

# JAN-7202/9202

## Conning Display

### Instruction Manual

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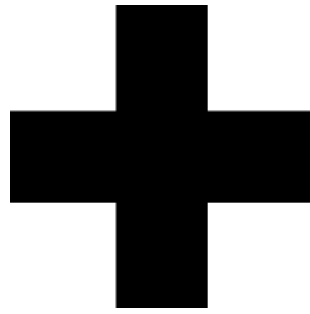
# PREFACE

Thank you for purchasing JAN-7202/9202.

This equipment meets the performance standards of the IMO (International Maritime Organization) and the IHO (International Hydrographic Organization), and serves to improve safety, reduce fuel combustion, concentrate voyage information as the main device of the INS (Integrated Navigation System).

- For the best operation, read this manual thoroughly before use.
- Keep this manual in a convenient place for future reference.  
Make use of this manual when experiencing operation difficulties.
- The LCD of this equipment uses thin film transistors (TFT). If some pixels on the screen are not clear, the color is different, or the screen is brighter than usual, it is not because of defect, instead it is because of inherent characteristic of the TFT display technology.
- The information in this manual is subject to change without notice at any time.

## ● Safety Cautions ●



### **Cautions for High Voltage**

High voltages, ranging from several hundreds to tens of thousands of volts, are used in electronic apparatus, such as radio and radar instruments. These voltages are totally harmless in most operations. However, touching a component inside the unit is very dangerous. (Any person other than authorized service engineers should not maintain, inspect, or adjust the unit.) High voltages on the order of tens of thousand volts are most likely to cause instant deaths from electrical shocks. At times, even voltages on the order of several hundred volts could lead to electrocution. To defend against electrical shock hazards, don't put your hand into the inside of apparatus. When you put in a hand unavoidably in case of urgent, it is strongly suggested to turn off the power switch and allow the capacitors, etc. to discharge with a wire having its one end positively grounded to remove residual charges. Before you put your hand into the inside of apparatus, make sure that internal parts are no longer charged. Extra protection is ensured by wearing dry cotton gloves at this time. Another important precaution to observe is to keep one hand in your pocket at a time, instead of using both hands at the same time.

It is also important to select a secure footing to work on, as the secondary effects of electrical shock hazards can be more serious. In the event of electrical shocks, disinfect the burnt site completely and obtain medical care immediately.

### **Precautions for Rescue of Victim of Electric Shock**

When a victim of electric shock is found, turn off the power source and ground the circuit immediately. If this is impossible, move the victim away from the unit as quick as possible without touching him or her with bare hands. He or she can safely be moved if an insulating material such as dry wood plate or cloth is used.

Breathing may stop if current flows through the respiration center of brain due to electric shock. If the electric shock is not large, breathing can be restored by artificial respiration. A victim of electric shock looks pale and his or her pulse may become very weak or stop, resulting in unconsciousness and rigidity at worst. It is necessary to perform first aid immediately.

## ● Emergency Measures ●

### Method of First-Aid Treatment

#### ☆ Precautions for First-Aid Treatments

Apply artificial respiration to the person who collapsed, minimizing moving as much as possible avoiding risks. Once started, artificial respiration should be continued rhythmically.

- (1) Refrain from touching the patient carelessly as a result of the accident; the first-aider could suffer from electrical shocks by himself or herself.
- (2) Turn off the power calmly and certainly, and move the patient apart from the cable gently.
- (3) Call or send for a physician or ambulance immediately, or ask someone to call doctor.
- (4) Lay the patient on the back, loosening the necktie, clothes, belts and so on.
- (5)
  - (a) Feel the patient's pulse.
  - (b) Check the heartbeat by bringing your ear close to the patient's heart.
  - (c) Check for respiration by bringing your face or the back of your hand to the patient's face.
  - (d) Check the size of patient's pupils.
- (6) Opening the patient's mouth, remove artificial teeth, cigarettes, chewing gum, etc. if any. With the patient's mouth open, stretch the tongue and insert a towel or the like into the mouth to prevent the tongue from being withdrawn into the throat. (If the patient clenches the teeth so tight that the mouth won't open, use a screwdriver or the like to force the mouth open and then insert a towel or the like into the mouth.)
- (7) Wipe off the mouth to prevent foaming mucus and saliva from accumulating.



# ★ Treatment to Give When the Patient Has a Pulse Beating but Has Ceased to Breathe

## \* Performing mouth-to-mouth artificial respiration

- (1) Bend the patient's face backward until it is directed to look back. (A pillow may be placed under the neck.)
- (2) Pull up the lower jaw to open up the airway. (To spread the airway)
- (3) Pinching the patient's nose, breathe deeply and blow your breath into the patient's mouth strongly, with care to close it completely. Then, move your mouth away and take a deep breath, and blow into his or her mouth. Repeat blowing at 10 to 15 times a minute (always with the patient's nostrils closed).
- (4) Continue artificial respiration until natural respiration is restored.
- (5) If the patient's mouth won't open easily, insert a pipe, such as one made of rubber or vinyl, into either nostril. Then, take a deep breath and blow into the nostril through the pipe, with the other nostril and the mouth completely closed.
- (6) The patient may stand up abruptly upon recovering consciousness. Keep the patient lying calmly, giving him or her coffee, tea or any other hot drink (but not alcoholic drink) to keep him or her warm.

## Mouth-to-mouth artificial respiration with the patient's head lifted


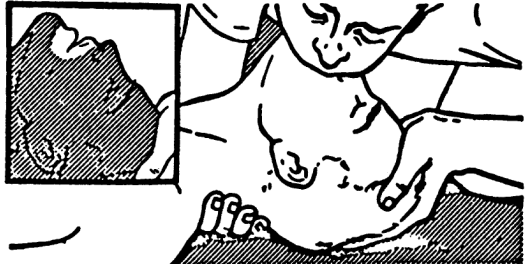

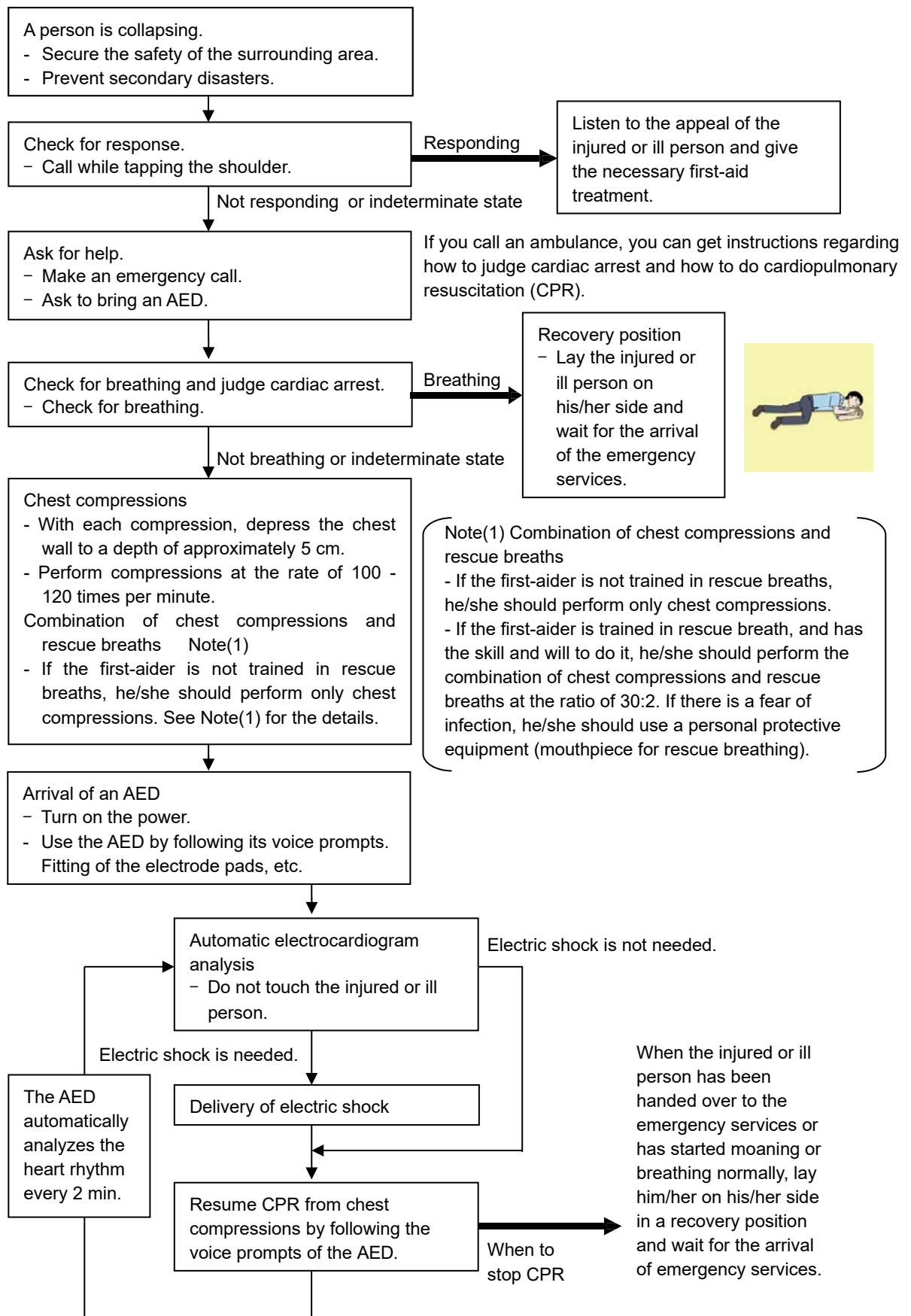
- [1]  (1) Lift the back part of the patient's head. Support the forehead with one of your hand and the neck with the other hand. → [1].  
Many patients will have their airways opened by lifting their head in this way to ease mouth-to-mouth artificial respiration.
- [2]  (2) Closing the patient's mouth with your mouth, press your cheek against the patient's nose → [2].  
Alternatively, hold the patient's nose with your finger to prevent air leak → [3].
- [3]  (3) Blowing air into the patient's lungs. Blow air into the patient's lungs until chest is seen to rise. The first 10 breaths must be blown as fast as possible.

Fig. 1 Mouth-to-mouth artificial respiration

# First Aid Method

## Flow of Cardiopulmonary Resuscitation (CPR)



# Specific Procedures for Cardiopulmonary Resuscitation (CPR)

## 1. Check the scene for safety to prevent secondary disasters

- a) Do not touch the injured or ill person in panic when an accident has occurred. (Doing so may cause electric shock to the first-aiders.)
- b) Do not panic and be sure to turn off the power. Then, gently move the injured or ill person to a safe place away from the electrical circuit.

## 2. Check for responsiveness

- a) Tap the shoulder of the injured or ill and shout in the ear saying, "Are you OK?"
- b) If the person opens his/her eyes or there is some response or gesture, determine it as "responding." But, if there is no response or gesture, determine it as "not responding."

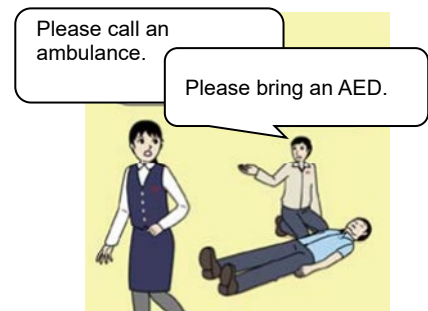


## 3. If responding

- a) Give first-aid treatment.

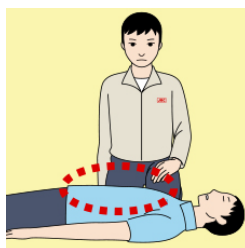
## 4. If not responding

- a) Ask for help loudly. Ask somebody to make an emergency call and bring an AED.
  - Somebody has collapsed. Please help.
  - Please call an ambulance.
  - Please bring an **AED**.
  - If there is nobody to help, call an ambulance yourself.

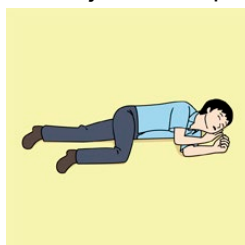


## 5. Check for breathing

- a) Look to see if the chest and abdomen of the injured or ill person are rising and falling.



- b) If the injured or ill person is breathing, place him/her in the recovery position and wait for the arrival of the emergency services.
  - Position the injured or ill person on his/her side.

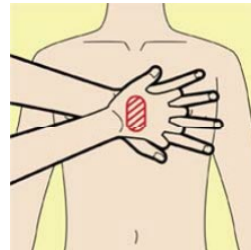
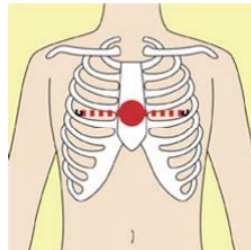


## 6. Cardiopulmonary resuscitation (CPR) (combination of chest compressions and rescue breaths)

### a) Chest compressions

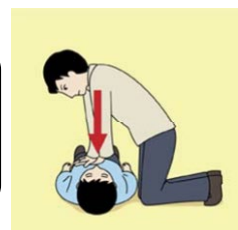
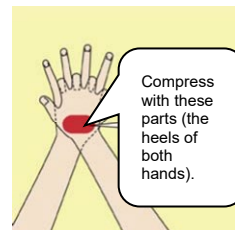
#### 1) Position of chest compressions

- Position the heel of one hand in the center of the chest, approximately between the nipples, and place your other hand on top of the one that is in position.



#### 2) Perform chest compressions

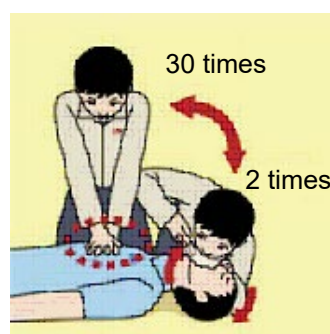
Perform uninterrupted chest compressions of 30 at the rate of about 100 - 120 times per minute, while locking your elbows positioning yourself vertically above your hands.



- With each compression, depress the chest wall to a depth of approximately 5 cm.

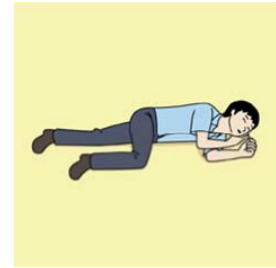
### b) Combination of 30 chest compressions and 2 rescue breaths

- 1) If the first-aider is not trained in rescue breaths, he/she should perform only chest compressions.
- 2) If the first-aider is trained in rescue breath, and has the skill and will to do it, he/she should perform 30 chest compressions, then give 2 rescue breaths.
- 3) If there is a fear of infection, he/she should use a personal protective equipment (mouthpiece for rescue breathing).
- 4) Continuously perform the combination of 30 chest compressions and 2 rescue breaths without interruption.
- 5) If there are two or more first-aiders, alternate with each other approximately every two minutes (five cycles) without interruption.



## 7. When to stop cardiopulmonary resuscitation (CPR)

- When the injured or ill person has been handed over to the emergency services
- When the injured or ill person has started moaning or breathing normally, lay him/her on his/her side in a recovery position and wait for the arrival of emergency services.



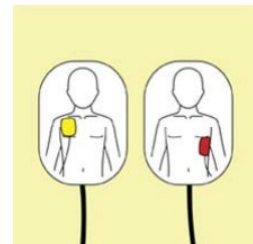
## 8. Arrival and preparation of an AED

- Place the AED at an easy-to-use position. If there are multiple first-aiders, continue CPR until the AED becomes ready.
- Turn on the power to the AED unit. Depending on the model of the AED, you may have to push the power on button, or the AED automatically turns on when you open the cover.
- Follow the voice prompts of the AED.



## 9. Attach the electrode pads to the injured or ill person's bare chest

- Remove all clothing from the chest, abdomen, and arms.
- Open the package of electrode pads, peel the pads off and securely place them on the chest of the injured or ill person, with the adhesive side facing the chest. If the pads are not securely attached to the chest, the AED may not function. Paste the pads exactly at the positions indicated on the pads. If the chest is wet with water, wipe dry with a dry towel and the like, and then paste the pads. If there is a pacemaker or implantable cardioverter defibrillator (ICD), paste the pads at least 3 cm away from them. If a medical patch or plaster is present, peel it off and then paste the pads. If the injured or ill person's chest hair is thick, paste the pads on the chest hair once, peel them off to remove the chest hair, and then paste new pads.
- Some AED models require to connect a connector by following voice prompts.
- The electrode pads for small children should not be used for children over the age of 8 and for adults.



## 10. Electrocardiogram analysis

- The AED automatically analyzes electrocardiograms. Follow the voice prompts of the AED and ensure that nobody is touching the injured or ill person while you are operating the AED.
- On some AED models, you may need to push a button to analyze the heart rhythm.



## 11. Electric shock (defibrillation)

- a) If the AED determines that electric shock is needed, the voice prompt saying, "Shock is needed" is issued and charging starts automatically.
- b) When charging is completed, the voice prompt saying, "Press the shock button" is issued and the shock button flashes.
- c) The first-aider must get away from the injured or ill person, make sure that no one is touching him/her, and then press the shock button.
- d) When electric shock is delivered, the body of the injured or ill person may jerk.



## 12. Resurgence of cardiopulmonary resuscitation (CPR)

- a) Resume chest compressions by following the voice prompts of the AED.
  - With each compression, depress the chest wall to a depth of approximately 5 cm.
  - Perform compressions at the rate of 100 - 120 times per minute.



## 13. Automatic electrocardiogram analysis

- a) When 2 minutes have elapsed since you resumed cardiopulmonary resuscitation (CPR), the AED automatically analyzes the electrocardiogram.
- b) If you suspended CPR by following voice prompts and AED voice prompt informs you that shock is needed, give electric shock again by following the voice prompts.  
If AED voice prompt informs you that no shock is needed, immediately resume CPR.

## 14. When to stop CPR (Keep the electrode pads on.)

- a) When the injured or ill person has been handed over to the emergency services
- b) When the injured or ill person has started moaning or breathing normally, lay him/her on his/her side in a recovery position and wait for the arrival of emergency services.






# ● Pictorial Indication ●

## Meanings of Pictorial Indication

Various pictorial indications are included in this manual and are shown on this equipment so that you can operate them safely and correctly and prevent any danger to you and / or to other persons and any damage to your property during operation. Such indications and their meanings are as follows.

Please understand them before you read this manual:

 <b>DANGER</b>	This indication is shown where incorrect equipment operation due to negligence may cause death or serious injuries.
 <b>WARNING</b>	This indication is shown where any person is supposed to be in danger of being killed or seriously injured if this indication is neglected and this equipment is not operated correctly.
 <b>CAUTION</b>	This indication is shown where any person is supposed to be injured or any property damage is supposed to occur if this indication is neglected and this equipment is not operated correctly.

## Examples of Pictorial Indication



Electric Shock

The  $\triangle$  mark represents CAUTION (including DANGER and WARNING).

Detailed contents of CAUTION ("Electric Shock" in the example on the left) is shown in the mark.



Disassembling  
Prohibited



The  $\odot$  mark represents prohibition.

Detailed contents of the prohibited action ("Disassembling Prohibited" in the example on the left) is shown in the mark.



Disconnect  
the power plug



The  $\bullet$  mark represents instruction.

Detailed contents of the instruction ("Disconnect the power plug" in the example on the left) is shown in the mark.

## Warning Label

There is a warning label on the top cover of the equipment. Do not try to remove, break or modify the label.

## ● Precautions upon Equipment Operation ●

# 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. Especially when an UPS is used, make sure to turn it off since voltage is still outputted from the UPS even after the indicator and the Conning display is turned off. Failure may result in equipment failure, or death or serious injury due to electric shock.



# **WARNING**



Do not hold down the Power button of the operation unit when turning off the power supply.

If the button is held down, the equipment may not be terminated normally, causing a failure.



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.



When cleaning the screen and Trackball of Operation Unit, do not wipe hard with a dry cloth. Also, do not use glass cleaner, alcohol, gasoline, or thinner to clean the screen. Also avoid wiping with water. It may cause surface damage or equipment failure.



Confirm computer virus does not exist in USB flash memory beforehand when reading and writing of the file by using USB flash memory.

Influences other equipment when the display unit is infected with the virus, and it may cause a breakdown.



Do not remove USB flash memory while the access lamp (in USB flash drive) is flashing.

Data may be damaged when the USB flash memory is inserted or removed while accessing it, and it may cause a breakdown.



Do not place a glass or cup containing water, etc., or a small metal object on this equipment.

If water or such object gets inside, a fire, an electric shock, or a malfunction may occur.



In case water or a metal object gets inside the equipment, turn off the power immediately, unplug the power supply cable from an electric outlet, and contact our head office, or a nearby branch or local office to request servicing. Keeping the equipment in operation under such condition may cause a fire, an electric shock or a malfunction.



In case you find smoke, unusual odor or extreme high heat coming from the equipment, turn off the power immediately, unplug the power supply cable from an electric outlet, and contact our head office, or a nearby branch or local office to request servicing.

Keeping the equipment in operation under such condition may cause a fire or an electric shock.



Change of the color of the Day/Night button, particularly the use of the [Night] color, may interfere with the recognition of display information.

# CAUTION



Make sure that two or more staff member work together when replacing the LCD. If only one person attempts to replace the LCD, he/she may drop it and become injured.



Any adjustments must be made by specialized service personnel.  
Incorrect settings may result in unstable operation, and this may lead to accidents or equipment failure.



Do not use or leave the equipment under direct sunlight for a long time or in the temperatures above 55°C.  
Otherwise, a fire or a malfunction may occur.



Do not block the ventilation opening of the equipment.  
Otherwise, heat may accumulate inside to cause a fire or a malfunction.



Do not touch the equipment with hands or gloves wet with water.  
Otherwise, an electric shock or a malfunction may occur.



- Do not place any object on the operation panel.  
In particular, if a hot object is placed on the operation panel, it can cause deformation of the surface of the operation panel.
- Do not apply any undue shock on the operation panel, trackball and dials.  
Otherwise, a malfunction may result.



Make sure that the main power is turned off before inspection or replacement of parts.  
Otherwise, an electric shock, a fire, or a malfunction may occur.



- If a fan alarm or CPU temperature rise alarm has occurred, immediately turn off the power.  
Keeping the equipment in operation under such condition may cause a fire or a malfunction.  
After turning off the power, contact our head office, or a nearby branch or local office to request servicing.

# CAUTION



Do not turn off the power during Backup/Restore.  
Otherwise, a function may fail, and an accident may occur.



Do not do the backup operation of data while sailing.  
The Conning Display application should be ended to begin the data backup. It becomes impossible to observe using the Conning Display and this may lead to accidents.



The backup power supply (DC power supply, etc.) of the equipment must be connected when recovery of the C drive image is performed. If the power supply stops during recovery, an equipment activation fault occurs, causing an accident.

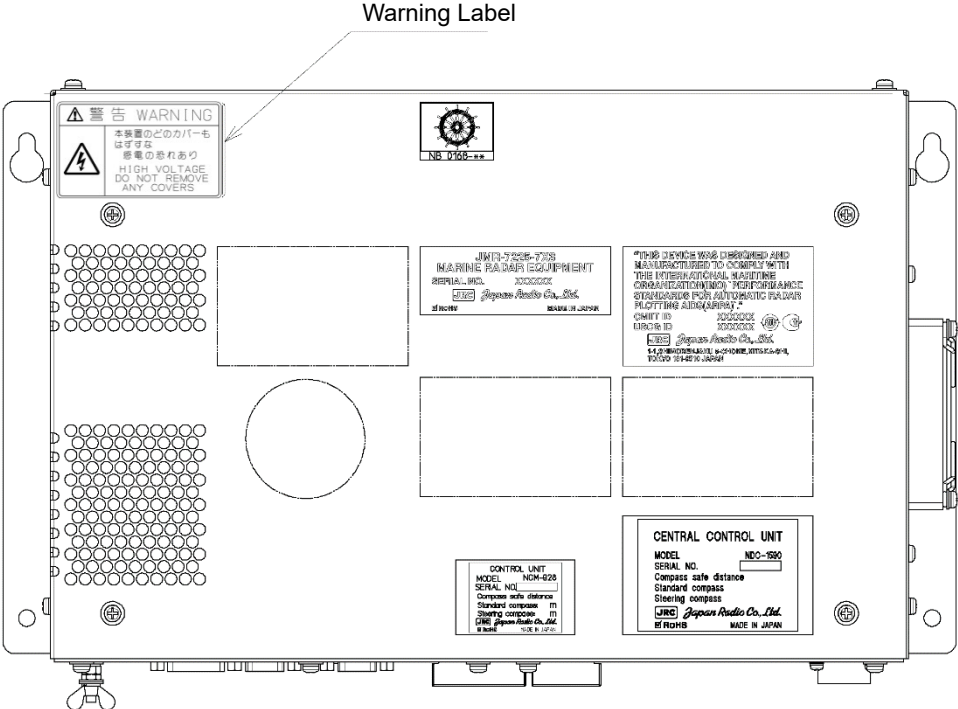


Do not turn off the power supply during recovery of C drive image.  
Otherwise, a function fault occurs, causing an accident.

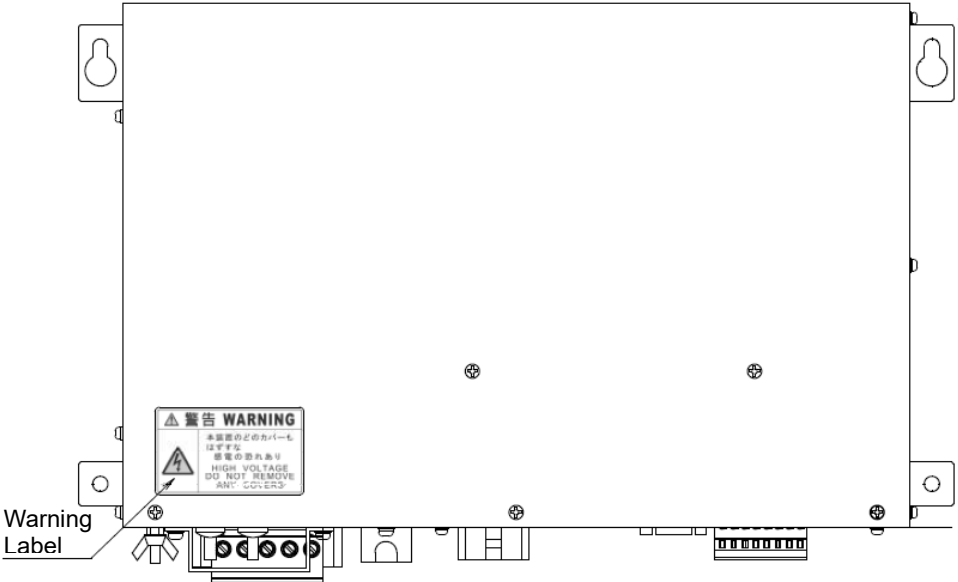


In the case of turning on the power under the condition of low temperature, do pre-heat more than 30 minutes.  
Otherwise, an operation failure may occur and an accident may occur.

