JMR-7230-S3/S
JMR-7225-7X3/9X3/6X/9X/6XH
JMR-7210-6X/6XH
JMR-7272-S
JMR-7282-S/SH
JMR-9230-S3/S
JMR-9225-7X3/9X3/6X/9X/6XH
JMR-9210-6X/6XH
JMR-9272-S
JMR-9282-S/SH

Marine Radar Equipment

Instruction Manual

<Reference>

JRC *Japan Radio Co., Ltd.*

Contents

Reference

Section 19   Adjusting and Setting up Equipment (for Services)

This section describes the methods for radar adjustment, installation verification, and maintenance that are conducted by the service staff by using the Service menu at installation construction of this equipment.

⚠ **CAUTION**
🚫 Never have the equipment adjusted by unauthorized service personnel. If the equipment is set up incorrectly, it may cause unstable operation. Further, an accident or trouble may occur.
🚫 Never make adjustments while sailing. Doing so may adversely affect the radar functions, causing accidents and/or malfunctions.

19.1   Service Menu

The Service menu consists of three submenus of Adjustment, Installation and Maintenance. To display the Service menu, a password is required.

19.1.1   To display the Service menu:

1   **Click on the [MENU] button on the left toolbar.**
The menu is displayed.

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2 **Change over to the second page using the page switching button, and click the [Code Input] button.**

The password input dialog is displayed.
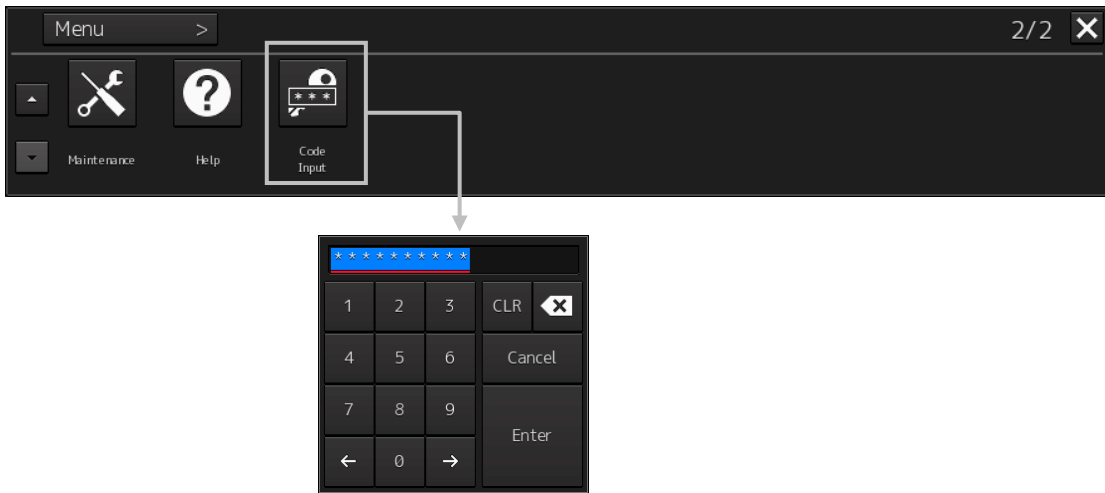
3 **Enter 0 in Password.**

4 **Click on the [MENU] button on the left toolbar.**

The menu is displayed.

5 **Change to the 2nd page by using the page change button.**

The [Service] button is added

6 **Click the [Service] button.**

The submenu is displayed.
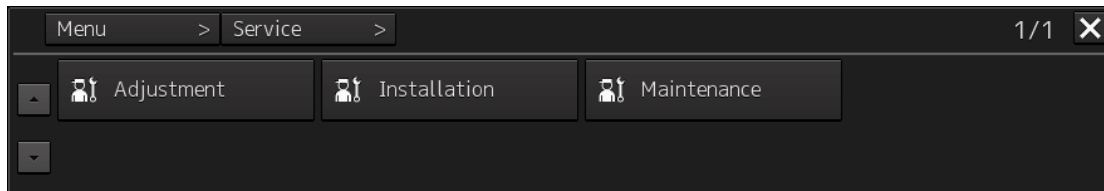
7 **Display a submenu dialog box by clicking on one of the [Adjustment], [Installation], and [Maintenance] buttons.**

19.2 Radar Adjustment

Use the "Adjustment" dialog box to adjust the radar of this equipment.

19.2.1 Displaying the "Adjustment" dialog box

Clicking the [Adjustment] button in the submenu displays the "Adjustment" dialog box.

The "Adjustment" dialog box consists of the classification pane and the edit pane.

By clicking the Disclosure button (>>) , you can hide the edit pane. To show the edit pane again, click the Disclosure button (<<).

"Adjustment" dialog box

1 **Click the item you want to set up in the classification pane.**
   The setup dialog of the item you selected appears in the edit pane.

2 **Set up in the edit pane.**

Note

On the ECDIS screen, [Performance Monitor] and [TT] do not function. Alternatively, the setting of [Sector Blank] cannot be changed.

19.2.2 Performing basic adjustments on the radar

Perform basic adjustments on the radar by using the "Basic Adjustment" dialog.

19.2.2.1 Displaying the "Basic Adjustment" dialog

When you select [Basic Adjustment] in the classification pane, the "Basic Adjustment" dialog is displayed in the edit pane.
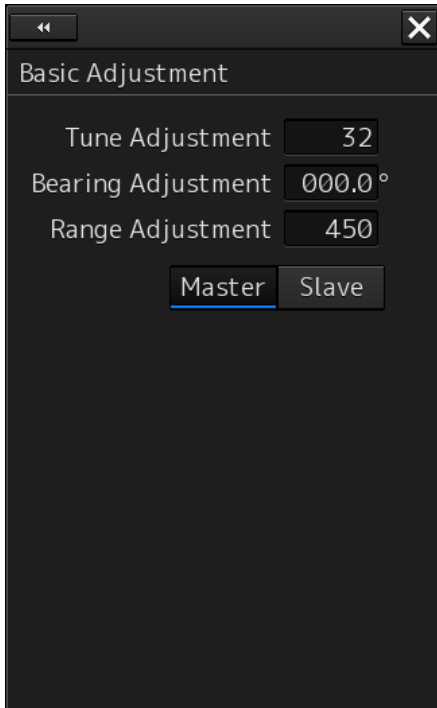
19.2.2.2 Tune adjustment

> **Note**
> - After replacement of the magnetron, perform rough tuning while the image is stable after setting the radar to the Standby state for 20 to 30 minutes as the preheating time, operating the radar from the short pulse range, and shifting the operation to the long pulse range sequentially.
> - This operation is disabled when the Radar Interswitch is set to the Slave mode.
> - Not displayed when the solid-state radar antenna is connected.

1 **Click on the [Tune Adjustment] (rough tuning) input box.**
A numeric value input keyboard is displayed. (0 to 127)

2 **Enter an adjustment value (0 to 127) in the input box so that the tuning bar indicates the maximum level (the tuning bar touches the right-most position).**
For the method of using the numeric input keyboard, refer to "3.15.2 Name and function of each section of the keyboard".

19.2.2.3 Adjusting the bearing

Adjust the bearing so that the bearing of the target measured by the compass on the ship and the bearing of the image that is displayed on the radar match.

> **Note**
> This function is disabled when the radar interswitch is set to the Slave mode.

1 **Set the bearing mode to [H UP] and set the image processing mode to [Process Off].**
For the bearing mode setting method, refer to "5.4.5 Setting the azimuth mode" and for the image processing mode setting method, refer to "5.4.4 Using video processing (Echo Process)".

2 **Measure a bearing in the ship's heading direction of a suitable target (for instance, halted ship, breakwater, and buoy) by using the compass on the ship.**

3 **Click on the [Bearing Adjustment] input box.**
A numeric value input keyboard is displayed.

4 **Input an adjustment value in the input box so that the bearing of the target that was measured in Step 2 indicates a correct bearing. (0 to 359.9°)**
For the method of using the numeric input keyboard, refer to "3.15.2 Name and function of each section of the keyboard".

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19.2.2.4   Adjusting a distance

Adjust the distance of the target on the screen so that the correct distance is displayed.

1   **On the radar screen, specify a target whose distance is available in advance.**

2   **Click on the [Range Adjustment] input box.**
A numeric value input keyboard is displayed.

3   **Enter an adjustment value in the input box so that the distance of the target specified in Step 1 indicates the correct distance. (128 to 1024)**
For the method of using the numeric input keyboard, refer to "3.15.2 Name and function of each section of the keyboard".

19.2.2.5   Radar operation modes

Click one of the radar operation mode buttons to select either the [Master] mode or the [Slave] mode.

[Master]:
Can control the radar antenna.

[Slave]:
Cannot control the radar antenna. The display unit uses the radar signals controlled by the master radar antenna.

Note
While in the Slave mode, the operation to control the radar antenna is disabled.

19.2.3　Adjusting Antenna

Adjust the antenna by using the "TXRX" dialog.

19.2.3.1　Displaying the "TXRX" dialog

When you select [TXRX] in the classification pane, the "TXRX" dialog is displayed in the edit pane.

19.2.3.2　Adjusting an radar antenna height

1　**Measure the height from the sea surface to the radar antenna.**

2　**In the [Antenna height] combo box, select the setting value corresponding to the height of the antenna that was measured in step 1.**

- Under 5m
- 5-10m
- 10-20m
- 20m Over

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19.2.3.3 Setting a tuning bar peak value

Set the scale when the tuning bar touches the peak value.

> **Notes**
> - This function is disabled under radar slave mode.
> - Not displayed when a solid-state radar antenna is connected.
> - Disabled in ECDIS mode.

1 **Set the range to 48 NM or more.**

2 **Click on the [Tune Indicator] (tune indicator bar display) input box.**
A numeric value input keyboard is displayed.

3 **Input a setting value in the input box so that the tuning bar oscillates within the range from 80% to 90% of the maximum amplitude position (0 to 127).**
For the method of using the numeric input keyboard, refer to "3.15.2 Name and function of each section of the keyboard".

19.2.3.4 Adjusting a tuning peak value

Adjust a tuning indication and an echo peak.

> **Notes**
> - Disabled in radar slave mode.
> - Displayed under 10kW radar (NKE-2103-6, NKE-2103-6HS) only.

1 **Adjust the tuning indication bar as described in "19.2.3.3 Setting a tuning bar peak value".**

2 **Set the range to 48nm or more.**

3 **Click the [Tune Peak Adjustment] input box.**
A numerical value input keyboard is displayed.

4 **Adjust the tuning peak adjustment value so that the radar image becomes strongest when the tuning indication at the top left corner of the screen points to the maximum.**
For the method of using the numerical value input keyboard, refer to "3.15.2 Name and function of each section of the keyboard".

19.2.3.5 Setting bearing pulse output

> **Notes**
> Disabled in ECDIS mode.

1 **From the [Output BP] (bearing pulse output) combo box, select a bearing pulse count that is output from the radar antenna (2048 or 4096).**

19.2.4 Adjusting a radar performance monitor (Radar screen only)

To adjust a radar transmitting/receiving status, use the "Performance Monitor" dialog or the "Performance Monitor (SSR) " dialog.

19.2.4.1 Displaying the "Performance Monitor"/"Performance Monitor (SSR) " dialog

When you select [MON] in the classification pane, the "Performance Monitor" dialog (using a magnetron radar) or the "Performance Monitor (SSR) " dialog (using a solid-state radar) is displayed in the edit pane. The items to be displayed change according to the type of the radar antenna.

Note

- When the radar is in the Slave mode, the "Performance Monitor" dialog (or "Performance Monitor (SSR) " dialog is disabled.
- If a master unit other than straight connection is being set in interswitch setting, the "Performance Monitor" screen (or "Performance Monitor (SSR) " screen) is disabled (may also be enabled depending on the equipment setting.).
- When the "Performance Monitor" dialog is displayed, the sector blank in the PPI screen is hidden. When the solid state radar antenna is connected, the PM sector is displayed; in the case of the magnetron radar, the sector is not displayed.
- While adjusting the performance monitor, TGT acquisition is not canceled by the target tracking function.
  If a TGT symbol is displayed inside a pattern of the performance monitor and adjusting is difficult, cancel TGT acquisition once.

19.2.4.2 Adjusting a magnetron radar performance monitor

On the "Performance Monitor" dialog, adjust a magnetron radar transmitting/receiving status while checking the performance monitor level.
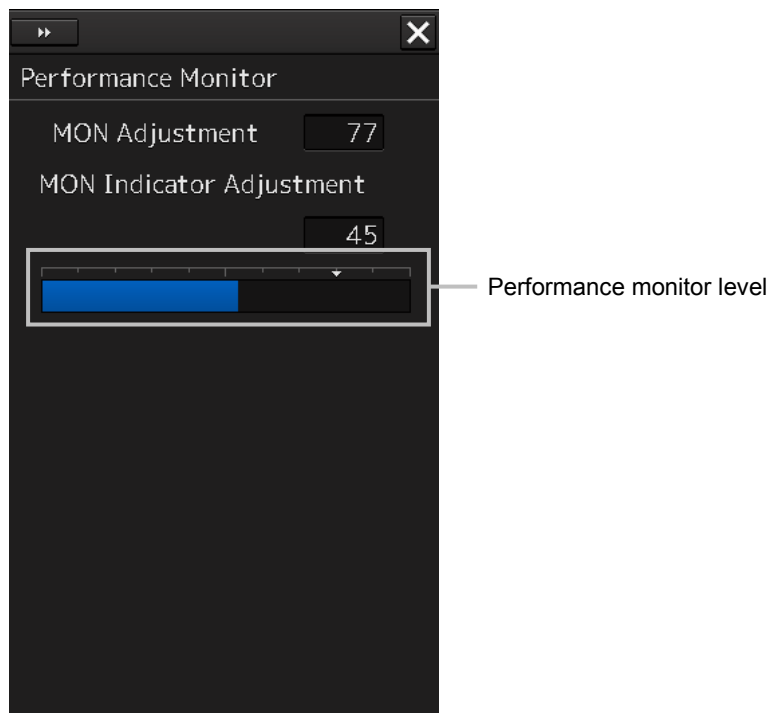
Performance monitor level

Adjusting a monitor reception level
Adjust the circuit for monitoring the radar equipment reception performance.

1 **Click on the [MON Adjustment] (MON reception level adjustment) input box.**
A numeric value input keyboard is displayed.

2 **Enter a setting value in the input box so that the farthest position of the performance monitor pattern becomes 18.00 NM. (0 to 127)**
For the method of using the numeric input keyboard, refer to "3.15.2 Name and function of each section of the keyboard".

Performance monitor pattern

18.00 NM
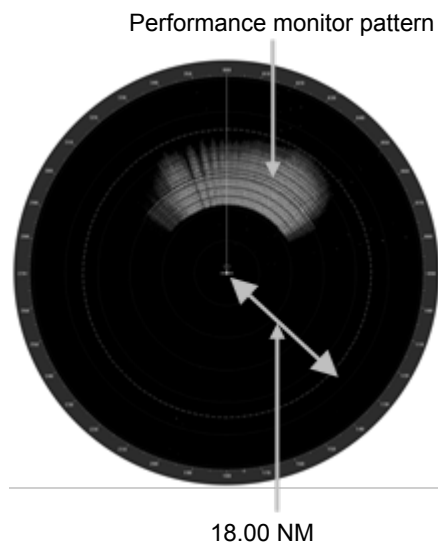
Adjusting a monitor transmission level

Adjust the circuit for monitoring the radar equipment transmission performance.

1 **Click on the [MON Indicator Adjustment] input box.**
A numeric value input keyboard is displayed.

2 **Enter a setting value so that the MON level indicates "8" (0 to 127).**
For the method of using the numeric input keyboard, refer to "3.15.2 Name and function of each section of the keyboard".

Adjust to 8.
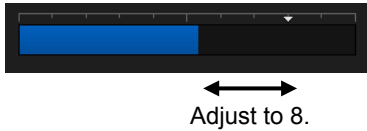
19.2.4.3 Adjusting a performance monitor of a Solid State Radar (SSR)

Use the "Performance Monitor (SSR) " dialog.

[Reference Attenuator value] display
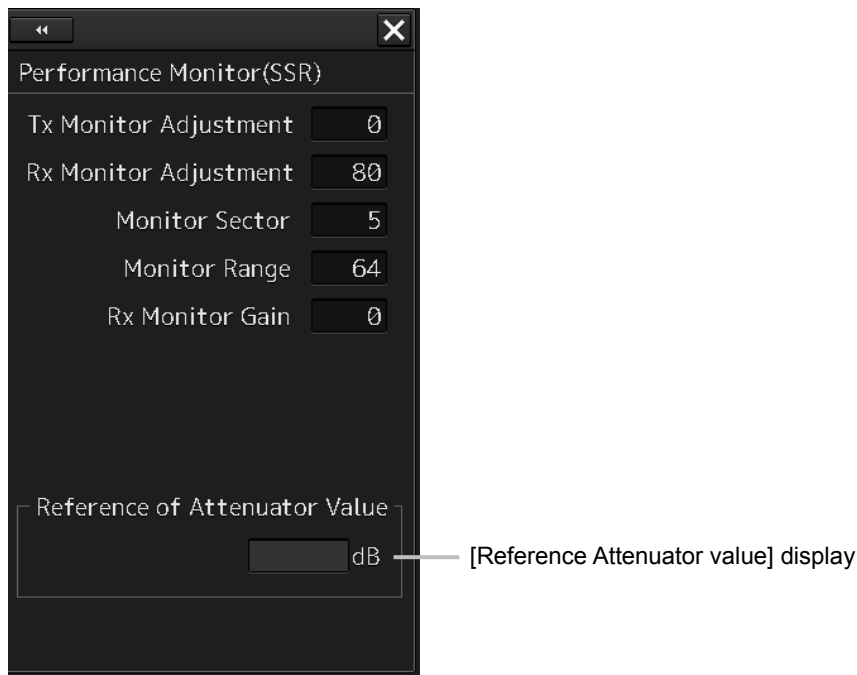
The type of transmission/reception attenuator value that is used as the reference for the adjustment at the setting change varies depending on the setting item.

Setting	Display
Tx Monitor Adjustment	Tx Attenuator Value is displayed.
Rx Monitor Adjustment	Rx Attenuator Value is displayed.
Monitor Sector	Rx Attenuator Value is displayed.
Monitor Range	Rx Attenuator Value is displayed.
Rx Monitor Gain	Rx Attenuator Value is displayed.

Perform the following adjustments by using the transmission/reception attenuator value as the reference in the "Performance Monitor (SSR) " dialog.

Note

Do not change the values set in the [Monitor Range] input box and the [RX Monitor Gain] (reception monitor gain) input box.

Adjusting a monitor transmission level

Adjust the circuit for monitoring the radar equipment transmission performance.

1 **Click on the [TX Monitor Adjustment] (transmission monitor adjustment) input box.**
A numeric value input keyboard is displayed.

2 **Enter a setting value in the input box so that "0.0±1.0dB" is indicated as the [Reference Attenuator Value]. (0 to 127)**
For the method of using the numeric input keyboard, refer to "3.15.2 Name and function of each section of the keyboard".

Adjusting a monitor reception level

Adjust the circuit for monitoring the radar equipment reception performance.

1 **Click on the [Monitor Sector] input box.**
A numeric value input keyboard is displayed.

2 **Input a setting value in the input box so that the maximum value is indicated as the [Reference of Attenuator Value].**
For the method of using the numeric input keyboard, refer to "3.15.2 Name and function of each section of the keyboard".

3 **Click on the [RX Monitor Adjustment] (reception monitor adjustment) input box.**
A numeric value input keyboard is displayed.

4 **Enter a setting value so that "0.0±1.0dB" is indicated as the [Reference of Attenuator Value] (0 to 127).**
For the method of using the numeric input keyboard, refer to "3.15.2 Name and function of each section of the keyboard".

19.2.5 Setting Sector Blank (Radar screen only)

The sector blank is an area that has been set up by specifying a fan-shaped range (sector) , stopping the transmission in that bearing, and hiding radar echoes. The sector blank runs in the relative bearing using the ship's heading as reference.
Three types of sectors can be set up (sector blanks 1/2/3).
Set sector blank by using the "Sector Blank" dialog.

19.2.5.1 Displaying the "Sector Blank" dialog

When you select [Sector Blank] in the classification pane, the "Sector Blank" dialog is displayed in the edit pane.
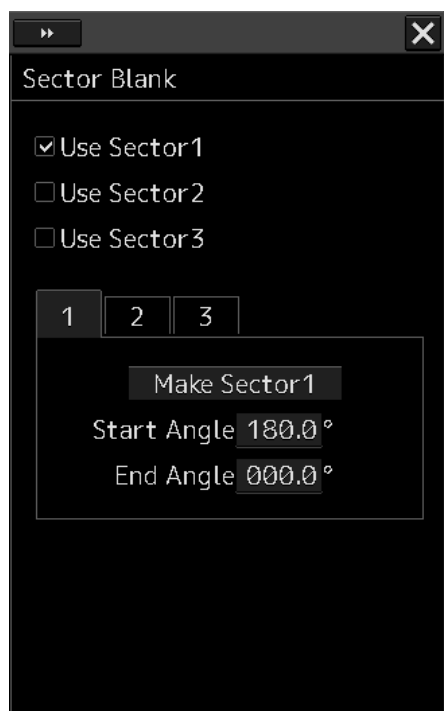
19.2.5.2 Setting Sector Blank

> **Note**
> This function is disabled under the Slave mode of the interswitch.

