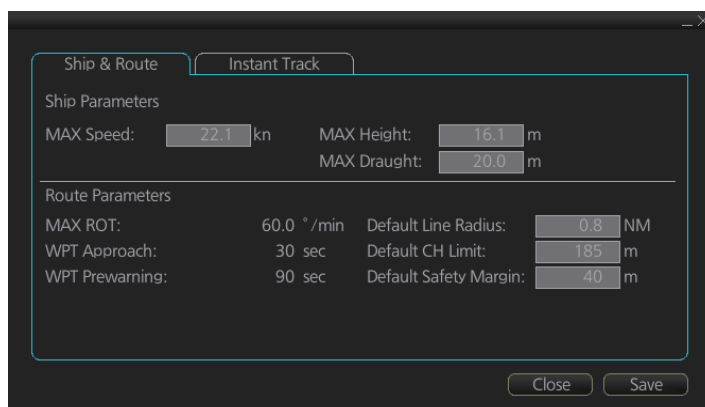
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21. PARAMETERS

21.1 Ship and Route Parameters

The purpose of the ship and route parameters is set the basic parameters for the ship. These parameters are relative to ship steering and they are very important to get correct function of the integrated navigation system. They must be maintained carefully. Modification requires a good knowledge of the parameters' importance.

Open the menu and select [Ship & Route Parameters] from the [General] menu to show the [Ship & Route] page. Set each item referring to the description below.



The screenshot shows a software window titled "Ship & Route" with two tabs: "Ship & Route" (selected) and "Instant Track". The window is divided into two sections: "Ship Parameters" and "Route Parameters".

Ship Parameters:

MAX Speed:	22.1 kn	MAX Height:	16.1 m
		MAX Draught:	20.0 m

Route Parameters:

MAX ROT:	60.0 °/min	Default Line Radius:	0.8 NM
WPT Approach:	30 sec	Default CH Limit:	185 m
WPT Prewarning:	90 sec	Default Safety Margin:	40 m

At the bottom right of the window are "Close" and "Save" buttons.

Ship parameters description

[MAX Speed]: Maximum speed the ship can do.

[MAX Height]: Max. height of ship above sea level.

[MAX Draught]: Max. draught of ship.

Route parameters description

[MAX R.O.T]*: The maximum rate of turn of the ship. Set at installation.

[WPT Approach]*: The alert time before reaching the wheel over point.

[WPT Prewarning]*: The alert time before reaching the wheel over point.

[Default Line Radius]: Define the default value of radius between waypoints during automatic route steering.

[Default CH Limit]: Define the default value of channel limit.

[Default Safety Margin]: Define the default value of extension for channel limits to be checked against selected alerts.

* Set at installation and cannot be changed by the operator.

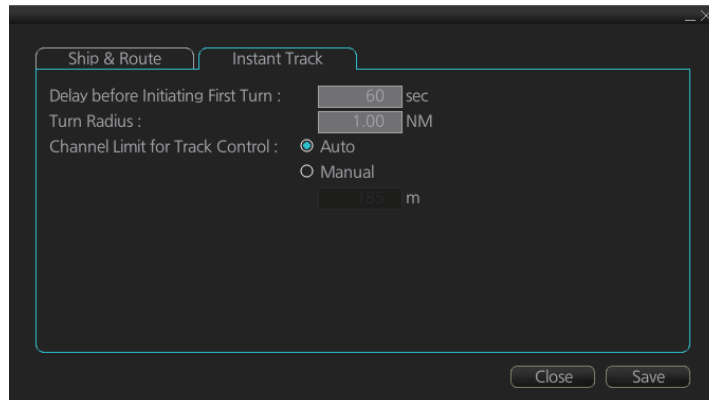
21.2 Instant Track Parameters

The instant track feature can create, in route monitoring, a simple route in the following situations:

- Return to the monitored route when the vessel goes outside the channel limits.
- Temporarily deviate from the monitored route (avoid collision, etc.).

How to set instant track parameters

Set the parameters for the instant track ([MENU] → [General] → [Ship & Route Parameters] → [Instant Track] tab).



[Delay before Initiating First Turn]: Set the number of seconds (30 - 600 seconds) to wait before initiating the first turn in the simple route.

[Turn Radius]: Set the turning radius (0.02 - 3.00 NM) to use between waypoints (four waypoints) in the simple route.

[Channel Limit for Track Control]: Set the channel limit (10 - 1852 m) for the instant track, automatically or manually. The [Auto] setting uses the channel limit set for the monitored route.