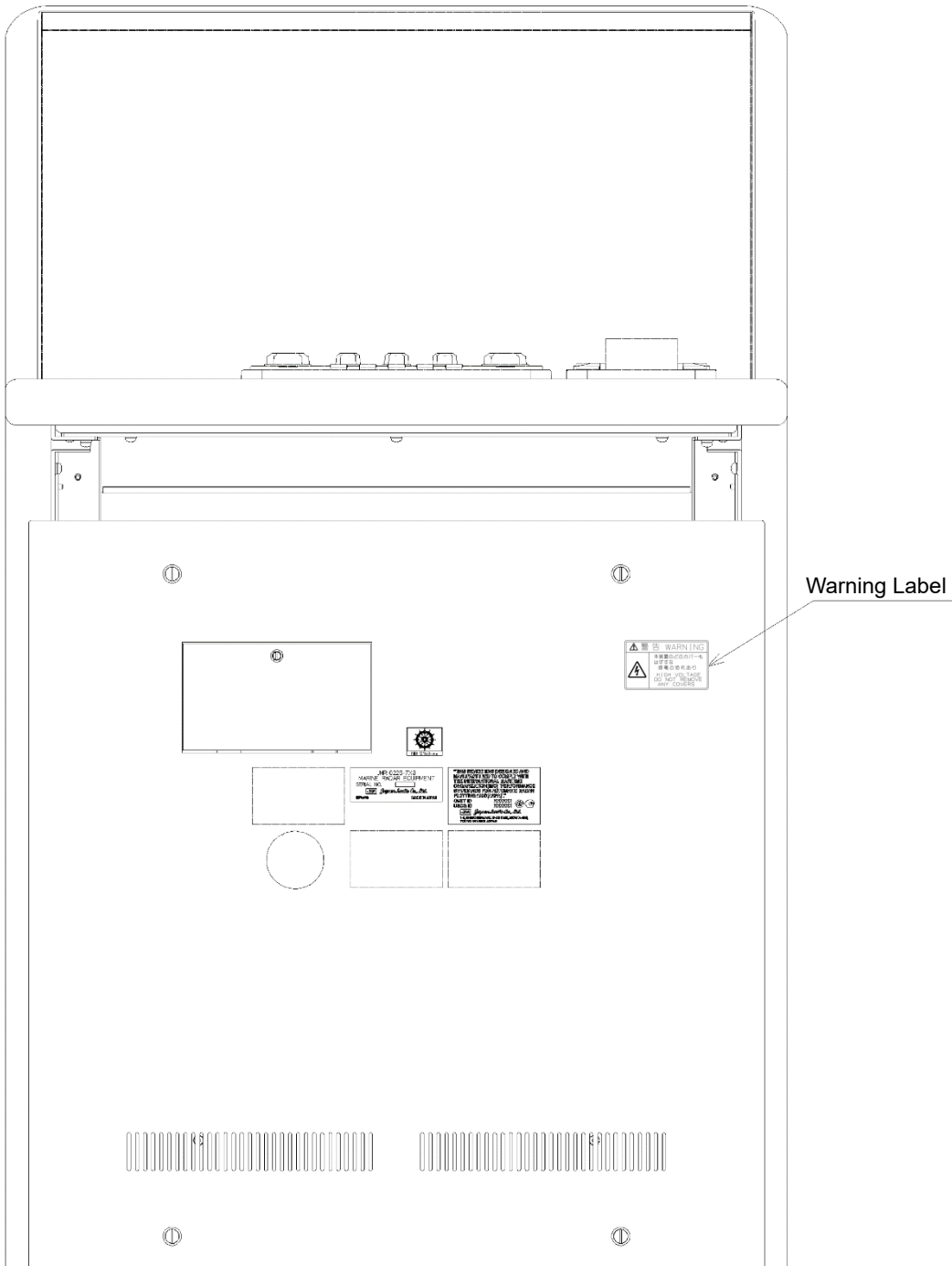
# The Mounting Point of the Warning Label



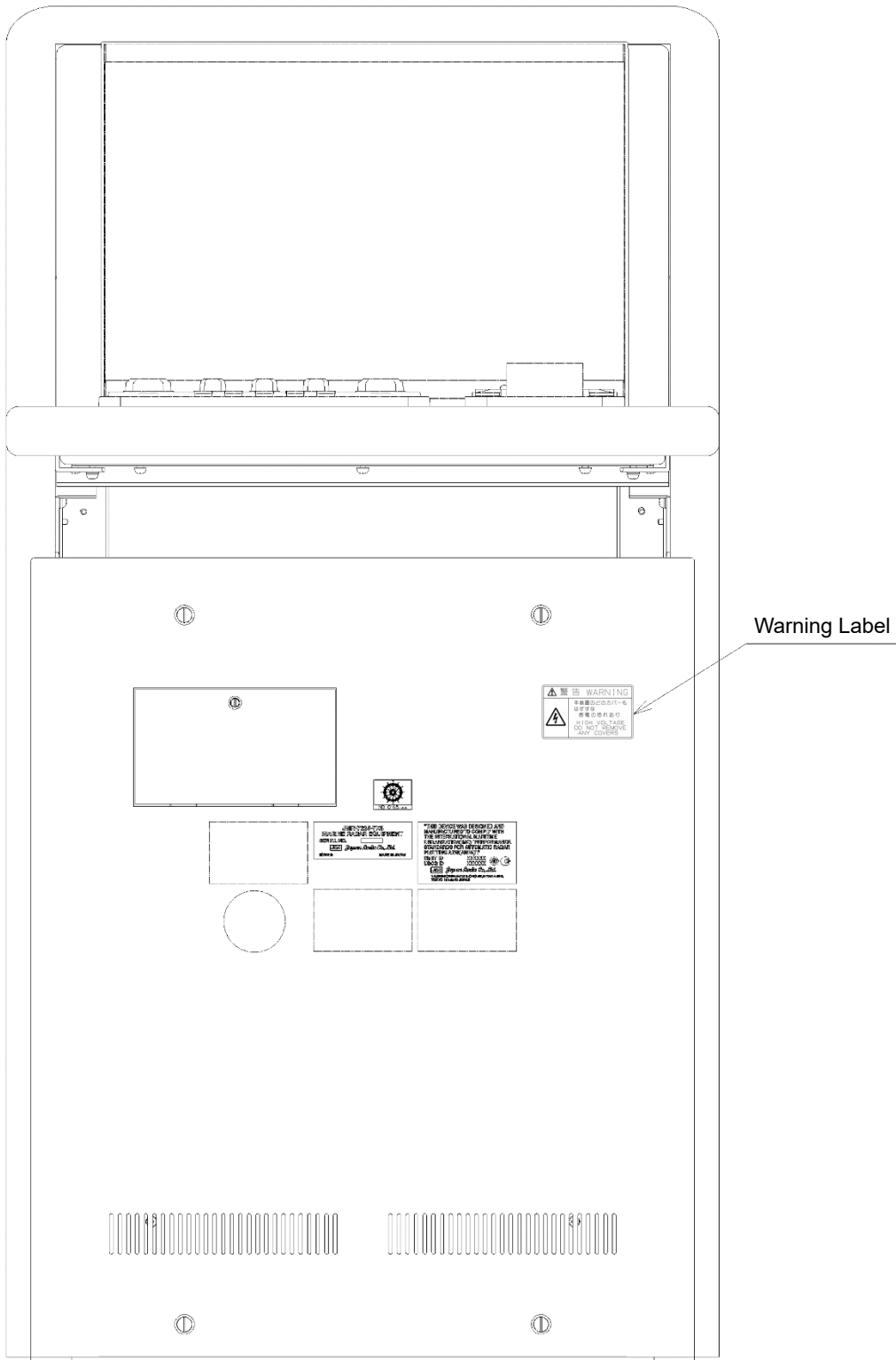
NDC-1590/A Central Control Unit



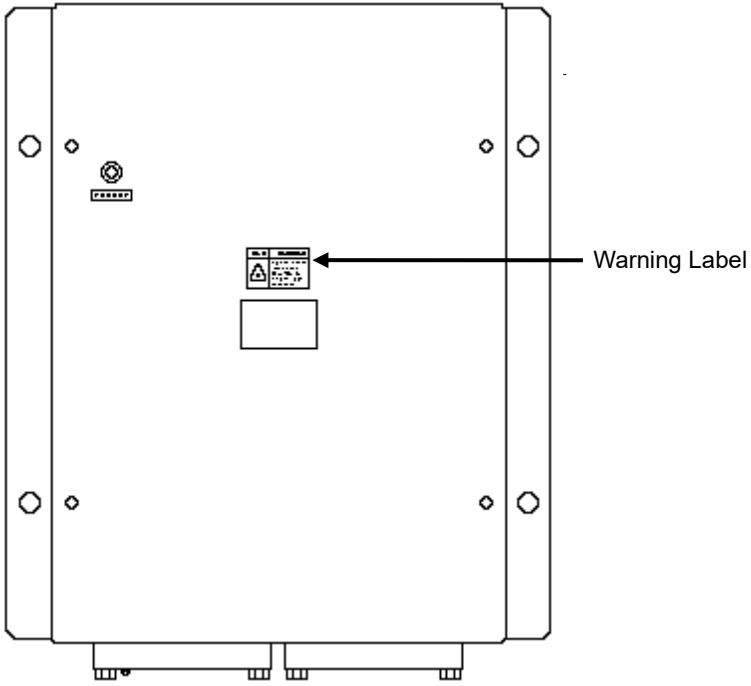
NBD-913 Power Supply Unit



CWA-246 26inch Display Unit Mount Kit



CWA-245 19inch Display Unit Mount Kit



NQE-3141-4A/8A Interswitch Unit

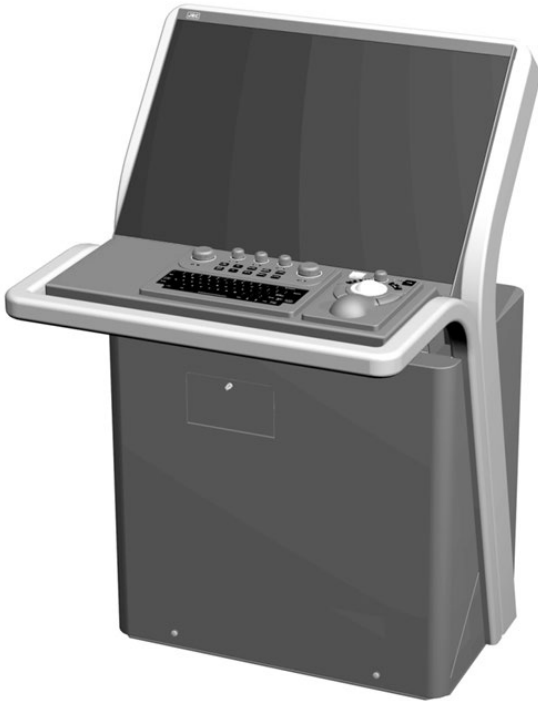
# EQUIPMENT APPEARANCE



CWA-245 Display Unit



CWA-246 Display Unit with tray



CWA-246 Display Unit without tray





NCE-5605 Trackball Operation Unit



NCE-5625 Keyboard Operation Unit (Option)



NDC-1590/A Central Control Unit



NBD-913 Power Supply Unit



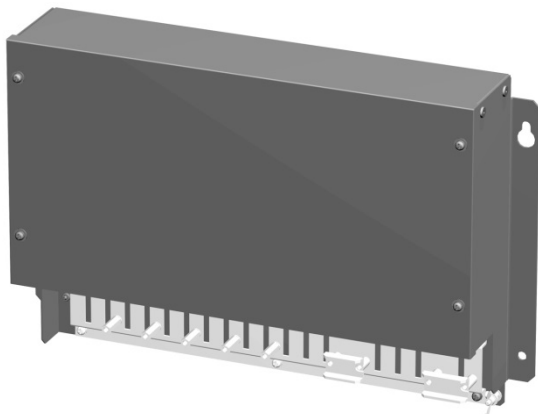
NWZ-207/214 19inch Display



NWZ-208 26inch Display



NWZ-233 27inch Display



NQE-1143 Junction box (Option)

# How to Use This Manual

## Structure of this manual

This manual is structured as shown below. Read the necessary section according to the purpose.

Item	Contents
Preface	Describes the purposes of using this equipment.
Safety Cautions Emergency Measures	Describes the cautions for a high voltage, precautions for rescue of victims of an electric shock, and the method of First-Aid treatment.
Pictorial Indication Precautions upon Equipment Operation	Describes the safety precautions and warning on this equipment.
The Mounting Point of the Warning Label	Describes the warning label attachment position on this equipment.
Equipment Appearance	Describes the appearance of this equipment.
How to use this manual	This page
Section 1 Overview	Provides the overview of this equipment.
Section 2 Name and Function of Each Unit	Describes the name and function of each unit of this equipment.
Section 3 Basic Operations	Describes the basic operations of Conning Display.
Section 4 Each Block of Conning Display	Describes how to view the blocks that are displayed on the Conning Display screen and how to operate the screen.
Section 5 Setting Up Screen View	Describes the detail setting of screen display.
Section 6 Setting Up Alerts	Describes the alert detail setting for avoiding dangers.
Section 7 Setting Up the Operation Mode	Describes the detail setting of the operation modes of this equipment.
Section 8 Adjusting and Setting Up Equipment (for Services)	Describes the adjustment and setup of this equipment by specialized service personnel.
Section 9 Maintenance & Inspection	Describes the maintenance and inspection of this equipment.
Section 10 Failures and After-Sale Services	Describes the failure handling measures and after-sale services of this equipment.
Section 11 About Disposal	Describes the cautions on disposing of this equipment.
Section 12 Specifications	Describes the specifications of this equipment.
Appendix A Alert List	Contains a listing of alerts.
Appendix B Menu List and Materials	Describes the materials such as the menu list.



# Notations

## Operation notations

Trackball operations on the operation panel are expressed as follows.

Operation	Notation
Click the left button.	Click Example: Click on the object.
Double-click the left button.	Double-click Example: Determine the drawing by double-click.

The buttons and dialog boxes on the screen are expressed as follows.

Button type	Notation
Button with button name indicated	Example:  → [ACK] (Acknowledgment) button
Button with an indication other than the button name such as an icon	Shown as follows. Example:  → Day/Night button

A series menu selection operation is expressed as follows.

Click on [Settings] - [General] - [Color and Brightness] on the menu.



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# Section 1 Overview

## **WARNING**



Do not put any container with water or small metallic object on this equipment. Water may spill or metal may enter the equipment, causing fire, electric shock or other troubles.



Should water or metal have entered the equipment, turn off the circuit breaker and contact our sales division, branch office, service center or representative located nearest to you.

If you continue to use the equipment without taking required action, fire, electric shock or other troubles may occur.



Should you find out smoke, offensive smell or extreme heat on the equipment, turn off the switch and circuit breaker immediately. Then contact our sales division, branch office, service center or representative located nearest to you.

If you continue to use the equipment without taking required action, fire or electric shock may occur.

## **CAUTION**



Do not use or leave the equipment where there is a direct sunshine and high humidity or the temperature exceeds 55°C.

Otherwise, fire or other troubles may occur.



Do not block the ventilation port of the equipment.

Otherwise, fire or other troubles may be caused by heat accumulation.



Do not touch the equipment when your hands or gloves are wet with fresh water or seawater.

Otherwise, electric shock or other troubles may occur.



- Do not place any object on the operation panel.

In particular, if a hot object is placed on the operation panel, it can cause deformation of the surface of the operation panel.

- Do not apply any undue shock on the operation panel, trackball and dials. Otherwise, a malfunction may result.



- If a fan alarm or CPU temperature rise alarm has occurred, immediately turn off the power.

Keeping the equipment in operation under such condition may cause a fire or a malfunction.

After turning off the power, contact our head office, or a nearby branch or local office to request servicing.

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# 1.1 Functions

Conning Display (referred to as "this equipment" henceforth), which enables quick understanding of the condition of own ship by intensively displaying on the screen the navigation information and progress information that are necessary for sailing and maneuvering the ship, supports the improvement of the safe transportation and work efficiency.

This equipment has the following functions:

- Display of information including ship's heading, speed, course, water depth, wind bearing/wind speed, current set/current drift, propeller/engine revolution speed, rudder angle, thruster, waypoint
- Sensor information graph display and numeric value display
- Switching between H UP and N UP of wind bearing/wind speed display
- Switching of data source
- Switching of display data unit
- Option alert management information(AMS license is required)  
Warning: Warning information/history display from the connection device
- Day/Night function
- Self-diagnosis function

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## 1.2 Features

This equipment has the following features:

- Displays the relationships among the ship's heading, course, wind bearing/wind speed, and current set/current drift of own ship in large graphic presentation, enabling the grasping of the relationships easily.
- Displays the relationships among the ship's heading, course, set heading, and planned course in 3D view combining with the view from the bridge, enabling the grasping of the relationships easily\*<sup>1</sup>
- Displays the speed in the unit of cm/s at the docking at the shore
- Displays many side thruster/azimuth thruster information items at docking at the shore
- Supports customization of display layout and label text according to the number of engines/wheels (supported at factory delivery)
- Menu selection by icon
- Applies 19-inch or 26/27-inch color LCD

\*1: The 3D view display may not be available depending on the Conning Display you use.



## 1.3 Components

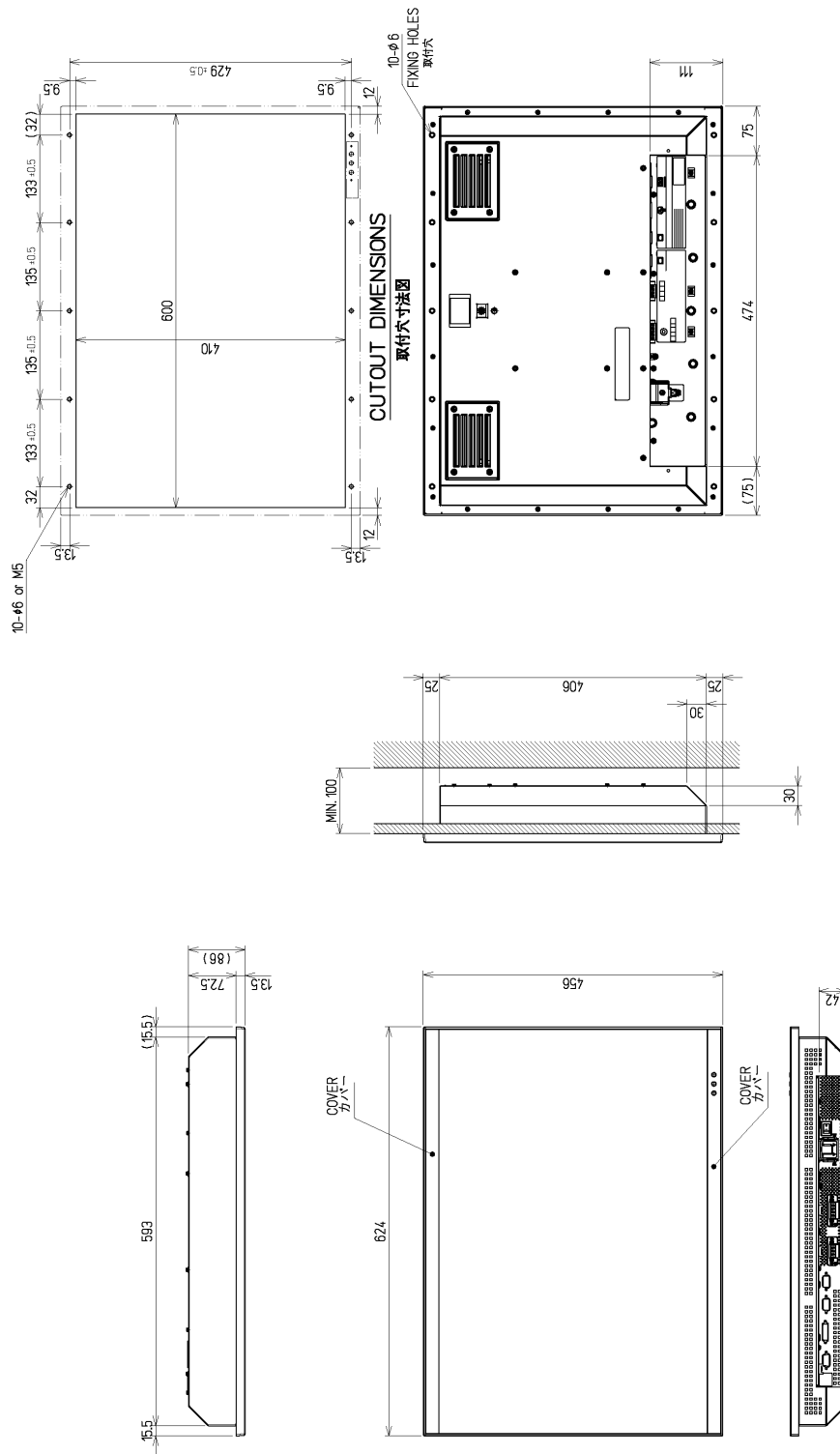
A list of components and optional accessories is shown below.

### Components of the Display Unit

Name		Model	Q'ty	Remarks
Display unit				Main unit
Display	(JMR-72XX/JAN-72XX)	NWZ-207 or NWZ-214	1	Included in the main unit.
	(JMR-92XX/JAN-92XX)	NWZ-208 or NWZ-233		
Trackball operation unit		NCE-5605	1	Included in the main unit.
Keyboard operation unit		NCE-5625	1	Option
Large tray		CWB-1593	1	Used only for a stand-alone display unit
UPS			1	
Central control unit		NDC-1590/A	1	Included in the main unit.
Power supply unit		NBD-913	1	Included in the main unit.
Junction box		NQE-1143	1	Option
	Serial LAN Interface circuit	CMH-2370	1	Option
	Analog Option circuit	CMJ-560	1	Option
	Gyro Interface circuit	CMJ-554	1	Option
Sensor LAN switch unit		NQA-2443/A	1	Option
26/27inch cradle frame		CWA-246	1	Option
19inch cradle frame		CWA-245	1	Option
26/27inch desktop frame		CWB-1595	1	Option
26/27inch desktop frame		CWB-1660	1	Option
19inch desktop frame		CWB-1594	1	Option
19inch desktop frame		CWB-1659	1	Option
Operation unit desktop frame		CWB-1596	1	Option
Instruction Manual (Japanese)			1	
Instruction Manual (English)			1	
Installation Manual (Japanese)			1	Option
Installation Manual (English)			1	Option
Canvas cover			1	Option
Hood	(JMR-72XX/JAN-72XX)		1	Option
	(JMR-92XX/JAN-92XX)			
Accessory	CD cleaner		1	Packing in 1 box
Spare parts for the main unit			1	Packing in 1 box
Spare parts for the junction box			1	Option

# 1.4 Structure

The outline of this equipment is as follows.



Outline drawing of 26inch Display (NWZ-208)

MASS	APPROX. 16 kg
UNIT	mm
質量	約 16 kg
単位	mm

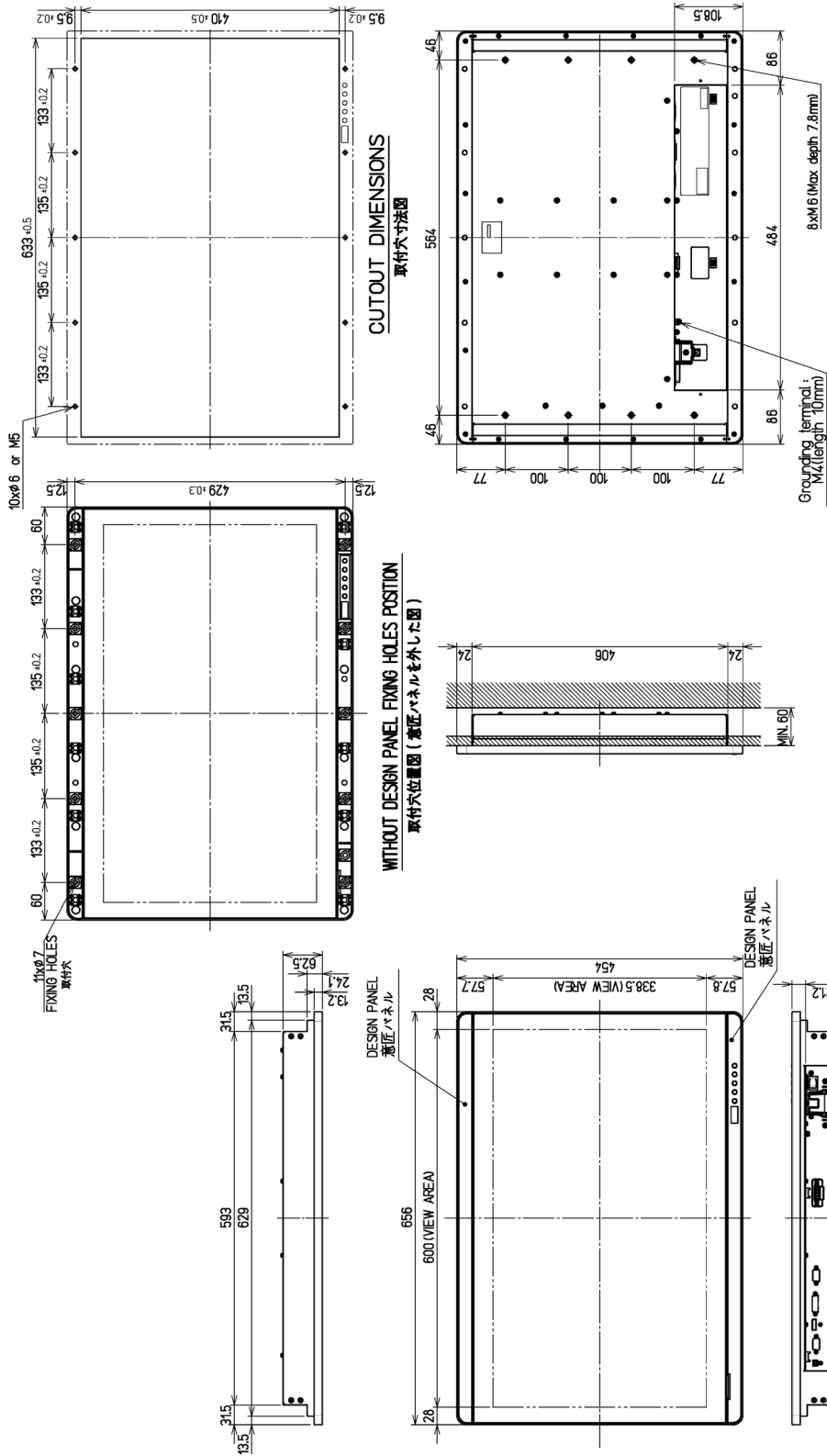
外形寸法	外形寸法 許容差	取付寸法 許容差
表題に 以下		
3	-0.5	+0.5
6	+1	
30	+1.5	
120	+2.5	+1
400	+4	+2
1000	+6	
2000	+8	+3

OUTLINE DIMENSIONS	PERMISSIBLE DIMENSIONAL DEVIATIONS	PERMISSIBLE DIMENSIONAL DEVIATIONS
COVER TO		
3	-0.5	+0.5
6	+1	
30	+1.5	
120	+2.5	+1
400	+4	+2
1000	+6	
2000	+8	+3

NWZ-208

MONITOR UNIT OUTLINE DRAWING

SCNWZ5077



OUTLINE DIMENSIONS		PERMISSIBLE MOUNTING DIMENSIONAL DEVIATIONS	PERMISSIBLE MOUNTING DIMENSIONAL DEVIATIONS
OVER	TO		
3	6	+0.5	+0.5
6	30	+1	+1
30	120	+1.5	+1.5
120	400	+2.5	+1
400	1000	+4	+2
1000	2000	+6	+3
2000	4000	+8	+3

外形寸法 寸法	外形寸法 許容差		取付寸法 許容差
	以下	以上	
3	6	+0.5	+0.5
6	30	+1	+1
30	120	+1.5	+1.5
120	400	+2.5	+1
400	1000	+4	+2
1000	2000	+6	+3
2000	4000	+8	+3