1 **Select sector blank to be set by checking [Use Sector1/2/3] (using sector blank 1/2/3).**

2 **Click on the [Make Sector1/2/3] (creating sector blank 1/2/3) button that corresponds to the sector blank number that was selected in Step 1.**
The cursor is set to the sector blank 1/2/3 creation mode.

3 **Draw sector blank with the cursor.**
The following information items are displayed regarding the sector blank that is being created.
Start Angle: Sector blank starting angle
End Angle: Sector blank ending angle

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19.2.6 Adjusting the TT function

Adjust the following TT function parameters by using the "TT" dialog.

- Vector constant
- Quantization level
- Target symbol display position
- Gate size used for tracking
- TT limit ring

What is quantization level?

A quantization level is a signal level that is recognized by the TT function as a target.

By setting a lower value, input of signals of weak targets in the TT target detection circuit is enabled. However, many unnecessary signals are also input, destabilizing acquisition and tracking of targets due to unnecessary signals. It is important to set a value greater than the value for detecting unnecessary signals by 4 or 5.

⚠CAUTION

	Do not change the quantization level settings indiscreetly.
🚫	If inappropriate values are set, the acquisition of the target tracking function and the tracking function will deteriorate, possibly causing accidents.

19.2.6.1 Displaying the "TT" dialog

When [TT] is selected in the classification pane, the "TT" dialog is displayed in the edit pane.

TT

Vector Constant 4
VD Level Mode(Manual)
   Auto Threshold1 ▾
VD Level(Manual) 8
VD Level(Auto) 15
Target Position Center ▾
Gate Size Medium ▾
☐ Limit Ring

19.2.6.2   Setting vector constants

Adjust the vector tracking of the target tracking function.

Note

Do not change this setting unnecessarily. Normally, set 4 for [Vector Constant].

19.2.6.3   Setting a quantization level at manual acquisition

---

⚠CAUTION

🚫 The optimum values are set for the VD Level and Constant. Do not change it carelessly. Otherwise, the performances of the target tracking function may be affected and an accident may result.

---

1   **Select a threshold value of a quantization mode at manual acquisition from the [VD Level Mode (Manual)] (quantization mode at manual acquisition) combo box.**
- Auto Threshold1
- Auto Threshold2
- Manual Threshold

19.2.6.4   Setting a quantization level at automatic acquisition.

⚠CAUTION

🚫 The optimum values are set for the VD Level and Constant. Do not change it carelessly. Otherwise, the performances of the target tracking function may be affected and an accident may result.

---

1   **Click on the [VD Level (Auto)] (quantization level at automatic acquisition) input box.**
A numeric value input keyboard is displayed.

2   **Enter a setting value in the input box. (0 to 255)**
For the method of using the numeric input keyboard, refer to "3.15.2 Name and function of each section of the keyboard".

19.2.6.5 Setting a gate size used for tracking

1 **Select a gate size from the [Gate Size] combo box.**
- Small
- Medium
- Large

19.2.6.6 Displaying a TT limit ring

1 **To display a TT limit ring, select the [Limit Ring] check box.**

19.2.7 Adjusting MBS

MBS (Main Bang Suppression) adjustment is to adjust a display unit processing circuit in order to suppress main bang, which is the reflection signal from a microwave transmission circuit of a waveguide that normally appears as an image of a circle at the center of the radar screen.

Perform MBS adjustment by using the "MBS" dialog.

⚠ WARNING

🚫	Do not change Initial Level/Area Offset indiscreetly. If wrong adjustment is performed, the nearest target will be erased, causing collision to lead to death or serious injury.

19.2.7.1 Displaying the "MBS" dialog

When you select [MBS] in the classification pane, the "MBS" dialog is displayed in the edit pane.

19.2.7.2 Performing MBS adjustment

1 **Click on the [Initial Level] (MBS initial level) input box.**
A numeric value input keyboard is displayed.

2 **Enter an initial level of MBS so that the image of main bang becomes optimum (faint image remains on the screen. (0 to 1023)**
For the method of using the numeric input keyboard, refer to "3.15.2 Names and functions of the sections of the keyboard".

19.2.7.3 Adjusting a MBS application range

1 **Expand the display range up to the range where a main bang can be identified.**

2 **Click the [Area Offset] (MBS application) input box.**
A numerical value input keyboard is displayed.

3 **Adjust the application range so that the main bang adjustment range becomes the optimum (distance where only the main bang section becomes the MBS adjustment range) (-0.200NM ~ 0.200NM).**
Adjust the range together with the MBS adjustment to the degree where the nearest target will not be lost.
For the method of using the numerical value input keyboard, refer to "3.15.2 Name and function of each section of the keyboard".

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19.3 Verifying Installation and Initial Setting

Use the "Installation" dialog box to verify the installation of this equipment and perform initial setting.

19.3.1 Displaying the "Installation" dialog box

Clicking on the [Installation] in the submenu, the "Installation" dialog box appears.

The "Installation" dialog box consists of the classification pane and the edit/result pane. The classification pane consists of two-level layers of the first classification pane and the second classification pane.
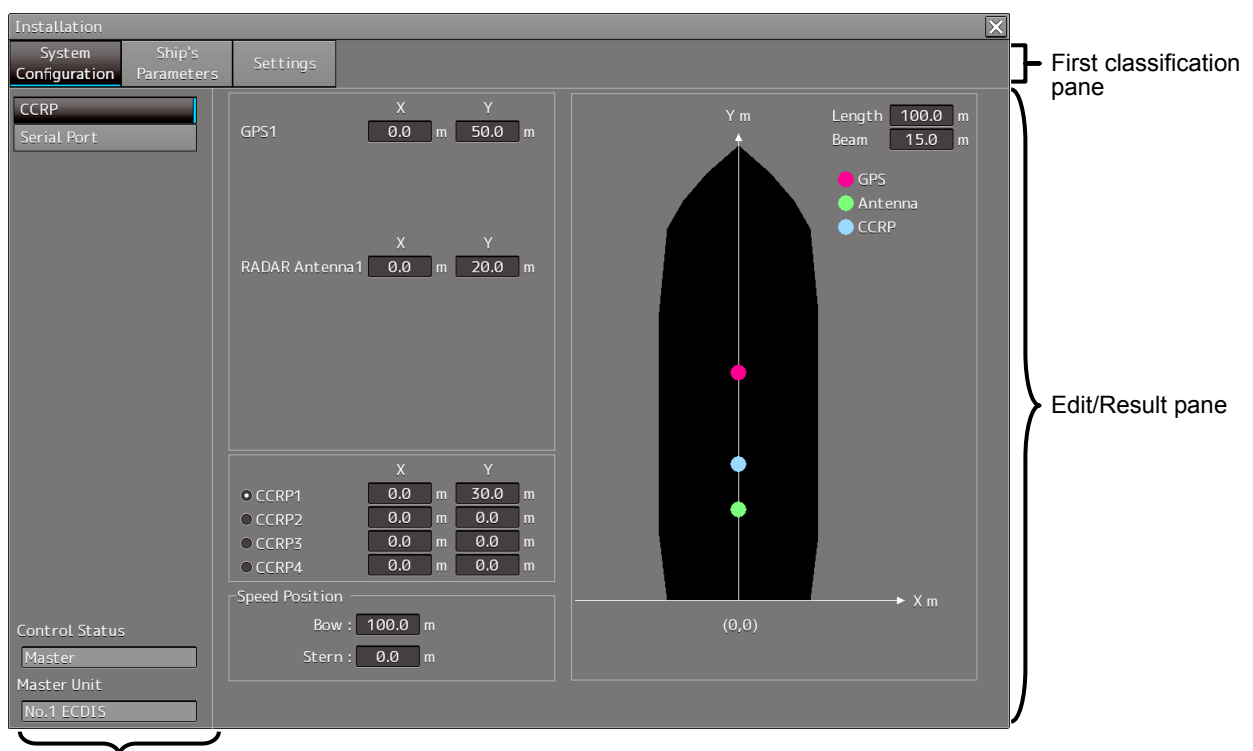
Second classification pane

1 **Click the item you want to set up in the classification pane.**

The setup dialog of the item you selected is displayed in the edit/result pane.

2 **Set up in the edit/result pane or check the setup result.**

19.3.2 Verifying/Setting CCRP (Consistent Common Reference Point)

Set a measurement reference position (CCRP) on own ship by using the "CCRP" dialog.

19.3.2.1 Displaying the "CCRP" dialog

When you select [System Configuration] in the first classification pane and [CCRP] in the second classification pane, the "CCRP" dialog is displayed in the edit/result pane.
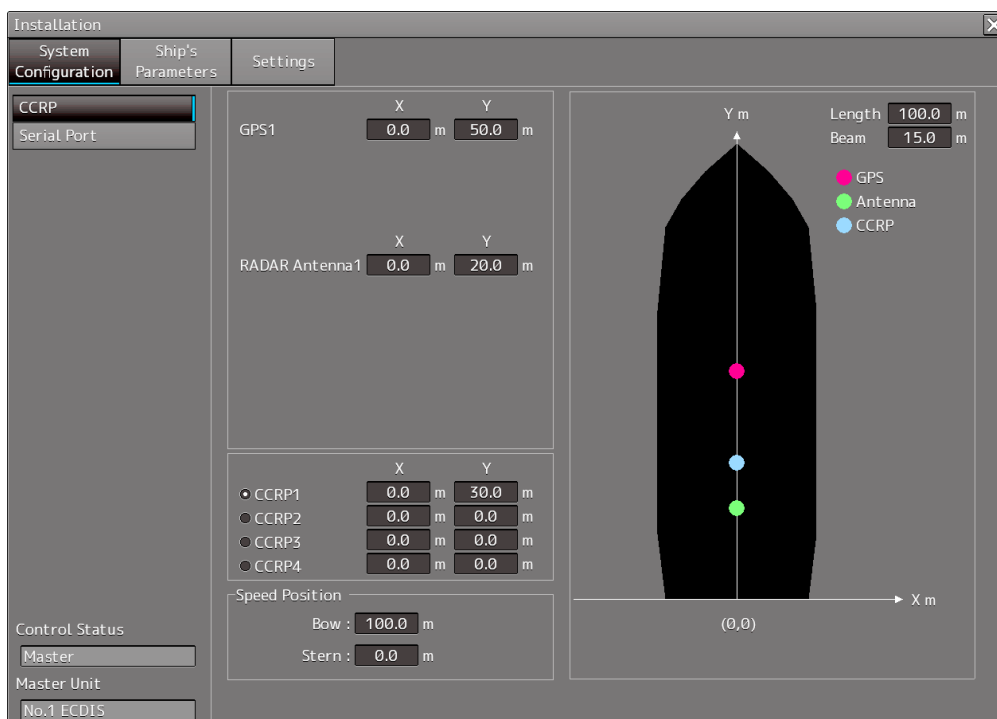
Note

Set up the GPS radar antenna correctly. The latitude and longitude data received from the GPS is compensated and then displayed as own ship's latitude and longitude. If the GPS radar antenna is not set up correctly, an AIS symbol and a radar echo may deviate when displayed.

19.3.2.2 Setting CCRP

Set the following items in the "CCRP" dialog.

Setting Item	Description of Setting	Setting Value
Length (of ship)	Enter the ship's length in the box.	1.0 to 1022.0m
Beam (ship's width)	Enter the ship's width in the box.	1.0 to 126.0m

GPSx (When two or more GPS units are present, "x" indicates the unit number.)	Enter the equipment positions of GPSx in the boxes.
	X: Horizontal axis position on the ship of the applicable GPS (Center: 0)
	Y: Front-back axis position on the ship of the applicable GPS (Stern: 0)
	
	Note
	• This item may not be displayed depending on the equipment setting.
	• When the input range is changed by modifying [Length] and [Beam], if a value exceeding the input range after modifying has already been entered, the value will be corrected to the maximum or minimum value.
		Changes depending on the value of [Length] and [Beam].
		If Length=a and Beam=b:
		X -b/2 to b/2
		Y 0.0 to a
		For example,
		• if Length=1.0 and Beam=1.0:
		  X -0.5 to 0.5
		  Y 0.0 to 1.0
		• if Length=700.0 and Beam=70.0:
		  X -35.0 to 35.0
		  Y 0.0 to 700.0

Radar Antennas1 to 8 (equipment positions of radar antennas1 to 8)	Enter the equipment positions of Radar Antennas1 to 8 in the boxes. X: Horizontal axis position of radar antennas 1 to 8 on the ship (Center: 0) Y: Front-back axis position of radar antennas 1 to 8 on the ship (Stern: 0) **Note** • If "No Equipment" is specified in the [DipSW] settings of the interswitch unit, this is not displayed. • When the input range is changed by modifying [Length] and [Beam], if a value exceeding the input range after modifying has already been entered, the value will be corrected to the maximum or minimum value.	
CCRP1/2/3/4	Enter the positions of CCRP1 to CCRP4 of the ship in the boxes. X: Horizontal axis position of CCRP1/2/3/4 on the ship (Center: 0) Y: Front-back axis position of CCRP1/2/3/4 on the ship (Stern: 0) **Note** When the input range is changed by modifying [Length] and [Beam], if a value exceeding the input range after modifying has already been entered, the value will be corrected to the maximum or minimum value.	

Setting Item	Description of Setting	Setting Value
Radio button on the left side of each CCRP	Select the position to be used as the ship's CCRP by clicking the applicable button.	CCRP1 CCRP2 CCRP3 CCRP4
Speed Position Bow	Enter the distance to the bow starboard/port speed display point.	0.0 to Ship's length m
Speed Position Stern	Enter the distance to the stern starboard/port speed display point.	0.0 to Ship's length m

Synchronizing setting

The "CCRP" dialog enables common setting items and individual setting items for RADAR, ECDIS, and Conning (called a task station individually). Once common items are set in any of the task stations, RADAR, ECDIS, and Conning, the settings are reflected (synchronized) in other task stations.

By setting common items in the state where all the task stations are active, the common setting items are synchronized in all the task stations.

19.3.3 Setting a Serial Port

Verify the setting of the serial port of this equipment and perform initial setting by using the "Serial Port" dialog.

Synchronizing setting

The "Serial Port" dialog enables common setting items and individual setting items for RADAR, ECDIS, and Conning (called a task station individually). Once common items are set in any of the task stations, RADAR, ECDIS, and Conning, the settings are reflected (synchronized) in other task stations.

By setting common items in the state where all the task stations are active, the common setting items are synchronized in all the task stations.

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19.3.3.1 Displaying the "Serial Port" dialog

When you select [System Configuration] in the first classification pane and [Serial Port] in the second classification pane, the "Serial Port" dialog is displayed in the edit/result pane.

19.3.3.2 [Diagnosis] lamp light colors

The [Diagnosis] lamp indicates the diagnosis result on whether or not the sentence of the sensor specified for each serial port has been received successfully and the status of ISW/MTR/Serial OPU.

Lit in red: Data not received.

Lit in green: Data is receiving.

Lit in orange: In diagnosis (before decision).

No color: Serial port is disabled.

19.3.3.3 Setting a serial port

In the "Serial Port" dialog, allocate the sensors to be connected for the serial port on CCU (Central Control Unit) and the serial port on SLC/ALC.

Setting a serial port on the CCU

Set each item as follows.

"Table A: Sensors that can be selected by serial ports on CCU" shows selectable sensors.

However, the sensors that actually can be selected vary depending on the equipment setting.

For the sensor communication speed, refer to "Selectable baud rates".

Setting Item	Description of Setting	Setting Value
Gyro	1. Select the check box and enable the serial port for the Gyro. 2. Select a sensor to be connected to the serial port for Gyro from the [Sensor] combo box. When not selecting a sensor, set [-].	To enable: Select. To disable: Clear.
LOG	1. Select the check box and enable the serial port for the LOG. 2. Select a sensor to be connected to the serial port for LOG from the [Sensor] combo box. When not selecting a sensor, set [-].	To enable: Select. To disable: Clear.
GPS	1. Select the check box and enable the serial port for the GPS. 2. Select a sensor to be connected to the serial port for the GPS from the [Sensor] combo box. When not selecting a sensor, set [-].	To enable: Select. To disable: Clear.
AIS	1. Select the check box and enable the serial port for the AIS. 2. Select a sensor to be connected to the serial port for the AIS from the [Sensor] combo box. When not selecting a sensor, set [-].	To enable: Select. To disable: Clear.

Table A: Sensors that can be selected by serial ports on CCU

Serial port	Sensor name
Gyro	Heading Sensor (NMEA) , Heading Sensor1 (NMEA) [1], Heading Sensor2 (NMEA) [1]
	Heading Sensor (Gyro I/F) , Heading Sensor1 (Gyro I/F) [1], Heading Sensor2 (Gyro I/F) [1]
LOG	Log (NMEA) , Log1 (NMEA) [2], Log2 (NMEA) [2]
	Log (Gyro I/F) [3]
	Selector
GPS	GPS 1
	GPS 2 [4]
	GPS 3 [4]
	GPS 4 [4]
	Selector
AIS	AIS

[1]: Only when two heading sensors are available

[2] Only when two logs are available

[3] Only when Heading Sensor (Gyro I/F) is selected for Gyro of CCU

[4] May not be displayed depending on the number of GPS units

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Setting serial ports on SLC/ALC

Set the serial ports on SLC/ALC that is installed as follows.

Setting item	Setting contents	Setting value
CH1 to CH8 (RS-422)	1. Click on any of the tabs, SLC1 (M) to SLC8 (M) /SLC1 (S) to SLC8 (S) /ALC1 to ALC8. 2. Enable the serial port of the channel by selecting the check box. 3. Select a sensor[*1] to be connected to the channel on the [Sensor] combo box. When not selecting a sensor, select [-].	Enable: Selected Disable: Clear
CH9/CH10 (RS-422/RS485)	1. Click on any of the tabs, SLC1 (M) to SLC8 (M) /SLC1 (S) to SLC8 (S) /ALC1 to ALC8. 2. Enable the serial port of the channel by selecting the check box. 3. Select a sensor[*1] to be connected to the channel on the [Sensor] combo box. When not selecting a sensor, select [-].	Enable: Selected Disable: Clear

[*1] : The sensors that can be selected on SLC/ALC are indicated below.

However, the sensors that can be actually selected vary depending on the equipment setting.

Heading Sensor 1, Heading Sensor 2, Log 1, Log 2, GPS 1, GPS 2, GPS 3, GPS 4, Ship's Clock, Echo Sounder (Depth) , AIS, NAVTEX, Anemometer (Wind) , Water Temperature Meter, Current Meter, Climate Meter, TRI, Autopilot, Rudder, Engine/Propeller, Engine Telegraph, Thruster, Azimuth Thruster, Generator, Fin Stabilizer, YEOMAN Digitizer, RADAR1 (TT RX) , RADAR2 (TT RX) , Alert (to CAM) , Alert (from Subsystem) , Alert (to BNWAS) , IAS (MODBUS) , DSC

19.3.3.4　To change the communication settings of the Serial Port

Click the [Detail] button of the enabled serial port and display the [Detail] dialog.

When selecting CH1 to CH7

When selecting CH8 to CH10

The setting target can be checked with [Source Device] display, [Terminal] display and [Sensor] display.

Perform the settings shown in the following table and then click on the [Set] button.

Setting Item	Description of Setting	Setting Value
Baud Rate	Select the baud rate of the serial port on the combo box. In the "Detail" dialog of any of CH8 to CH10, the [Baud Rate] addition ratio combo box is displayed on the right side of the [Baud Rate] combo box.	Selectable baud rates vary depending on the serial port (refer to "Selectable baud rates").
[Baud Rate] addition ratio combo box	Displayed in the "Detail" dialog of CH8 to CH10. By using this combo box, the addition ratio (%) for adjusting the baud rate can be changed. The baud rate is determined by adding the additional ratio to the value that is set in the [Baud Rate] combo box. Example) $4800 \times (1 + \underline{1.5 / 100}) = 4872$ Additional ratio	0.0% to 3.0% (can be set in the unit of 0.5%)
Data Length	Select the data length of the corresponding serial port from the combo box.	5/6/7/8
Parity	Select the parity of the corresponding serial port from the combo box.	None/Odd/Even
Stop Bits (Stop Bit Length)	Select the stop bit length of the corresponding serial port from the combo box.	1/2
Buffer Size	Enter the buffer size of the corresponding serial port from the list.	0 to 10240 byte
Time Out	Enter the time-out duration of the corresponding serial port from the list.	0 to 999s
Checksum	Select the check box and enable the checksum of the sentence of the corresponding serial port.	To enable: Select. To disable: Clear.
Subsystem	Set the equipment to be connected for Alert Handling. Displayed only when the sensor is "Alert (from Subsystem) " or "Alert (to CAM) ". The selection is also allowed for the subsystem that has already been used in the channel of some other serial port.	"Alert (from Subsystem) ": Equipment that is set as -/installed (Task Station and sensor) "Alert (to CAM) ": Equipment that is set as -/installed (Task Station)
Primary/Secondary	Select Primary or Secondary for IAS (MODBUS) input. Displayed only when the sensor is "IAS (MODBUS) ".	Primary: Primary system Secondary: Secondary system

Setting Item	Description of Setting	Setting Value
Sentence	Select the sentence of Alert Handling. Displayed when the sensor is other than "Alert (BNWAS), "IAS (MODBUS)", or "DSC".	Normal sensor such as GPS and Log: -/ALR/ALF "Alert (from Subsystem/to CAM) ": ALR/ALF

Selectable baud rates

Serial port	Baud rate
Serial point on CCU	
Gyro (at selection of Heading Sensor (NMEA))	4800/38400
Gyro (at selection of Heading Sensor (Gyro I/F))	Fixed to 38400
Log (at selection of Log (NMEA))	Fixed to 4800
Log (at selection of Log (Gyro I/F))	Fixed to 38400
GPS	Fixed to 4800
AIS	Fixed to 38400
Serial port on SLC/ALC	
CH1-8	2400/4800/9600
CH9/10	2400/4800/9600/19200/38400
Gyro I/F	Fixed to 38400

Setting the same contents for SLC (Main) and SLC (Sub)

The setting of SLC (Sub) can be changed to the contents that are set for SLC (Main) collectively.