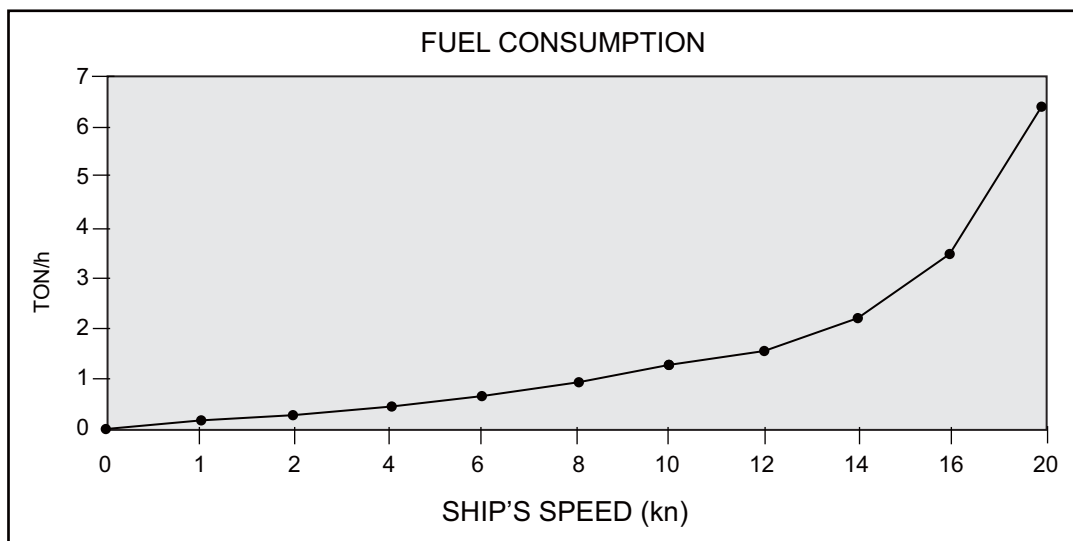
21.3 Cost Parameters

The cost parameters are used in the optimization calculation. Therefore define these parameters before doing the calculation.

Open the menu and select [Cost Parameters] from the [General] menu to show the [Cost Parameters] page. Set each item according to ship's plan, etc.

Speed kn	Heavy Fuel Oil ton/h	Diesel Oil ton/h
0.0	0.000	0.000
0.0	0.000	0.000
0.0	0.000	0.000
0.0	0.000	0.000
0.0	0.000	0.000
0.0	0.000	0.000
0.0	0.000	0.000
0.0	0.000	0.000
0.0	0.000	0.000
0.0	0.000	0.000
0.0	0.000	0.000
0.0	0.000	0.000

At the [Cost] window, enter the cost/hour and cost/ton for heavy fuel oil and diesel oil. At the [Fuel Consumption] window, define the fuel consumption figures for up to 12 different speeds. Before entering the data, plot the data on a graph, like the one shown below. Use a second graph if, for example, diesel oil consumption is different from that of heavy fuel oil. Reset the power to effect the settings.

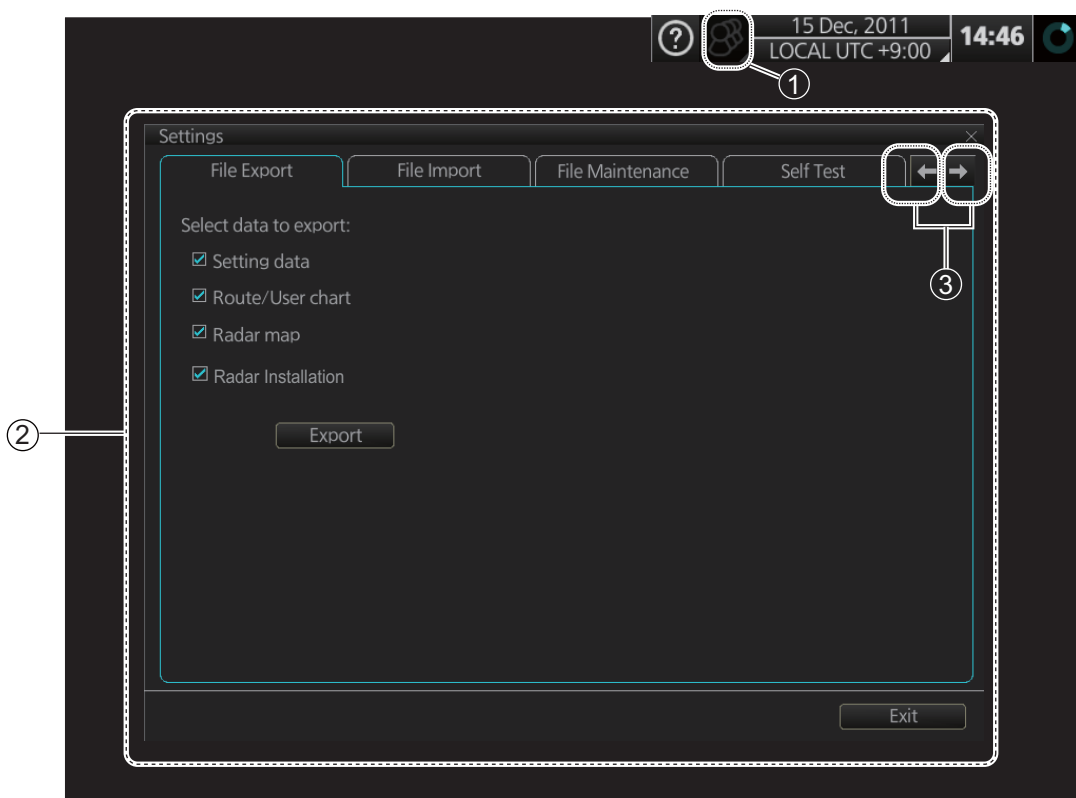



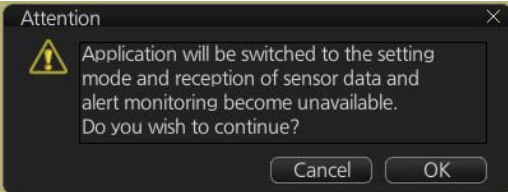
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22. SETTINGS MENU

The [Settings] menu provides file import, export and maintenance, testing facilities (display, keyboard, self test), customizing, screenshot processing, and CCRP selection.