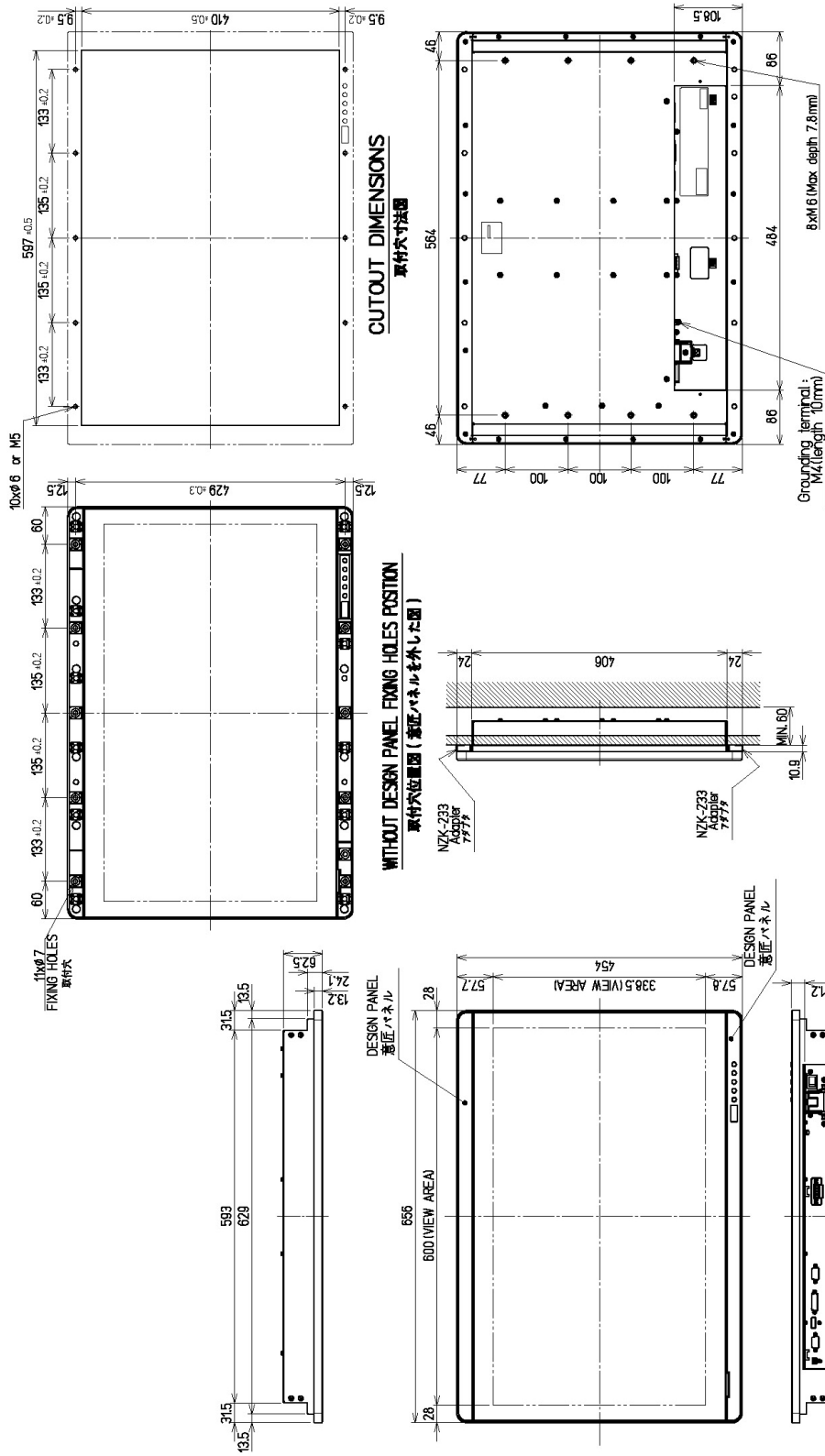
MASS APPROX. 8.6 kg  
UNIT mm  
質量 約 8.6 kg  
単位 mm

Outline drawing of 27inch Display (NWZ-233)

P00024426-1-0

MONITOR UNIT OUTLINE DRAWING

NWZ-233



MASS	APPROX. 8.6 kg
UNIT	mm
質量	約 8.6 kg
単位	mm

外形寸法 を越え	外形寸法 許容差		取付寸法 許容差
	以下		
3	6	+0.5	+0.5
6	30	+1	
30	120	+1.5	+1
120	400	+2.5	+2
400	1000	+4	+3
1000	2000	+6	
2000	4000	+8	

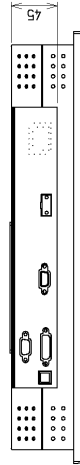
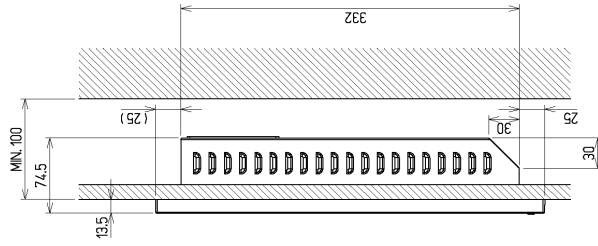
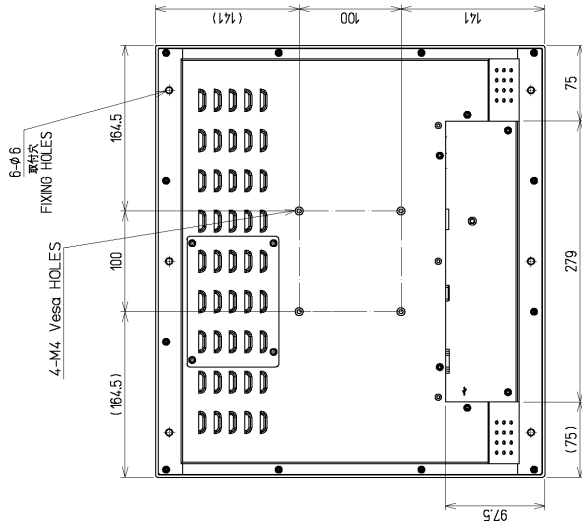
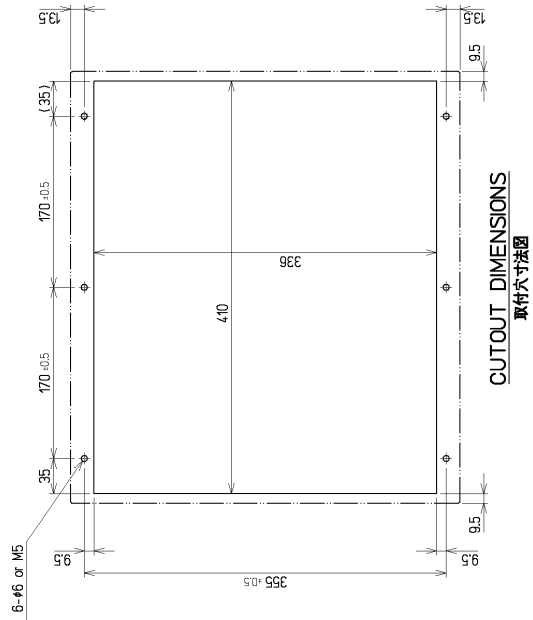
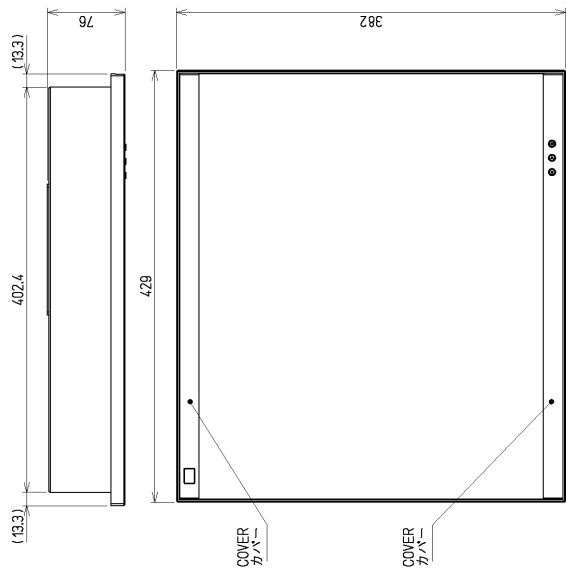
OUTLINE DIMENSIONS OVER	PERMISSIBLE OUTLINE DIMENSIONAL DEVIATIONS		PERMISSIBLE MOUNTING DIMENSIONAL DEVIATIONS
	TO		
3	6	+0.5	+0.5
6	30	+1	
30	120	+1.5	+1
120	400	+2.5	+2
400	1000	+4	+3
1000	2000	+6	
2000	4000	+8	

NWZ-233  
With NZK-233 Adapter

MONITOR UNIT OUTLINE DRAWING

P00024426-2-0

Outline drawing of 27inch Display (NWZ-233) with NZK-233 Adapter



OUTLINE DIMENSIONS		PERMISSIBLE OUTLINE DIMENSIONAL DEVIATIONS	PERMISSIBLE MOUNTING DIMENSIONAL DEVIATIONS
DVER	T0		
3	6	+0.5	
6	30	+1	+0.5
30	120	+1.5	
120	400	+2.5	+1
400	1000	+4	+2
1000	2000	+6	
2000	4000	+8	+3

外形寸法		外形寸法許容差	取付寸法許容差
寸法	以下		
3	6	+0.5	
6	30	+1	+0.5
30	120	+1.5	
120	400	+2.5	+1
400	1000	+4	+2
1000	2000	+6	
2000	4000	+8	+3

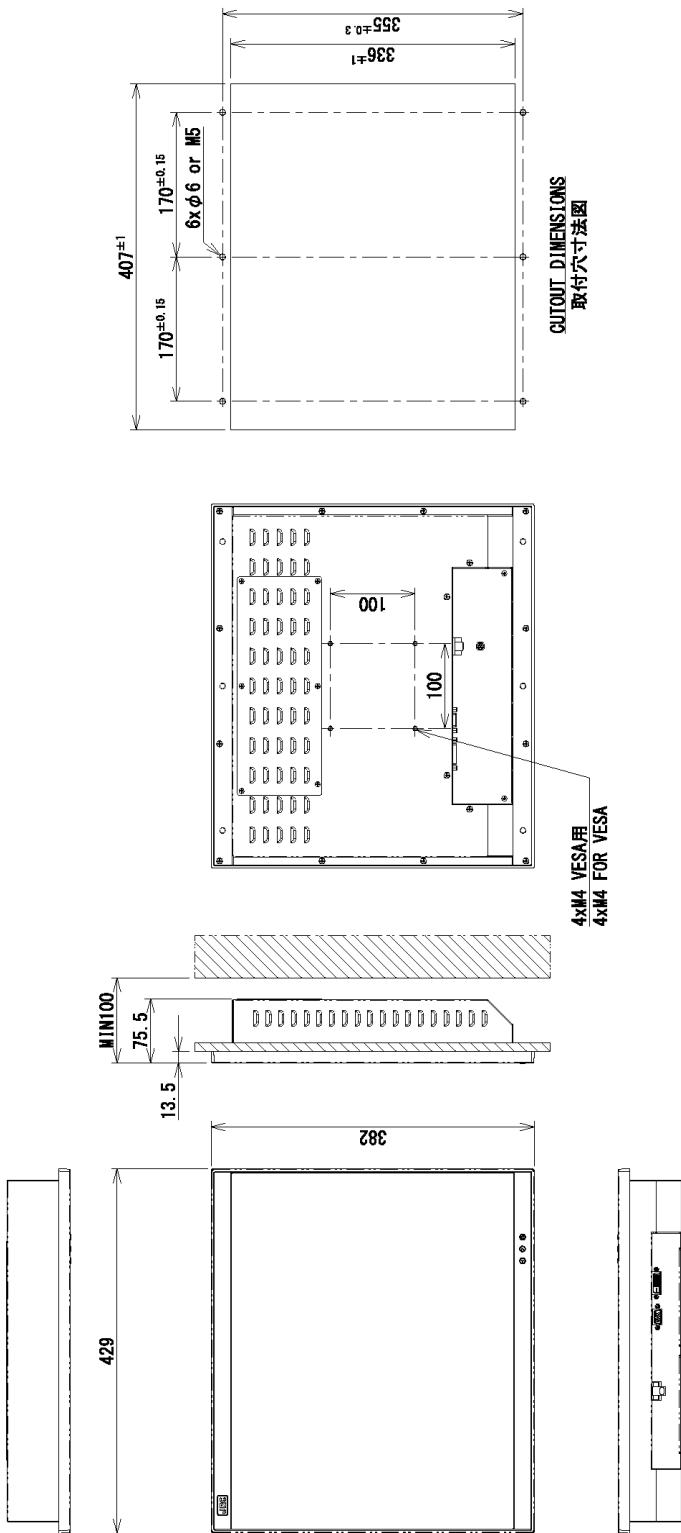
MASS APPROX. 6 kg  
 UNIT mm  
 質量 約 6 kg  
 単位 mm

Outline drawing of 19inch Display (NWZ-207)

SCNWZ5078

MONITOR UNIT OUTLINE DRAWING

NWZ-207



OUTLINE DIMENSIONS  
取付穴寸法図

4xM4 VESA用  
4xM4 FOR VESA

MASS APPROX. 4.6kg  
UNIT mm  
質量 約 4.6kg  
單位 mm

外形寸法 を越え	外形寸法 以下		外形寸法 許容差	取付寸法 許容差
	3	6		
6	30	6	±0.5	±0.5
30	120	30	±1	
120	400	120	±1.5	±1
400	1000	400	±2.5	±2
1000	2000	1000	±4	±3
2000	4000	2000	±6	
4000		4000	±8	

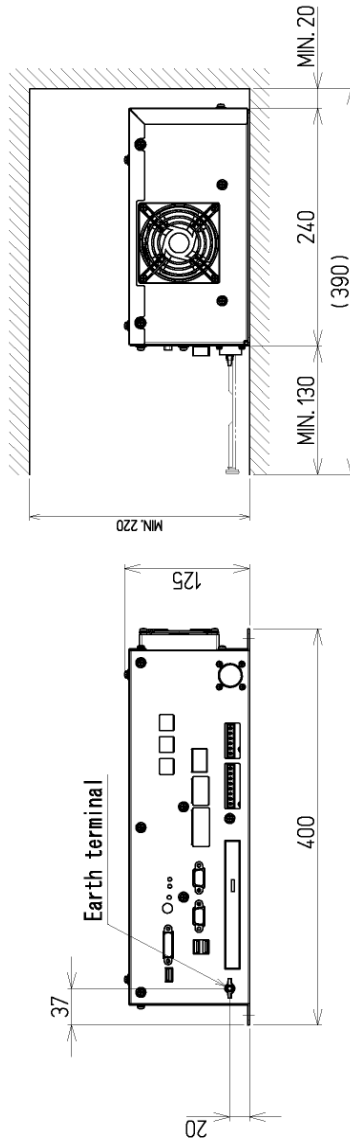
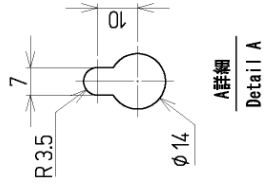
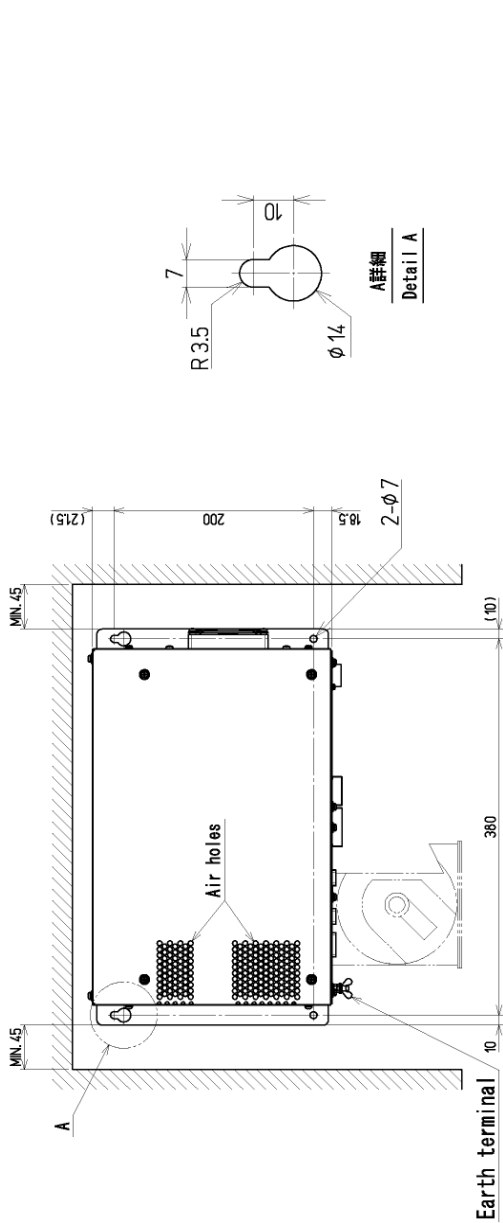
OUTLINE DIMENSIONS OVER		PERMISSIBLE OUTLINE DIMENSIONAL DEVIATIONS	PERMISSIBLE MOUNTING DIMENSIONAL DEVIATIONS
3	6	±0.5	±0.5
6	30	±1	
30	120	±1.5	±1
120	400	±2.5	
400	1000	±4	±2
1000	2000	±6	±3
2000	4000	±8	

NWZ-214

Outline drawing of 19inch Display (NWZ-214)

外形寸法		外形寸法 許容差	取付寸法 許容差
を 超え	以下		
3	6	±0.5	±0.5
6	30	±1	
30	120	±1.5	±1
120	400	±2.5	
400	1000	±4	±2
1000	2000	±6	±3
2000	4000	±8	

OUTLINE DIMENSIONS		PERMISSIBLE OUTLINE DIMENSIONAL DEVIATIONS	PERMISSIBLE MOUNTING DIMENSIONAL DEVIATIONS
OVER	TO		
3	6	±0.5	±0.5
6	30	±1	
30	120	±1.5	±1
120	400	±2.5	
400	1000	±4	±2
1000	2000	±6	±3
2000	4000	±8	



MASS APPROX. 5.6 kg  
UNIT mm

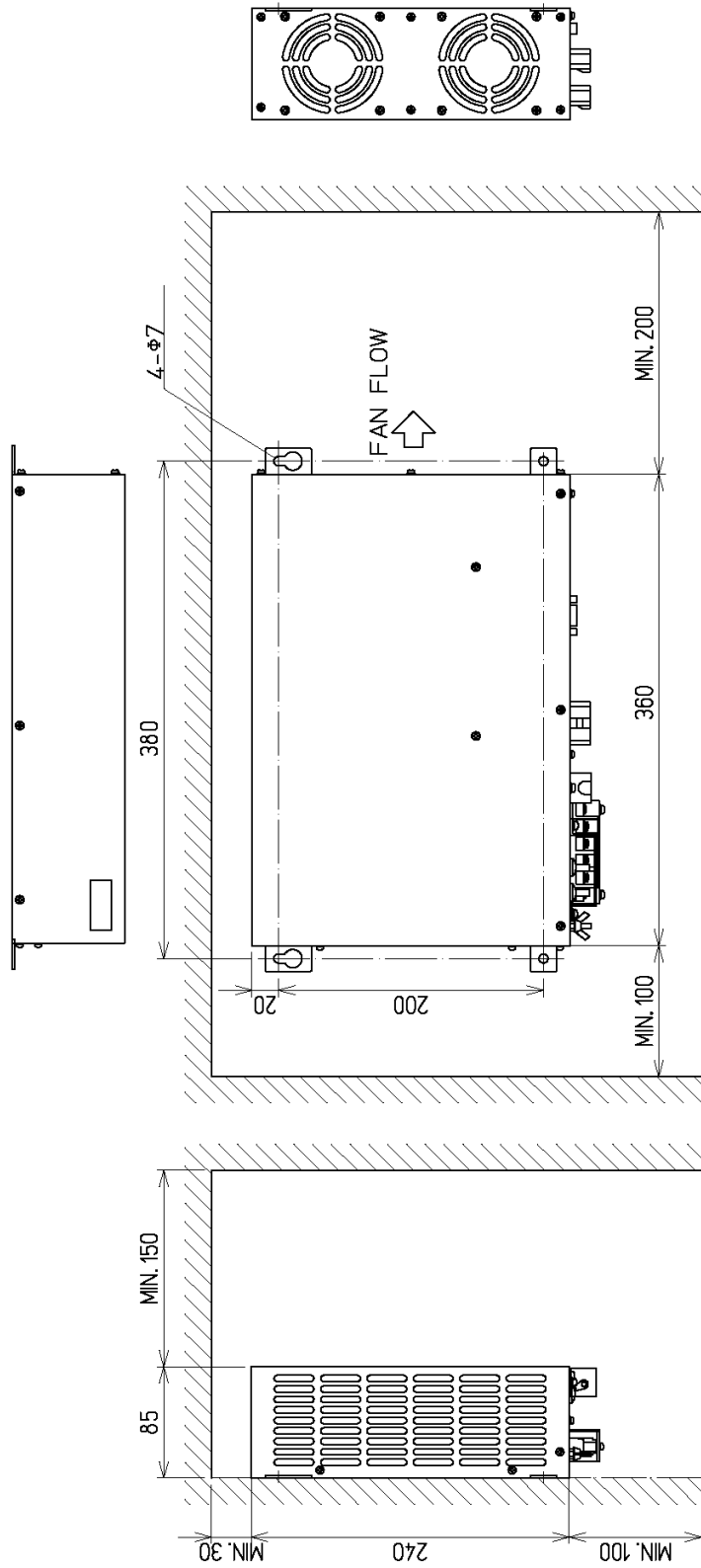
質量 約 5.6 kg  
単位 mm

Outline Drawing of Central Control Unit (NDC-1590/A)

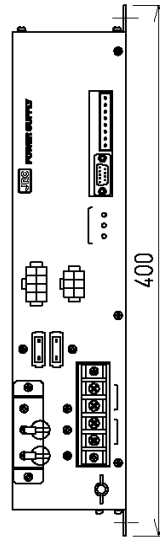
CENTRAL CONTROL UNIT OUTLINE DRAWING

SCNDC5246-0

NDC-1590/A



Outline Drawing of Power Supply Unit (NBD-913)



MASS APPROX. 4.2 kg

UNIT mm

質量 約 4.2 kg

単位 mm

外形寸法 公差	外形寸法 許容差		取付法 許容差
	以下	以上	
3	±0.5	±1	±0.5
6	±1	±1.5	
30	±1.5	±2.5	±1
120	±2.5	±4	±2
400	±4	±6	±3
1000	±6	±8	
2000	±8		

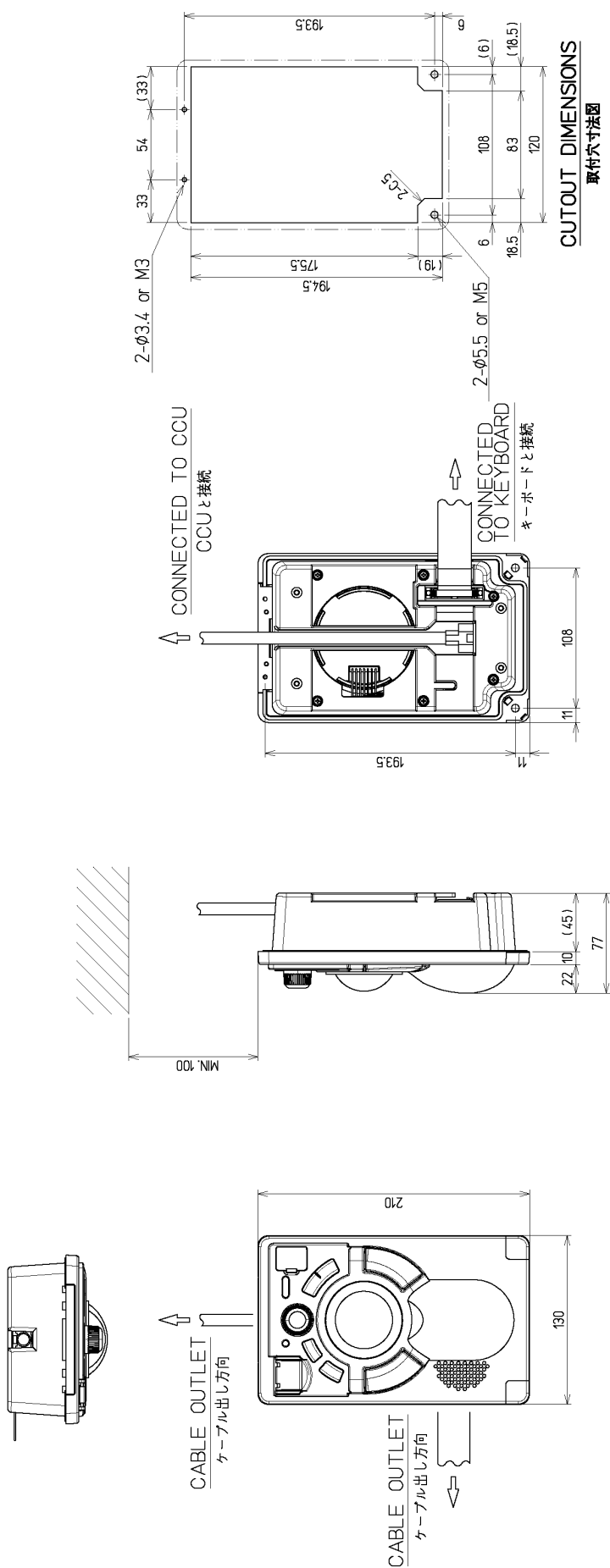
OUTLINE DIMENSIONS	PERMISSIBLE OUTLINE DIMENSIONAL DEVIATIONS		PERMISSIBLE MOUNTING DIMENSIONAL DEVIATIONS
	TO	FROM	
3	±0.5	±1	±0.5
6	±1	±1.5	
30	±1.5	±2.5	±1
120	±2.5	±4	±2
400	±4	±6	±3
1000	±6	±8	
2000	±8		

SCNBD5067

POWER SUPPLY UNIT OUTLINE DRAWING

NBD-913





CUTOUT DIMENSIONS  
取付穴寸法図

外形寸法 を越え	外形寸法 許容差		取付寸法 許容差
	以下		
3	6	+0.5	±0.5
6	30	±1	
30	120	±1.5	±1
120	400	±2.5	
400	1000	±4	±2
1000	2000	±6	
2000	4000	±8	±3

OUTLINE DIMENSIONS	PERMISSIBLE OUTLINE DIMENSIONAL DEVIATIONS		PERMISSIBLE MOUNTING DIMENSIONAL DEVIATIONS
	OVER	TO	
3	6	+0.5	±0.5
6	30	±1	
30	120	±1.5	±1
120	400	±2.5	
400	1000	±4	±2
1000	2000	±6	
2000	4000	±8	±3