When there is a different connection between SLC (Main) and SLC (Sub), the setting is changed individually after this operation.

1 **Select the tab of the SLCx (S) to be set (x:1 to 8).**

2 **Click the "Same as SLCx (Main)" button.**
The value that was set in SLCx (Sub) is changed to the same content as that of SLCx (Main).

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19.3.4 Setting own ship's parameters

Set parameter values of own ship by using the "Ship's Parameters" dialog.

19.3.4.1 Displaying the "Ship's Parameters" dialog

When you select [Ship's Parameters] in the classification pane, the "Ship's Parameters" dialog is displayed in the edit/result pane.
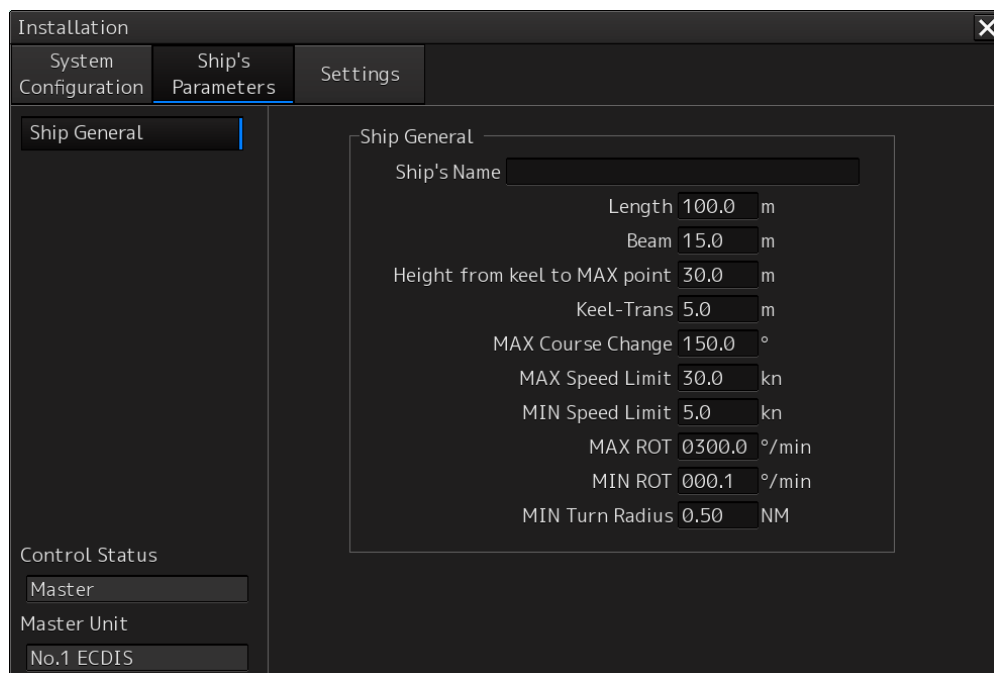
19.3.4.2 Setting own ship's parameters

Set the following items in the "Ship's Parameters" dialog.

Setting Item	Description of Setting	Setting Value
Ship's Name	Enter own ship's name in the box.	Max. 20 characters
Length (of ship)	Enter own ship's length in the box.	1.0 to 1022.0 m
Beam (ship's width)	Enter own ship's beam in the box.	1.0 to 126.0 m
Height from keel to MAX point	Enter the height of the ship from the keel to the maximum point in the box.	1.0 to 126.0 m
Keel-Trans (distance between the transducer and the keel)	Enter the distance between the transducer of the depth sounder and the keel. (Required when displaying the water depth with the keel fixed)	0.0 to 20.0 m
MAX Course Change (limit value of course change angle)	Enter the limit value of the course change angle of the planned route in the box.	20.0 to 359.9°
MAX Speed Limit	Enter the ship's maximum speed in the box.	10.0 to 99.9 kn
MIN Speed Limit	Enter the ship's minimum speed in the box.	0.0 to 89.9 kn
MAX ROT	Enter the maximum rate of turn in the box.	30.0 to 600.0°/min
MIN ROT	Enter the minimum rate of turn in the box.	0.0 to 570.0°/min
MIN Turn Radius	Enter the minimum turn radius in the box.	0.00 to 9.99 NM

Synchronizing setting

The "Ship's Parameters" dialog enables common setting items and individual setting items for RADAR, ECDIS, and Conning (called a task station individually). Once common items are set in any of the task stations, RADAR, ECDIS, and Conning, the settings are reflected (synchronized) in other task stations. By setting common items in the state where all the task stations are active, the common setting items are synchronized in all the task stations.

19.3.5 Setting the automatic sailing system

By using the "Autosail" dialog, verify and initialize the automatic sailing system that is installed in this equipment.

19.3.5.1 Displaying the "Autosail" dialog

When you select [Settings] in the first classification pane and [Autosail] in the second classification pane, the "Autosail" dialog is displayed in the edit/result pane.
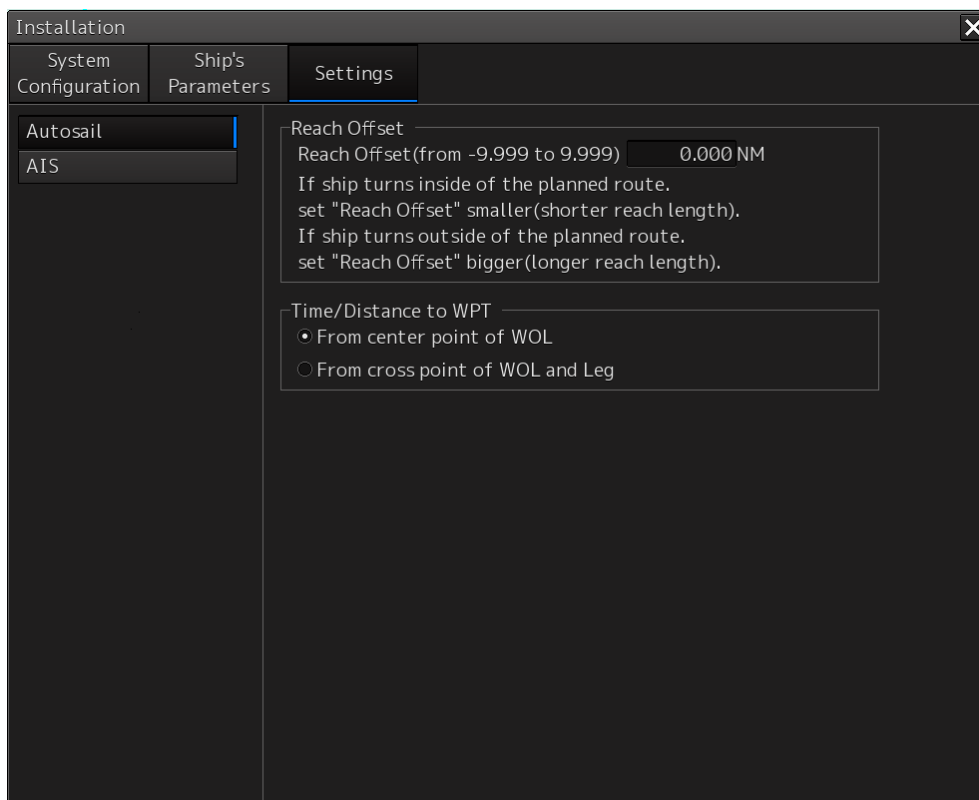
19.3.5.2　Setting the automatic sailing system

Set the following items in the "Auto Sail" dialog.

Setting Item	Description of Setting	Setting Value
Reach Offset	Enter the reach offset in the box.	-9.999 to 9.999 NM
Time/Distance to WPT	Select this to select a parameter for calculating the time and distance from own ship to the WPT. **From center point of WOL:** Center point between own ship and the WOL **From cross point of WOL and Leg:** Center point of own ship's heading and the WOL	• From center point of WOL • From cross point of WOL and Leg

19.3.6　Setting the AIS password

Set the AIS password by using the "AIS" dialog.

19.3.6.1　Displaying the "AIS" dialog

When [Settings] is selected in the 1st classification pane and [AIS] is selected in the 2nd classification pane, the [AIS] dialog is displayed in the edit/result pane.
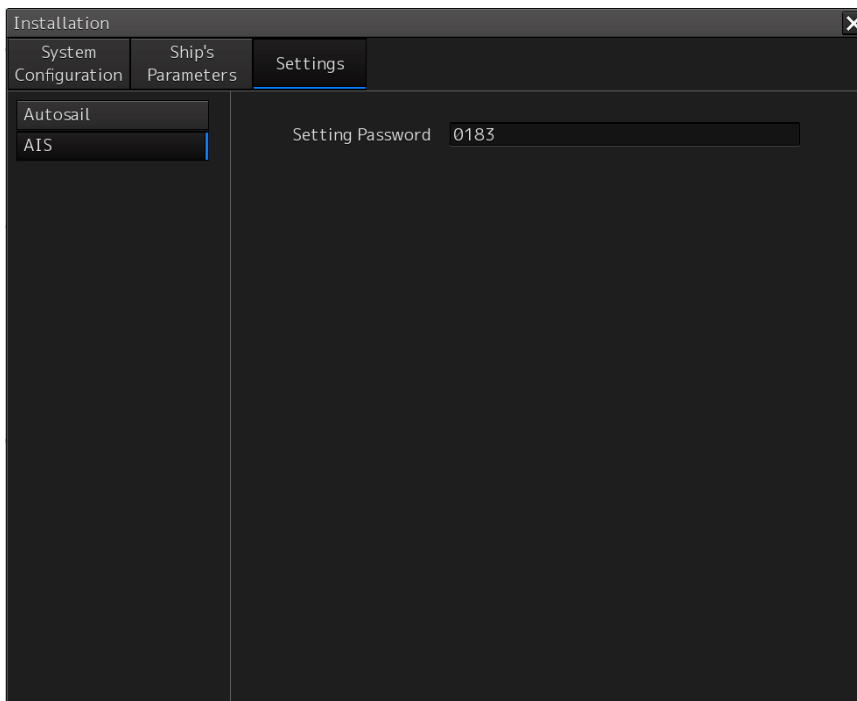
19.3.6.2 Setting the AIS password

Set the following item on the "AIS" dialog.

Setting item	Description of setting	Setting value
Setting Password	To change Voyage data from the external device, JHS-183 requires the password. When the AIS password is changed, change this setting value. When the password is not required, this setting value is ignored in (JHS-182).	Up to 32 characters (numeric value only)

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19.4 Maintenance

Use the "Maintenance" dialog box for maintenance operation of this equipment.

19.4.1 Displaying the "Maintenance" dialog box

Clicking the [Maintenance] button in the submenu displays the "Maintenance" dialog box.

The "Maintenance" dialog box in the submenu consists of the classification pane and the edit/result pane. The classification pane consists of two-level layers of the first classification pane and the second classification pane.
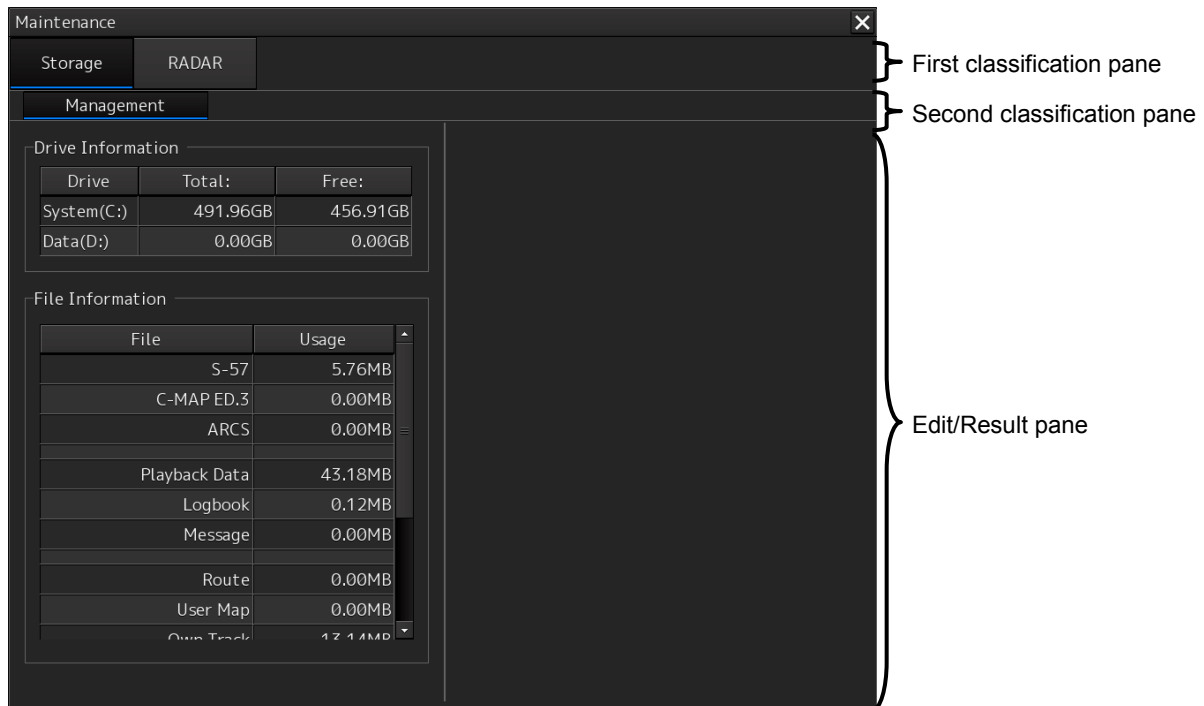
Note
In the ECDIS screen, [RADAR] finction does not work.

19.4.2 Managing storage

When you select [Storage] in the first classification pane and [Management] in the second classification pane, the "Management" dialog is displayed in the edit/result pane.

Maintenance		
Storage	RADAR	

Management

Drive Information

Drive	Total:	Free:
System(C:)	491.96GB	456.91GB
Data(D:)	235.49GB	180.77GB

File Information

File	Usage
S-57	5.76MB
C-MAP ED.3	0.00MB
ARCS	0.00MB
Playback Data	43.18MB
Logbook	0.12MB
Message	0.00MB
Route	0.00MB
User Map	0.00MB
Own Track	13.14MB
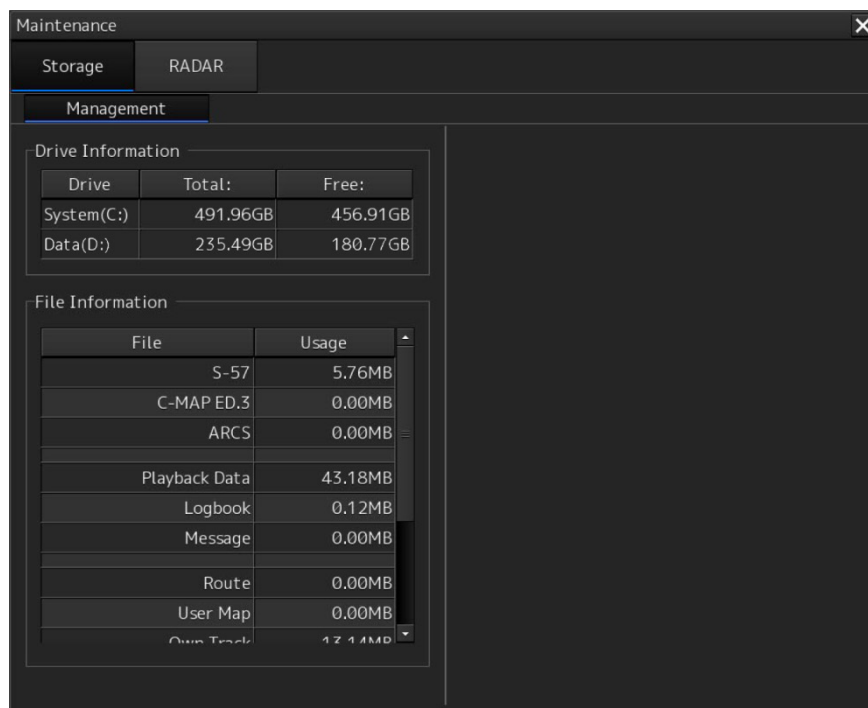
The total storage capacity and free space on each of the drives (C and D) are displayed in the [Drive Information] list. The capacity of each of the files stored on the drives is displayed in the [File Information] list. The files managed by File Manager are applicable.

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19.4.3 Maintaining the radar (Radar screen only)

Use the "RADAR" dialog to maintain the radar.

19.4.3.1 Displaying the "RADAR" dialog

When you select [RADAR] in the classification pane, the RADAR dialog is displayed in the edit/result pane.

Transmission result display
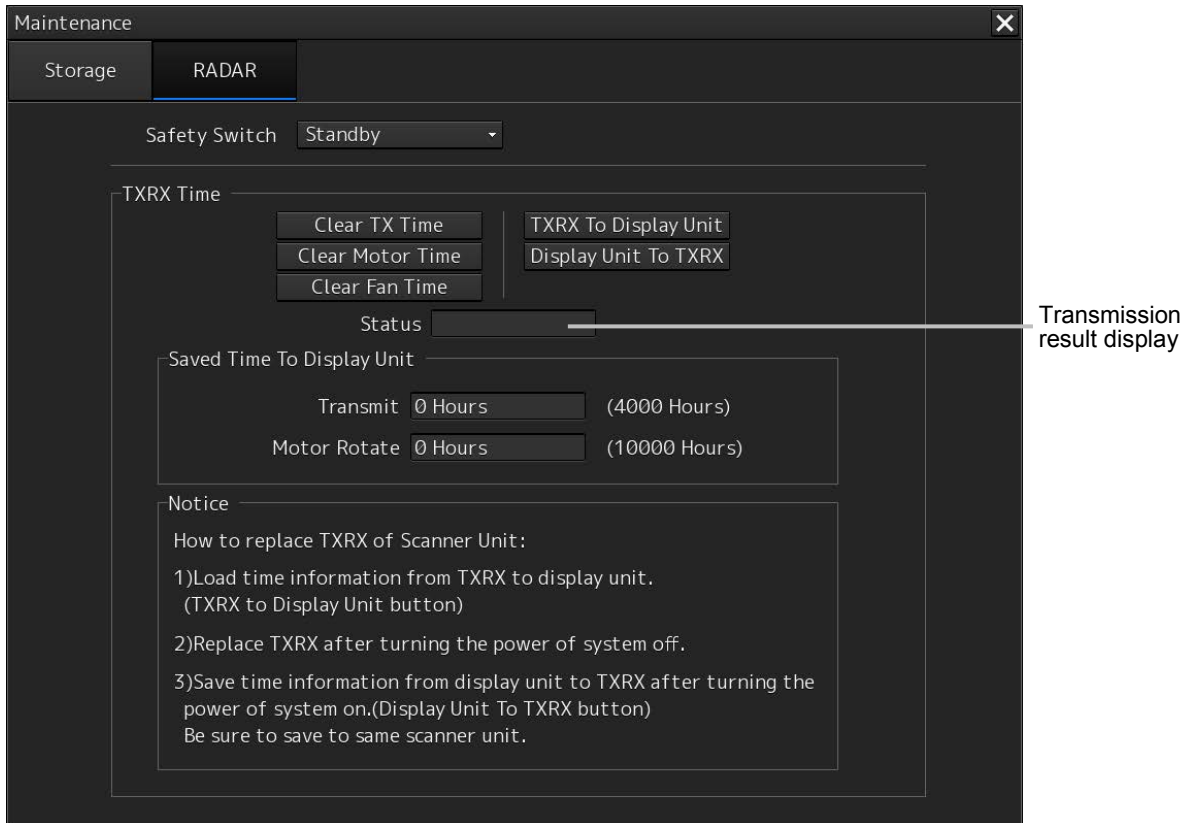
19.4.3.2 Changing the operation mode of the safety switch

Open the list of the [Safety Switch] box and select the operation to be performed when the safety switch of the antenna is set to OFF.

Setting	Operation
TX-Off	• No radiant section's rotation and transmission • PPI screen in the transmitting state • Maintains the transmitting state without generating BP or BZ alarm
Standby	• No radiant section's rotation and transmission • PPI screen standby
TX-On	• No radiant section's rotation, with transmission • PPI screen in the transmitting state • Maintains the transmitting state without generating BP or BZ alarm

19.4.3.3 Clearing a radar antenna operation time

The total transmission time and the total motor rotation time of a radar antenna can be cleared.