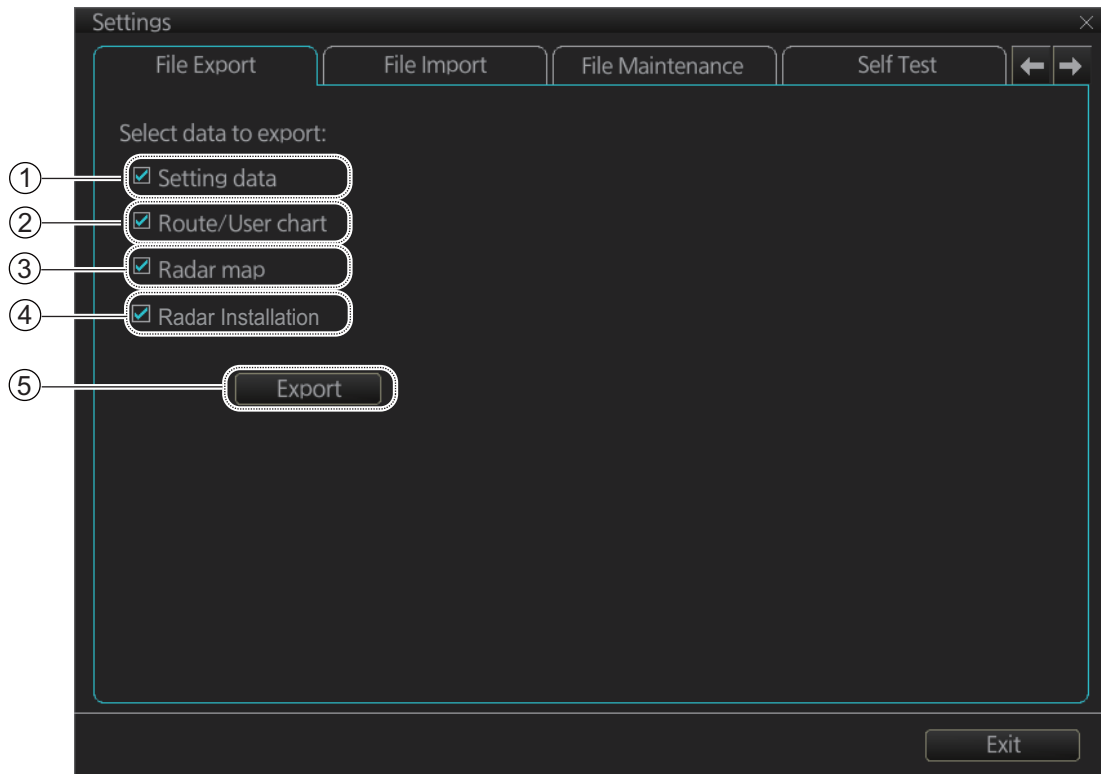
22.1 How to Access the Settings Menu



No.	Name	Description
1	 ([Settings] menu access button)	Click the button then select [Settings] to open the [Settings] menu. The message shown below appears. Click the [OK] button to open the [Settings] menu. 
2	[Settings] menu display area	The [Settings] menus appear here.
3	Page selection buttons	To open a page, use the page selection buttons to select a page then click the tab of the page required. The color of the border of the page selected is light blue.

22.2 File Export

The [File Export] page lets you export setting data, routes, user charts, radar maps and radar installation to a USB flash memory, in .zip file format.



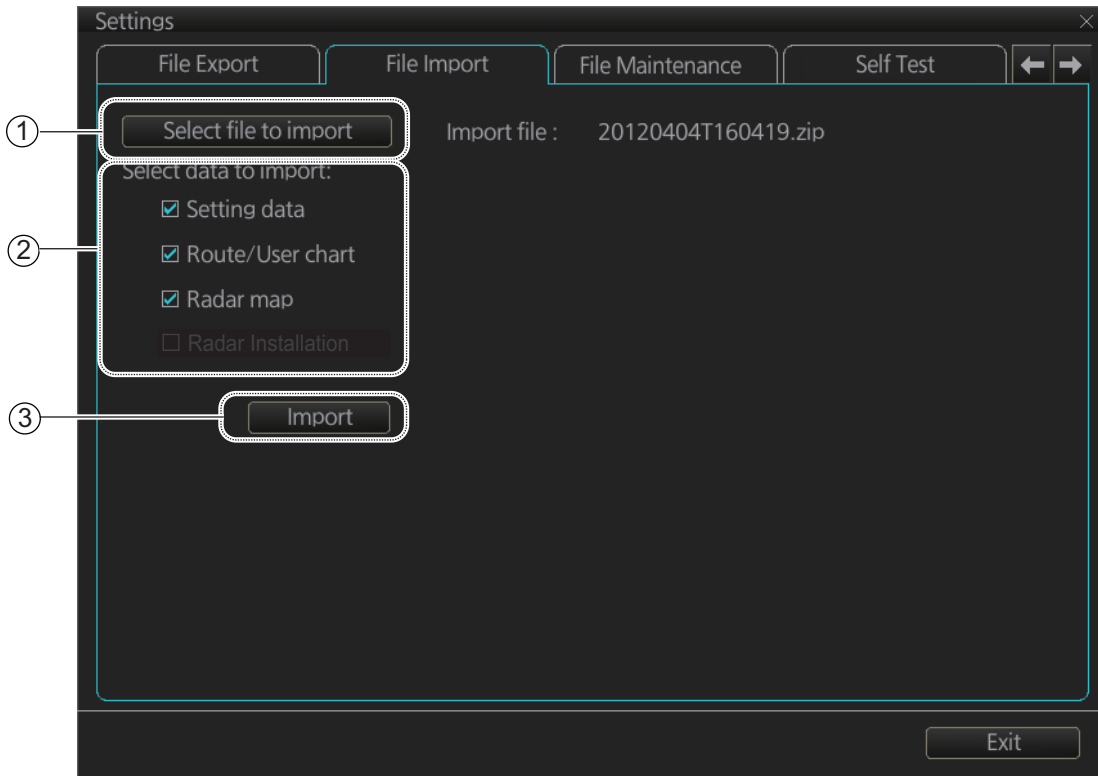
No.	Name	Description
1	[Setting data]	Check to export setting data (radar, chart, conning, common, performance monitor data) and ten user profile data.
2	[Route/User chart]	Check to export all routes and user charts.
3	[Radar map]	Check to export all radar maps.
4	[Radar Installation]	Check to export all setting of radar installation.
5	[Export] button	Click the button to open the [SAVE FILE] dialog box. Select the destination to save then click the [Save] button to export all selected objects.