MASS APPROX. 1.3 kg

UNIT mm

質量 約 1.3 kg

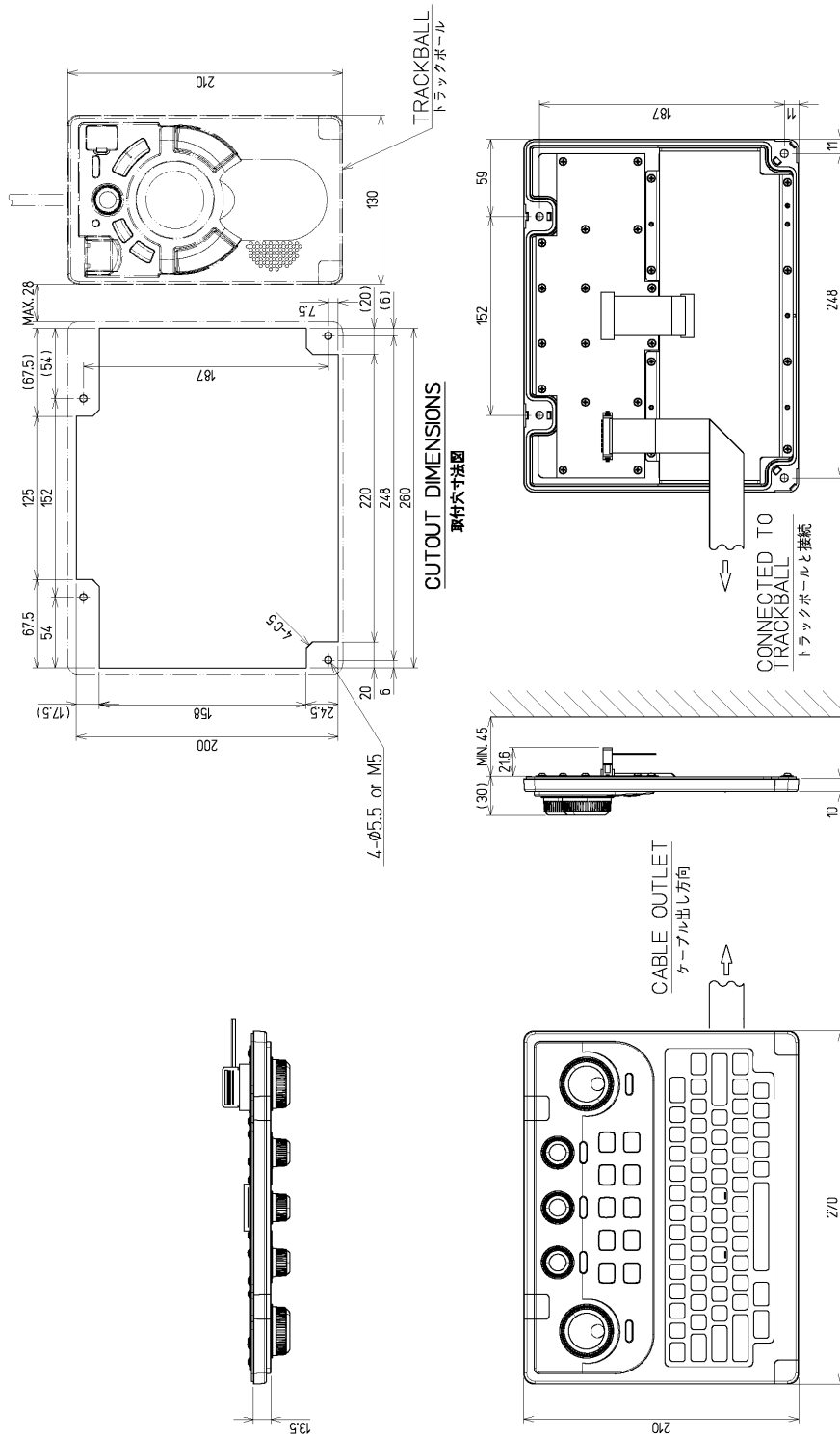
単位 mm

SONCE5367

TRACKBALL OPERATION UNIT OUTLINE DRAWING

NCE-5605

Outline Drawing of Trackball Operation Unit (NCE-5605)



MASS	APPROX. 0.8 kg
UNIT	mm
質量	約 0.8 kg
単位	mm

外形寸法 を越え	外形寸法 許容差		取付寸法 許容差
	以下		
3	6	+0.5	+0.5
6	30	+1	
30	120	+1.5	+2.5
120	400	+2.5	
400	1000	+4	+2
1000	2000	+6	+3
2000	4000	+8	

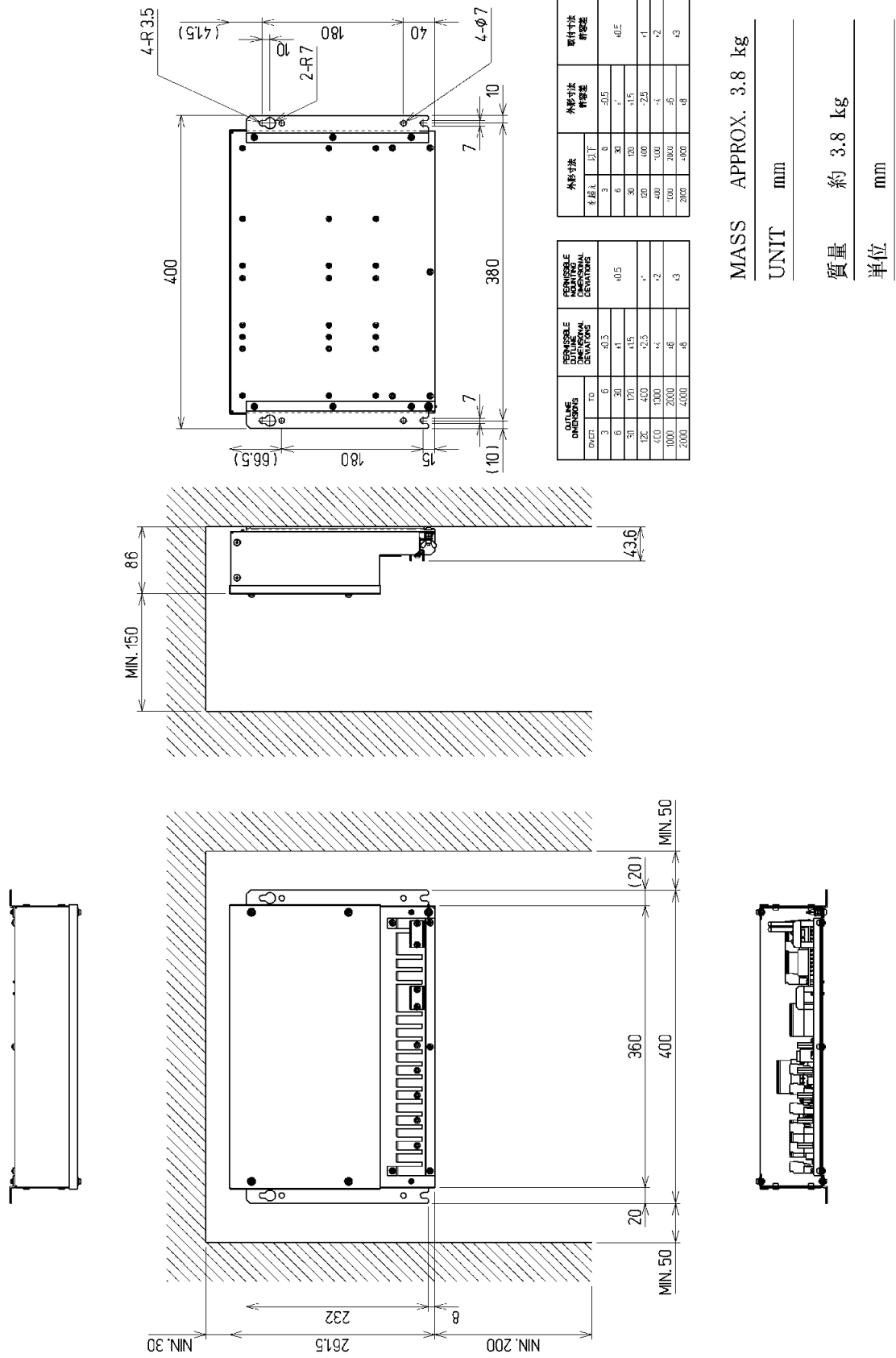
OUTLINE DIMENSIONS OVER	PERMISSIBLE DIMENSIONAL DEVIATIONS		PERMISSIBLE DIMENSIONAL DEVIATIONS
3	6	+0.5	+0.5
6	30	+1	
30	120	+1.5	+2.5
120	400	+2.5	
400	1000	+4	+2
1000	2000	+6	+3
2000	4000	+8	

SONCE5368

KEYBOARD OPERATION UNIT OUTLINE DRAWING

NCE-5625

Outline Drawing of Keyboard Operation Unit (NCE-5625)



Outline Drawing of Junction Box (NQE-1143)

JUNCTION BOX OUTLINE DRAWING

NQE-1143

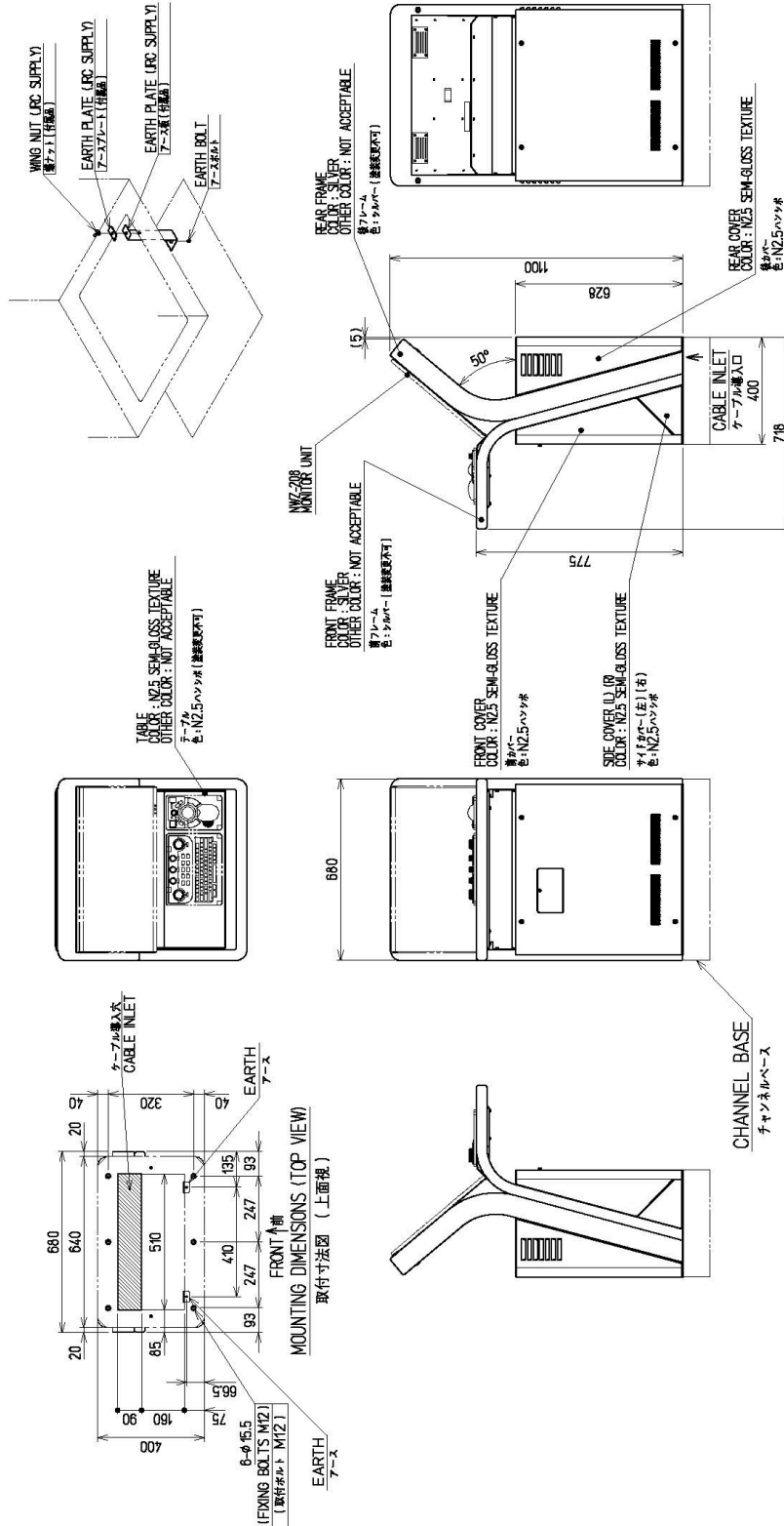
SCNQE5093-0

MASS APPROX. 3.8 kg

UNIT mm

質量 約 3.8 kg

単位 mm



外形寸法 を超過	外形寸法 許容差		取付寸法 許容差	
	以下	以下	以下	以下
3	6	±0.5	±0.5	±0.5
6	30	±1	±1	±0.5
30	120	±1.5	±1.5	±1
120	400	±2.5	±2.5	±1
400	1000	±4	±4	±2
1000	2000	±6	±6	±2
2000	4000	±8	±8	±3

OUTLINE DIMENSIONS	PERMISSIBLE OUTLINE DIMENSIONAL DEVIATIONS		PERMISSIBLE MOUNTING DIMENSIONAL DEVIATIONS	
	OVER	TO	±	±
3	6	±0.5	±0.5	±0.5
6	30	±1	±1	±0.5
30	120	±1.5	±1.5	±1
120	400	±2.5	±2.5	±1
400	1000	±4	±4	±2
1000	2000	±6	±6	±2
2000	4000	±8	±8	±3

MASS APPROX. 65 kg ※Note1

MASS APPROX. 100 kg ※Note2

UNIT mm

質量 約 65 kg ※注1

質量 約 100 kg ※注2

単位 mm

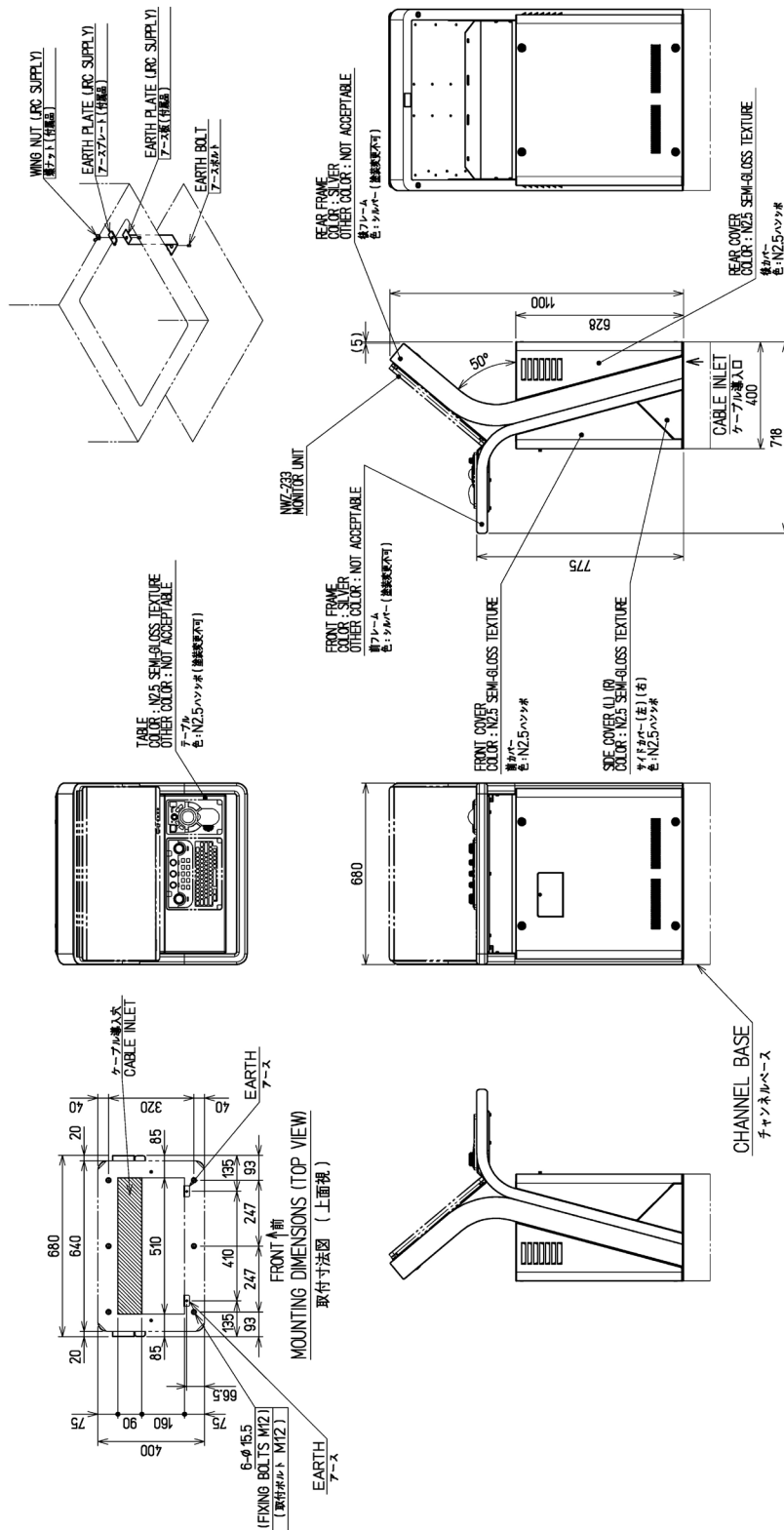
※Note1: Only CWA-246  
※Note2: NDC-2272 (Composition: CWA-246, NWZ-208, NDC-1590A, NBD-913, NDE-1143, NCE-5605 and NCE-5625 / CWB-1593)

※注1: CWA-246のみ  
※注2: NDC-2272 (構成: CWA-246・NWZ-208・NDC-1590A・NBD-913・NDE-1143・NCE-5605・NCE-5625 / CWB-1593)

SCYW05768 A-1-0 DISPLAY UNIT MOUNT KIT OUTLINE DRAWING CWA-246 (NWZ-208)

Outline Drawing of 26inch Cradle Frame (CWA-246)

(with display, trackball operation unit and keyboard operation unit installed)



MASS APPROX. 65 kg ※No161  
MASS APPROX. 93 kg ※No162

UNIT mm

※No161: Only CWA-246  
※No162: NCD-277ZB (Composition: CWA-246, NWZ-233, NDC-1590A, NED-913, NCE-1143, NCE-5605 and NCE-5625 / CMB-1593)

質量 約 65 kg ※注1

質量 約 93 kg ※注2

単位 mm

※注1: CWA-246/A  
※注2: NCD-277ZB 機種: CWA-246, NWZ-233, NDC-1590A, NED-913, NCE-1143, NCE-5605, NCE-5625 / CMB-1593

外形寸法 を越え	外形寸法 許容差		取付寸法 許容差	
	以下			
3	6	±0.5		
6	30	±1		±0.5
30	120	±1.5		
120	400	±2.5		±1
400	1000	±4		±2
1000	2000	±6		±3
2000	4000	±8		

OUTLINE DIMENSIONS OVER	TO	PERMISSIBLE OUTLINE DIMENSIONAL DEVIATIONS	PERMISSIBLE MOUNTING DIMENSIONAL DEVIATIONS
		3	6
6	30	±1	
30	120	±1.5	
120	400	±2.5	±1
400	1000	±4	±2
1000	2000	±6	±3
2000	4000	±8	

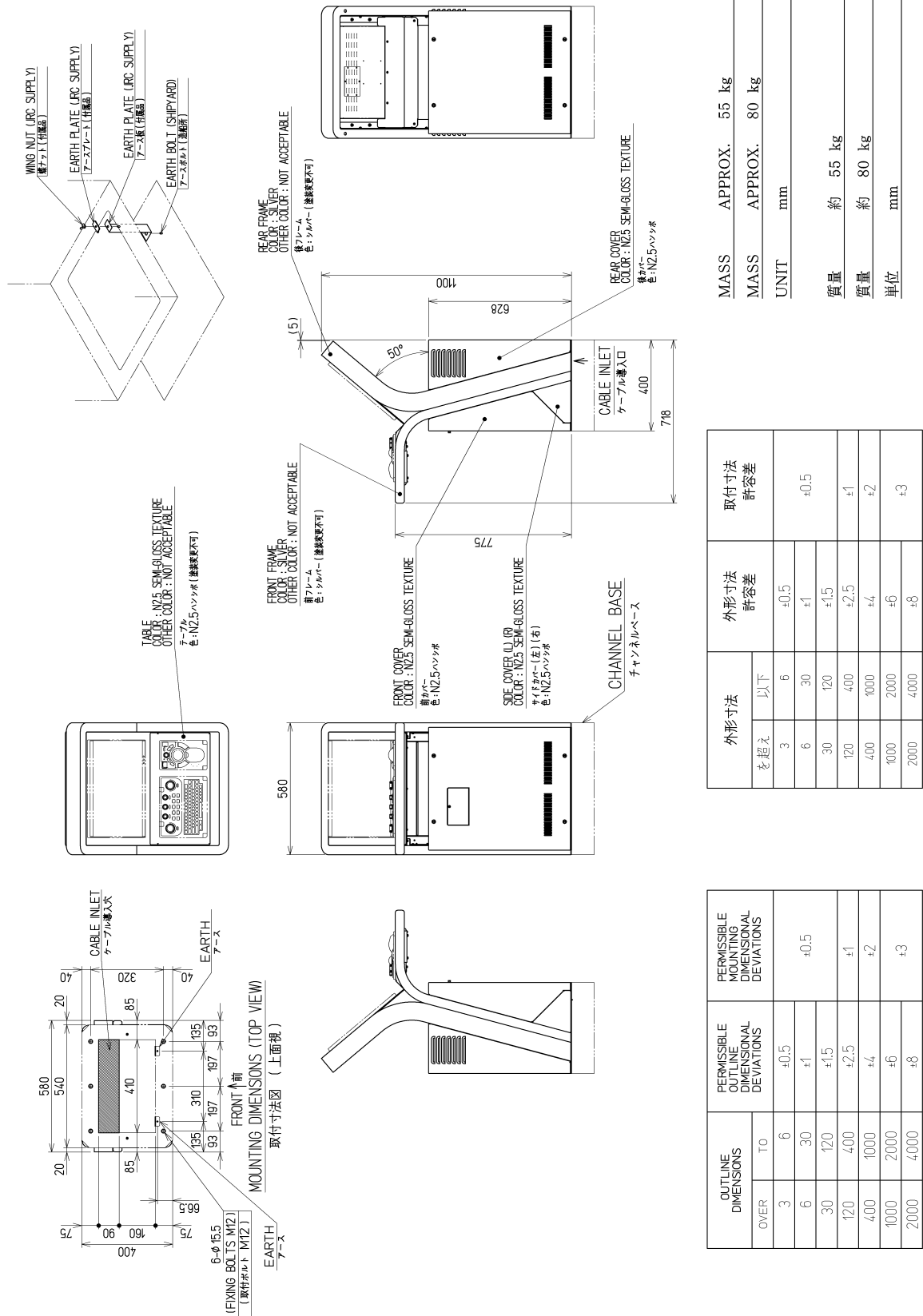
SCYW05768 A-2-0

DISPLAY UNIT MOUNT KIT OUTLINE DRAWING

CWA-246 (NWZ-233)

Outline Drawing of 27inch Cradle Frame (CWA-246)

(with display, trackball operation unit and keyboard operation unit installed)

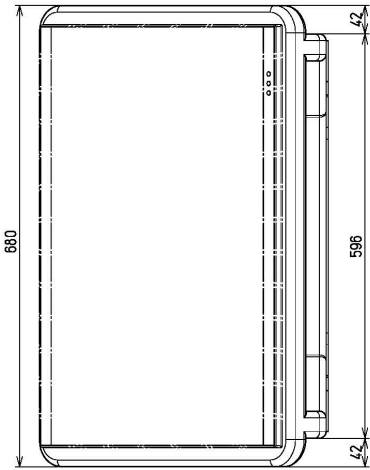
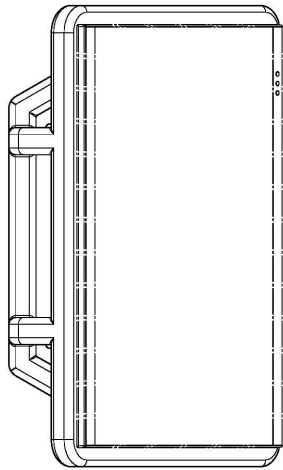


Outline Drawing of 19inch Cradle Frame (CWA-245)  
 (with display, trackball operation unit and keyboard operation unit installed)

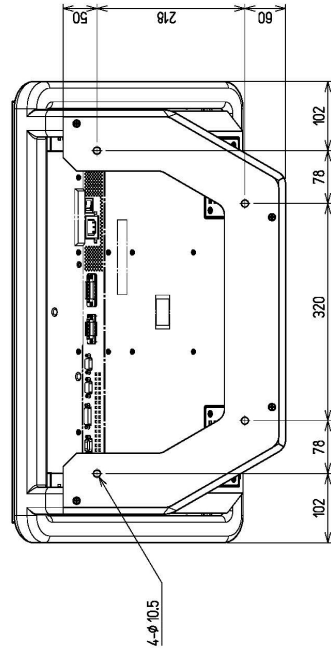
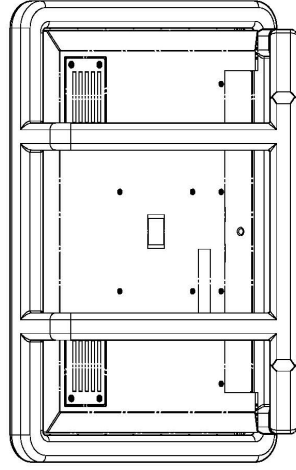
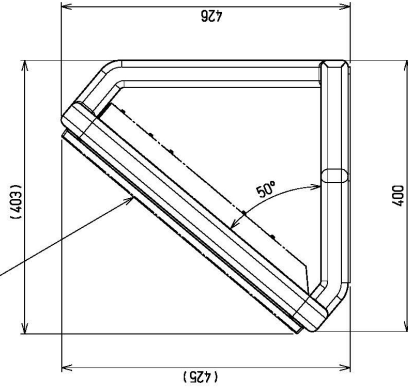
SCYW05606-④

DISPLAY UNIT MOUNT KIT OUTLINE DRAWING

CWA-245



NWZ-208  
MONITOR UNIT



外形寸法		外形寸法 許容差	取付寸法 許容差
φ	以下		
3	6	±0.5	
6	30	±1	±0.5
30	120	±1.5	
120	400	±2.5	±1
400	1000	±4	±2

OUTLINE DIMENSIONS		PERMISSIBLE OUTLINE DIMENSIONAL DEVIATIONS	PERMISSIBLE MOUNTING DIMENSIONAL DEVIATIONS
OVER	TO		
3	6	±0.5	
6	30	±1	±0.5
30	120	±1.5	
120	400	±2.5	±1
400	1000	±4	±2

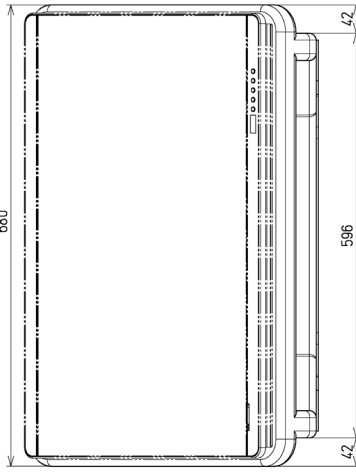
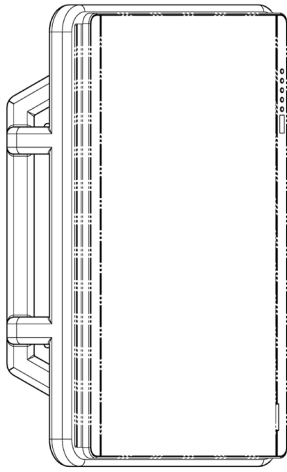
MASS	5.5 kg
UNIT	mm
質量	5.5 kg
単位	mm