Clearing the total transmission time of a radar antenna

1 **Click on the [Clear TX Time] (resetting transmission time) button.**

Clearing the total motor rotation time of a radar antenna

1 **Click on the [Clear Motor Time] (resetting the motor rotation time) button.**

19.4.3.4 Replacing a TXRX circuit of a radar antenna

Verify the total transmission time and the total motor rotation time of the radar antenna and use the information as the guideline for replacement.

Acquiring the data of the total transmission time and the total motor rotation time from a radar antenna

1 **Click on the [TXRX To Display Unit] (transmitting from an antenna to a display unit) button.**
The data of the total transmission time and the total motor rotation time is acquired from the antenna and is stored in a display unit. The time that is acquired is displayed on the [Saved Time To Display Unit] display section.
Transmit: Total time acquired from the radar antenna
Motor Rotate: Total motor rotation time acquired from the radar antenna

Storing data of the total transmission time and the total motor rotation time in the radar antenna

1 **Click the [Display Unit To TXRX] button (transmission from the display to the radar antenna).**
The total transmission time and total motor ration time saved in the display unit are saved to the radar antenna.
If data is saved normally, the data saved in the display unit will be deleted.
When a command is sent from the display unit to the radar antenna, the transmission result is displayed as follows.
Result waiting state: "Sending..." is displayed blinking at intervals of 1 sec.
When the result is success: "Completed" is displayed.
When the result is failure: "Not Completed" is displayed.

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Replacing a TXRX circuit

The operation procedure and notes are displayed on the Notice display.

1 **By clicking on the [TXRX To Display Unit] button, load the data of the total transmission time and the total motor rotation time from the radar antenna to the display unit.**

2 **Turn off the power of the system and replace the TXRX circuit.**

3 **Turn on the power of the system and write the data of the total transmission time and the total motor rotation time in the transceiver unit of the radar antenna by clicking on the [Display Unit To TXRX].**

> **Note**
>
> Make sure that data is written to the transceiver unit of the same radar antenna when the data is loaded.

Section 20 Playing Back Data Recorded During Navigation

The following information recorded during navigation can be played back on the ECDIS screen.

- Own ship's information
- Other ship's information
- Route information
- Alarm information

Click on the [Playback] button on the Task Menu.

The following ECDIS screen appears and the playback controller is displayed. (Playback mode)

Playback controller
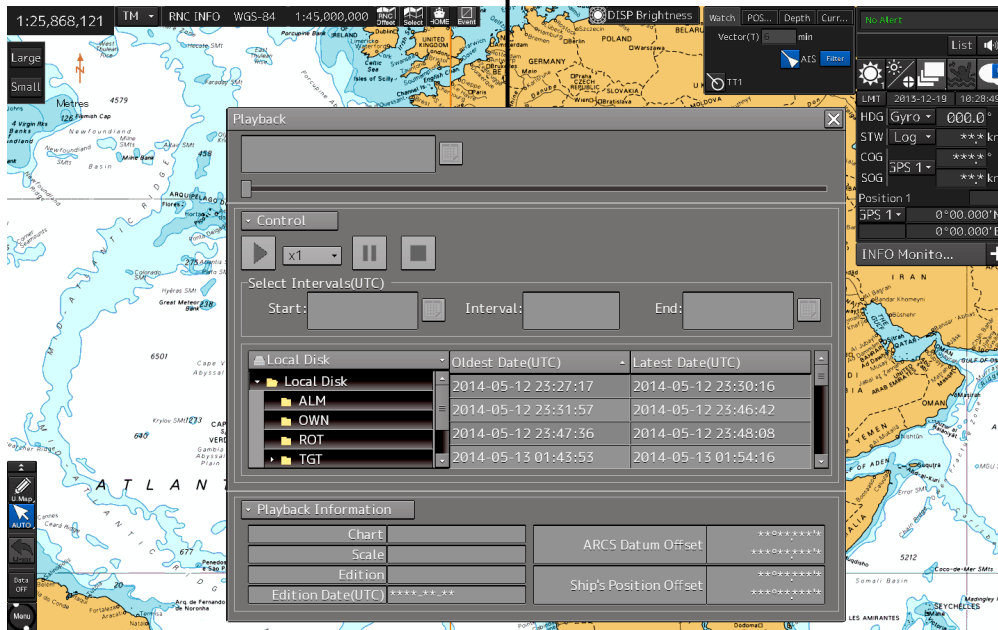
The playback controller can move to any position on the Playback dialog box; however, it cannot be minimized.

20.1 Playback Controller

The view of the playback controller can be switched between simplified display and full display by clicking the View Change button (or   ).

Simplified Display

[1] [3] [2]

Playback

[4] ▸ Control

▸ Playback Information

Full Display

[Control] section

Playback

[5]
[6]
[7]
[8]
[12]
[11]
[13]

▸ Control

x1

Select Intervals(UTC)

Start: Interval: End:

[9] ▲Local Disk Oldest Date(UTC) Latest Date(UTC) [14]

▸ ▸ Local Disk 2014-05-12 23:27:17 2014-05-12 23:30:16
▸ ALM 2014-05-12 23:31:57 2014-05-12 23:46:42
[10] ▸ OWN 2014-05-12 23:47:36 2014-05-12 23:48:08
▸ ROT 2014-05-13 01:43:53 2014-05-13 01:54:16
▸ TGT

▾ Playback Information

Chart ARCS Datum Offset ***°**'***'*
Scale ***°**'***'*
Edition Ship's Position Offset ***°**'***'*
Edition Date(UTC) ****-**-** ***°**'***'*

[Playback Information] Section

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Upper Part of the Playback Controller

Number	Name	Function
1	Playback time	The playback time is displayed.
2	[X] (Close) button	Exits playback.
3	Playback slider	The progress of playback is displayed. The playback position can be changed by moving the slider control. • During playback, the pointer of the playback slider cannot be dragged. • During halt/temporary halt, the pointer of the playback slider cannot be dragged to any position.
4	View switch buttons	Switch between full display/simple display of the control unit and the playback information unit.

[Control] Section

Number	Name	Function
5	Playback speed selection box	Select the playback speed from the list. (x1, x2, x4, x10, x30, x60)
6	Playback button	Executes playback. When this button is clicked during playback, the playback speed changes in the following order: x1 $\Rightarrow$ x2 $\Rightarrow$ x4 $\Rightarrow$ x10 $\Rightarrow$ x30 $\Rightarrow$ x60 $\Rightarrow$ x1 $\Rightarrow$ .....
7	Pause button	Pauses playback. To resume, click the Playback button again.
8	Stop button	Stops playback. When playback is stopped, the playback time returns to the playback start time and the playback slider control returns to the playback start time position.
9	Drive selection box	Select a data drive storing navigation record data from the list.
10	Folder tree	Folders storing navigation record data are displayed in tree view.
11	Playback start time	The playback start time is displayed. By clicking the calendar icon, you can display the calendar picker and change the playback start time. Specify the playback time range concurrently with the playback end time. The range can be specified within the range from the start to the end of the recording of the log data.
12	Playback segment	The playback segment is displayed. (When a playback list has not been selected, this box is blank.)
13	Playback end time	The playback end time is displayed. (When a playback list has not been selected, this box is blank.) By clicking the calendar icon, you can display the calendar picker and change the playback end time. Specify the playback time range concurrently with the playback start time. The range can be specified within the range from the start to the end of the recording of the log data.
14	Playback list	Each record data is displayed in the order of the oldest time to the latest time. When [Oldest Date] or [Latest Date] on the title bar is clicked on, the data is sorted in the order of the oldest data or latest data.

[Playback Information] Section

Information of each record data is displayed.

Name	Function
Chart	The cell having the cell name of the chart being displayed when recorded is shown.
Scale	The scale of the chart being displayed when recorded is shown.
Edition	The version of the cell having the cell name of the chart being displayed when recorded is shown.
Edition Date (UTC)	The issue date of the chart being displayed when recorded is shown.
ARCS Datum Offset	The offset value of the ARCS chart when recorded is shown.
Ship's Position Offset	The offset value of own ship's position when recorded is shown.

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20.2 Selecting Playback Data

Select the navigation record data you want to play back.
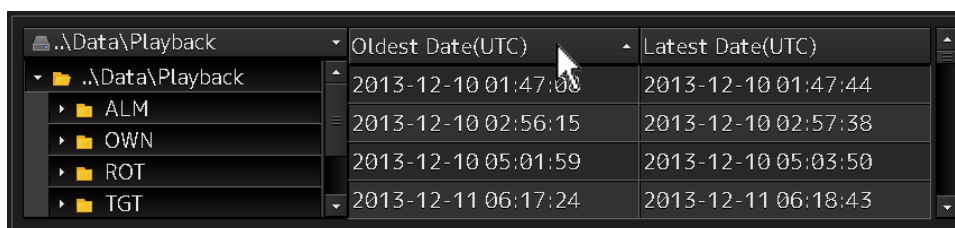
1 **Click on the Drive Selection box to open the list, and then select a data drive storing navigation record data.**

Folders saved on the selected data drive are displayed in tree view.

2 **Select a folder storing the navigation record data you want to play back (ex. Playback folder).**

Each navigation record data is displayed in the order of the oldest time to the latest time.

3 **Select the navigation record data you want to play back.**
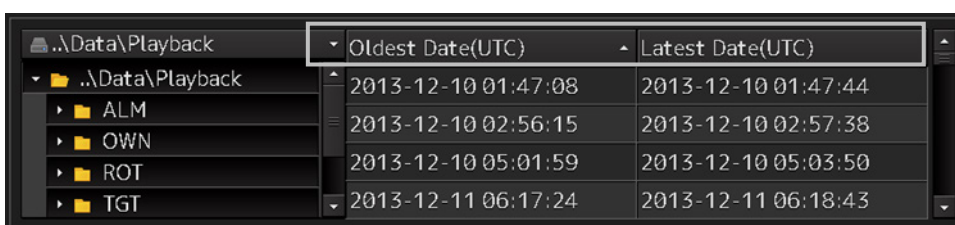
The oldest time and latest time of the selected navigation record data are reset to their initial values and then displayed in the playback list.

When navigation record data is selected, a chart is displayed in such a way that the position of own ship when recording has started is at the center of the dialog box. When display setting is executed, own ship's track is displayed on the chart.

20.2.1 Sorting the Playback List

Sort the logbook data display sequence in the ascending/descending sequence based on the oldest time/latest time.

1 **Click the title bar on the control section.**

To sort navigation record data by the oldest time, click on [Oldest Date(UTC)]; to sort it by the latest time, click on [Latest Date(UTC)].

20.3 Playing back Logbook Data

Play back the selected logbook data.

To Start Playback

1 **Click on the Playback button.**

Playback of navigation record data starts.

The Playback button is highlighted during playback, and the playback time indicator and the playback slider control are also linked with the playback.

To Pause Playback

1 **Click on the Pause button.**

Playback of navigation record data pauses.

The Pause button is highlighted while pausing, and the playback time indicator and the playback slider control also pause.

To resume, click on the Playback button.

To Stop Playback

1 **Click on the Stop button.**

Playback of navigation record data stops.

The Stop button is highlighted while stopping, and the playback time is reset to the playback start time and the playback slider control returns to the starting point at the left edge.

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20.3.1 Changing the Playback Speed

Change the playback speed of logbook data.

1 **Select a playback speed from the list in the Playback Speed Selection box.**
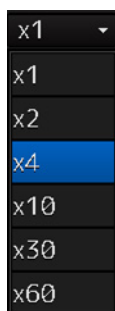
Navigation record data is played back at the selected playback speed.

The time shown on the playback time indicator and the progress shown on the playback slider control change according to the playback speed.

The playback speed can be changed by clicking on the Playback button repeatedly.

Each time the Playback button is clicked, the playback speed changes in the following order: x1 ⇒ x2 ⇒ x4 ⇒ x10 ⇒ x30 ⇒ x60 ⇒ x1 ⇒ .....

20.4 Exiting the Playback Mode

Other tasks cannot be executed while the Playback dialog box is being displayed (during the Playback mode).
To execute other tasks, exit the Playback mode.

1 **Click on the [X] (Close) button on the playback controller.**
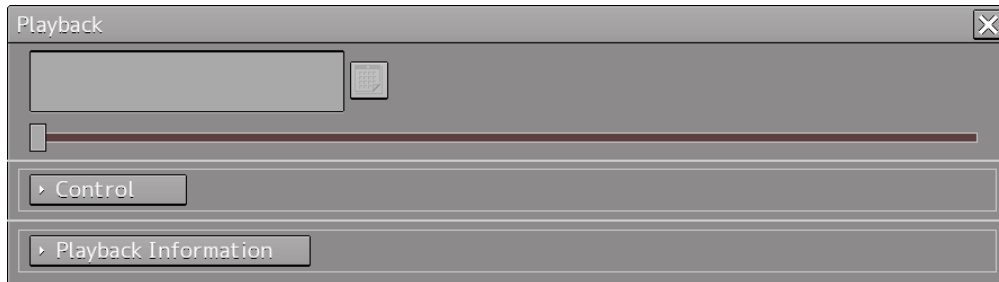
The Exit Confirmation dialog box appears.
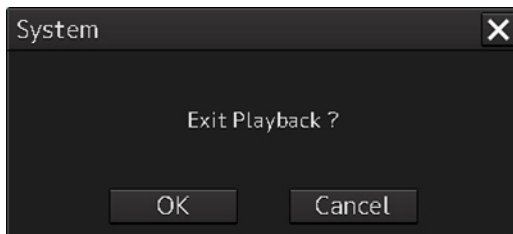
2 **Click on the [OK] button.**
The playback controller closes and the Playback mode ends.
To cancel exiting the Playback mode, click on the [Cancel] button.

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20.5 Outputting Navigation Record Data

Select navigation record data from the File Manager submenu of the Tools menu, and then copy it to the output destination you specify.

1 **Open the File Manager submenu of the Tools menu.**

File type selection box

[Copy>>] button

Drive selection box (output destination)

Drive selection box (output source)

Output data interval selection boxes
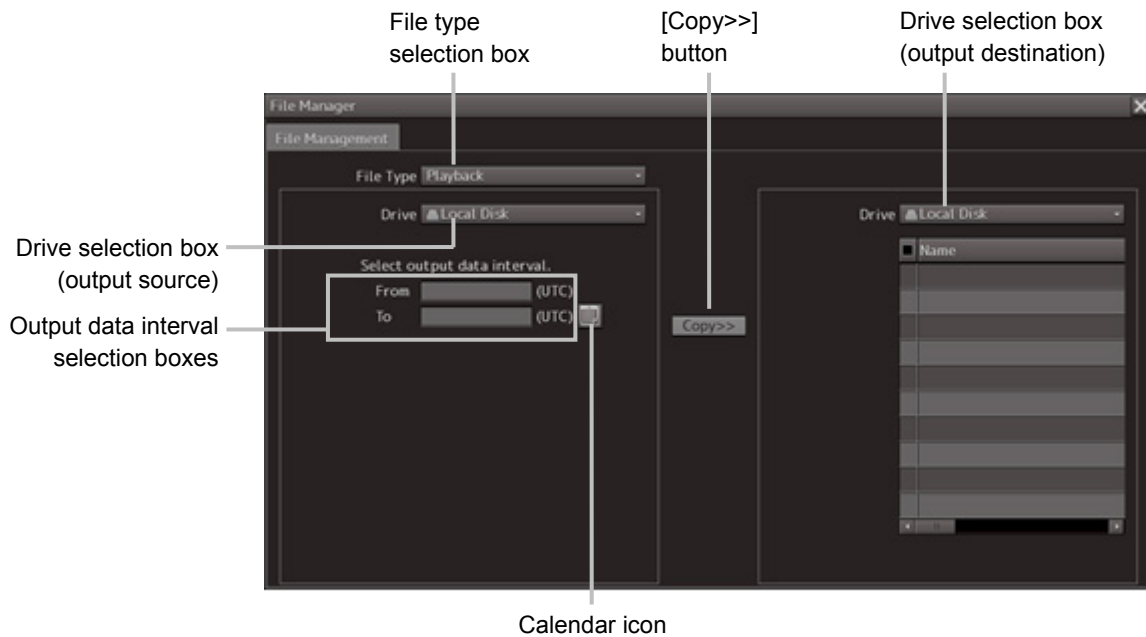
Calendar icon

2 **Select [Playback] from the File type selection box, and then select [Local Disk] from the Drive at the output source selection box.**

Below the Drive at the output source selection box, the output data interval selection boxes and the calendar icon appear.

3   By clicking on the Calendar icon, specify the duration of the logbook data to be output.

The selected dates appear in the output data interval selection boxes.
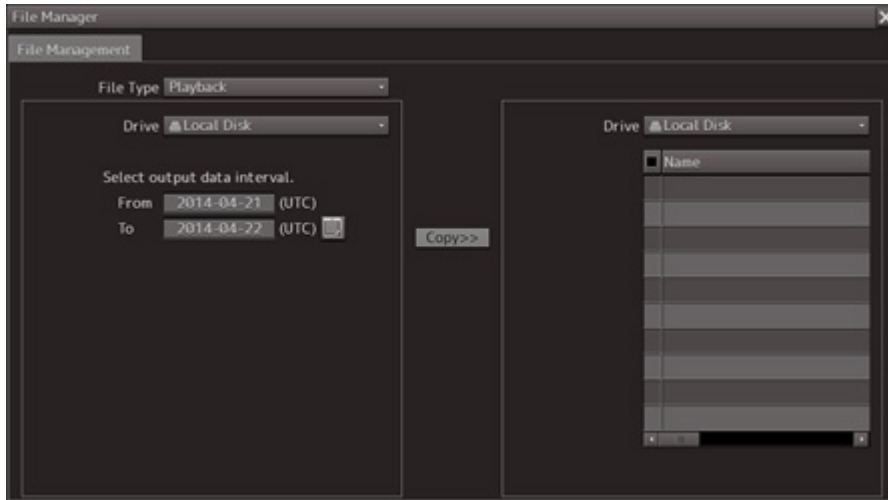
4   Specify the drive of the output destination from the output destination drive selection box and the output destination folder from the folder tree.

The [Copy>>] button takes effect.

5   Click on the [Copy>>] button.

The following folder is created in the output destination path, and the navigation record data having the specified interval is copied to this folder.

Folder name: Playback_120108_120109

Output data start time [yymmdd]   Output data end time [yymmdd]

20.6 Functional Restrictions when in the Playback Mode

Some functions are restricted in playback mode. The restricted functions are disabled.

Section 21 Maintenance & Inspection

21.1 Maintenance Functions Executed from Menu

This section explains maintenance functions that are executed from the menu.

21.1.1 Starting maintenance functions

1 **Click on the [Menu] button on the left Toolbar.**
The menu is displayed.

2 **Click on the [Maintenance] button on the menu.**
The submenu is displayed.

3 **Click on a button on the submenu.**
The dialog box of the selected maintenance function is displayed.

21.1.2 Setting Date/Time/Time Zone

1 **Click on the [Menu] button on the left Toolbar.**
The menu is displayed.

2 **Click on the [Maintenance] - [Date/Time/Time Zone] button on the menu.**
The [Date/Time] dialog box appears.
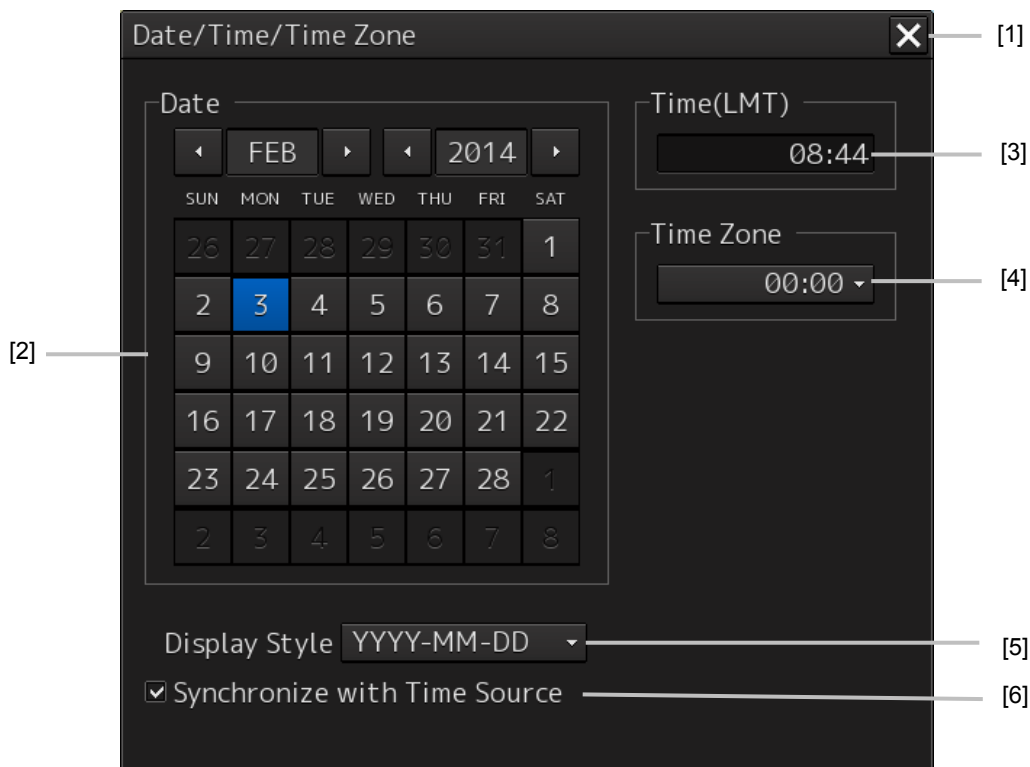
[1] [X] button

Click on this button to close the "Date/Time" dialog box.