Note 1: Item 5 does not appear until a object is selected.

Note 2: The message "Now processing" appears during the exporting. The message "File export finished." appears upon completion of the exporting. Click the [OK] button.

22.3 File Import

The [File Import] page lets you import setting data, routes, user charts, radar maps and radar installation from an external media (USB flash memory, etc.).



No.	Name	Description
1	[Select file to import] button	Click to show the [OPEN FILE] dialog box, where you can select the file to import.
2	[Select data to import]	Check the data to import, among [Setting data], [Route/User chart] and [Radar map]. Note 1: Execute [User Default] (see section 22.11) before importing [Setting data]. Note 2: [Radar Installation] is available only with the service mode.
3	[Import] button	Click to import the objects selected. The following message appears on the display. <div data-bbox="798 1507 1220 1727" data-label="Image"> </div>

Note 1: The system automatically restarts if setting data is imported.

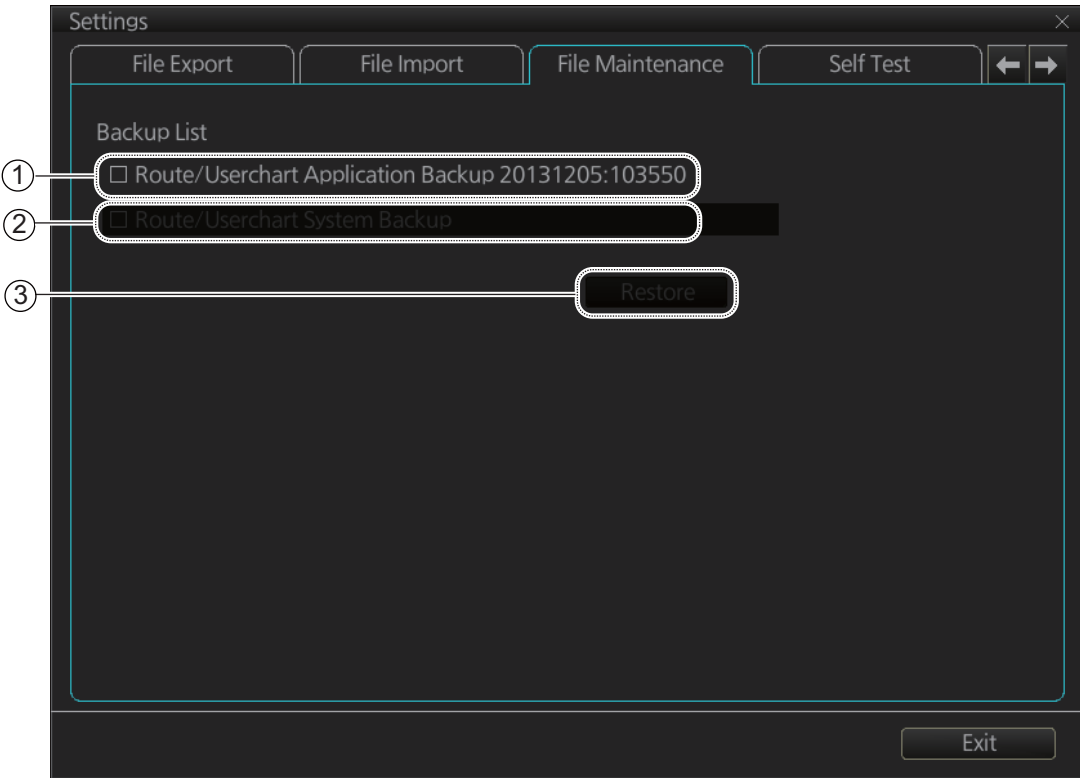
Note 2: If importing could not be completed, first check if the USB flash memory is properly inserted. If inserted properly, try importing again.