Outline Drawing of 26inch Desktop Frame (CWB-1595)

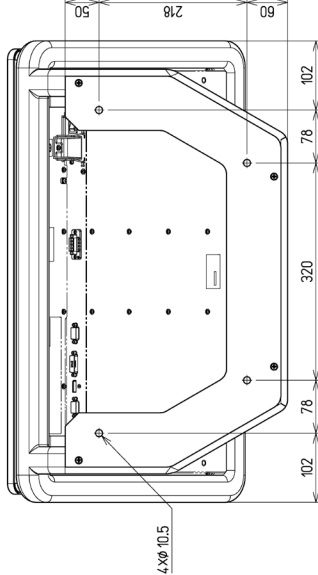
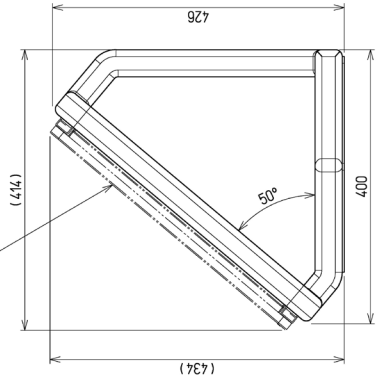
SCYW05609A-1-①

26INCH DSKTOP FRAME OUTLINE DRAWING

CWB-1595 (NWZ-208)



NWZ-233  
MONITOR UNIT



外形寸法		外形寸法 許容差	取付寸法 許容差
超過	以下		
3	6	+0.5	±0.5
6	30	±1	
30	120	±1.5	±1
120	400	±2.5	
400	1000	±4	±2

OUTLINE DIMENSIONS		PERMISSIBLE OUTLINE DIMENSIONAL DEVIATIONS	PERMISSIBLE MOUNTING DIMENSIONAL DEVIATIONS
OVER	TO		
3	6	+0.5	±0.5
6	30	±1	
30	120	±1.5	±1
120	400	±2.5	
400	1000	±4	±2

MASS	5.5 kg
UNIT	mm
質量	5.5 kg
単位	mm

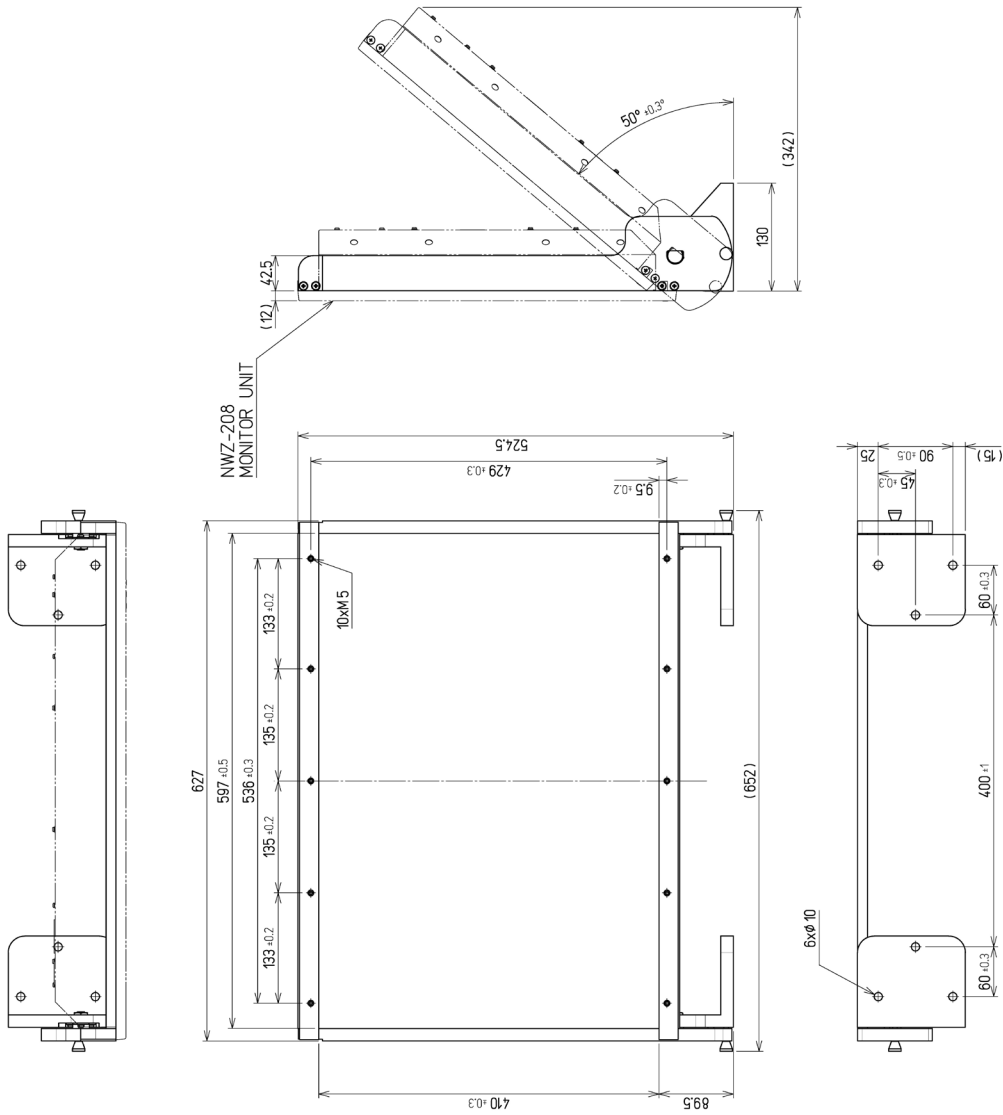
Outline Drawing of 27inch Desktop Frame (CWB-1595)

SCYW05609A-2-①

26INCH DSKTOP FRAME OUTLINE DRAWING

CWB-1595 (NWZ-233)





OUTLINE DIMENSIONS OVER		PERMISSIBLE OUTLINE DIMENSIONAL DEVIATIONS	PERMISSIBLE MOUNTING DIMENSIONAL DEVIATIONS
3	TO 6	±0.5	±0.5
6	30	±1	
30	120	±1.5	±1
120	400	±2.5	
400	1000	±4	±2
1000	2000	±6	±3
2000	4000	±8	

外形寸法		外形寸法 許容差	取付寸法 許容差
を越え	以下		
3	6	±0.5	±0.5
6	30	±1	
30	120	±1.5	±1
120	400	±2.5	
400	1000	±4	±2
1000	2000	±6	±3
2000	4000	±8	

MASS APPROX. 4.8 kg

UNIT mm

質量 約 4.8 kg

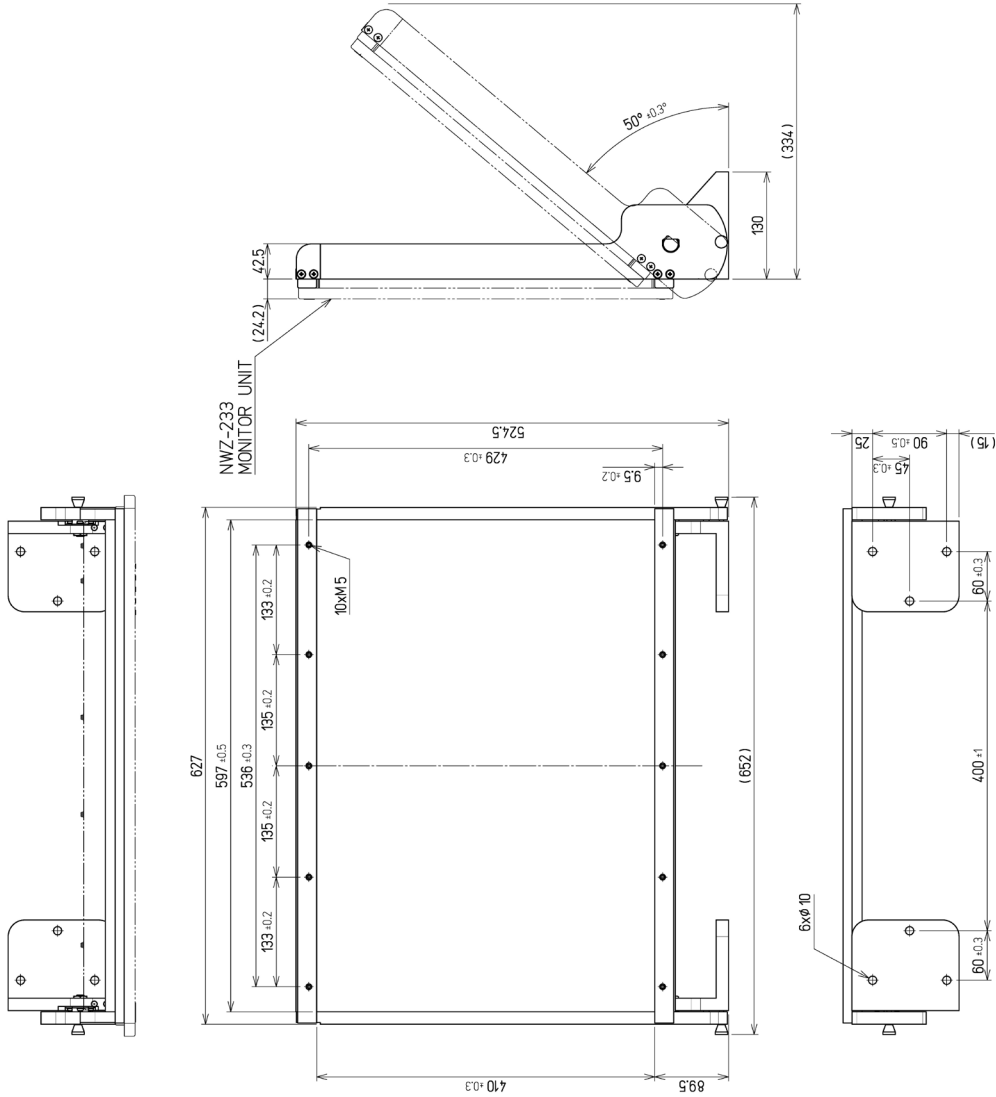
単位 mm

Outline Drawing of 26inch Desktop Frame (CWB-1660)

P00024011-1-②

26INCH DESKTOP FRAME OUTLINE DRAWING

CWB-1660 (NWZ-208)



OUTLINE DIMENSIONS		PERMISSIBLE DIMENSIONAL DEVIATIONS	PERMISSIBLE DIMENSIONAL DEVIATIONS
OVER	TO		
3	6	+0.5	±0.5
6	30	±1	
30	120	±1.5	±1
120	400	±2.5	
400	1000	±4	±2
1000	2000	±6	
2000	4000	±8	±3

外形寸法		外形寸法 許容差	取付寸法 許容差
を越え	以下		
3	6	+0.5	±0.5
6	30	±1	
30	120	±1.5	±1
120	400	±2.5	
400	1000	±4	±2
1000	2000	±6	
2000	4000	±8	±3

MASS APPROX. 4.8 kg  
UNIT mm

質量 約 4.8 kg  
単位 mm

Outline Drawing of 27inch Desktop Frame (CWB-1660)

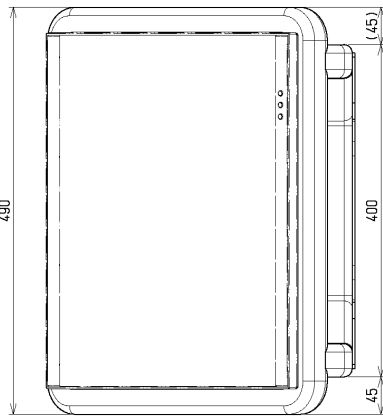
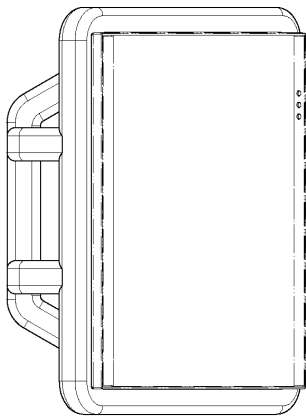
P00024011-2-0

26INCH DESKTOP FRAME OUTLINE DRAWING

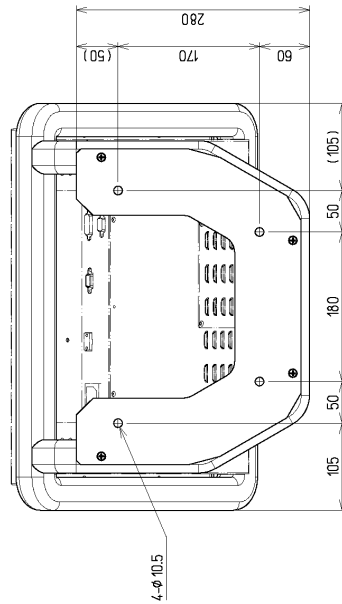
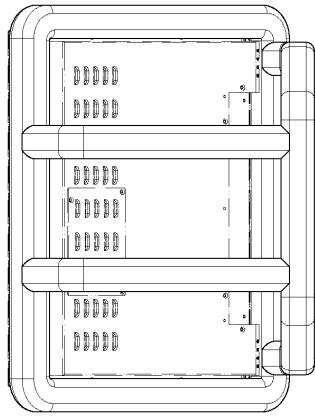
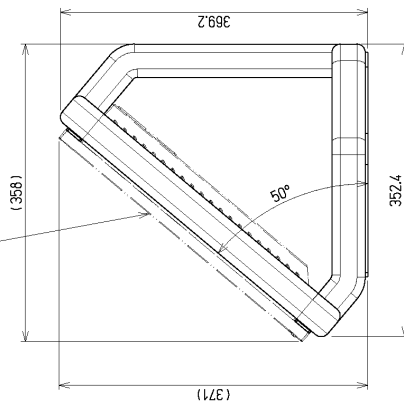
CWB-1660 (NWZ-233)

外形寸法 公差	外形寸法 許容差		取付寸法 許容差
	以下	以上	
3	6	+0.5	40.5
6	30	+1	
30	120	+1.5	
120	400	+2.5	+1
400	1000	+4	+2

OUTLINE DIMENSIONS OVER	T0	PERMISSIBLE OUTLINE DIMENSIONAL DEVIATIONS	PERMISSIBLE MOUNTING DIMENSIONAL DEVIATIONS
3	6	+0.5	+0.5
6	30	+1	
30	120	+1.5	
120	400	+2.5	+1
400	1000	+4	+2



NWZ-207  
MONITOR UNIT



MASS APPROX. 3.6 kg  
UNIT mm

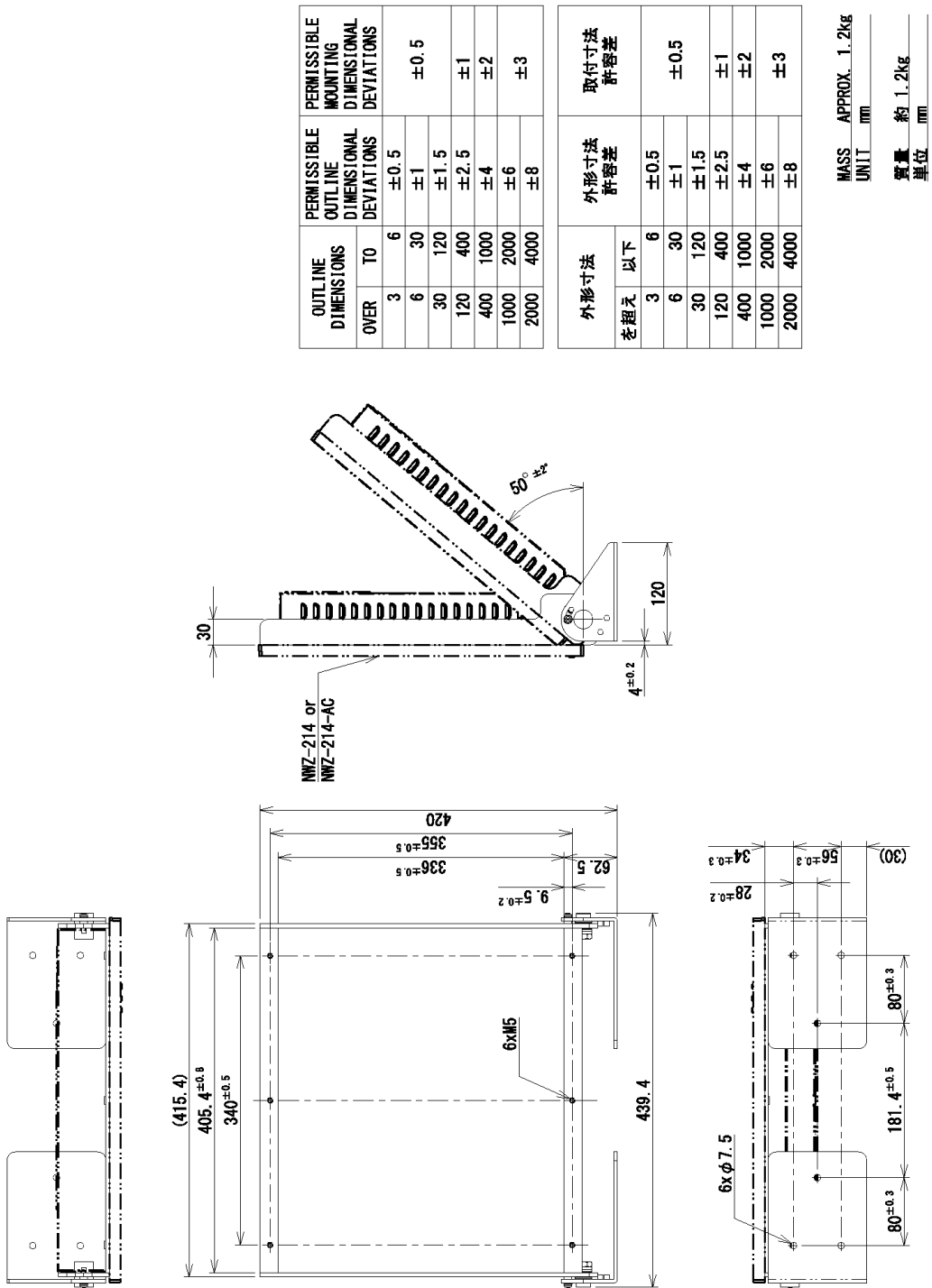
質量 約 3.6 kg  
単位 mm

Outline Drawing of 19inch Desktop Frame (CWB-1594)

SCYW05608

19 INCH DESKTOP FRAME OUTLINE DRAWING

CWB-1594



Outline Drawing of 19inch Desktop Frame (CWB-1659)

OUTLINE DIMENSIONS		PERMISSIBLE MOUNTING DIMENSIONAL DEVIATIONS	PERMISSIBLE MOUNTING DIMENSIONAL DEVIATIONS
OVER	TO		
3	6	±0.5	
6	30	±1	±0.5
30	120	±1.5	
120	400	±2.5	±1
400	1000	±4	±2
1000	2000	±6	
2000	4000	±8	±3

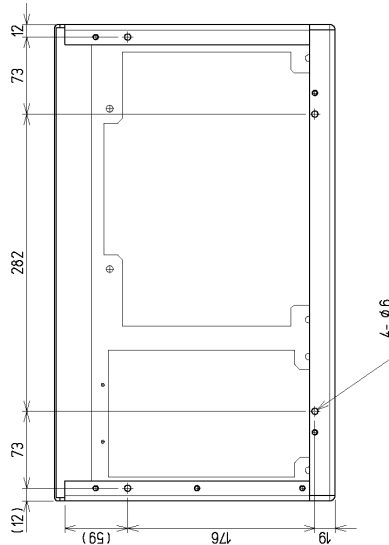
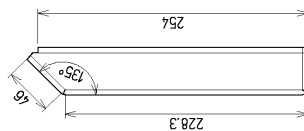
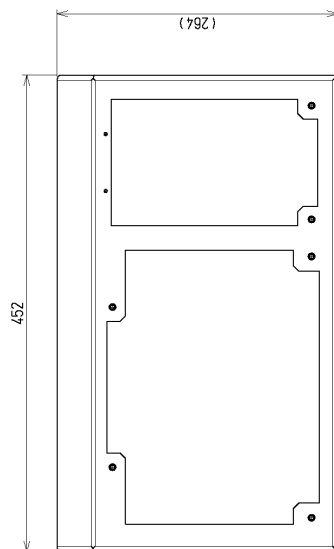
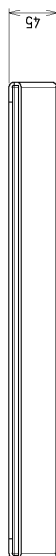
外形寸法		外形寸法許容差	取付寸法許容差
を 超 え	以 下		
3	6	±0.5	
6	30	±1	±0.5
30	120	±1.5	
120	400	±2.5	±1
400	1000	±4	±2
1000	2000	±6	
2000	4000	±8	±3

MASS APPROX. 1.2kg  
 UNIT mm  
 質量 約 1.2kg  
 単位 mm

Outline Drawing of OPU Desktop Frame (CWB-1596)

外形寸法		外形寸法 許容差	取付寸法 許容差
φ超過	以下		
3	6	±0.5	
6	30	±1	±0.5
30	120	±1.5	
120	400	±2.5	±1
400	1000	±4	±2

OUTLINE DIMENSIONS		PERMISSIBLE DIMENSIONAL DEVIATIONS
OVER	T.O	
3	6	±0.5
6	30	±1
30	120	±1.5
120	400	±2.5
400	1000	±4



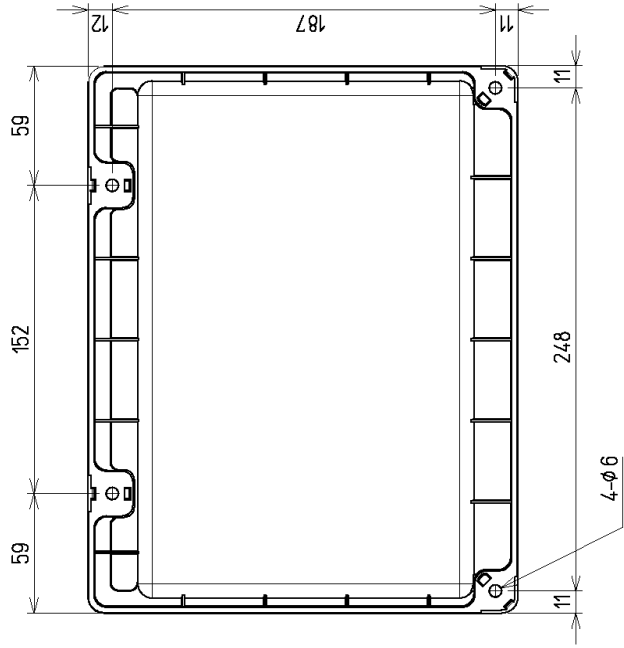
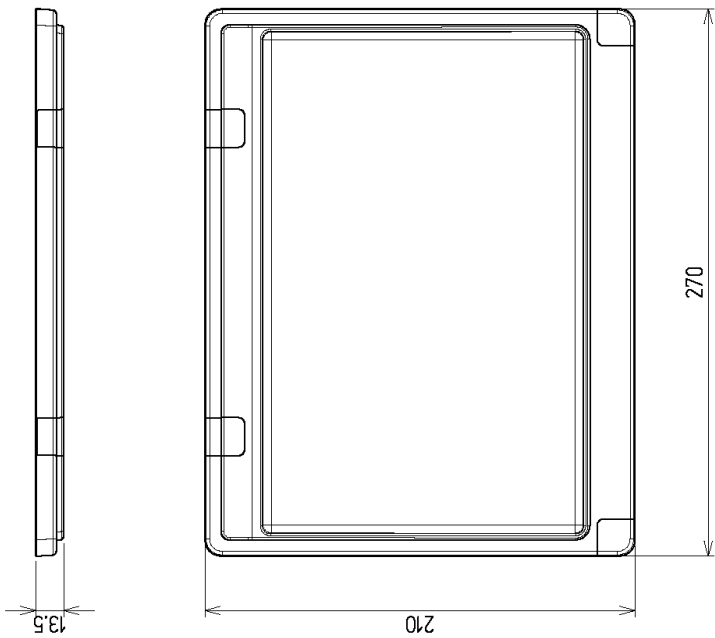
MASS APPROX. 1 kg  
UNIT mm

質量 約 1 kg  
単位 mm

SCYW05610

OPU DESKTOP FRAME

CWB-1596



外形寸法		外形寸法 許容差	取付寸法 許容差
を 超え	以下		
3	6	±0.5	±0.5
6	30	±1	±0.5
30	120	±1.5	±0.5
120	400	±2.5	±1
400	1000	±4	±2
1000	2000	±6	±3
2000	4000	±8	±3

OUTLINE DIMENSIONS		PERMISSIBLE OUTLINE DIMENSIONAL DEVIATIONS	PERMISSIBLE MOUNTING DIMENSIONAL DEVIATIONS
OVER	TO		
3	6	±0.5	±0.5
6	30	±1	±0.5
30	120	±1.5	±0.5
120	400	±2.5	±1
400	1000	±4	±2
1000	2000	±6	±3
2000	4000	±8	±3

MASS 0.3 kg  
UNIT mm

質量 0.3 kg  
単位 mm

Outline Drawing of Large Tray (CWB-1593)