[2] [Date]

Set the year, month and day on the calendar.

For the details of how to use the calendar, refer to "3.16 Setting a Date and a Time [Calendar Operation)".

[3] [Time(LMT)]

Enter the time in the input box. The time entered will be reflected on the clock.

[4] [Time Zone]

Enter the time zone in the time zone input box.

A time zone can be selected between -13:30 and +13:30 from UTC.

[5] [Display Style]

From the list, select the style to display the date.

- YYYY-MM-DD (Japanese style)
- MMM DD,YYYY (North American style)
- DD MMM,YYYY (European style)

[6] [Synchronize with Time Source] (Synchronizing with the time of the GPS and so on.)

Check this box to set a time synchronized with time information (ZDA sentence) obtained from GPS and so on.

Note

When [Synchronize with Time Source] is not checked, the time is reset to the initial value at the start of power supply. Therefore, set a correct time manually.

21.1.3　Confirming System Information

System information can be confirmed.

1　**Click on the [Menu] button on the left Toolbar.**
The menu is displayed.

2　**Click on the [Maintenance] - [System Information] button on the menu.**
The [System Information] dialog box appears.
The contents of the dialog will be switched by clicking on the selection tabs provided in the dialog box.

System Information				
Software	Functionality	H/W Key	Specification	← Selection tabs

JMR-9200

Application	01.00
Maintenance No.	01.00.085
TXRX	00.00.01.00
Presentation Library	3.4

Save to USB Device

21
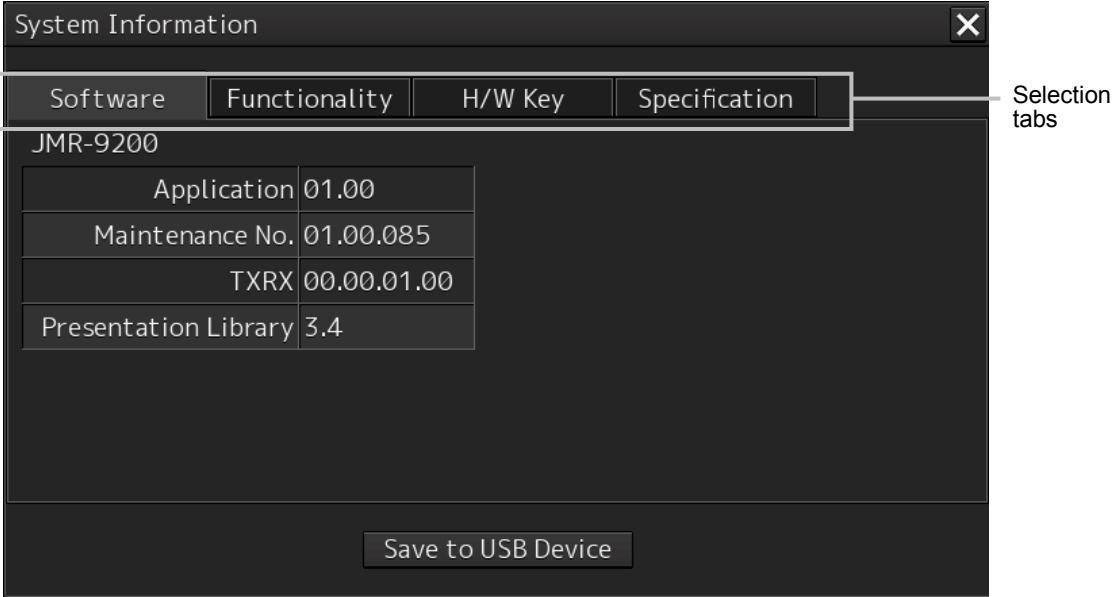
21.1.3.1 Confirming software information

┌───┐
│   ⚠ **WARNING**   │
├──────────┬──┤
│   🚫   │ When you want to use a USB flash memory to read or write a file, make sure in advance that the USB flash memory is not affected by a computer virus. If the indicator is infected with a virus, other equipment will also be infected, with the result that a trouble will occur. │
├──────────┼──┤
│   ❗   │ Before removing the USB flash memory, check for the access lamp of the USB flash memory and make sure that it is not being accessed. If you remove the USB flash memory when it is accessed, data may be destroyed and a trouble may occur. │
└──────────┴──┘

Software information can be confirmed.

1 **Click on the [Menu] button on the left Toolbar.**
The menu is displayed.

2 **Click on the [Maintenance] - [System Information] button on the menu.**
The [System Information] dialog box appears.

3 **Click on the [Software] tab.**
The software information is displayed.
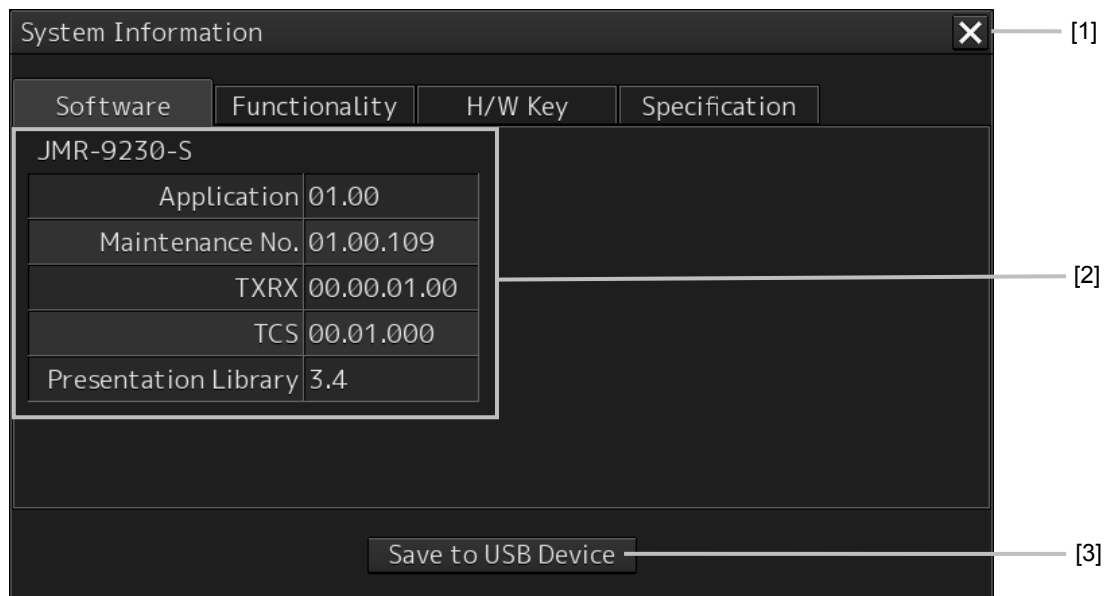
[1] [X] button
Click on this button to close the "System Information" dialog box.

[2] Software information

Item	Displayed information
Jxx-xxxx	Type and model name of the system
Application	Version of the application software
Maintenance No.	7-digit maintenance number
TXRX	Version of the software used for the radar transmitter-receiver unit * This information is displayed when the system is equipped with the RADAR function.
TCS	Version of the software used for TCS * This information is displayed when the system is equipped with the TCS function.
Presentation Library	Edition of S52 Presentation Library Displayed for ECDIS or RADAR (ENC chart display license available) only

[3] [Save to USB Device] (Saving to USB flash memory) button

Click on this button to save the displayed information in a USB flash memory in the text format.

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21.1.3.2 Checking the enable/disable statuses of the functions that have been installed

⚠ WARNING

🚫 When you want to use a USB flash memory to read or write a file, make sure in advance that the USB flash memory is not affected by a computer virus. If the indicator is infected with a virus, other equipment will also be infected, with the result that a trouble will occur.

❗ Before removing the USB flash memory, check for the access lamp of the USB flash memory and make sure that it is not being accessed. If you remove the USB flash memory when it is accessed, data may be destroyed and a trouble may occur.

1 **Click on the [Menu] button on the left Toolbar.**
The menu is displayed.

2 **Click on the [Maintenance] - [System Information] button on the menu.**
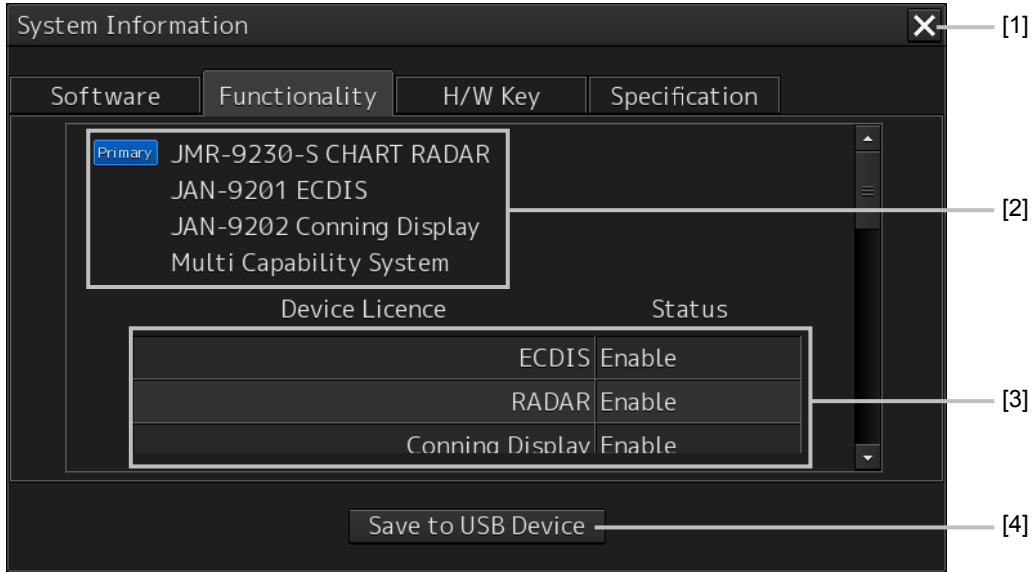The [System Information] dialog box appears.

3 **Click on the [Functionality] tab.**
The functionality information is displayed.
The display contents vary depending on the number of operation modes and whether the modes include the primary task (shown by this equipment).

[The system has multiple operation modes and RADAR is the primary task]

System Information   ✕   — [1]

| Software | Functionality | H/W Key | Specification |

> **Primary** JMR-9230-S CHART RADAR
> JAN-9201 ECDIS
> JAN-9202 Conning Display
> Multi Capability System

— [2]

Device Licence	Status
ECDIS	Enable
RADAR	Enable
Conning Display	Enable

— [3]

Save to USB Device   — [4]

[The system has multiple operation modes and RADAR is not the primary task]

System Information   ✕   — [1]

| Software | Functionality | H/W Key | Specification |

> JMR-9200 Series RADAR
> **Primary** JAN-9201 ECDIS
> JAN-9202 Conning Display
> Multi Capability System

— [2]

Device Licence	Status
ECDIS	Enable
RADAR	Enable
Conning Display	Enable

— [3]

Save to USB Device   — [4]

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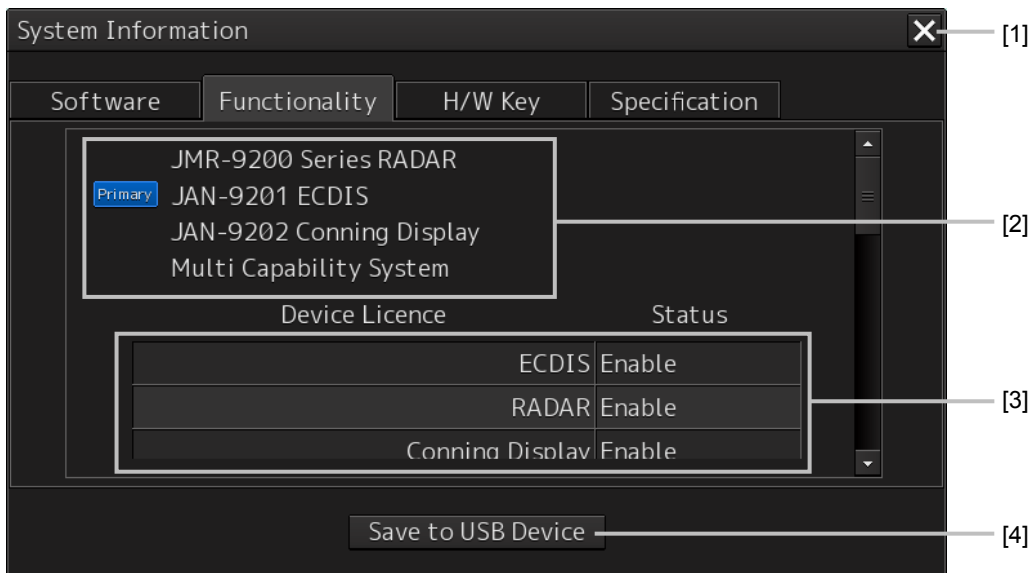
[Section that is displayed when the above screen is scrolled down (example)]

System Information   ✕

| Software | Functionality | H/W Key | Specification |

Option Licence	Status
LAN Interswitch	Disable
X/S Band Combining	Disable
MAX TT Number	200
MAX AIS Number	1000
Chart ENC/C-MAP Ed3	Enable
TCS	Enable

— [3]

Save to USB Device

System Information   ✕

| Software | Functionality | H/W Key | Specification |

TCS	Enable
S-Joy	Disable
Using VHF	Disable
RADAR Overlay	Enable
Inmarsat Blocking Area	Disable
Wave Analysis	Enable
Data Synchronization	Stand-alone
Overlay Weather	Disable

— [3]

Save to USB Device

System Information   ✕

| Software | Functionality | H/W Key | Specification |

RADAR Overlay	Enable
Inmarsat Blocking Area	Disable
Wave Analysis	Enable
Data Synchronization	Stand-alone
Overlay Weather	Disable
Overlay Current	Disable
Overlay Wave Height/ Direction.	Disable

— [3]

Save to USB Device

[1] [X] button

Click on this button to close the "System Information" dialog box.

[2] Format

The system format and model name of this equipment are displayed.

(Example: JAN-9201)

The [Primary] badge is displayed in front of the format for the primary task.

[3] Functionality

The functions that are installed are displayed in [Device Licence] and [Option Licence].

One of the following is displayed in [Status].

[Status]	Meaning
Enable	Indicates that the function can be used.
Disable	Indicates that the function cannot be used.
Value (such as 500)	Indicates the setting value of the option license of the function.
Stand-alone	This indicates that it is not possible to use the function of synchronization with other equipment, and independent operation has to be made.

[4] [Save to USB Device] (Saving to USB flash memory) button

Click on this button to save the displayed information in a USB flash memory in the text format.

21.1.3.3 Confirming H/W key information

⚠ **WARNING**

🚫 When you want to use a USB flash memory to read or write a file, make sure in advance that the USB flash memory is not affected by a computer virus. If the indicator is infected with a virus, other equipment will also be infected, with the result that a trouble will occur.

❗ Before removing the USB flash memory, check for the access lamp of the USB flash memory and make sure that it is not being accessed. If you remove the USB flash memory when it is accessed, data may be destroyed and a trouble may occur.

Hardware key information can be confirmed.

This information is displayed only for the equipment with the ECDIS function.

1 **Click on the [Menu] button on the left Toolbar.**

The menu is displayed.

2 **Click on the [Maintenance] - [System Information] button on the menu.**

The [System Information] dialog box appears.

3 **Click on the [H/W Key] tab.**

The hardware key information is displayed.
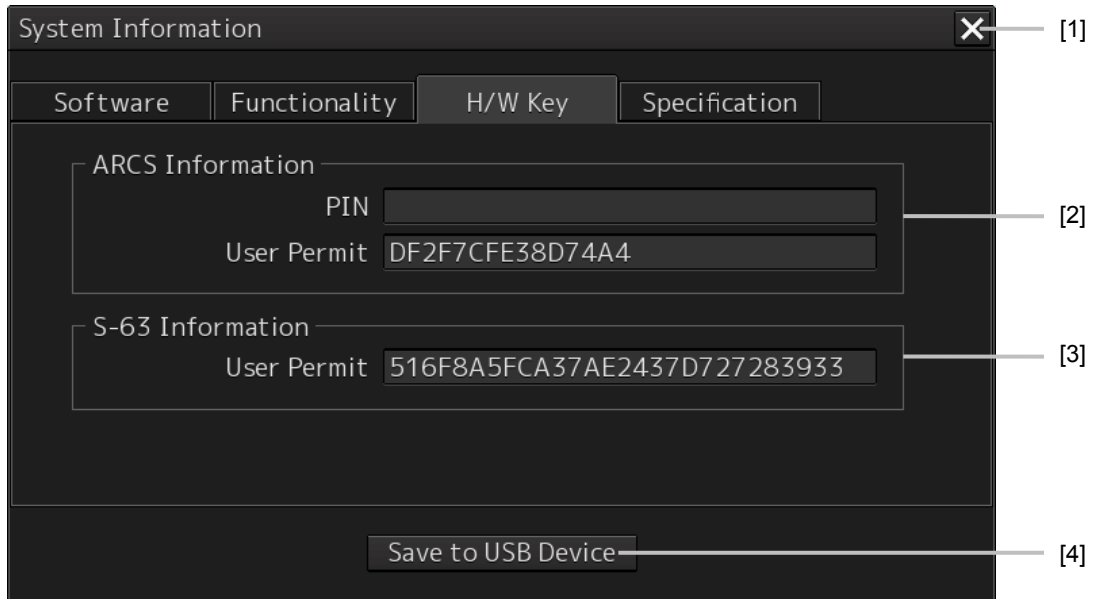
[1] [X]

Click on this button to close the "System Information" dialog box.

[2] [ARCS Information]

The ARCS PIN number and User Permit are displayed.

[3] [S-63 Information]

The S-63 User Permit is displayed.

[4] [Save to USB Device] (Saving to USB flash memory) button

Click on this button to save the displayed information in a USB flash memory in the text format.

21.1.3.4 Confirming the compliant standards for the equipment

When you want to use a USB flash memory to read or write a file, make sure in advance that the USB flash memory is not affected by a computer virus. If the indicator is infected with a virus, other equipment will also be infected, with the result that a trouble will occur.
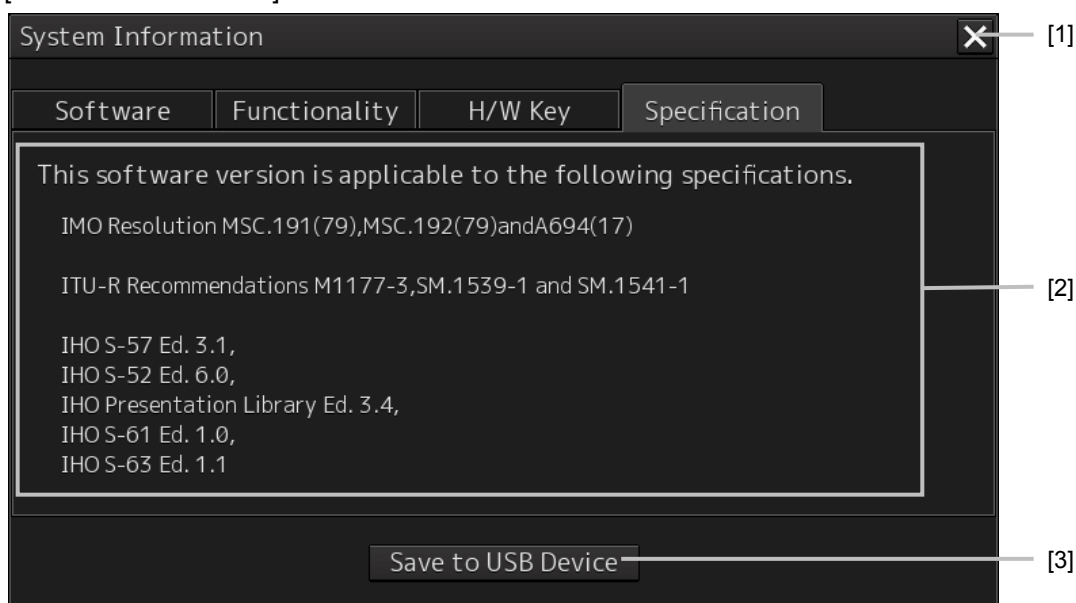
Before removing the USB flash memory, check for the access lamp of the USB flash memory and make sure that it is not being accessed. If you remove the USB flash memory when it is accessed, data may be destroyed and a trouble may occur.

When the equipment license of RADAR or ECDIS is available, the standard relating to the equipment license is displayed.

1 **Click on the [Menu] button on the left Toolbar.**
The menu is displayed.

2 **Click on the [Maintenance] - [System Information] button on the menu.**
The [System Information] dialog box appears.