Note 3: Items 2 and 3 do not appear until a file is selected.

Note 4: The message "Now processing" appears during the importing. The message "File import finished." appears upon completion of the importing. Click the [OK] button.

22.4 File Maintenance

The [File Maintenance] page lets you restore the last-saved route/user chart application and route/user chart system.

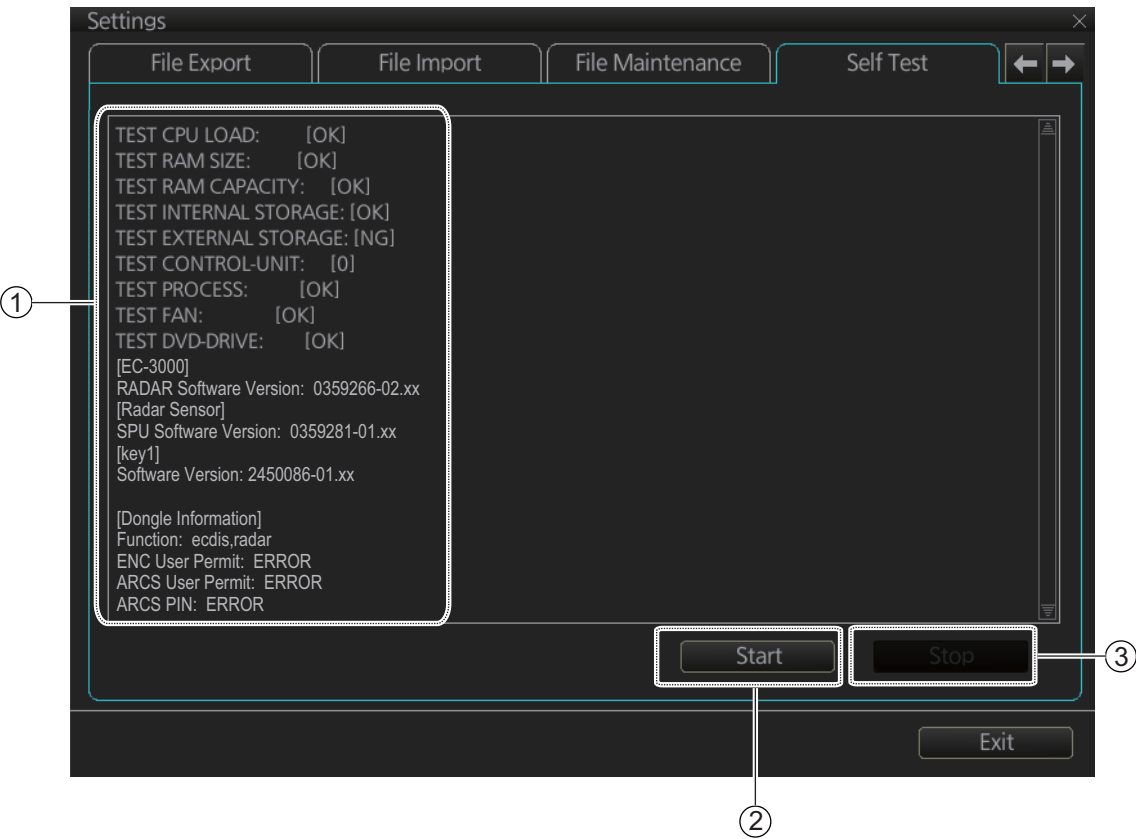


No.	Name	Description
1	[Route/Userchart Application Back-up]	Click to restore last-saved route/userchart application.
2	[Route/Userchart System Backup]	Click to restore last-saved route/userchart system.
3	[Restore] button	Click to restore item selected.

Note: To back up route data, first check for the chart radar with the most recent route list then do the restore from that chart radar.