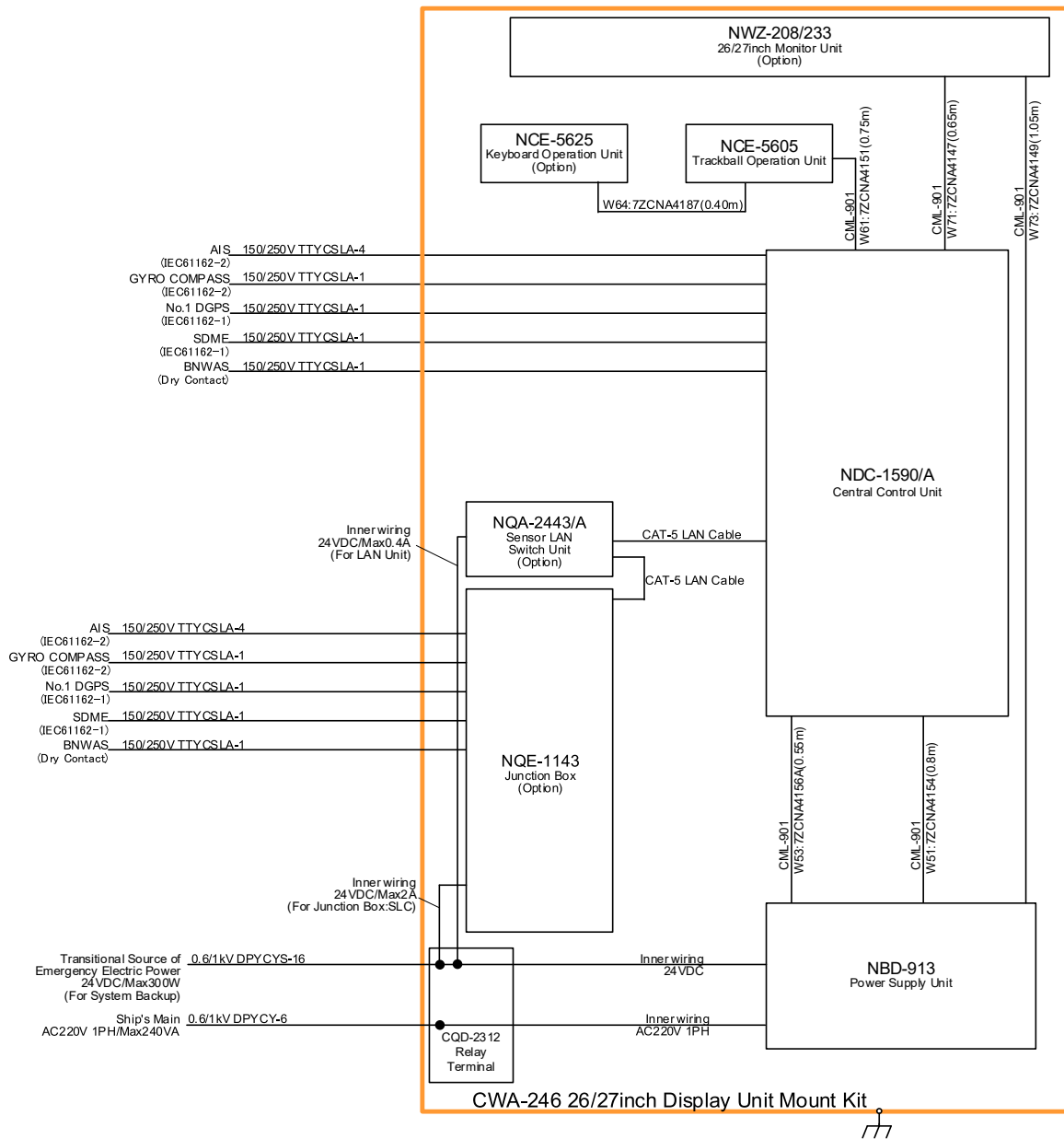
SCYW05611

LARGE TRAY OUTLINE DRAWING

CWB-1593

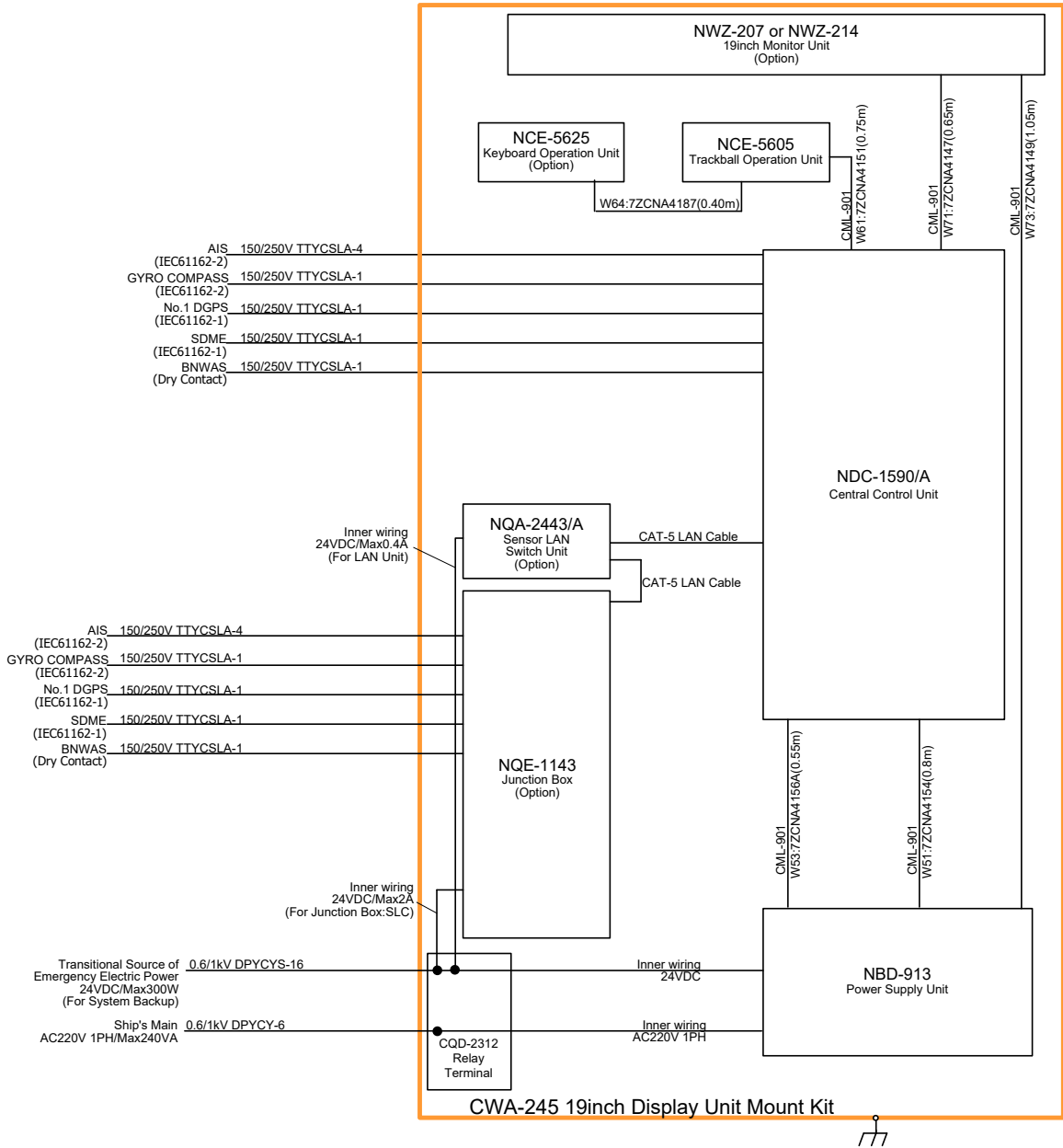
# 1.5 General System Diagrams

Connection examples of this equipment are shown below.



NOTE: ELIMINATING THE INTERFERENCE ON FREQUENCIES USED FOR MARINE COMMUNICATIONS AND NAVIGATION DUE TO OPERATION OF THE RADAR.  
 ALL CABLES OF THE RADAR ARE TO BE RUN AWAY FROM THE CABLES OF RADIO EQUIPMENT.  
 (ex. RADIOTELEPHONE, COMMUNICATIONS RECEIVER and DIRECTION FINDER. etc.)  
 ESPECIALLY INTER-WIRING CABLES BETWEEN SCANNER UNIT AND DISPLAY UNIT OF THE RADAR SHOULD NOT BE RUN PARALLEL WITH THE CABLES OF RADIO EQUIPMENT.

## General System Diagram of JAN-9202



NOTE: ELIMINATING THE INTERFERENCE ON FREQUENCIES USED FOR MARINE COMMUNICATIONS AND NAVIGATION DUE TO OPERATION OF THE RADAR.  
 ALL CABLES OF THE RADAR ARE TO BE RUN AWAY FROM THE CABLES OF RADIO EQUIPMENT. (ex. RADIOTELEPHONE, COMMUNICATIONS RECEIVER and DIRECTION FINDER, etc.)  
 ESPECIALLY INTER-WIRING CABLES BETWEEN SCANNER UNIT AND DISPLAY UNIT OF THE RADAR SHOULD NOT BE RUN PARALLEL WITH THE CABLES OF RADIO EQUIPMENT.

**General System Diagram of JAN-7202**





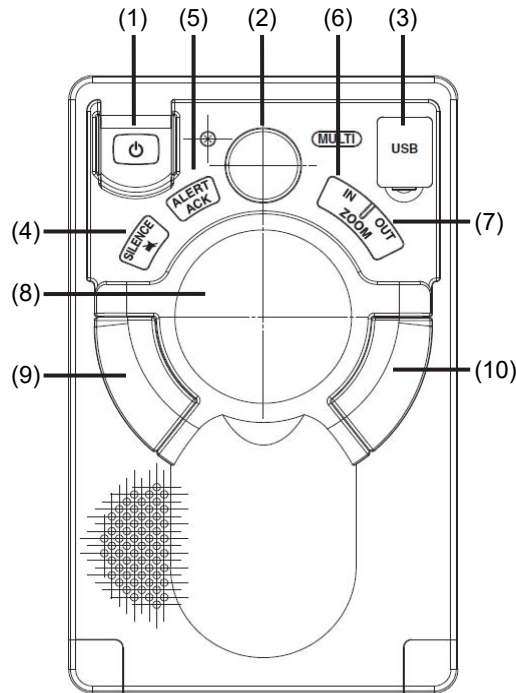
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# Section 2 Name and Function of Each Unit

---

## 2.1 Name and Main Function of the Operation Unit

### 2.1.1 Trackball operation unit



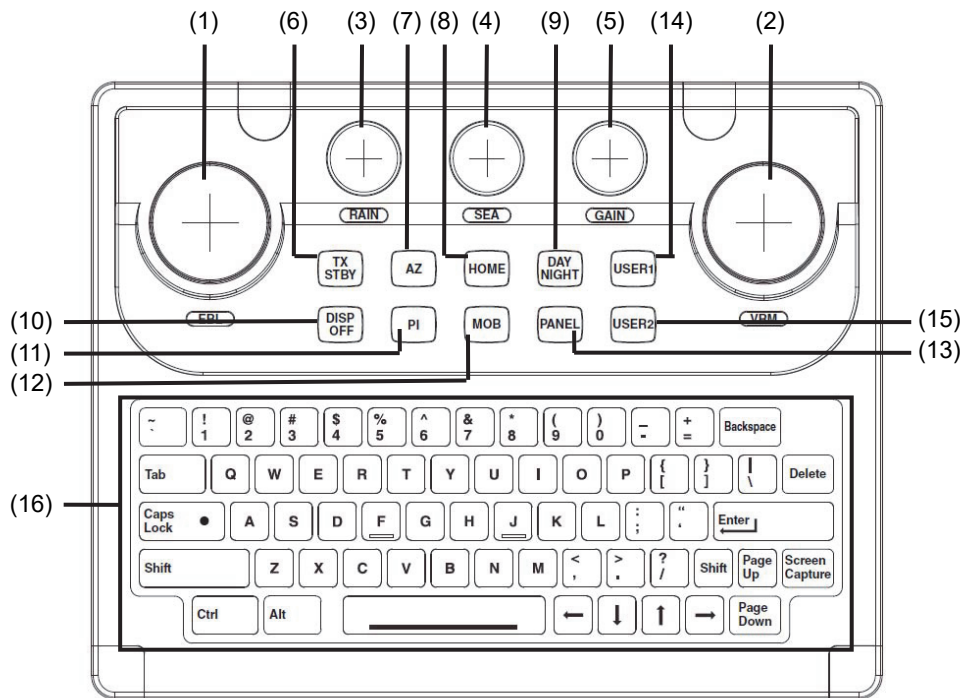
## WARNING



When turning off the power supply, do not press the Power button on the operation unit for an extended period of time. If the button is pressed for an extended period of time, the equipment may not be terminated normally, causing a failure.

No	Name	Function outline
1	Power button	Use this button to turn on and off this equipment.
2	[MULTI] dial	<ul style="list-style-type: none"> <li>- Turn this dial to operate the function that is assigned to the [MULTI] dial, such as the Display Brightness function.</li> <li>- If the [MULTI] dial is held down, the Display Brightness function is assigned to the [MULTI] dial forcibly.</li> </ul>
3	USB terminal	Connects a USB flash memory.
4	[SILENCE] key	Stops the alert buzzer.
5	[ALERT ACK] key	Acknowledges the alert.
6	[ZOOM IN] key	Not used.
7	[ZOOM OUT] key	Not used.
8	Trackball	Moves the cursor on the screen. Use the trackball to specify a position or to perform various settings.
9	Left button	<ul style="list-style-type: none"> <li>- Use this button to select a function or determine the operation that is set.</li> <li>- Clicking the left button once is referred to as "click" in this manual.</li> <li>- Clicking the left button twice consecutively is referred to as "double click" in this manual.</li> </ul>
10	Right button	Not used.

## 2.1.2 Keyboard operation unit (Option)

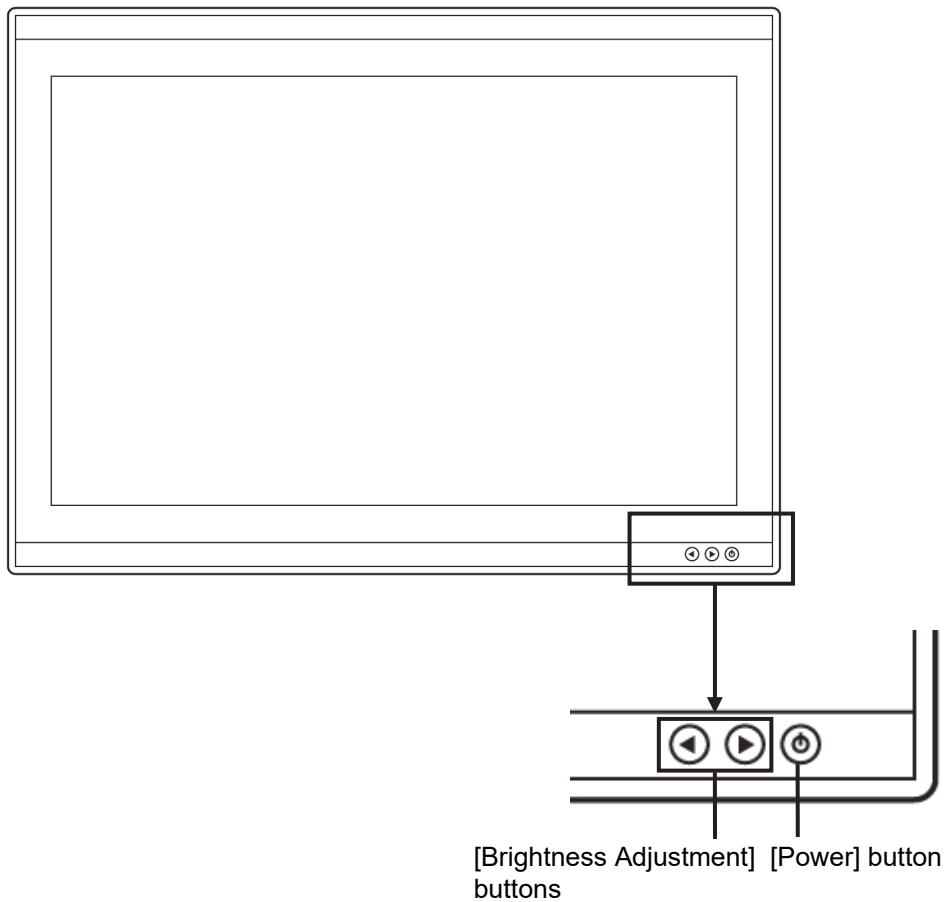


No.	Name	Function outline
1	[EBL] dial	Not used.
2	[VRM] dial	Not used.
3	[RAIN] dial	Not used.
4	[SEA] dial	Not used.
5	[GAIN] dial	Not used.
6	[TX STBY] key	Not used.
7	[AZ] key	Not used.
8	[HOME] key	Not used.
9	[DAY NIGHT] key	Switches the display color on the screen over 5 levels according to the brightness on the bridge.
10	[DISP OFF] key	Not used.
11	[PI] key	Not used.
12	[MOB] (Man Over Board) key	<ul style="list-style-type: none"> <li>- The [Marker] dialog box (which shows monitoring information for preventing loss of sight of the position of the person who fell overboard) appears based on the latitude and longitude information of the own ship's position.</li> <li>- Holding down this key closes the [Marker] dialog box.</li> </ul>
13	[PANEL] key	Whenever this key is pressed, the brightness of the panel on the operation unit is switched.
14	[USER1] key	<ul style="list-style-type: none"> <li>- Executes the function that is assigned to the key.</li> <li>- Holding down this key displays the setting dialog box for assigning a function to the [USER1] key.</li> </ul>
15	[USER2] key	<ul style="list-style-type: none"> <li>- Executes the function that is assigned to the key.</li> <li>- Holding down this key displays the setting dialog box for assigning a function to the [USER2] key.</li> </ul>
16	Keyboard	The keyboard is used for the input of numeric values and characters at operation of this equipment.

---

---

## 2.1.3 Display unit



### [Power] button

When the Power button is pressed while the power of the display unit is turned off, the power is turned on.

To turn off the power of the display unit, press the Power button for 5 seconds or longer.

### [Brightness Adjustment] buttons

These buttons are used to adjust the brightness of the screen.

The screen increases brightness by pressing the ► button.

The screen decreases brightness by pressing the ◀ button.

### Memo

Adjust the brightness of the screen to the extent it is not dazzling, taking into account the brightness of the surroundings and to the brightness which you can be easily observed the screens.

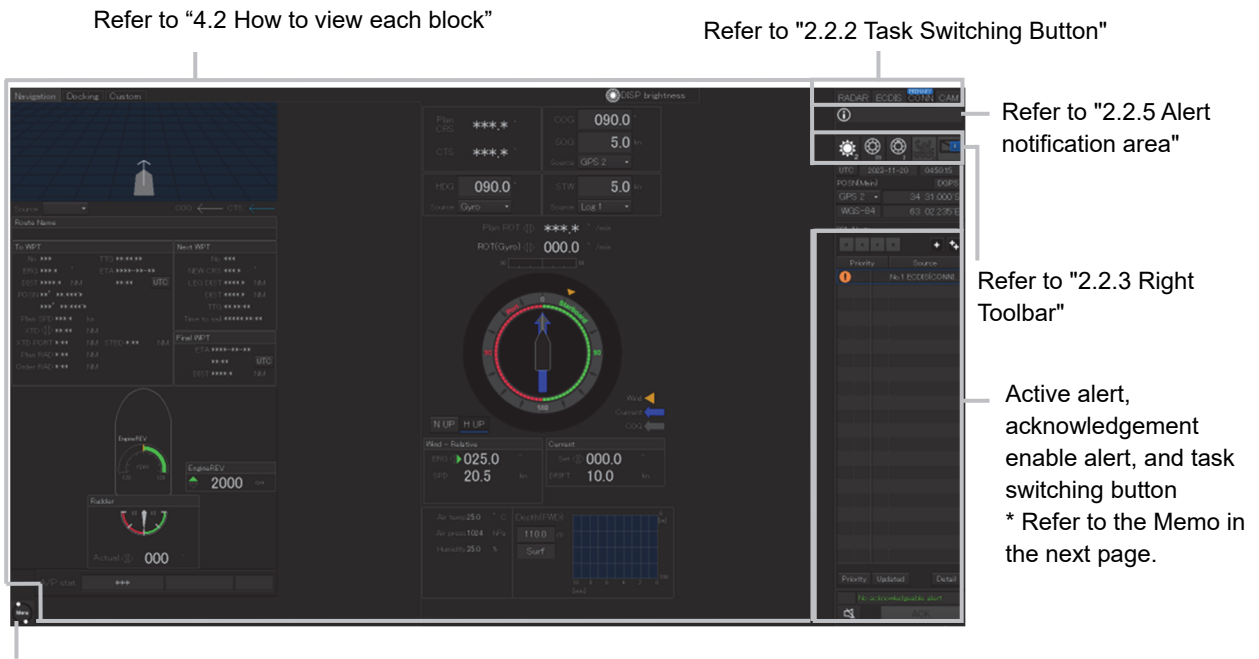
Be careful in the nighttime brightness adjustment because nighttime brightness adjustment may hinder the visibility of information.

# 2.2 Names and Main Functions of the Top Screen

This section describes the names and main functions of the top screen.

## 2.2.1 Conning Display top screen

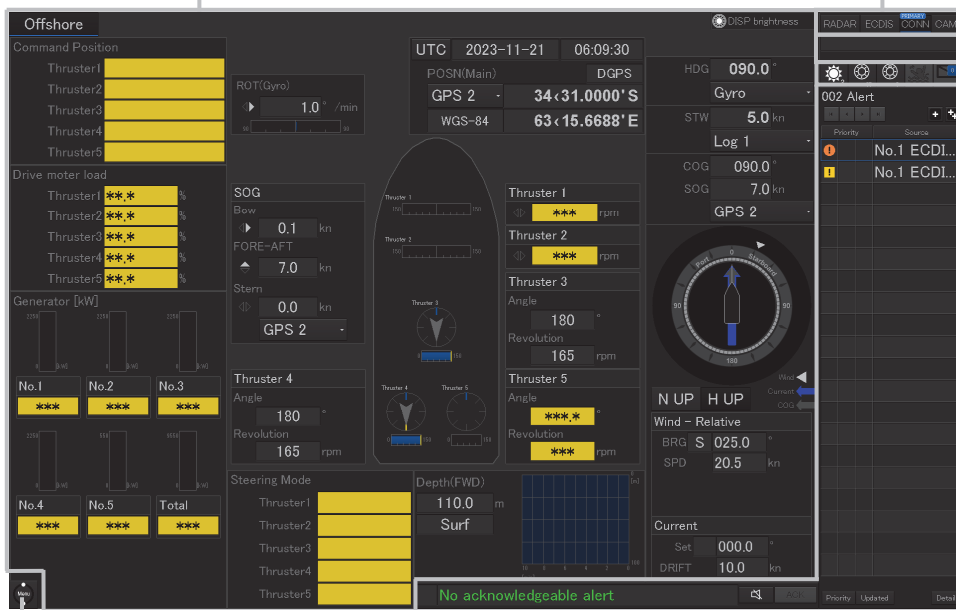
Any of the following screens is displayed as the top screen depending on the Conning Display you use.



Top screen (1) (with AMS license)

Refer to “4.2 How to view each block”

Refer to “2.2.2 Task Switching Button”



Refer to “2.2.5 Alert notification area”

Refer to “2.2.3 Right Toolbar”

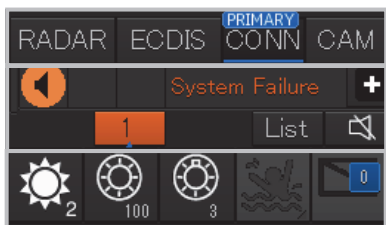
Active alert and Acknowledgement Enable alert

- Refer to the “Memo” shown below.

Refer to “2.2.4 [Menu] button”

Top screen (2) (with CAM license)

The top screen (1) and top screen (2) are displayed when the CAM license is available. When there is no CAM license, the top right of the screen is as shown below.



Refer to “2.2.2 Task Switching Button”

Refer to “2.2.5 Alert notification area”

Refer to “2.2.3 Right Toolbar”

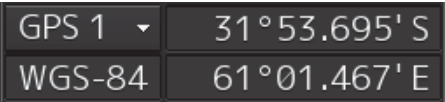
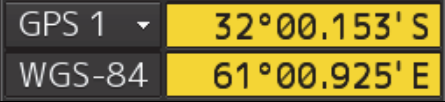

**Memo**

The active alert and acknowledgement enable alert are displayed when the CAM license is available.

For the details, refer to “(1) Active alert” and “(2) Acknowledgment enable alert” in “3.2.2 Conning Display” of the “Bridge Alert Management System (BAMS) Instruction Manual”.

### 2.2.1.1 Color-coded numeric display

The background of the value from each sensor is displayed in three colors.

Background color	Status of numeric value
Normal color	The numeric value is normal. 
Yellow	The numeric value is displayed in yellow when it is unreliable such as when the difference with the previous value is greater than the threshold value. 
Red	When the numeric value is abnormal, "*****" is displayed in red. 

### 2.2.1.2 Color coding of bar graphs

Bar graphs are color-coded at display as follows.

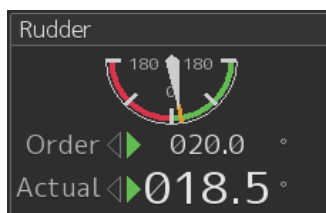
Red: Port side/backward direction

Green: Starboard side/forward direction

### 2.2.1.3 Numeric box

A numeric value is displayed in the numeric box outside of the graph as required.

Example: Arc-like bar graph (rudder angle, etc.)



#### Memo

The graph and numeric value box are displayed separately from each other depending on the Conning Display you use.



## 2.2.2 Task Switching Button



To switch to a required task, click on the task switching button.

Click on the task to be executed from [RADAR]/[ECDIS]/[CONN] (Conning Display) /[CAM].

### Memo

The [Primary] badge is displayed on the task that is set to the Primary function (basic task).

### Example: ECDIS is the Primary function



## 2.2.3 Right Toolbar

The functions of the buttons of the right toolbar are as follows.

### Day/Night button

The display color on the screen can be switched to 5 levels according to the brightness on the bridge.

For the details, refer to "3.7 Switching the Day/Night Mode".

### Display Brightness button

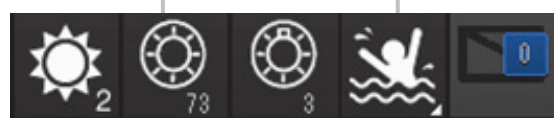
The brightness of the screen can be switched within the range from 0 to 100.

For the details, refer to "3.8.1 Adjusting the Brightness of the Screen and Operation Unit".

### MOB (Man Over Board) button

When a person falls overboard, use this button to mark the own ship's position when the button is clicked on, so as not to lose the sight of the position.

For the details, refer to "3.9 MOB (Man Over Board)".



### Message notification button

Not used on the Conning Display.

### Panel Brightness button

Switch the brightness of the operation unit to any of the 5 levels, 0 to 4.

For the details, refer to "3.8.2 Adjusting the Brightness of the Operation Unit".

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## 2.2.4 [Menu] button

When the [Menu] button on the bottom left corner of the screen is clicked on, the top menu is displayed.

For the menu operation, refer to "3.4 Basic menu operation".

## 2.2.5 Alert notification area

### 2.2.5.1 Condition where there is no AMS license

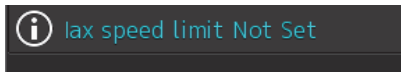
When an alert occurs, the alert status, the content of the alert and the occurrence count are displayed in the alert notification area.



For the details, refer to "3.6 Confirming and Acknowledging an Alert".

### 2.2.5.2 Condition where there is an AMS license

When an alert occurs, the alert status and the content of the alert are displayed in the alert notification area.



Neither alert confirmation nor approval can be performed by operating the alert notification area.

Alert confirmation and approval can be performed from the active alert display and the approval enabled alert display.

For the details, refer to "(1) Active alert" and "(2) Acknowledgment enabled alert" of "3.2.2 Conning Display" of the "Bridge Alert Management System (BAMS) Instruction Manual".



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# Section 3 Basic Operations

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## 3.1 Powering On and Starting

Turn on the power supply according to the following procedure.

### **CAUTION**



For low-temperature start-up, perform pre-heat for more than 30 minutes. Otherwise, an operation failure may occur and an accident may occur.

#### **1 Press the Power button on the operation unit.**

The Power button is lit and the start-up screen is displayed.

#### **Memo**

When power is applied with all the power supplies to the display unit shut off, the display unit starts automatically even when the Power button is not pressed.

After the start-up screen is displayed, the task menu is displayed after a brief interval.

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---

## 3.2 Starting Each Mode

When this equipment starts up, a task menu is displayed on the screen.

On the Task menu, you can select and start the desired mode from the operation modes available for this equipment.



Task Menu Display Example

When the button of the mode to be executed is clicked on, the screen of the mode is displayed.

### Note

When this equipment is started for the first time, if no operation is performed within 10 seconds after the task menu is displayed, the mode screen that has been set up at the time of shipment will appear.