3 **Click on the [Specification] tab.**
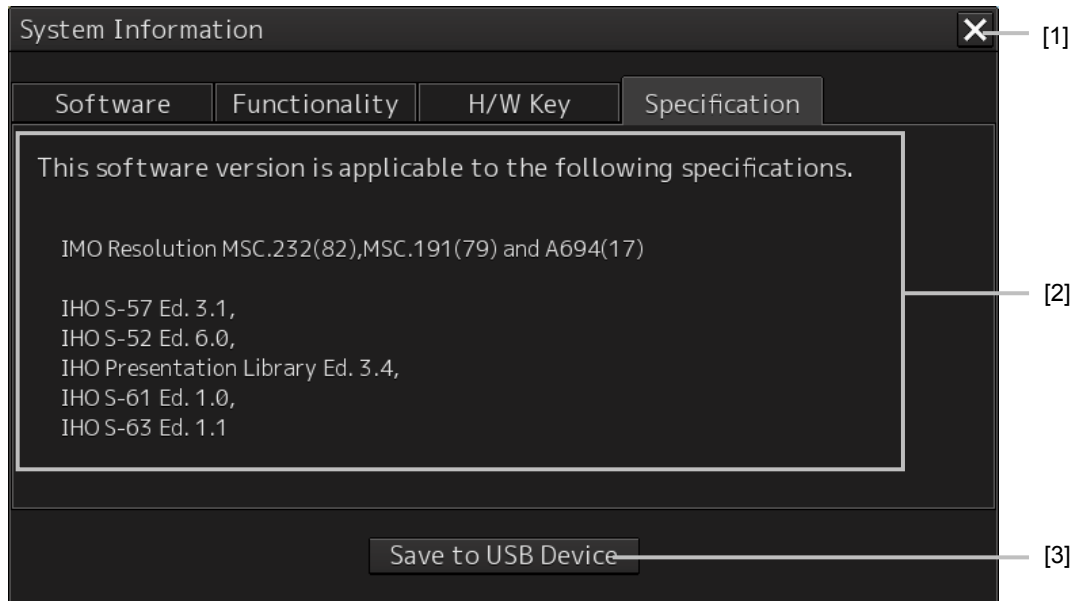The equipment license standard specification information is displayed.

[In the case of RADAR]

| Software | Functionality | H/W Key | Specification |

This software version is applicable to the following specifications.

IMO Resolution MSC.191(79),MSC.192(79)andA694(17)

ITU-R Recommendations M1177-3,SM.1539-1 and SM.1541-1

IHO S-57 Ed. 3.1,
IHO S-52 Ed. 6.0,
IHO Presentation Library Ed. 3.4,
IHO S-61 Ed. 1.0,
IHO S-63 Ed. 1.1

Save to USB Device

Memo
The IHO information is displayed only when there is ENC chart display as an optional license.

[In the case of ECDIS]

[1] [×] button

Closes the "System Information" dialog box.

[2] Equipment license information

The equipment license standard specification information is displayed.

[3] [Save to USB Device] (Saving to USB flash memory) button

Click on this button to save the displayed information in a USB flash memory in the text format.

21.1.4　Confirming Operating Time

Confirm the operating time of this system.

1　**Click on the [Menu] button on the left Toolbar.**
The menu is displayed.

2　**Click on the [Maintenance] - [Operating Time] button on the menu.**
The [Operating Time] dialog box appears.
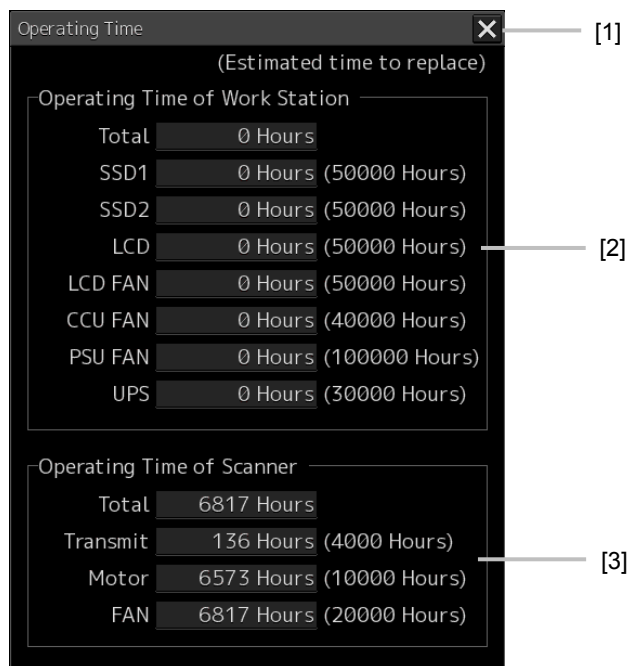
[1] [X] button

Click on this button to close the "Operating Time" dialog box.

[2] [Operating Time Of Work Station]

The operating time of this equipment is displayed.

[Total]:　　Total operating time of this equipment

[SSD1]:　　Total operating time of SSD1. The estimated replacement time is indicated in (　).

[SSD2]:　　Total operating time of SSD2. The estimated replacement time is indicated in (　).

[LCD]:　　Total operating time of LCD. The estimated replacement time is indicated in (　).

[LCD FAN]:　Total operating time of LCD FAN. The estimated replacement time is indicated in (　).

[CCU FAN]:　Total operating time of CCU FAN. The estimated replacement time is indicated in (　).

[PSU FAN]:　Total operating time of PSU FAN. The estimated replacement time is indicated in (　).

[UPS]:　　Total operating time of UPS. The estimated replacement time is indicated in (　).

Memo

　[UPS] is displayed only when UPS is installed as an option.

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[3] [Operating Time Of Scanner]

The total operating time of the radar antenna is displayed.

[Total]: Total operating time of the radar antenna

[Transmit]: Total operating time of the transmitter. The estimated replacement time is indicated in ( ).

[Motor]: Total operating time of the motor. The estimated replacement time is indicated in ( ).

[FAN]: Total operating time of the radar antenna fan.

Memo

[Operating Time Of Scanner] is displayed in RADAR mode only.

21.1.5　Displaying/Resetting the Current Voyage Distance

This equipment displays the current voyage distance (estimated voyage distance) that is calculated from the speed over the ground and the speed through the water.
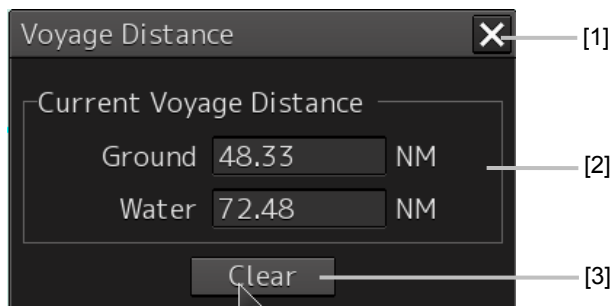
The voyage distance can also be reset.

1 **Click on the [Menu] button on the Left Tool Bar.**

A menu is displayed.

2 **Click on [Maintenance] - [Voyage Distance] on the menu.**

The "Voyage Distance" dialog is displayed.

[1] [×] button

The "Voyage Distance" dialog is closed.

[2] [Current Voyage Distance]
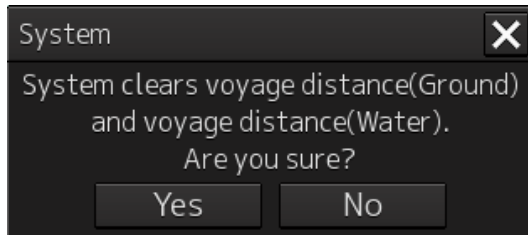
The current voyage distance is displayed.

[Ground]: Indicates the current voyage distance that is calculated from the speed over the ground.

[Water]: Indicates the current sea distance that is calculated from the speed through the water.

[3] [Clear] button

The voyage distance is reset.

When this button is clicked on, a confirmation dialog is displayed.

To reset the voyage distance, click on the [Yes] button. When not resetting the voyage distance, click on the [No] button.


Memo

When the voyage distance is reset in the [Voyage Distance] dialog, the voyage distance in the event detailed information in the logbook is also reset. The [Voyage distance (ground)] and [Voyage distance (water)] in the event detailed information are reset.

For the details of the event detailed information in the logbook, refer to "15.1.1 Event detailed information".

21.1.6   Setting and confirming the Sensor Source

Set and confirm the sensor source.

1   **Click on the [Menu] button on the left Toolbar.**
The menu is displayed.

2   **Click on the [Maintenance] - [Sensor Selection/Status] button on the menu.**
The [Sensor Selection/Status] dialog box appears.
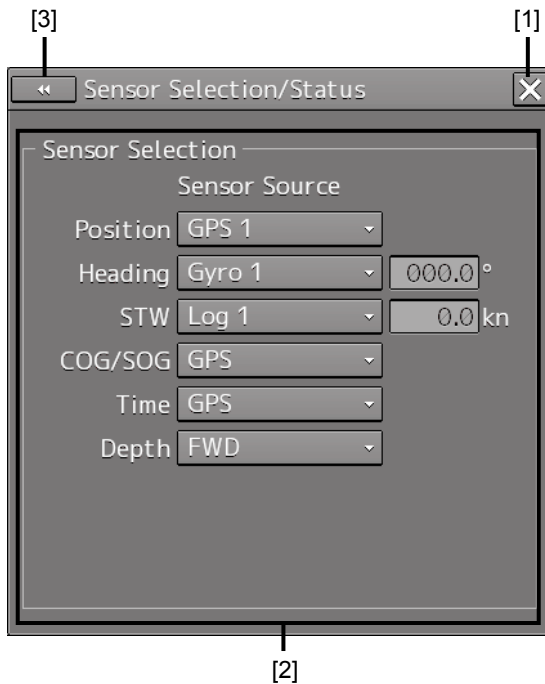
[1] [X] button

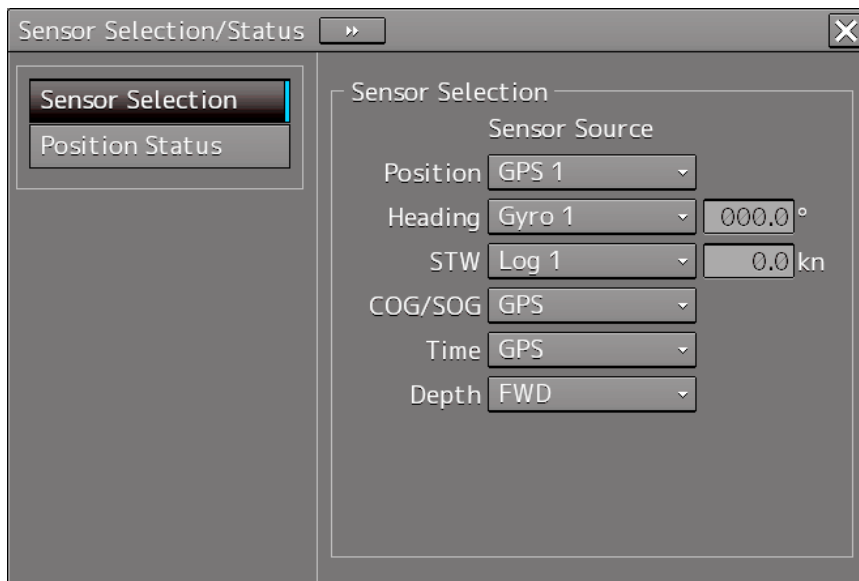Closes "Sensor Selection/Status" dialog box.

[2] [Sensor Selection]

Enables selection of a sensor source.

Setting item	Setting contents	Setting value
Position	Select a Primary Position sensor source from the combo box.	GPS x ("x" indicates the unit number)
Heading	Select a heading sensor source from the combo box. * The sources that can be selected vary according to the installation. When the Gyro Compass system that is used has the automatic switching function, the sensor source display is switched automatically according to the switching condition. When the sensor source is set to [MAN], the ship's heading value can also be input in the input box. Ship's heading value input range: 0.0-359.9°	MAN, Gyro x, MAG, G/C ("x" indicates the unit number)
STW (Speed Through Water)	Select a Speed Through Water sensor source from the combo box. * The source that can be selected varies depending on the installation When the sensor source is set to [Manual], a Speed Through Water can also be input in the input box. Speed Through Water value input range: 0.0-99.9kn	MAN, Logx ("x" indicates the unit number)
COG/SOG (Course Over the Ground/Speed Over the Ground)	Select Course Over the Ground/Speed Over the Ground sensor source from the combo box. * The source that can be selected varies depending on the installation When GPS is selected for Position, the same GPS is selected automatically.	Log x, GPS ("x" indicates the unit number)
Time (Time correction)	Select a sensor source to be used for time correction of this equipment from the combo box. * The source that can be selected varies depending on the installation	GPS, Ship Clock
Depth (Water depth)	Select a water depth sensor source from the combo box. * The source that can be selected varies depending on the installation	FWD, AFT, MID

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[3] Disclosure button

When clicked, the hidden left pane appears.

When the left pane is displayed

21.2 General Maintenance

⚠ DANGER

🚫	Never attempt to check or repair the inside of the equipment. Checking or repair by an unqualified person may cause a fire or an electric shock. Contact our head office, or a nearby branch or local office to request servicing.
🚫	Never remove the cover of this equipment. Touching the high-voltage section inside will cause an electric shock.
🚫	Do not attempt to disassemble or tamper with this equipment. Otherwise, a fire, an electric shock, or a malfunction may occur.
❗	When conducting maintenance, make sure to turn the main power off. Failure may result in electric shock.
❗	Turn off all the main powers before cleaning the equipment. Make sure to turn it off since voltage is still outputted from the rectifier even after the indicator and the radar are turned off. Failure may result in equipment failure, or death or serious injury due to electric shock.
❗	When conducting maintenance work on the radar antenna, make sure to turn all the main powers off. Failure may result in electric shock or injuries.
❗	Make sure to turn off the radar antenna safety switch. Failure may result in injuries caused by physical contact with the rotating radar antenna.

For operating this equipment in the good conditions, it is necessary to make the maintenance work as described below. If maintenance is made properly, troubles will reduce. It is recommended to make regular maintenance work.

The general maintenance work common among each equipment is as follows.

Clean the equipment.

Remove the dust, dirt, and sea water rest on the equipment cabinet with a piece of dry cloth.
Especially, clean the air vents with a brush for good ventilation.

21.3 Maintenance on Each Unit

21.3.1 Radar antenna NKE-1125/1129/1130/1139

⚠ **WARNING**

	When turning off the power supply, do not hold down the power button of the operation unit. Otherwise, a trouble may occur due to termination failure.
	Never directly touch the internal components of the radar antenna or indicator. Direct contact with these high-voltage components may cause electric shock. For maintenance, inspection, or adjustment of equipment components, consult with our branch office, branch shop, sales office, or our distributor in your district.
	Do not get close to the radiant section of the radar antenna. It is a rotating part, and it may cause injuries if it suddenly starts rotating and consequently hits the body. It is recommended that the radiant section be installed at a high place such as on the roof of the wheelhouse, on the flying bride, on the trestle, or on the radar mast so that no one can get close to it.

Keep away from the radar antenna during transmission.

Microwaves are generated from the front center of the radiant section of the radar antenna at the levels indicated in the table below. Exposure to microwaves at close range can result in injury (especially damage to eyes).

Microwave radiation level of the radar antenna

System	50 W/m^2	20 W/m^2	2.5 W/m^2
NKE-2103	n/a	26 cm	123 cm
NKE-1125/1129/2254	5 cm	81 cm	162 cm
NKE-1130/1139	11 cm	76 cm	181 cm

|	Make sure to install the radar antenna at a place higher than human height. Direct exposure to electromagnetic wave at close range will have adverse effects on the human body.
	When it is necessary to get close to the radar antenna for maintenance or inspection purposes, make sure to turn the power switch of the display unit to "OFF" or "STBY". Direct exposure to electromagnetic waves at close range will have adverse effects on the human body.
	When conducting maintenance work, make sure to turn off the power so that the power supply to the equipment is completely cut off. Some equipment components can carry electrical current even after the power switch is turned off, and conducting maintenance work may result in electric shock, equipment failure, or accidents.

After the maintenance work, turn the safety switch to stop the radar antenna to "ON".

21.3.1.1 Precautions in mounting the cover

When the cover is removed for regular inspection and replacement of parts and refitted after such work, the procedures of fastening bolts shall be taken with the following precautions:

(1) The proper fastening torque of the fitting bolts (M8) is <u>1176 to 1470 N•cm (120 to 150 kgf•cm)</u> (which makes the inside water-tight and protects the packings against permanent compressive strain). The packings start sticking out from the cover at a torque of approximately 1470 N•cm (150 kgf•cm). Do not fasten the bolts with a torque exceeding the specified value.   Otherwise, the screws may be broken.

(2) Use an offset wrench of 11 mm × 13 mm or a double-ended wrench of 13 mm × 17 mm (not longer than 200 mm).

(3) Screw all the bolts by hand first to prevent them playing, then fasten them evenly in order not to cause one-sided fastening. (Fasten the bolts with 25% of the required torque at the first step.)

*: Fasten the bolts in the diagonal order.

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4-M8 (stainless steel) bolt

Tightening torque: 120 to 150 kgf/cm

[1]   [3]

[4]   [2]
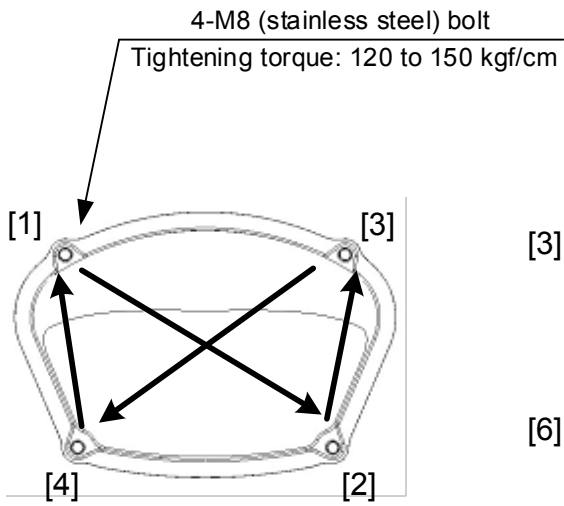
Bolt Tightening Order of
NKE-1125/1129 Cover

8-M8 (stainless steel) bolt

Tightening torque: 120 to 150 kgf/cm

[7]   [1]

[3]   [5]

[6]   [4]

[2]   [8]
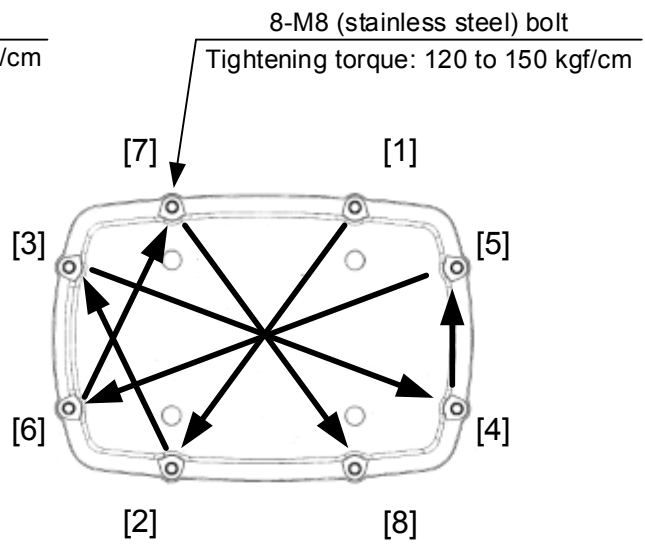
Bolt Tightening Order of
NKE-1130/1139/1632 Cover

6-M8 (stainless steel) bolt

Tightening torque: 380 kgf cm

[3]   [1]

[5]   [6]

[2]   [4]
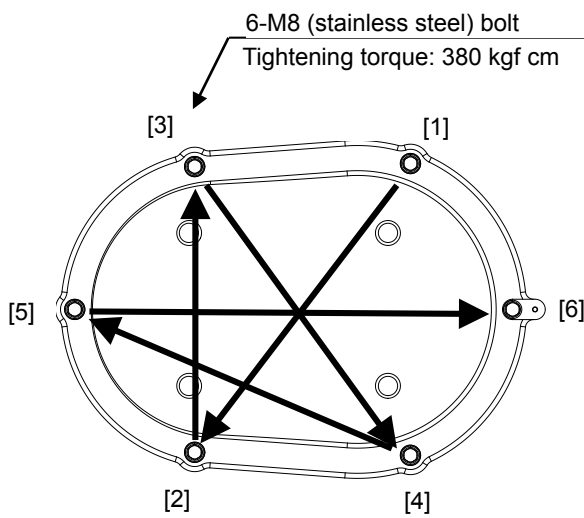
Bolt Tightening Order of
NKE-2632/2632-H Cover

21.3.1.2 Radiator

Perform inspection and cleaning of the radiator.

> **Note**
> - If the radiator front face (radiation plane) is soiled with smoke, salt, dust, paint or birds' droppings, wipe it with a piece of soft cloth wetted with alcohol or water and try to keep it clean at all times. Otherwise, radar beam radiation may attenuate or reflect on it, resulting in deterioration of radar performance.
> - Never use solvents of gasoline, benzene, trichloroethylene and ketone for cleaning. Otherwise, the radiation plane may deteriorate.