22.5 Self Test

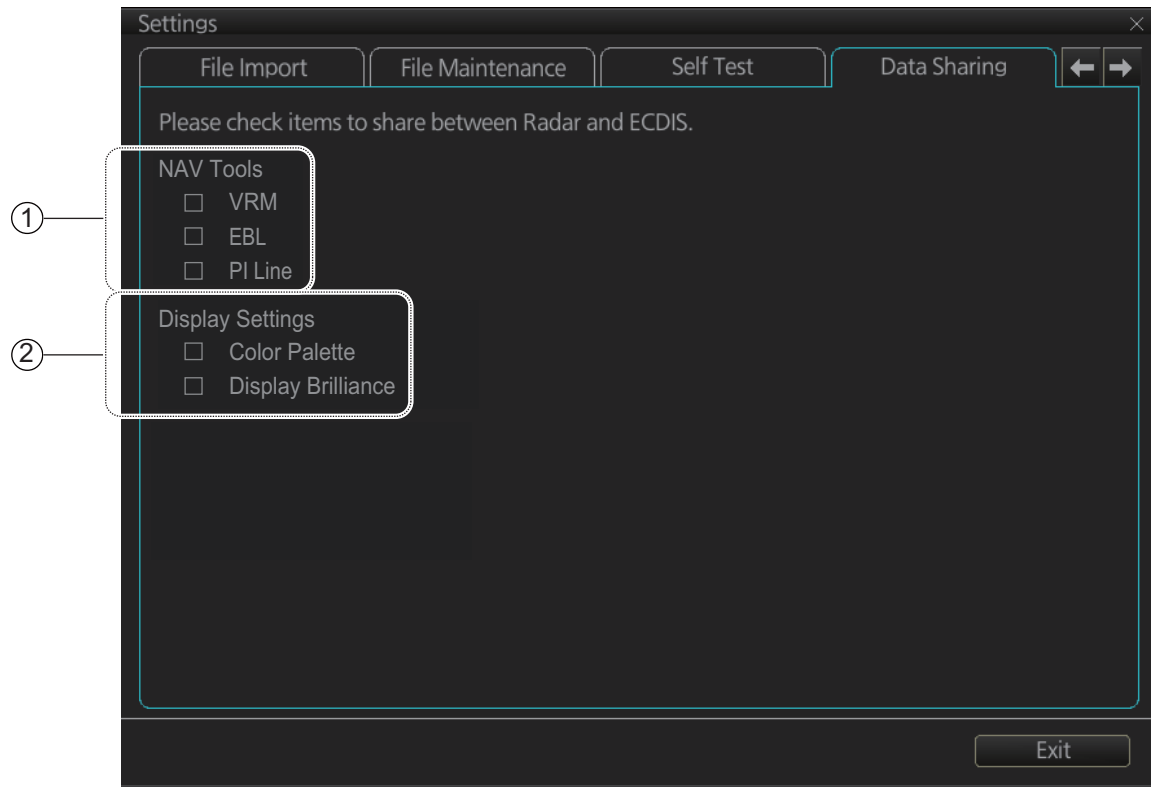
The [Self Test] page is mainly for use by the service technician to check the equipment. The chart radar is inoperative during the test.



No.	Name	Description
1	Test results, program numbers	The results of the self test and the program numbers. (xx=version number)
2	[Start] button	Start the self test.
3	[Stop] button	Stop the self test. (Shown during test.)

22.6 Data Sharing

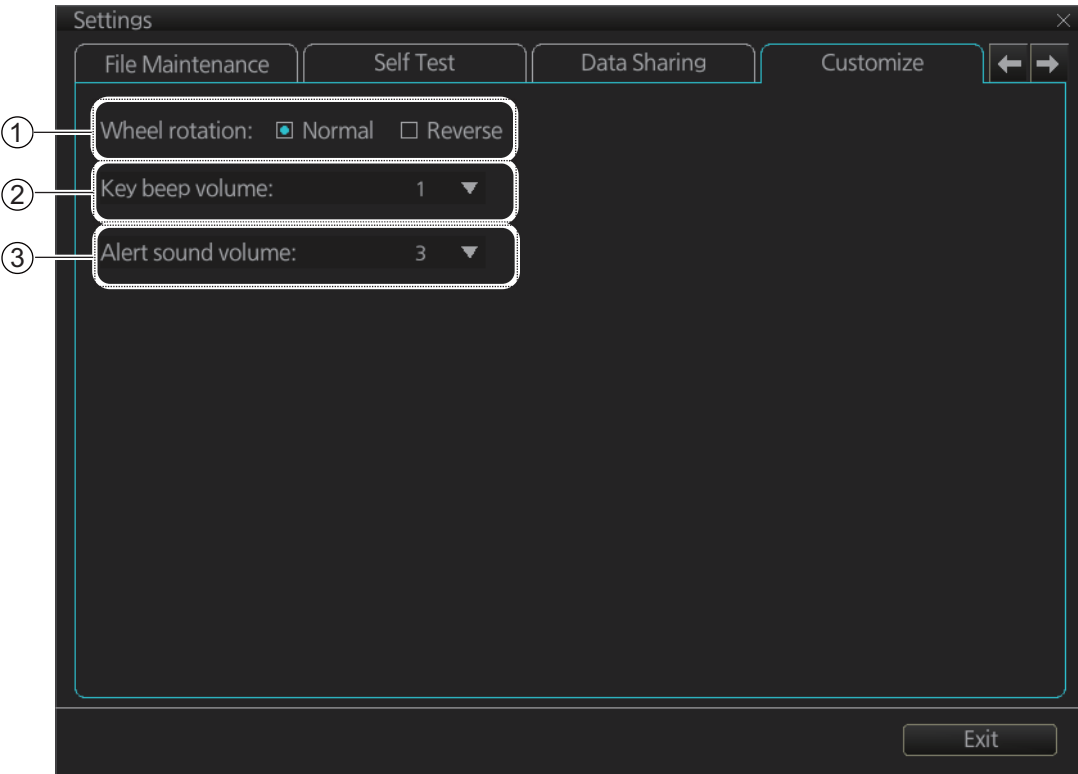
The [Data Sharing] page selects the items to share between the radar and the chart radar.



No.	Name	Description
1	[NAV Tools]	Check the NAV tools items to share them between the chart and the radar.
2	[Display Settings]	Check the display setting items to share between the chart and the radar.