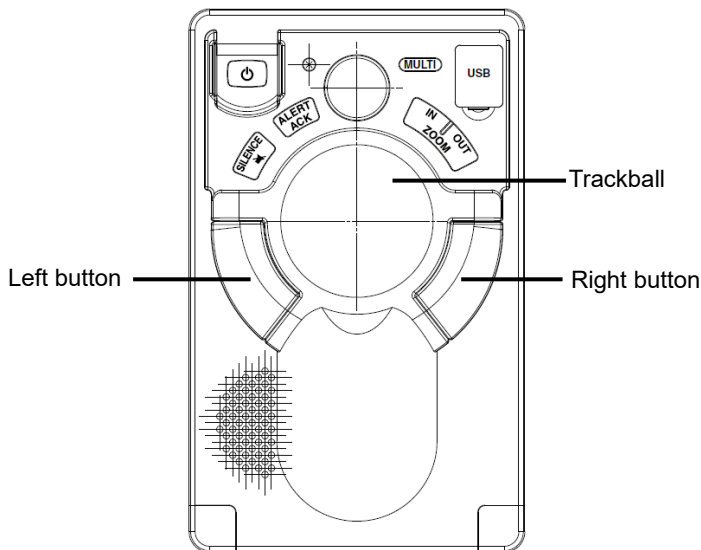
### 3.2.1 Starting Conning Display

To display the top screen of Conning Display, click on the [Navigation Data Monitoring (Conning Display)] button in the task menu.

## 3.3 Basic Operations when using a Trackball

A trackball in the trackball operation unit is mainly used for the operations of this equipment. This section describes the basic operations performed using the trackball.

### 3.3.1 Trackball functions



#### Trackball:

Use the trackball to move the cursor on the screen. Use the trackball for specifying a position, and setting a button and a dialog box.

#### Left button:

Use the left button to determine the position, and determine the button and dialog box settings. In this manual, "click" refers to the clicking of the left button once and "double-click" refers to the clicking of the left button twice consecutively.


#### Right button:

Do not use the right button while operating Conning Display.

### 3.3.2 Basic trackball operations

Move the cursor that is displayed on the screen by the trackball and perform various operations using the left mouse button.

#### 3.3.2.1 Cursor types

Only the "Pointer Cursor" type (  ) is available.

---

### **3.3.3 Basic click operations**

When the cursor is set to a button and the button is clicked on, the function of the selected button is executed.

- When a function On/Off button is clicked on, the setting is switched to On/Off each time.
- When a function selection button is clicked on, the function selection menu is displayed.

# 3.4 Basic Menu Operations

Various functions can be executed or set from the menu that is displayed by clicking on the [Menu] button.

This section describes the basic menu operations.

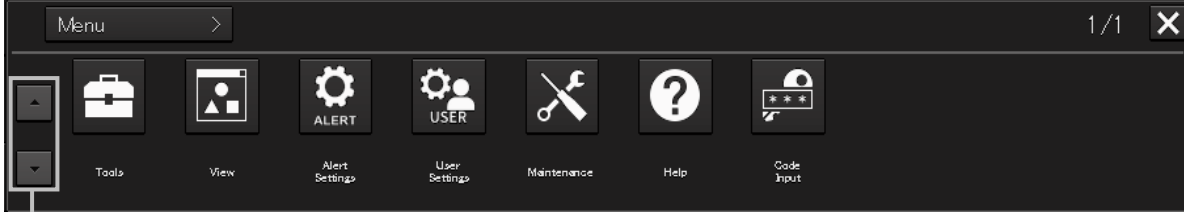
## 3.4.1 Opening the menu

- 1 Click on the [Menu] button at the bottom left corner of the screen.



[Menu] button

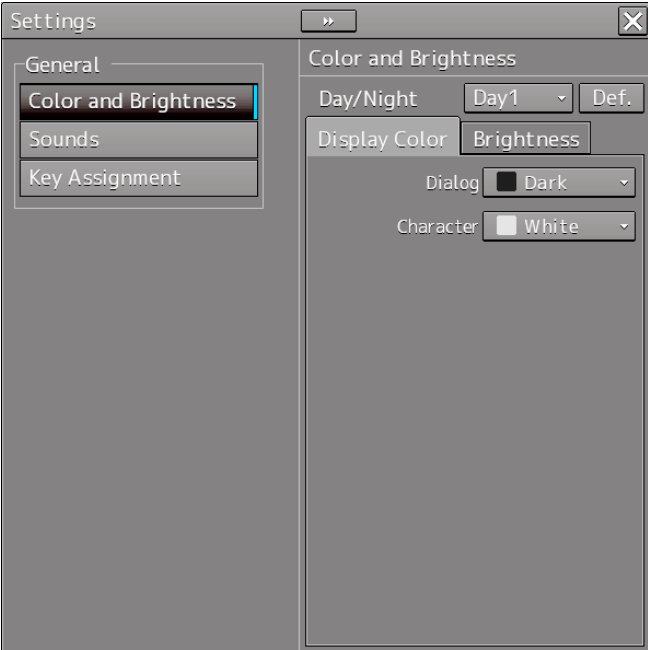
The top menu is displayed.



Page switching button

- 2 Click on one of the buttons that are displayed on the menu.

A dialog box for executing or setting the applicable function appears.



Display Example



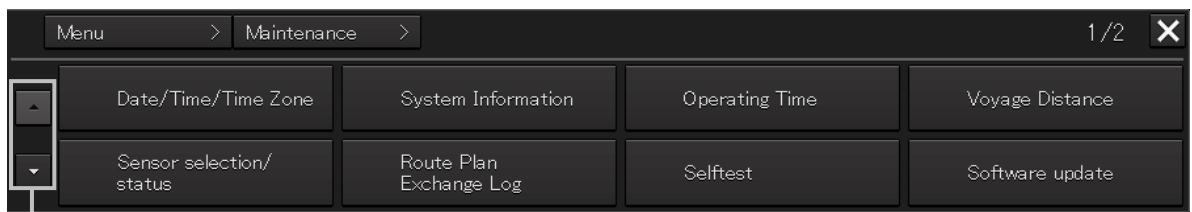
- 3 A submenu is displayed depending on the function. In this case, display a dialog box of the function by clicking on the button on the submenu.**

Example: Maintenance

Top menu



Maintenance submenu



Page switching button

**Memo**

When the submenu screen extends over two pages, similar to the menu screen, it is possible to switch between the pages using the page switching buttons.

### 3.4.2 Menu list

The menus that are displayed vary according to the task that is currently being executed.

Menu	Related section
Tools	3.15 Managing Files with File Manager
View	Section 5 Setting Up Screen View
Alert	Section 6 Setting Up Alerts
Settings	Section 7 Setting Up the Operation Mode
Maintenance	9.1 Maintenance Functions Executed from Menu
Help	3.13 Help
Code Input	3.14 Password Input
Service	Section 8 Adjusting and Setting Up Equipment (for Services)

### 3.4.3 Closing the menu

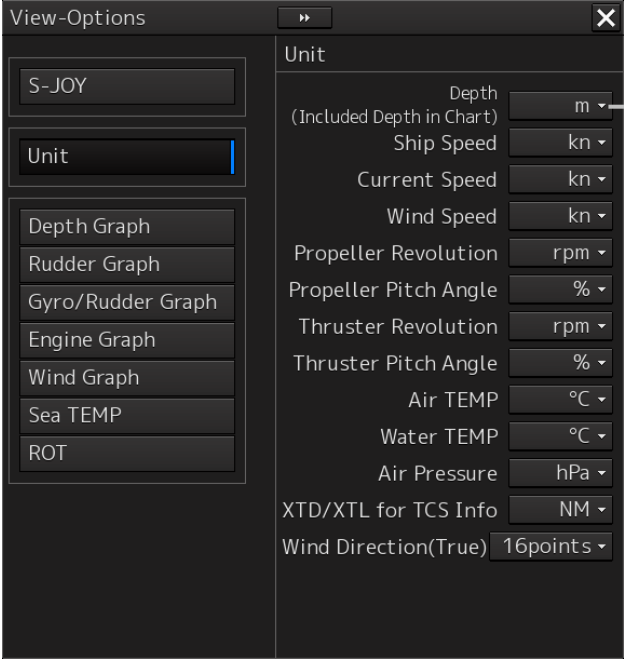
Click on the [X] button on the menu (submenu).

# 3.5 Basic Dialog Box Operations

When a dialog box is opened, the dialog box is in the factory setting state or state at termination of the previous operation.

## 3.5.1 Changing dialog box settings

This section describes how to change the settings by using some dialogs as the examples.



**[Depth (Included Depth in Chart)] list**  
Select [m], [ft], or [fm] from the list. (Perform the same operation for the lists from [Ship Speed].)

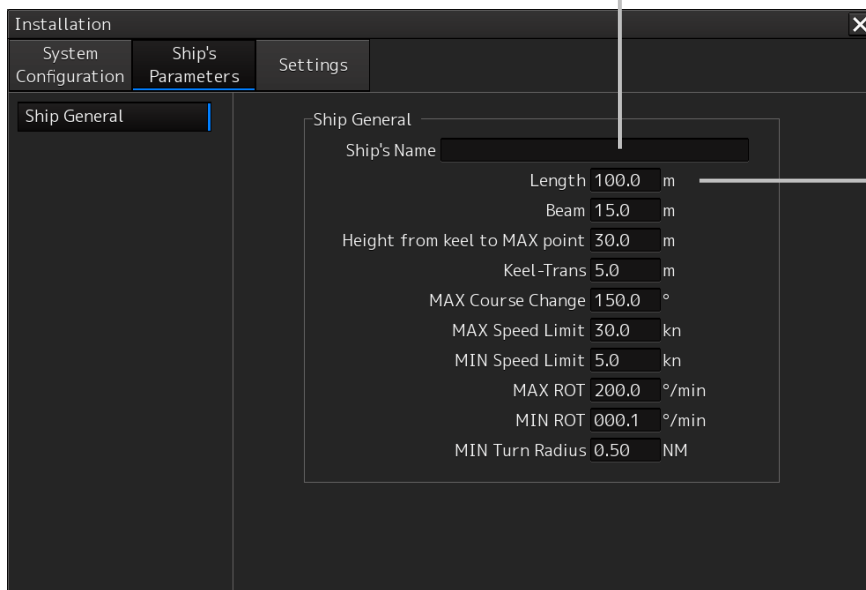
[View-Options] dialog



**[Panel Brightness] check box**  
Set the function to ON or OFF by selecting or clearing the [Panel Brightness] check box.

[Multi Dial] tab of the [Key Assignment] dialog

**[Ship's Name] box**  
Enter a ship's name (characters)

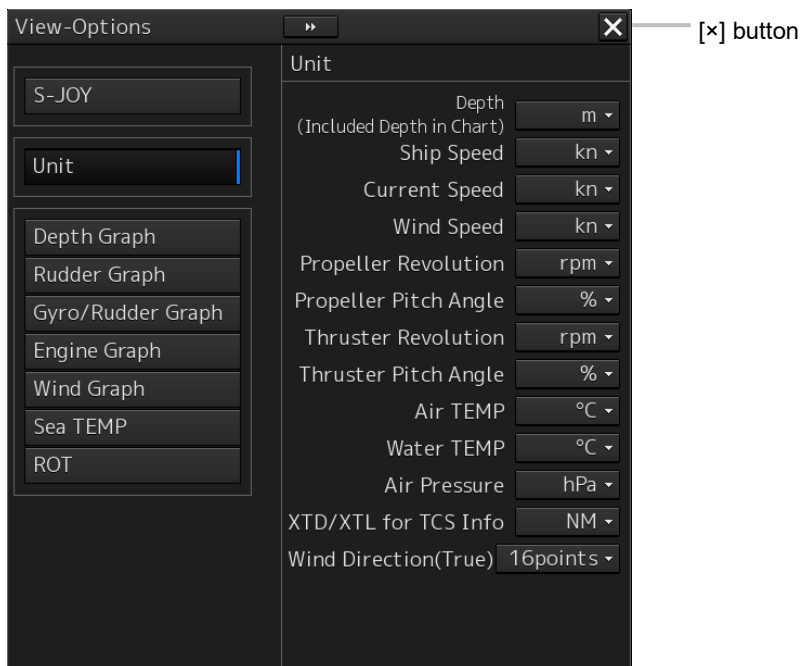


**[Length] box**  
Enter the ship's length (numeric).  
(Perform the same operation for the [Beam] and subsequent boxes.)

[Ship's Parameters] dialog

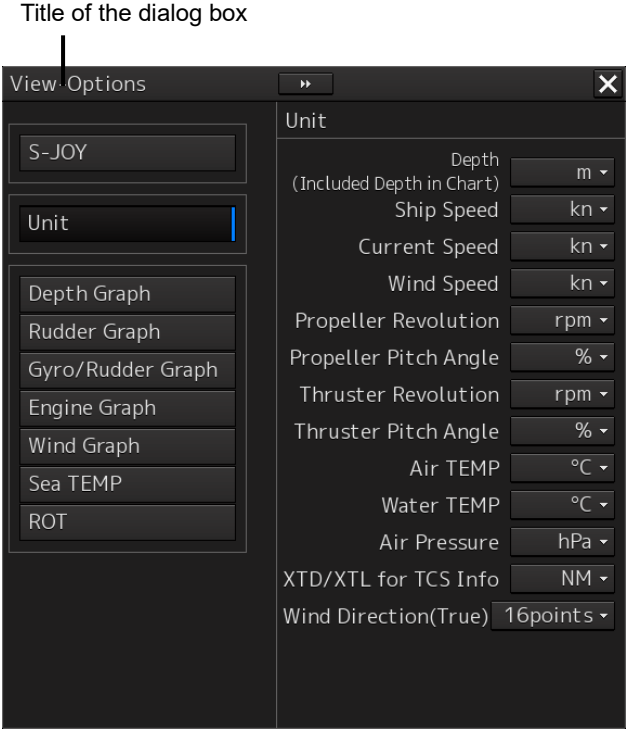
## 3.5.2 Closing the dialog

Close the dialog by clicking on the [X] button of the dialog.



### 3.5.3 Title Bar

The name (title) of the dialog box is displayed on the title bar of the dialog box.



The dialog can be moved by dragging the title bar.

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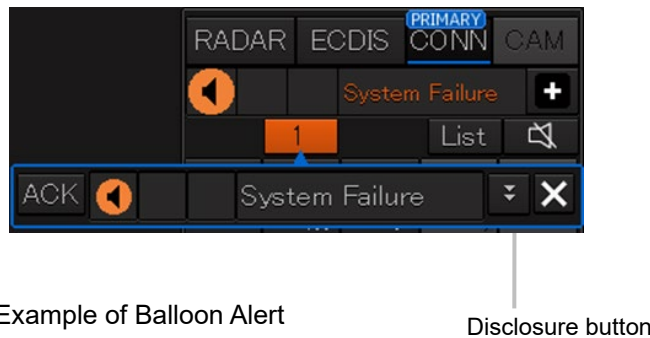
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## 3.6 Confirming and Acknowledging an Alert

### Memo

This section explains the display and operation at the occurrence of an alert when there is no AMS license.

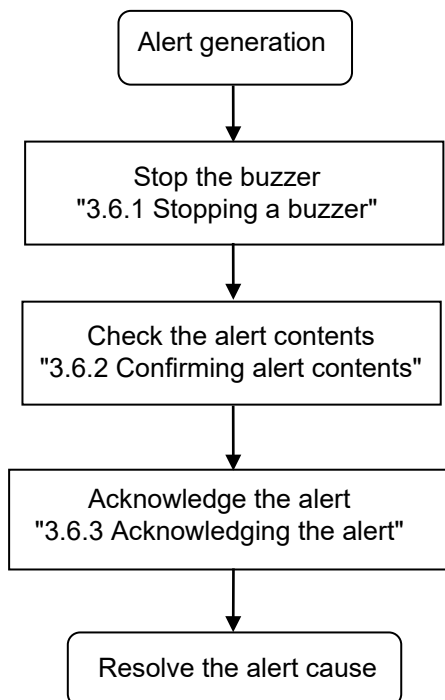
When an alert is generated, a buzzer sound is emitted and an alert balloon is displayed in the alert notification area.



To acknowledge the alert detailed information, click on the Disclosure button.

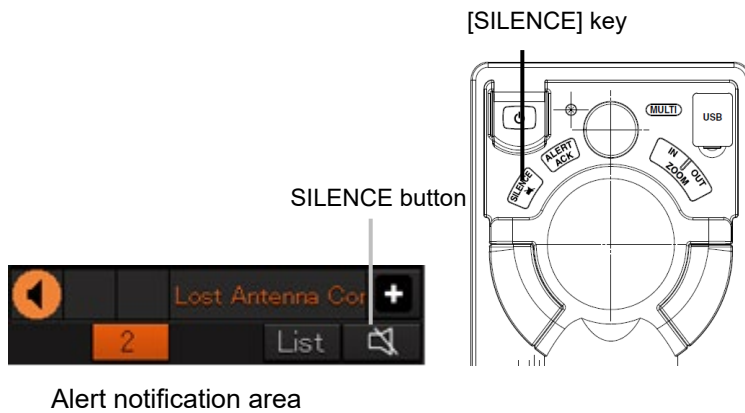
For the details of the subsequent operations, refer to "3.6.2 Confirming alert contents".

The general procedure for handling an alert is shown below.

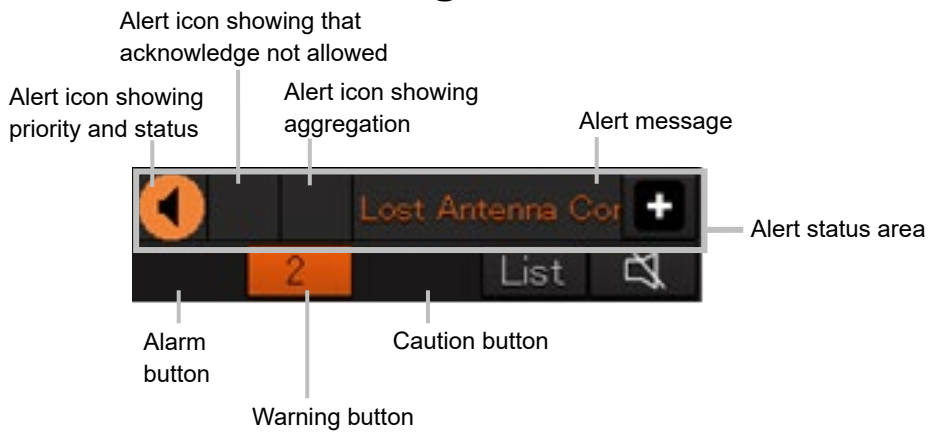


### 3.6.1 Stopping a buzzer

To stop a buzzer (silencing), click the silence button in the alert notification area or press the [SILENCE] key in the trackball operation unit.



### 3.6.2 Confirming alert contents



Display Example when an Alert is generated



Display Example when No Alert is generated

When an alert is generated, the alert message is displayed in the "Alert status area". The alert type and the number of alerts are displayed by the button.



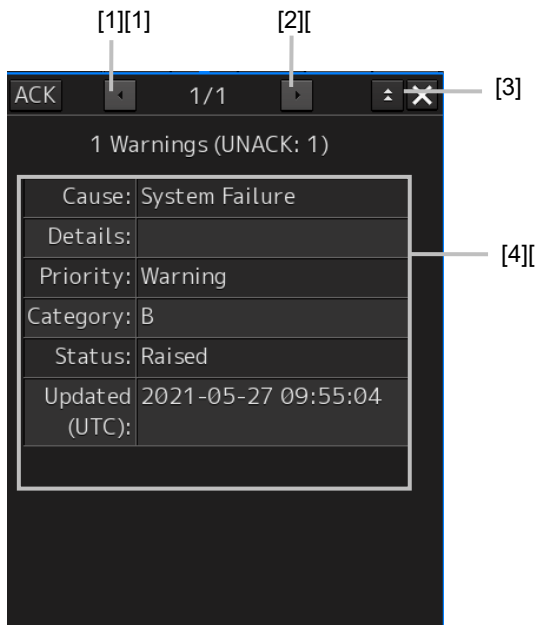
- Alarm button: Displayed when an alarm is generated. The button is displayed in red. The number of alarms is indicated on the button.
- Warning button: Displayed when a warning is generated. The button is displayed in orange. The number of warnings is indicated on the button.
- Caution button: Displayed when a caution is generated. The button is displayed in yellow. The number of cautions is indicated on the button.

**1 Click on the button.**

An alert balloon is displayed.



**2 Display the alert detail dialog by clicking on the Disclosure button.**



**[1] [Higher] button**

When the Higher button is clicked on, details of the alerts of the higher priority than the alert currently displayed appear.

**[2] [Lower] button**

When the Lower button is clicked on, details of the alerts of the lower priority than the alert currently displayed appear.

---

**[3] Disclosure button**

When the Disclosure button is clicked on, the original alert balloon is displayed.  
As a result, the operation area that was hidden can be re-acknowledged.

**[4] Detail information**

Cause (Cause), Status (Status), date and times (Updated), details (Details), category (Category) and priority (Priority) to be taken are displayed.

**Memo****About Information:**

Information is displayed in addition to a warning or a caution in the alert status area.

Information is used to report operation errors and so on to the users.

Unlike other alerts, no detail display is provided for Information.



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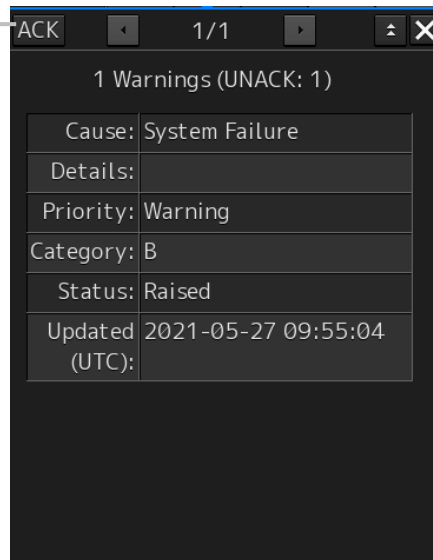
### 3.6.3 Acknowledging the alert

After checking the alert contents, when the [ACK] button of the alert details or [ALERT ACK] button of the trackball operation unit is clicked on, the alert that is displayed is acknowledged.

When there are multiple alerts, perform the same operation by displaying the details dialog box of another alert.

If all the alerts are acknowledged, the alert display dialog is closed automatically.

[ACK] (acknowledgement) button



#### **Memo**

An alert can also be acknowledged by clicking on the [Active Alert] tab - [ACK] button of the [Alert List] dialog box.

For the details refer to "3.6.4 Displaying alert list and alert history".

### 3.6.4 Displaying alert list, alert history and Maintenance INFO

An active alert, alert history and maintenance information can be displayed in list format by clicking on the Alert List button.

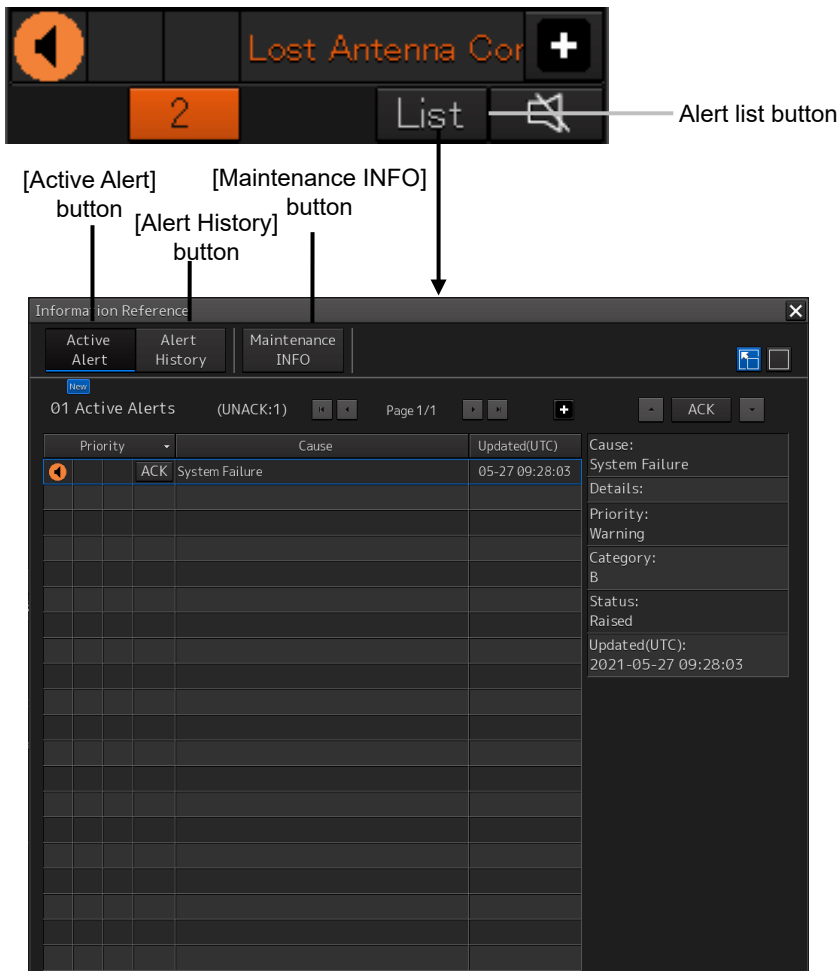
In the [Active Alert] tab, a list of the current alerts is displayed. In the [Alert History] tab, a list of past alerts that have been resolved is displayed. In the [Maintenance INFO] tab, a list of the current maintenance Information is displayed.

#### Memo

The window of the [Active Alert] tab can be switched to standard window display or extended window display.

In this example, extended window display is used.

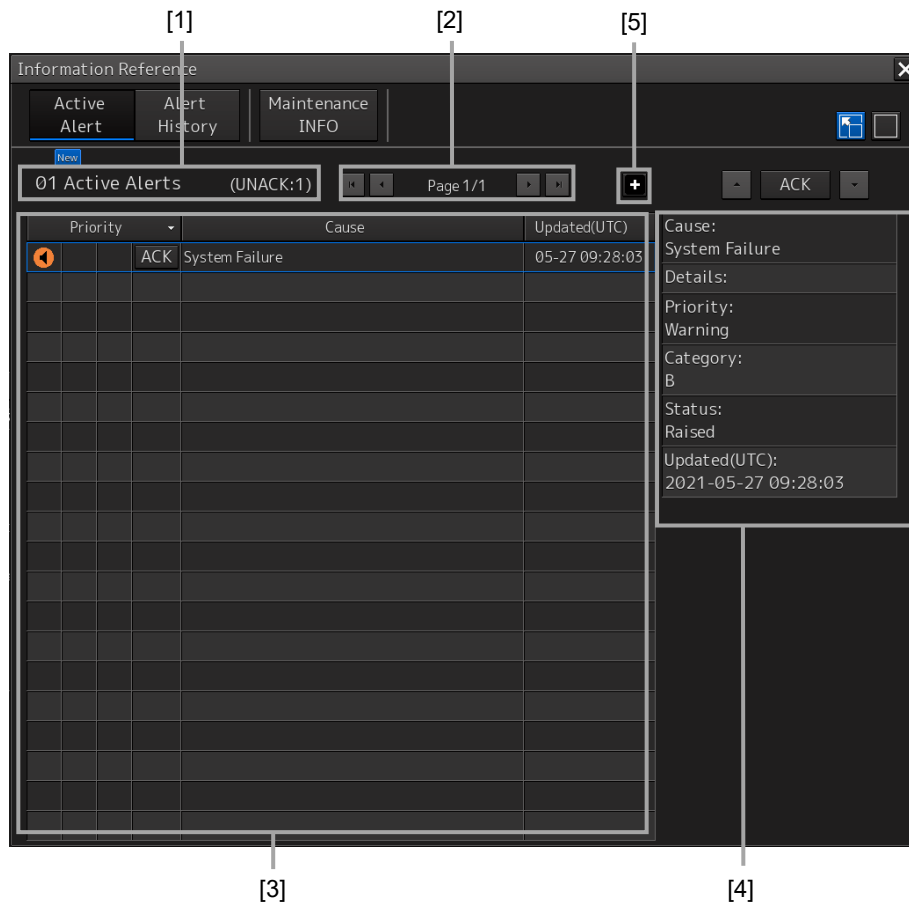
For the details of switching between standard window and extended window, refer to "3.6.4.1 Switching between a standard window and an extended window".