21.3.1.3 Rotating section

Supply oil seal

When there is not a grease nipple, the replenishment of grease oil is unnecessary.

Remove the cap on the grease nipple located on the front of the part at which the radiator is supported, and grease with a grease gun. Make the oiling every six months. The oil quantity shall be approximate 100 g, which is as much as the grease comes out of the oil seal. Use the grease of Mobilux2 of Mobil Oil.

Oiling gears

Apply grease evenly to the tooth surfaces of the main shaft drive gear and the encoder drive gear with a spreader or brush. Oiling in short intervals is more effective to prevent the gears from wear and tear and extend their service life, but oil at least every six months.

Use the grease of Mobilux2 of Mobil Oil or equivalent.

Mounting legs

Check the mounting legs and mounting bolts of the radar antenna chassis for corrosion at intervals and maintain them to prevent danger. Apply paint to them once a half year because painting is the best measure against corrosion.

21.3.2 Flexible wave guide (JMR-9225-7X3/9X3, JMR-7225-7X3/9X3)

> **Note**
> Install the flexible wave guide without any clearance.
> Leaving a clearance may cause water leakage or corrosion later.

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21.3.3 Coaxial cable (JMR-9230-S3, JMR-7230-S3)

The coaxial tube gland of a coaxial cable terminal is fully waterproofed when installed. To prevent a water leakage accident, periodically inspect the coaxial tube gland. In particular, the coaxial tube gland should be repainted every six months.

⚠**WARNING**	
🚫	Do not apply strong shock to the coaxial cable by striking it with a tool or hammering it. Otherwise, an open circuit failure may result.
🚫	Do not place anything heavy on the coaxial cable. Otherwise, an open circuit failure may result.
🚫	Do not twist or pull the coaxial cable. Otherwise, an open circuit failure may result.

For the details, refer to the coaxial cable installation procedure for S-band radars.

21.3.4 Transmitter-receiver (NTG-3225/3230)

Wipe dust off the transmitter-receiver with a dry cloth or feather duster.

21.3.5 Display unit

⚠**WARNING**	
🚫	When cleaning the screen, do not wipe it too strongly with a dry cloth. Also, do not use gasoline or thinner to clean the screen. Otherwise the screen surface may be damaged.

Dust accumulated on the screen will reduce clarity and darken the video.
For cleaning it, wipe it with a piece of soft cloth (flannel or cotton). Do not wipe it strongly with a piece of dry cloth nor use gasoline or thinner.

21.4 Performance Check

Make performance check on the radar equipment regularly and if any problem is found, investigate it immediately. Pay special attention to the high voltage sections in inspection and take full care that no trouble is caused by any error or carelessness in measurement. Take note of the results of inspection, which can be used effectively in the next inspection work.

Carry out performance check on the items listed in the check list below.

Check List

Equipment	Item to be checked	Criteria	Remarks
Transmitter-receive	Synchronization LED of Receiver	The LED is lit during operation	48 NM range
Display unit	Video and echoes on the screen Sensitivity Brightness Various markers Various numerical indications Lighting	Can be correctly controlled	
	Cleaning the DVD drive	21.4.10 Cleaning the lens of the DVD drive	
Radar antenna	Magnetron current	21.4.7 Checking the magnetron current level of the radar [Magnetron Curr.]	
	Performance Monitor	21.4.9 Checking the performance monitor status	

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21.4.1   Starting Diagnosis functions

1   Click on the [Menu] button on the left Toolbar.

The menu is displayed.

2   Click on the [Maintenance] - [Diagnosis] button on the menu.

The "Diagnosis" dialog box appears.

Disclosure button

Diagnosis functions
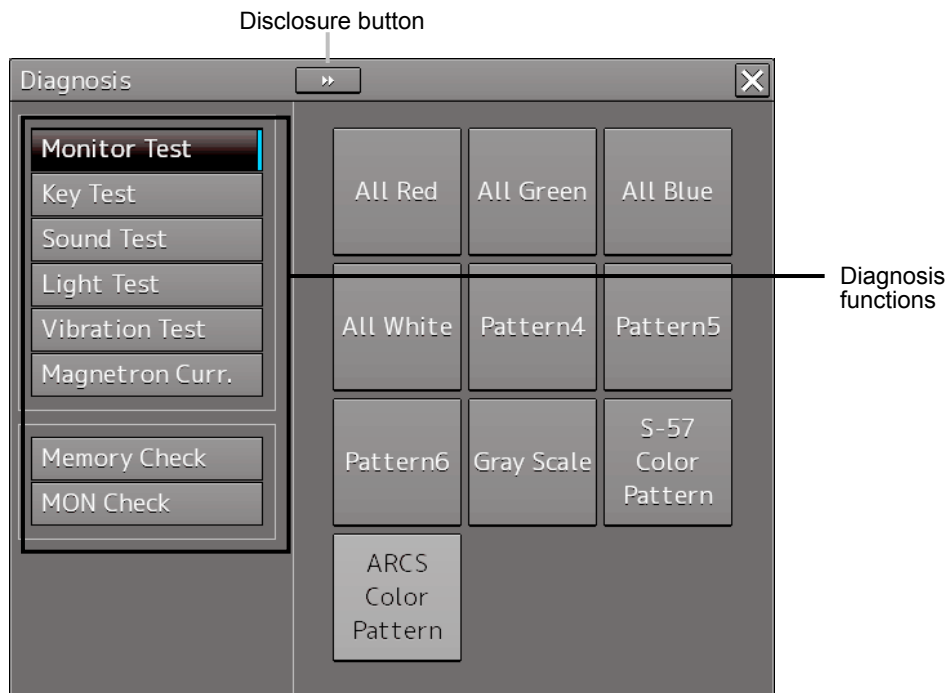
The Diagnosis functions are displayed in the left pane.

Click on the disclosure button to hide the left pain.

3   Click on a Diagnosis function to be executed.

The execution dialog of the selected diagnosis function is displayed.

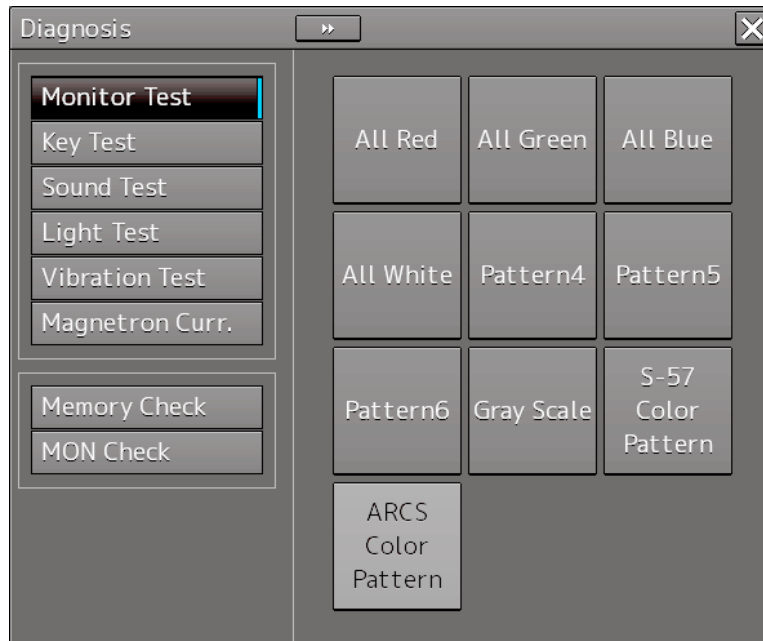## 21.4.2 Confirming the screen status [Monitor Test]

Confirm the screen status.

1 **Click on the [Menu] button on the left Toolbar.**
The menu is displayed.

2 **Click on the [Maintenance] - [Diagnosis] - [Monitor Test] button on the menu.**
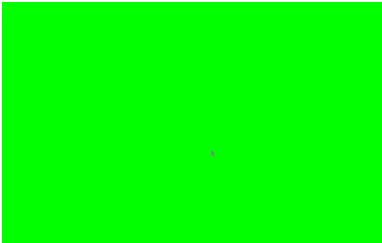When the color or pattern of the dialog is clicked on, the color or pattern is displayed on the screen.
Check the screen status with the display status.
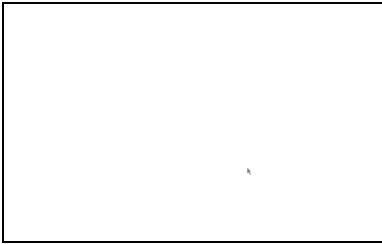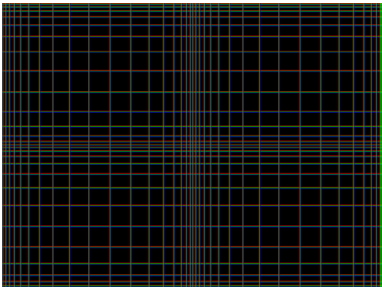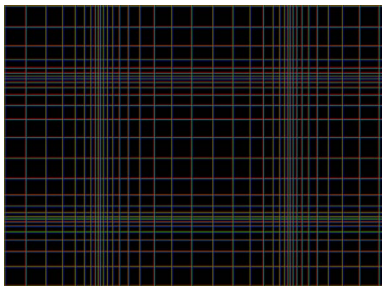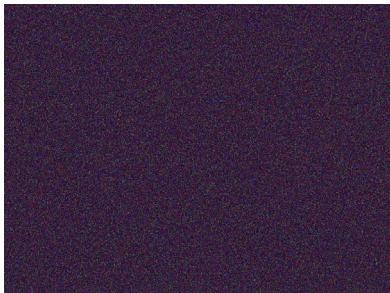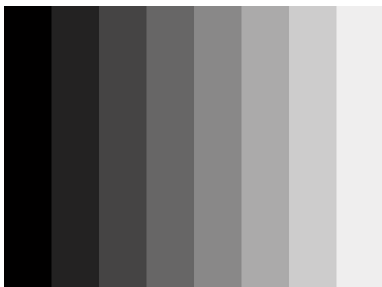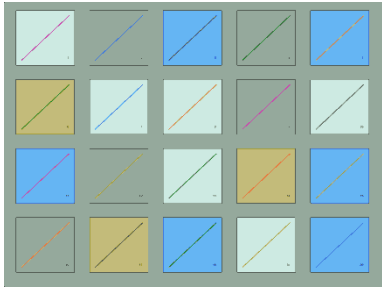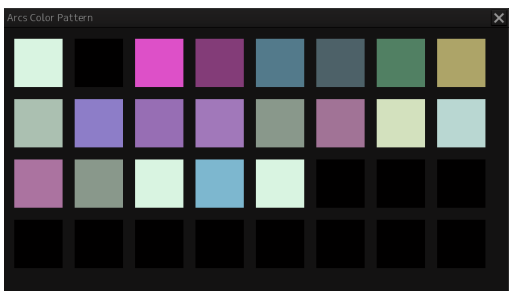
To reset the display, click the button again.

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Pattern list

Pattern button name	Display
All Red	The entire screen is displayed in red.
All Green	The entire screen is displayed in green.
All Blue	The entire screen is displayed in blue.
All White	The entire screen is displayed in white.
Pattern4	Displays the pattern for checking the communication quality for VDR.

Pattern button name	Display
Pattern5	 Displays the pattern for checking the communication quality for VDR.
Pattern6	 Displays the pattern for checking the communication quality for VDR.
Gray Scale	 Displays the grey scale pattern for checking the monitor brightness adjustment. Grey scale patterns can be identified with brightness in day/night mode. By adjusting the monitor brightness to facilitate identification of grey scale patterns, the optimum brightness can be set. The brightness in night mode can also be adjusted in the same way. Use the Day/Night button on the right Toolbar for switching between the day and night mode. For the details of the Day/Night button, refer to "2.2.1 Right toolbar".

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Pattern button name	Display
S-57 Color Pattern	 A color test pattern of the S57 chart is displayed. By identifying the color pattern, the S57 chart display status can be verified. A color pattern can be displayed in Day/Night mode. Use the Day/Night button on the right Toolbar for switching between the day and night mode. For the details of the Day/Night button, refer to "2.2.1 Right toolbar".
ARCS Color Pattern	The "ARCS Color Pattern" dialog is displayed. A color test pattern of the ARCS chart is displayed. By identifying the color pattern, the ARCS chart display status can be verified. A color pattern can be displayed in Day/Night mode. Use the Day/Night button on the right Toolbar for switching between the day and night mode. For the details of the Day/Night button, refer to "2.2.1 Right toolbar".

21.4.3 Confirming the operation of the operation unit [Key Test]

Confirm the operation of the keys of the operation unit.

1 **Click on the [Menu] button on the left Toolbar.**
The menu is displayed.

2 **Click on the [Maintenance] - [Diagnosis] - [Key Test] button on the menu.**

3 **Click on the [Key Test Start] button.**
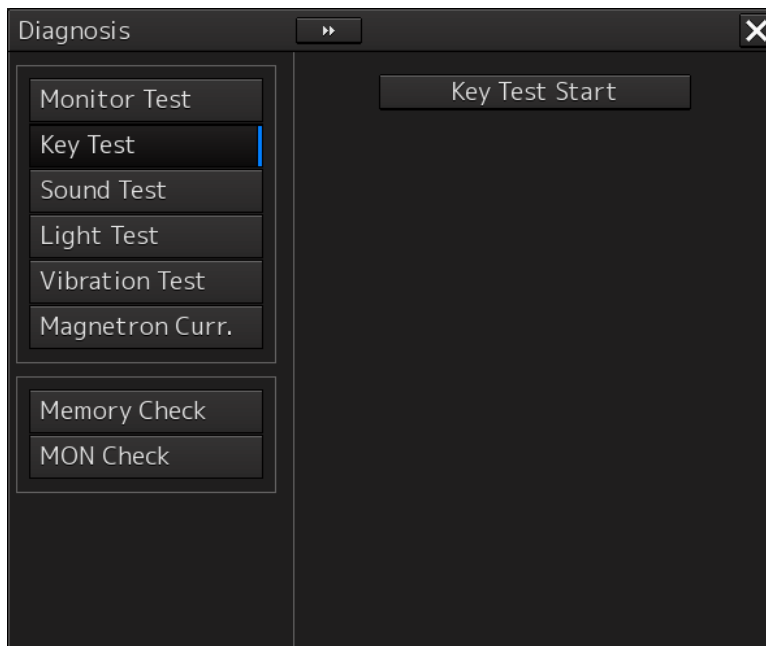
Key Test screen is displayed.

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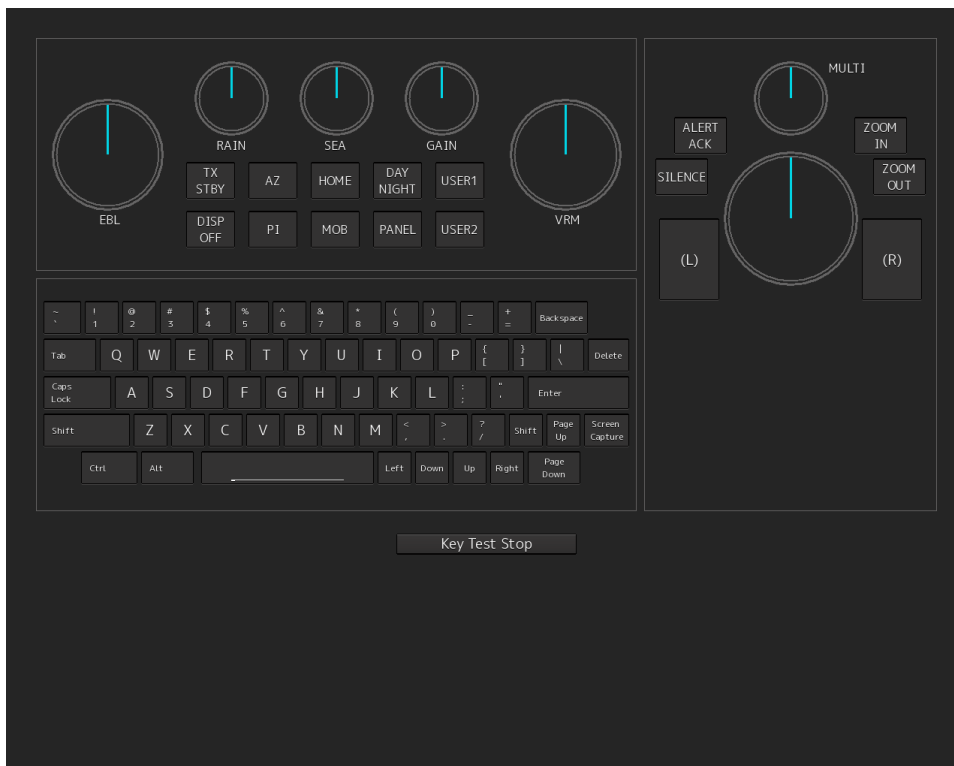
4   Operate the keys, buttons and dials in the operation unit.

If the performance of the operation unit is normal, the colors of the keys, buttons and dials are changed.

5   Click on the [Key Test Stop] button after the operation check.

Returns to the "Diagnosis" dialog box.

21.4.4   Confirming the alert sound [Sound Test]

Confirm the alert sound.

1   Click on the [Menu] button on the left Toolbar.

The menu is displayed.

2   Click on the [Maintenance] - [Diagnosis] - [Sound Test] button on the menu.

3   Click on the [Sound Test Start] button.

A sound test starts. All the available beep sound volumes can be tested by increasing the level from 0.

Diagnosis	►►	✕
Monitor Test	Sound Test Start	
Key Test		
Sound Test	Playing the following volume	
Light Test		
Vibration Test		
Magnetron Curr.		
Memory Check		
MON Check		

21.4.5   Testing the brightness of LED [Light Test]

Test the brightness of the LED of the operation unit.

1   Click on the [Menu] button on the left Toolbar.
The menu is displayed.

2   Click on the [Maintenance] - [Diagnosis] - [Light Test] button on the menu.

3   Click on the [Light Test Start] button.
A LED brightness test starts. All the available brightness levels can be tested by increasing the
level from 0.

21.4.6 Testing a motor [Motor Vibration]

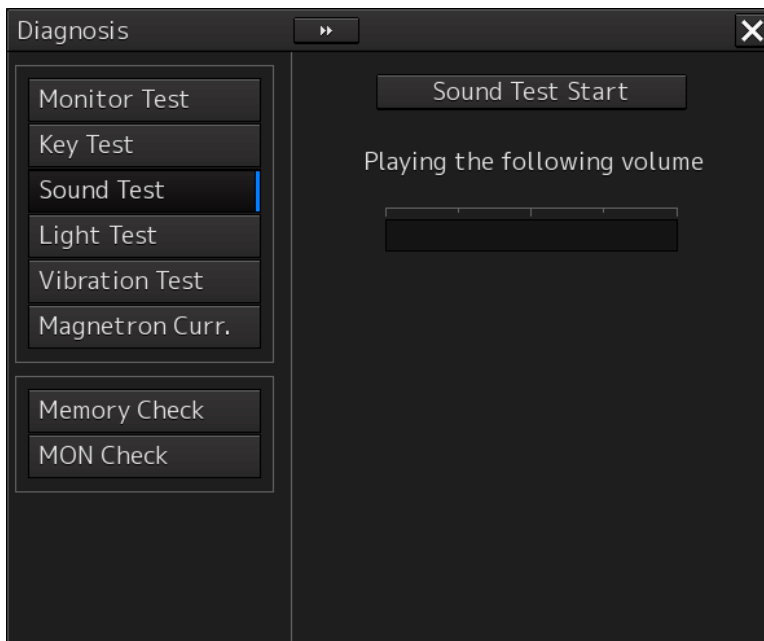Test the vibrations of the motor.

1 **Click on the [Menu] button on the left Toolbar.**
The menu is displayed.

2 **Click on the [Maintenance] - [Diagnosis] - [Vibration Test] button on the menu.**

3 **Click on the [Vibration Test] button.**
The motor continuously vibrates while the button is pressed. When the button is released, vibration stops.

21.4.7 Checking the magnetron current level of the radar [Magnetron Curr.]

This function is used to check the magnetron current level of the radar.