22.7 Customize

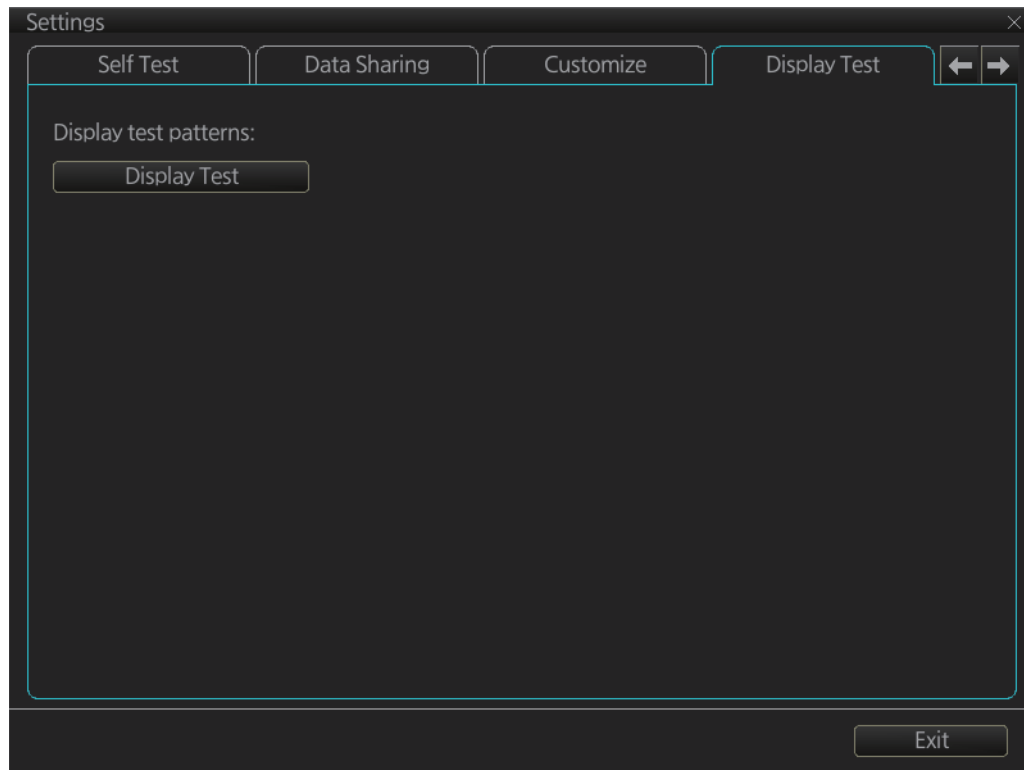
The [Customize] page lets you set buzzer volume, key beep volume, and scrollwheel rotation direction.



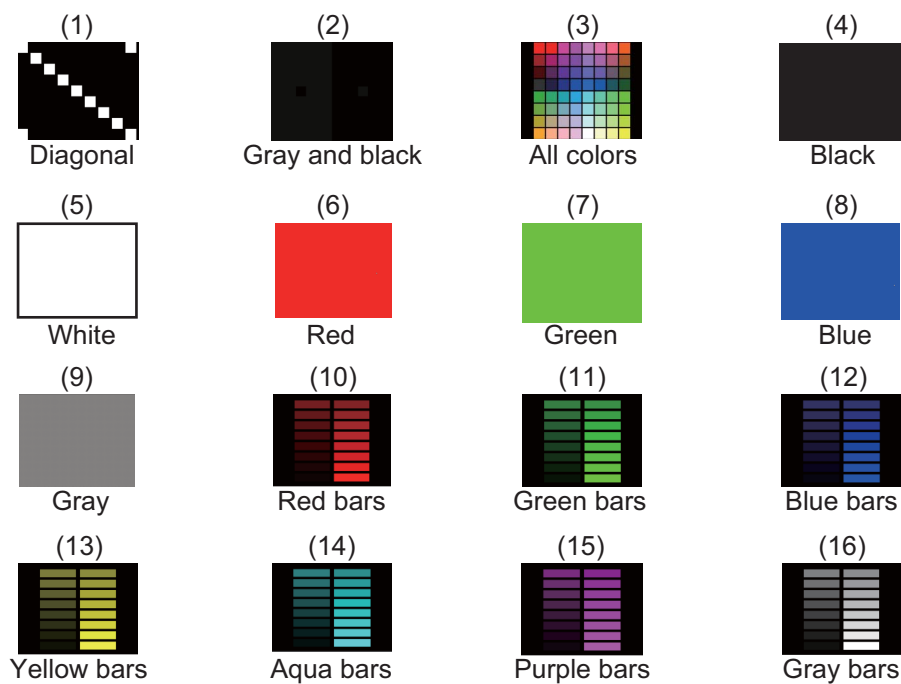
No.	Name	Description
1	[Wheel rotation]	Set the direction of scrollwheel rotation direction. [Normal]: Downward to increase value, upward to decrease value. [Reverse]: Reverse of [Normal].
2	[Key beep volume]	Set the loudness of the key beep that sounds for correct key or mouse button operation. 0: No beep, 1: LOW, 2: MID, 3: HIGH
3	[Alert sound volume]	Set the loudness of the alert buzzer. 1: LOW, 2: MID, 3: HIGH

22.8 Display Test

The [Display Test] page displays various test patterns to check the FURUNO-supplied monitor for proper display of colors. Click the [Display Test] button to start the test. The buzzer sounds when the display test starts.



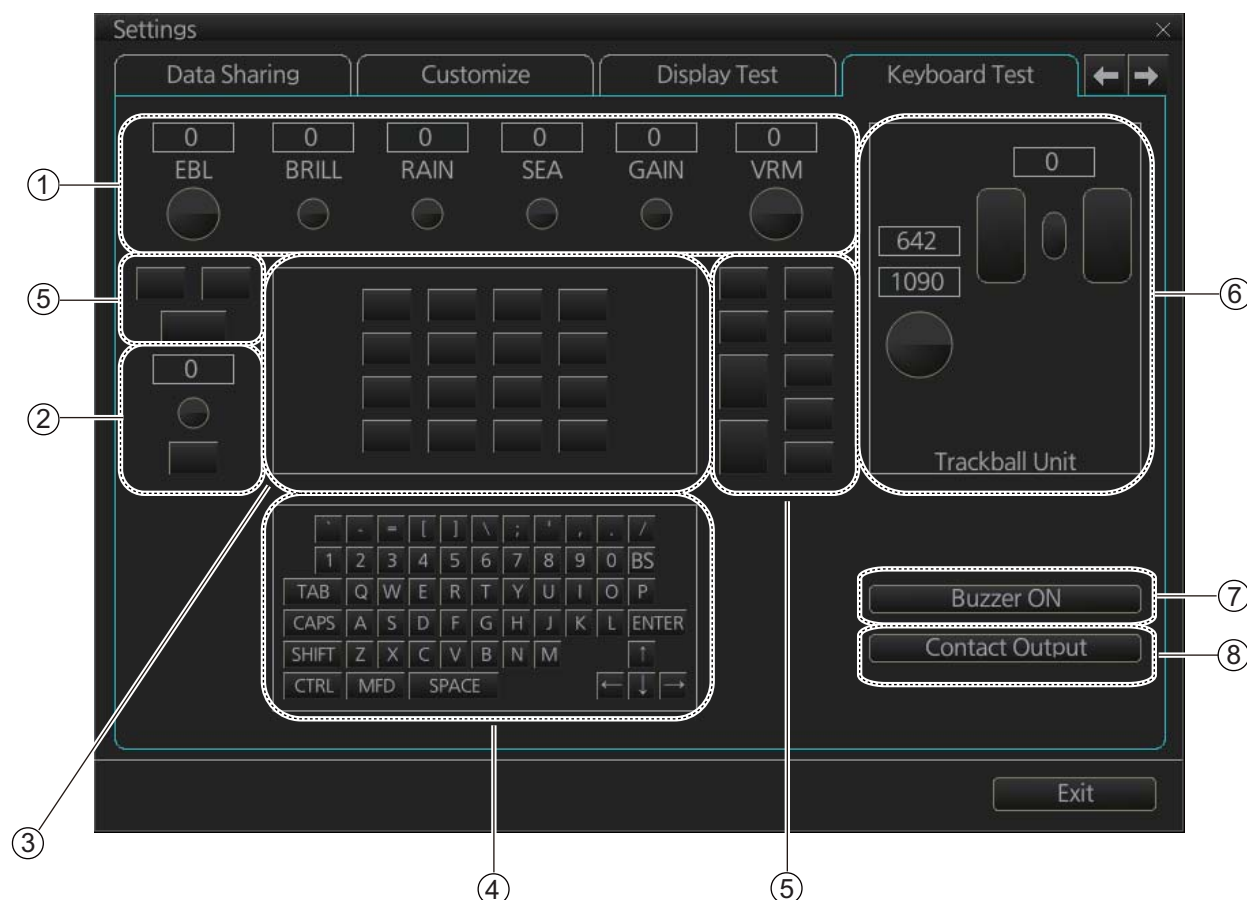
Left-click to proceed in the numerical order shown below; right-click to proceed in reverse order.



To quit the display test at any time, press the **ESC** key on the applicable Control Unit.

22.9 Keyboard Test

The [Keyboard Test] page checks the controls and keys on the Radar Control Unit and the ECDIS Control Unit and the trackball module on the Radar Control Unit, ECDIS Control Unit and Trackball Control Unit.



No.	Name	Description
1	Common controls	Operate the corresponding controls on the Radar Control Unit and chart radar Control Unit. Rotate a control and the window above the control shows the setting value. Push a control and the corresponding location on screen lights in light blue. (The EBL and VRM controls do not have a push function.)
2	InstantAccess knob/key	Check the InstantAccess knob and key. 1) Rotate the knob and the setting value appears in the window. 2) Push the knob and the knob lights in light blue. 3) Push the key and the key lights in blue.
3	Keys of the Radar Control Unit	Operate each key. The key pressed lights in light blue.
4	Keyboard of the chart radar Control Unit	Operate each key. The key pressed lights in light blue.

22. SETTINGS MENU

No.	Name	Description
5	Keys of both the Radar Control Unit and chart radar Control Unit	Operate each key. The pressed key lights in light blue.
6	Trackball module	Check the trackball module of a Control Unit: 1) Spin the scrollwheel and rotate the trackball. The indication above the operated control shows the setting value. 2) Push each button. The window above a pushed button lights in light blue. 3) Push the scrollwheel. The window above the wheel lights in light blue.
7	[Buzzer ON] button	Click the [Buzzer ON] button to sound the buzzer. The buzzer sounds and the button flashes (in red). Click the button again to cancel.
8	[Contact Output] button	Click the [Contact Output] button to output the System Failure contact signal from the Processor Unit. Click the button again to cancel.