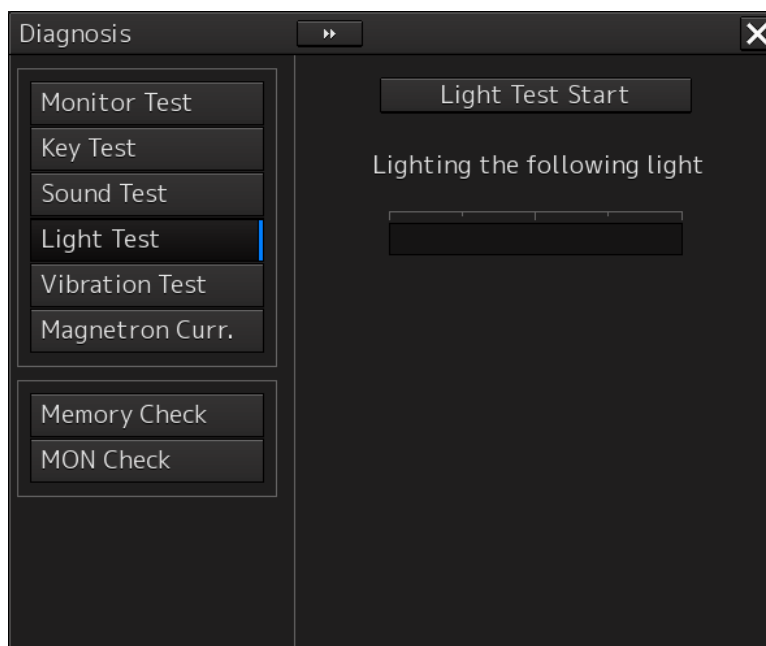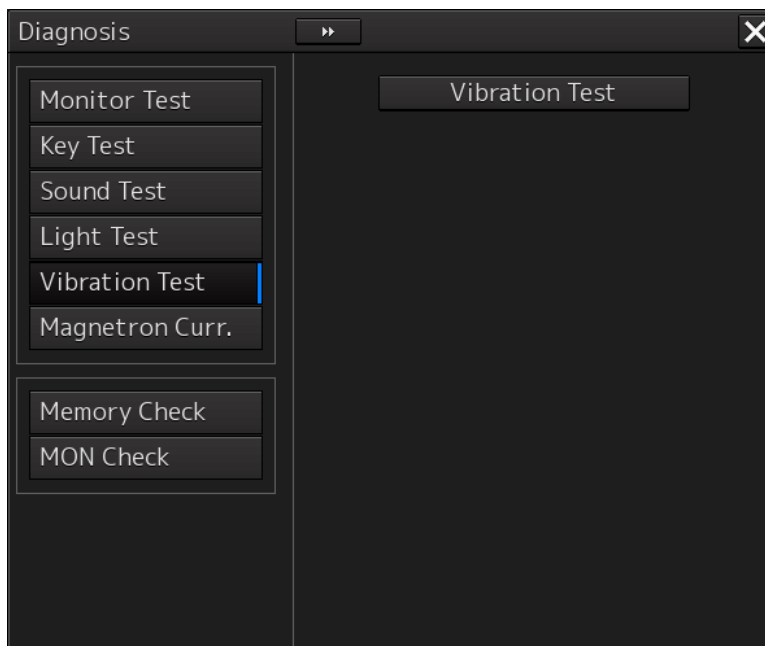This function is displayed only when the magnetron radar antenna is connected.

1 **Click on the [Menu] button on the left Toolbar.**

The menu is displayed.

2 **Click on the [Maintenance] - [Diagnosis] - [Magnetron Curr.] button on the menu.**

The magnetron current level of the radar antenna is displayed.
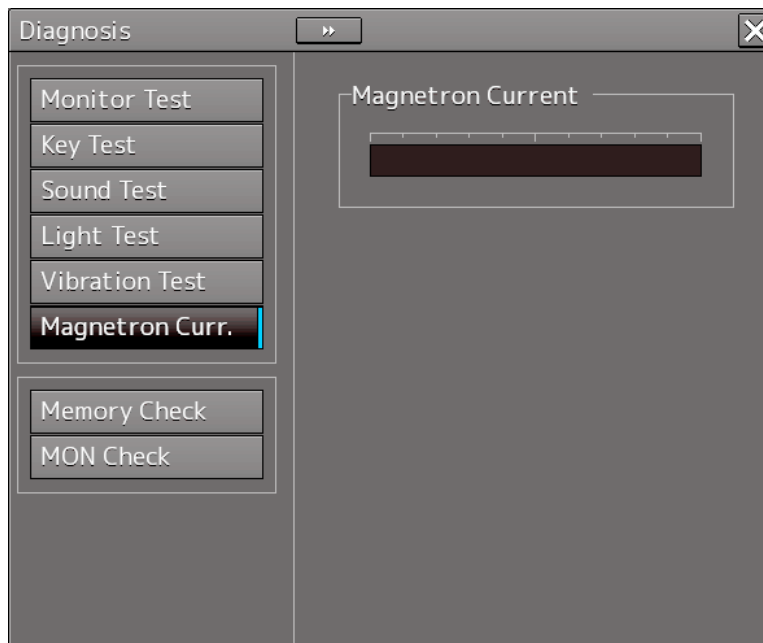
The current level is normal if it is within the following scope under the 48NM range.

10kW transmitter: Scale 4 to 7

25/30kW transmitter: Scale 6 to 9

Note

- In the sector blank area, the display of the magnetron current becomes unstable.
- Check that there are no fluctuations (drift) of 2 scales or more while sector blank is not set. For the details of sector blank setting, refer to "19.2.5 Setting Sector Blank".

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21.4.8 Checking the memory [Memory Check]

Check the memory.

1 **Click on the [Menu] button on the left Toolbar.**

The menu is displayed.

2 **Click on the [Maintenance] - [Diagnosis] - [Memory Check] button on the menu.**

3 **Click on the [Memory Check Start] button.**

Memory checking starts and the checking result is displayed on the [Result] list.
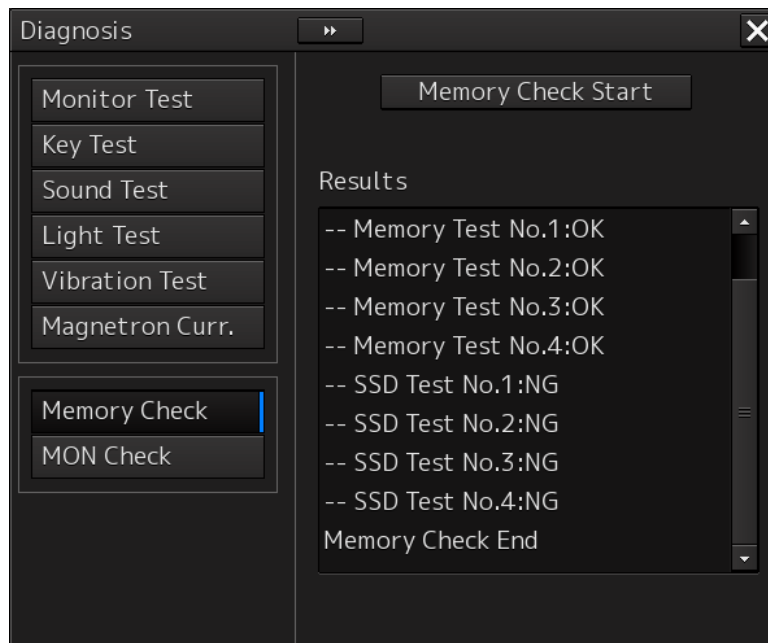
21.4.9 Checking the performance monitor status

This function is used to check the condition of the radar performance monitor.

Items displayed under this function vary depending on the type of the radar antenna.

When magnetron radar is used, the following dialog box appears.
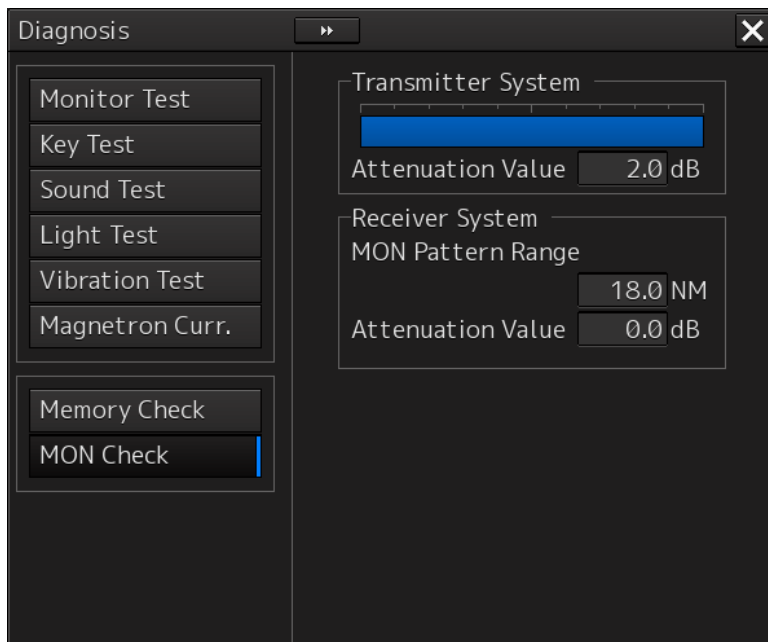
For the details of this dialog box, refer to "21.4.9.1 MON Check."

When a solid-state radar is used, the following dialog box will be displayed.
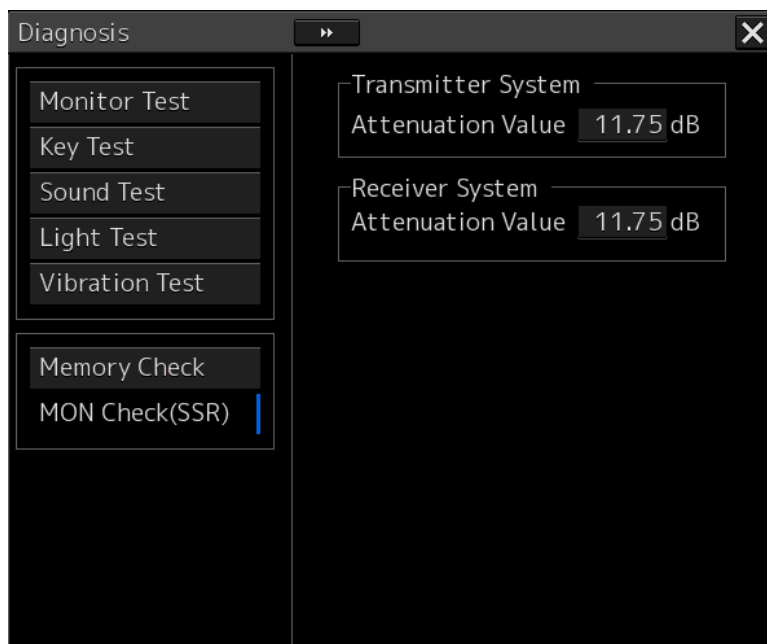
For the details of this dialog box, refer to "21.4.9.2 MON Check (SSR)".

21.4.9.1　MON Check

1　**Click on the [Menu] button on the left Toolbar.**

The menu is displayed.

2　**Click on the [Maintenance] - [Diagnosis] - [MON Check] button on the menu.**
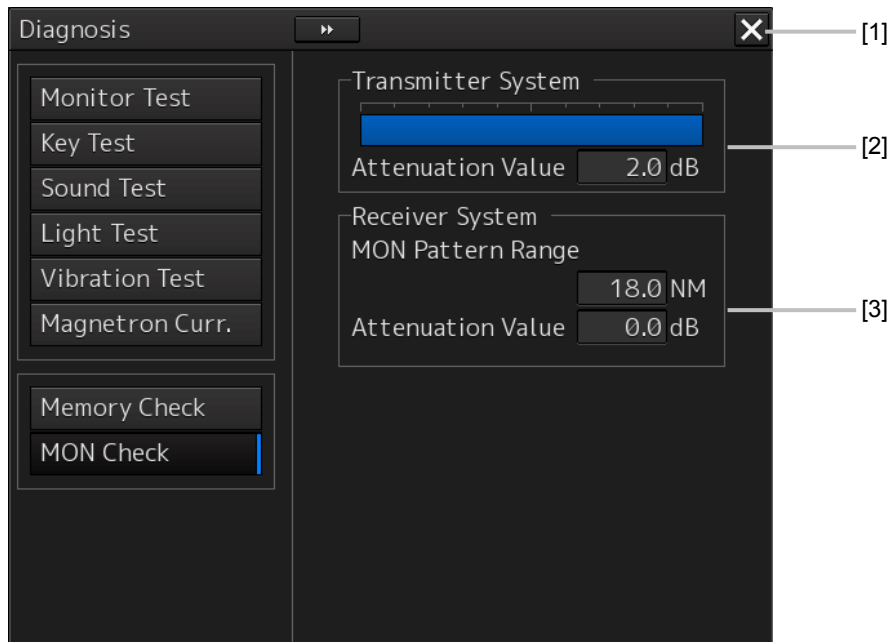
[1] [X] button

Click on this button to close the "Diagnosis" dialog box.

[2] [Transmitter System]

The amount of attenuation at the radar transmitter is displayed in a bar graph as well as in a numerical value [dB].

[3] [Receiver System]

• MON Pattern Range

The distance [NM] is displayed when the user adjusts VRM to the farthest edge of the performance monitor pattern.

• Attenuation Value

The amount of attenuation at the radar receiver is displayed in a numerical value [dB].

Checking a performance monitor status

> **⚠ In case of equiped with Interswitch function (Option)**
>
> To check the performance with the performance monitor, set the interswitch connection to straight (i.e. No. 1 radar antenna is connected to No. 1 display unit).

Adjust VRM to the farthest edge of the performance monitor pattern.

Performance monitor pattern
(If the performance of the receiver degrades, the pattern range becomes short.)

1 **Click on the [Menu] button on the left Toolbar.**
The menu is displayed.

2 **Click on the [Maintenance] - [Diagnosis] - [MON Check] button on the menu.**

3 **Turn the [VRM] control on the keyboard operation unit to the farthest edge of the performance monitor pattern.**

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4 Check the amount of attenuation in the dialog box.

Benchmarks for the amount of attenuation are as follows:

Attention Value of Transmitter:

At normal: -6.9 dB to +2.0 dB

At degrading performances: -15.0 dB to -7.0 dB

Attention Value of Receiver:

At normal: -2.9 dB to +3.5 dB

At degrading performances: -15.0 dB to -3.0 dB

> • When confirming the attenuation value of the transmitter, after opening the dialog box, wait for one minute, and then read its value.
> • If the attenuation value of the transmitter is -7dB or lesser, or the receiver's attenuation indicator is -3dB or lesser, it is indicates that performances of the transmitter/receiver unit are degrading.
> In this case, inspection by the specialized service personnel is required. Contact our dealer, the nearest service representative or JRC sales.

21.4.9.2 MON Check (SSR)

1 Click on the [Menu] button on the left Toolbar.

The menu is displayed.

2 Click on the [Maintenance] - [Diagnosis] - [MON Check (SSR)] button on the menu.
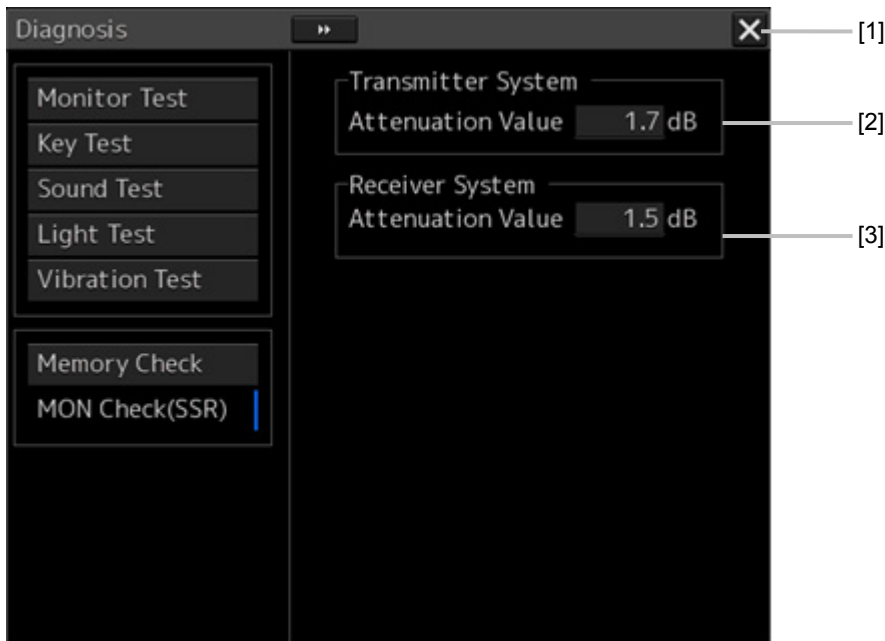
[1] [X] button

Click on this button to close the "Diagnosis" dialog box.

[2] [Transmitter System]

The amount of attenuation at the radar transmitter is displayed in a numerical value [dB].

[3] [Receiver System]

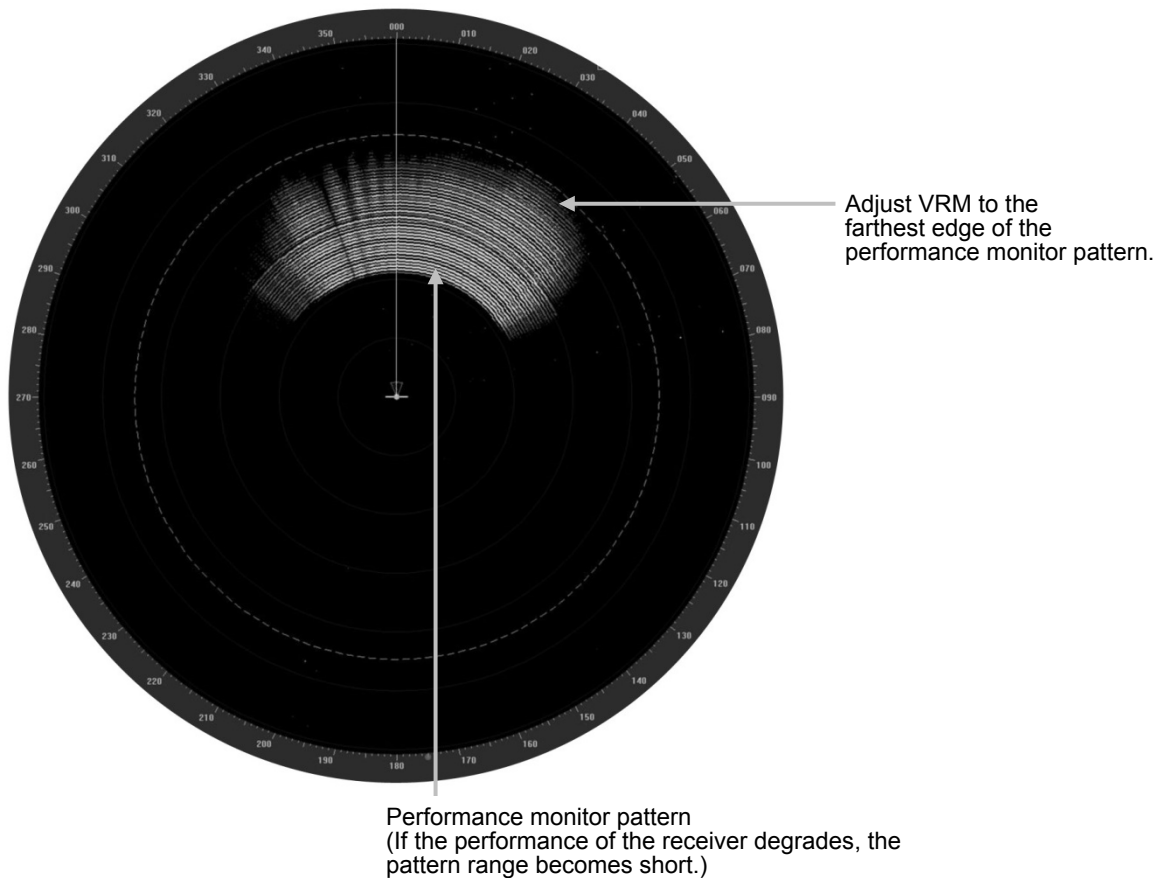The amount of attenuation at the radar receiver is displayed in a numerical value [dB].

3 **Check the attenuation value with the dialog.**

The guidelines of attenuation values are as follows.

Transmission section attenuation value:

Normal: -6.9dB to +7.0dB

Performance deterioration: -20.0dB to -7.0dB

Reception section attenuation value:

Normal: -6.9dB to +7.0dB

Performance deterioration: -20.0dB to -7.0dB

- When confirming the attenuation value of the transmitter, after opening the dialog box, wait for one minute, and then read its value.
- If the attenuation value of the transmitter is -7dB or lesser, or the receiver's attenuation indicator is -7dB or lesser, it is indicates that performances of the transmitter/receiver unit are degrading.
  In this case, inspection by the specialized service personnel is required. Contact our dealer, the nearest service representative or JRC sales.

21.4.10 Cleaning the lens of the DVD drive

1 **Insert the supplied lens cleaner CD into the DVD drive.**

2 **Click on the [Menu] button on the left Toolbar.**
The menu is displayed.

3 **Click [Maintenance] - [Diagnosis] - [DVD Cleaning] from the menu.**
Cleaning automatically starts.
The following dialog box appears during cleaning:

DVD Drive Cleaning ✕

Playing lens cleaner…
Close this message to stop cleaning.

<<NOTE>>
We recommend to clean DVD drive every month at least,
otherwise system might be unable to read Chart CD/DVD
correctly, and fail to import/update charts.

OK

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4 **When the cleaning completion dialog box appears, click on the [OK] button.**

DVD Drive Cleaning ☒

Lens cleaning completed.   21-42
Please eject lens cleaner.

<<NOTE>>
We recommend to clean DVD drive every month at least,
otherwise system might be unable to read Chart CD/DVD
correctly, and fail to import/update charts.

OK

Remove the supplied lens cleaner CD.

Note

It is recommended that the DVD drive is cleaned at least once a month. If the lens becomes dirty, it may not be possible to read data from a CD/DVD, or else it may not be possible to install a chart or an update.

When reading the lens cleaner CD fails, an error dialog box appears.

System ☒

Error:Please insert Cleaning CD
(Audio CD Type) and retry.

OK