#### Memo

If the alert category is category A, alerts cannot be acknowledged with the [ACK] button in the active alert list.

## [Active Alert] tab



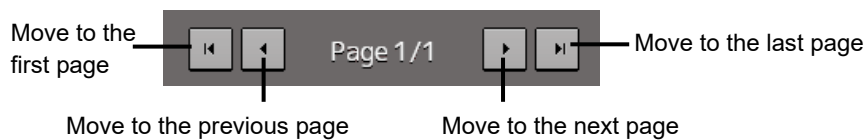
### [1] Active alert information

The number of current alerts is displayed.



### [2] Active page information

Up to 20 alert information items can be displayed in one page. Use this function to switch pages when the number of alert information items exceeds 20, requiring multiple pages.



**[3] Active alert list**

Priority			Cause	Updated(UTC)
		ACK	System Failure	05-27 09:28:03

- The alerts that are being generated are displayed. When any of the alerts is clicked on, the alert can be set to a selected state.

		ACK	System Failure	05-27 09:28:03
--	--	-----	----------------	----------------

- The details of the selected alert are displayed in "[4] Active alert details".
- When a new alert is generated during the screen display, the alert is added at the top of the list.
- By clicking on any of the items in the title line, active alerts can be sorted based on the item.

Priority			Cause	Updated(UTC)
		ACK	System Failure	05-27 09:28:03

- When the [ACK] button is clicked on, the alert is acknowledged.

Priority			Cause
		ACK	System Failure

**Memo**

The [ACK] button is not displayed for the [Caution] alert since acknowledgement is not required.

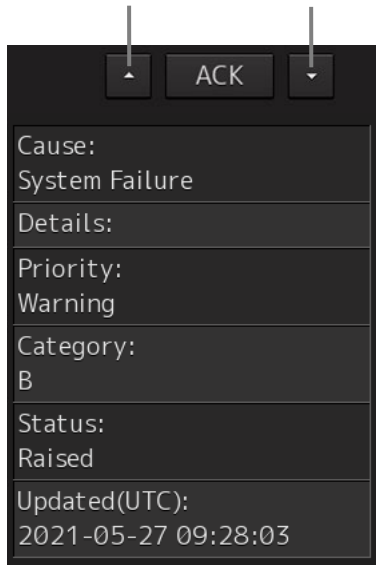
---

---

#### [4] Details of active alert

Details of the alert that is currently selected are displayed.

[Higher] button    [Lower] button



Alert	Detailed information
Cause	Displays the cause of the alert.
Details	Displays the details of the cause of the alert.
Priority	Displays the alert priority (identification of Alarm/Warning/Caution).
Category	Displays the alert category.
Status	Displays the status of the alert (Raised/Silenced/ACKed/Transferred/UnACK-Rectified).
Updated	Displays the latest update time of the alert.

#### [Higher] button

When this button is clicked on, the details of the alert of the higher priority than the alert that is currently displayed appear.

#### [Lower] button

When this button is clicked on, the details of the alert of the lower priority than the alert that is currently displayed appear.

#### [ACK] button

When this button is clicked on, the alert that is currently selected is acknowledged.

**[5] Aggregation of alert**

When this button is clicked on, display of the aggregation of alert is switched to ON or OFF.



Aggregation: OFF (Default)



Aggregation: ON

Memo:

There are no aggregated alerts on the Conning screen.

**[Alert History] tab**

Alerts that have been generated in the past are displayed.

Update(UTC)	Priority	Event	Cause
2020-09-02 06:44:52	Caution	Rectified	Lost AP
2020-09-02 06:44:50	Caution	Rectified	Lost AIS IF
2020-09-02 06:29:48	Caution	Raised	Lost AP
2020-09-02 06:28:50	Caution	Raised	Lost AIS IF

**[1] Alert History List**

- Up to 20 events of alerts are displayed per page.
- When an alert is no longer active, the alert is added to the top of the list.
- By clicking on any of the items in the title row, alert can be sorted based on the item.
- Alerts are added per event as follows.

2020-09-04 04:27:53	Warning	ACKed	Course difference
2020-09-04 04:27:15	Warning	Raised	Course difference

Event	Detailed information
Raised	Alert raised
Silenced	Alert silenced
ACKed	Alert acknowledged
Transferred	Alert responsibility transferred
UnACK-Rectified	Rectified alert is unacknowledged
Rectified	Alert rectified
Repeat	Alert sound was repeated
Removed	Alert removed This event occurs when equipment shuts down, returns to the task menu, removes the installation, or loses the alert function.
Call Nav	Alarm was transferred to BNWAS

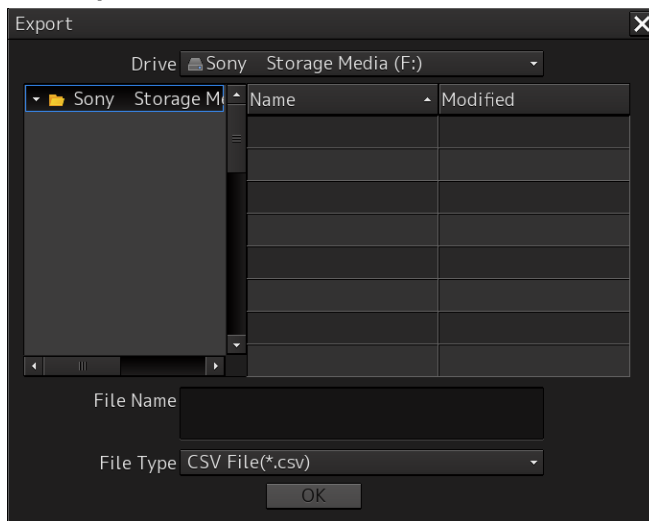
## [2] Export of Alert History List

When this button is clicked on, Alert History List can be output.

- 1 Click on the [Export] button.

[Export] dialog box appears.

- 2 Select the storage destination of the Alert History List from the [Drive] combo box of the output destination.



- 3 Enter [File Name].
- 4 Click on the [OK] button.

**[Maintenance INFO] tab**

Maintenance Information are displayed.

For the details of the Maintenance INFO, refer to "9.1.6 Confirming Maintenance INFO".

X
☰
☐

Active Alert
Alert History
Maintenance INFO

20 Maintenance Informations
Page 1/50

Status	Cause	Raised(UTC)									
!	SLC1-1(Communication failed, Mai...	2021-05-27 09:28:10	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">Cause:</td> <td>SLC1-1(Communication failed, Main LAN)</td> </tr> <tr> <td>Raised(UTC):</td> <td>2021-05-27 09:28:10</td> </tr> <tr> <td>Rectified(UTC):</td> <td>-</td> </tr> <tr> <td>Details:</td> <td>Communication with SLC1-1 cannot be performed via Main LAN.</td> </tr> </table>	Cause:	SLC1-1(Communication failed, Main LAN)	Raised(UTC):	2021-05-27 09:28:10	Rectified(UTC):	-	Details:	Communication with SLC1-1 cannot be performed via Main LAN.
Cause:	SLC1-1(Communication failed, Main LAN)										
Raised(UTC):	2021-05-27 09:28:10										
Rectified(UTC):	-										
Details:	Communication with SLC1-1 cannot be performed via Main LAN.										
!	ALC1(Communication failed, Main ...	2021-05-27 09:28:10									
!	No.1 Radar(Communication failed, ...	2021-05-27 09:28:10									
!	OPU-USB(Communication error)	2021-05-27 09:28:03									
!	Gyro 2(Communication Failed, Mai...	2021-05-27 09:27:35									
!	Gyro 1(Communication Failed, Mai...	2021-05-27 09:27:35									
!	Time(unavailable)	2021-05-27 09:27:26									
!	DATUM(unavailable)	2021-05-27 09:27:26									
!	Time(unavailable)	2021-05-27 09:27:26									
!	Position(unavailable)	2021-05-27 09:27:25									
!	COG/SOG(unavailable)	2021-05-27 09:27:25									
!	Heading(unavailable)	2021-05-27 09:27:25									
!	STW Speed(unavailable)	2021-05-27 09:27:25									
!	GPS 2(Communication Failed, Main...	2021-05-27 09:27:25									
!	BNWAS(Communication failed, Mai...	2021-05-27 09:27:25									
!	Autopilot(Communication Failed, ...	2021-05-27 09:27:25									
!	Anemometer(Communication faile...	2021-05-27 09:27:25									
!	Log 1(Communication failed, Main ...	2021-05-27 09:27:25									
!	GPS 1(Communication Failed, Main...	2021-05-27 09:27:25									
!	CONNING Task	2021-05-27 09:27:10									

Export



## 3.6.4.1 Switching between a standard window and an extended window

The window of the [Active Alert] tab can be switched to a standard window or an extended window. To switch to an extended window, click on the list extension button. To switch to a standard window, click on the list standard button.



[Example of Extended window]

The screenshot shows the 'Information Reference' window in its extended view. The top section contains a 'New' button, '01 Active Alerts (UNACK:1)', 'Page 1/1', and an 'ACK' button. Below this is a table with columns for Priority, Cause, and Updated(UTC). A single row is visible with an orange arrow icon, 'ACK', 'System Failure', and '05-27 09:28:03'. To the right of the table is a details panel with the following information:

Priority	Cause	Updated(UTC)
ACK	System Failure	05-27 09:28:03

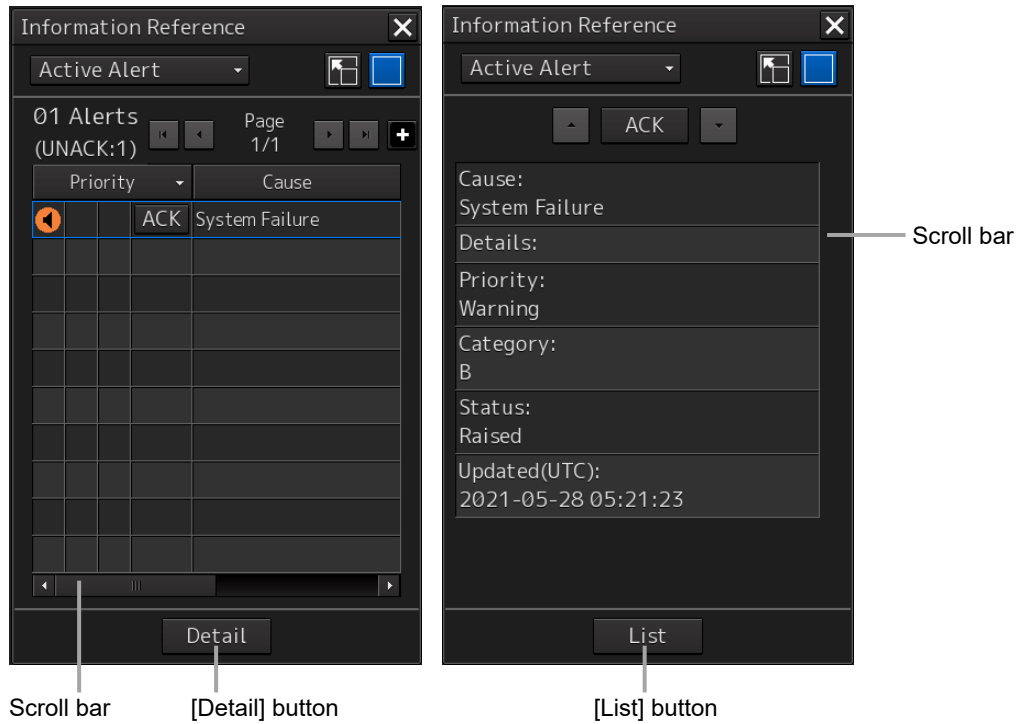
Details:  
Cause: System Failure  
Priority: Warning  
Category: B  
Status: Raised  
Updated(UTC): 2021-05-27 09:28:03

[Example of standard window]

A list screen and a detail screen are available for the standard window.

To switch to the detail screen: Click on the [Detail] button.

To switch to the list screen: Click on the [List]



When the display contents overlap the top, bottom, left, or right side of the screen, a scroll bar is displayed.

By dragging the scroll bar, the overlapped section can be displayed.

**Memo**

An extended window is displayed at the initial display.

---

---

## 3.7 Switching the Day/Night Mode

The screen display color can be switched to any of five levels according to the brightness within the bridge.

Use the following procedure for switching.

- 1 Click on the Day/Night button on the right toolbar.





Adjustment buttons are displayed based on the brightness that is currently set.



Example: Day2 is set.

- 2 Adjust the brightness by using the  [Light] button and the  [Dark] button.

Whenever the  [Light] button is clicked on, the brightness increases by one level from the current level.

When the  [Dark] button is clicked on, the brightness decreases by one level from the current level.





# WARNING



Change of the color of the Day/Night button, particularly the use of the [Night] color, may interfere with the recognition of display information.

**Memo**

The colors and brightness of the buttons can be changed by setting [Settings] - [General] - [Color and Brightness] in the menu. For the details, refer to "7.2 Setting Color and Brightness".

**Relationship between the day/night mode and the screen/operation unit brightness setting value**

When the day/night mode is changed, the screen/operation unit brightness is set to the following values.

	26-inch monitor NWZ-208	27-inch monitor NWZ-233	19-inch monitor NWZ-207	19-inch monitor NWZ-214
Screen brightness	Day1, Day2, Day3: 67/100 Dusk: 60/100 Night: 11/100	Day1, Day2, Day3: 79/100 Dusk: 64/100 Night: 41/100	Day1, Day2, Day3: 42/100 Dusk: 20/100 Night: 4/100	Day1, Day2, Day3: 70/100 Dusk: 62/100 Night: 10/100
Operation unit brightness	Day1: Level4 Day2: Level3 Day3: Level2 Dusk, Night: Level1			

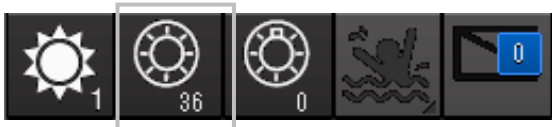
---

## 3.8 Adjusting the Brightness of the Screen and Operation Unit

### 3.8.1 Adjusting the Brightness of the Screen

The screen brightness can be adjusted within the range from 0 to 100.

- 1 Click on the [Display Brightness] button on the right toolbar.



The following screen brightness buttons are displayed.



- 2 Adjust the brightness by using the  [Light] button and  [Dark] button.

Whenever the [Light] button/ [Dark] button is clicked on, the brightness changes by one level.

## 3.8.2 Adjusting the Brightness of the Operation Unit



The brightness of the operation section can be adjusted in 5 levels (0 to 4).

- 1 Click on the [Panel Brightness] (Brightness of the operation unit) on the Right Tool Bar.



The following operation unit brightness buttons are displayed.



- 2 Adjust the brightness by using the  [Light] button and  [Dark] button. Whenever the [Light] button/[Dark] button is clicked on, the brightness changes by one level.

---


---

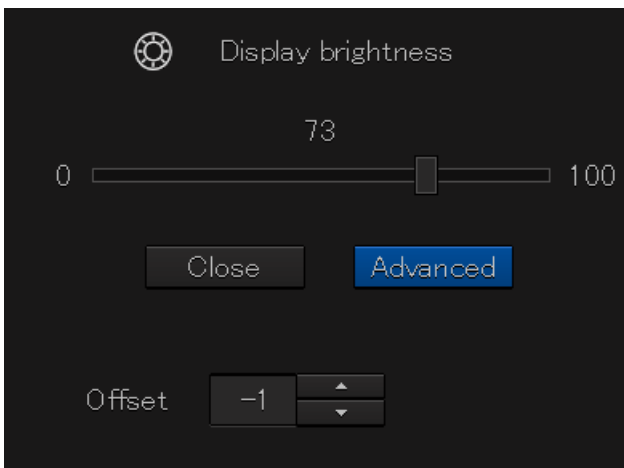
### 3.8.3 [Display Brightness] dialog box

When [MULTI] dial is operated while [Display Brightness] is selected as the function that is assigned to the [MULTI] dial, the [Display Brightness] dialog is displayed.



It is possible to adjust the brightness of the display section by rotating the [MULTI] dial.

In order to set an offset value so that when set to the same value as the screen brightness of other equipment, the light emitted becomes the same as in other equipment, click the [Advanced] button and adjust the offset using the  buttons displayed for setting the "Offset".



## 3.9 MOB (Man Over Board)

When a person falls overboard, this monitoring function prevents loss of sight of the position of the person overboard.

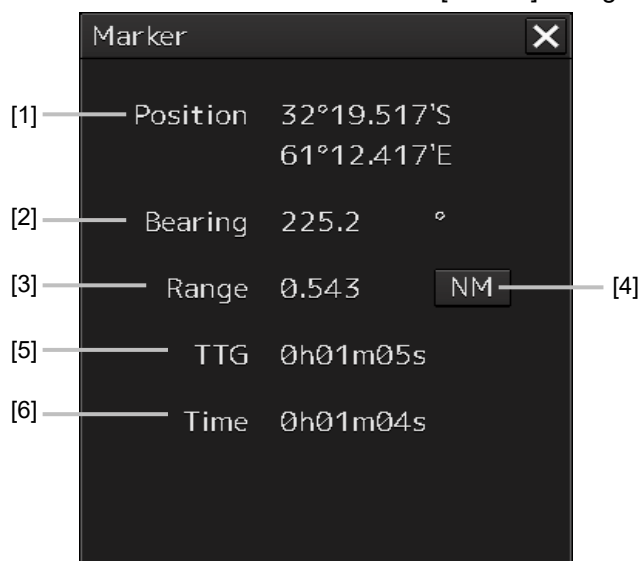
The MOB use procedure is as follows.

- 1 Click on the MOB button on the right toolbar.



The [Marker] dialog box appears.

See below for how to reference the [Marker] dialog box.



### [1] [Position]

Displays the coordinates of the MOB.

### [2] [Bearing]

Displays the bearing from own ship to the MOB position. The value changes as the ship moves.

### [3] [Range]

Displays the range from the own ship to the MOB marker.

### [4] NM/Km/sm switching button

Whenever this button is clicked on, the unit of [Range] is switched to NM, km or sm.

#### Memo

NM denotes nautical mile, sm denotes statute mile, and km denotes kilometer.

### [5] [TTG]

Displays the time to reach the MOB marker from the ship speed.

### [6] [Time]

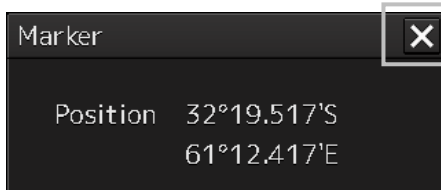
Displays the time elapsed after clicking on the [MOB] button.



---

To exit from MOB

- 1 Click the [X] button in the [Marker] dialog box.

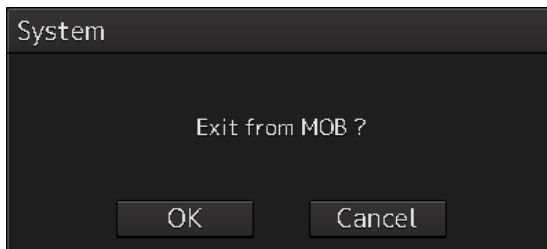


A confirmation dialog box appears.

- 2 Click on the [OK] button.

The [Marker] dialog is closed.

The MOB marker is cleared.



**Memo**

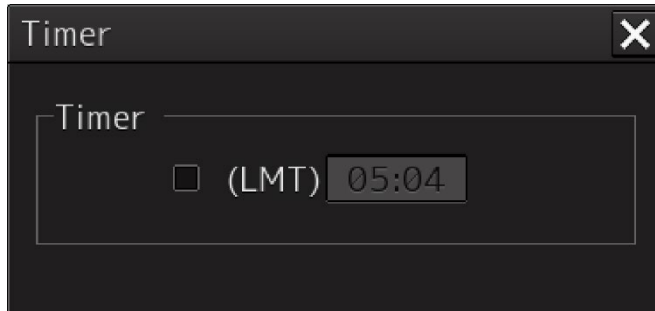
When the equipment has the ECDIS license, the MOB marker that indicates the MOB position is displayed on the chart of the ECDIS screen, enabling confirmation of the position relationship between own ship and the MOB position while the ship is moving.

---

## 3.10 Setting up the Timer

When [Timer] is selected in the Tools menu, the [Timer] dialog is displayed.

In this dialog, the time to generate an alarm can be set up.



### 3.10.1 Setting up the timer

To turn on the timer, select the [(LMT)] check box.

To turn off the timer, clear the [(LMT)] check box.

### 3.10.2 Setting up the time

When you click on the [Timer (LMT)] input box, the numeric value input keyboard appears. Specify the time at which to generate an alarm in a range between 00:00 and 23:59.

For the use of the numeric value input keyboard, refer to "3.17.2 Name and function of each section of the keyboard".

---

---

## 3.11 [MULTI] Dial

### 3.11.1 Functions of [MULTI] dial

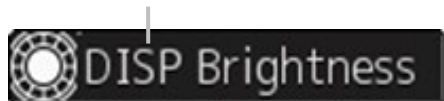
By turning the [MULTI] dial, the functions that are assigned to the [MULTI] dial can be operated. Assignment to the [MULTI] dial can be changed.

### 3.11.2 Functions assigned to [MULTI] dial

#### 3.11.2.1 Displaying a screen for setting the function that is assigned

By pressing the [MULTI] dial, the setting screen for the function that is currently assigned can be displayed.

Assigned function name



#### 3.11.2.2 Changing the function that is assigned

- 1 Press the [MULTI] dial.
- 2 Select a function to be assigned by turning the [MULTI] dial.

The table below lists the functions that can be assigned.

Function name	Function outline
Display Brightness	Adjustment of brightness of the display panel
Panel Brightness	Adjustment of brightness of the operation panel

- 3 Press the [MULTI] dial.

The selected function is set to the assigned function.

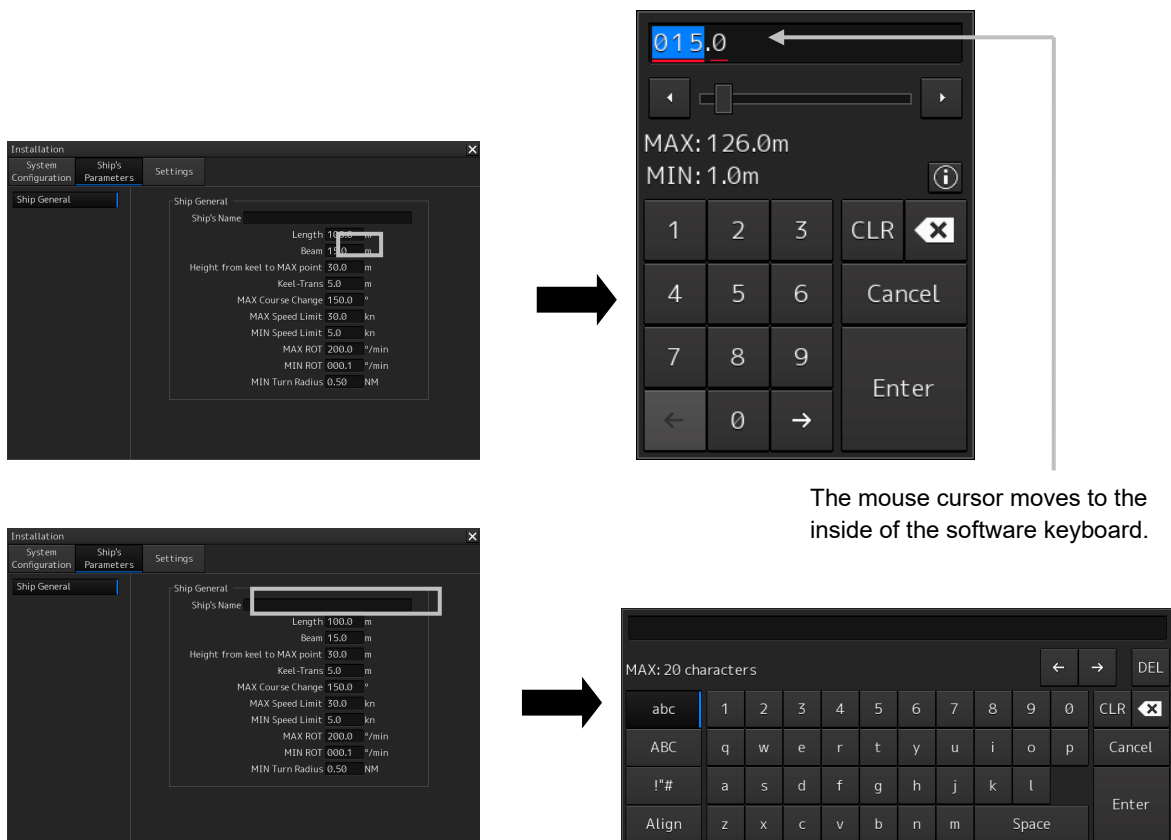
## 3.12 Basic Operations of the Software Keyboard

Use a software keyboard for inputting numeric values and characters in various setting operations. This section describes the basic operations of a software keyboard.

### 3.12.1 Starting a software keyboard

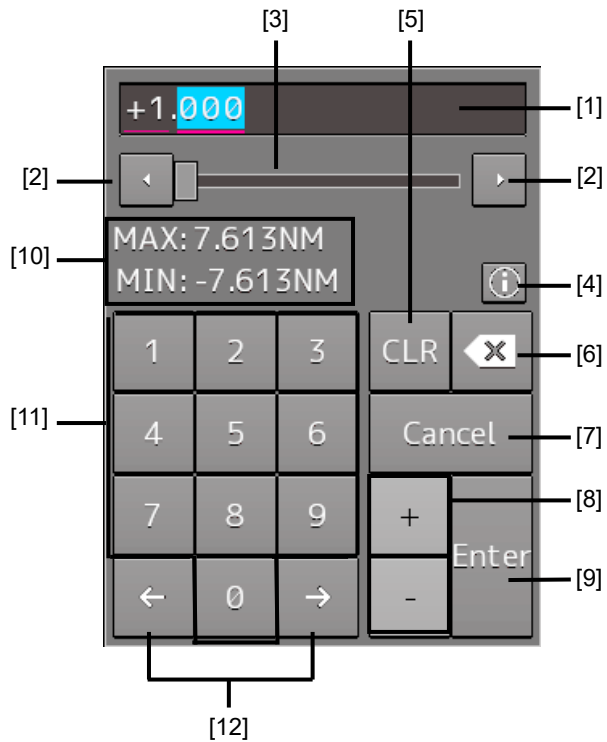
When the mouse button is clicked on a numeric input text box on such as a dialog box, a numeric input software keyboard is displayed.

When the mouse button is clicked on a character input text box, a character input full keyboard is displayed.



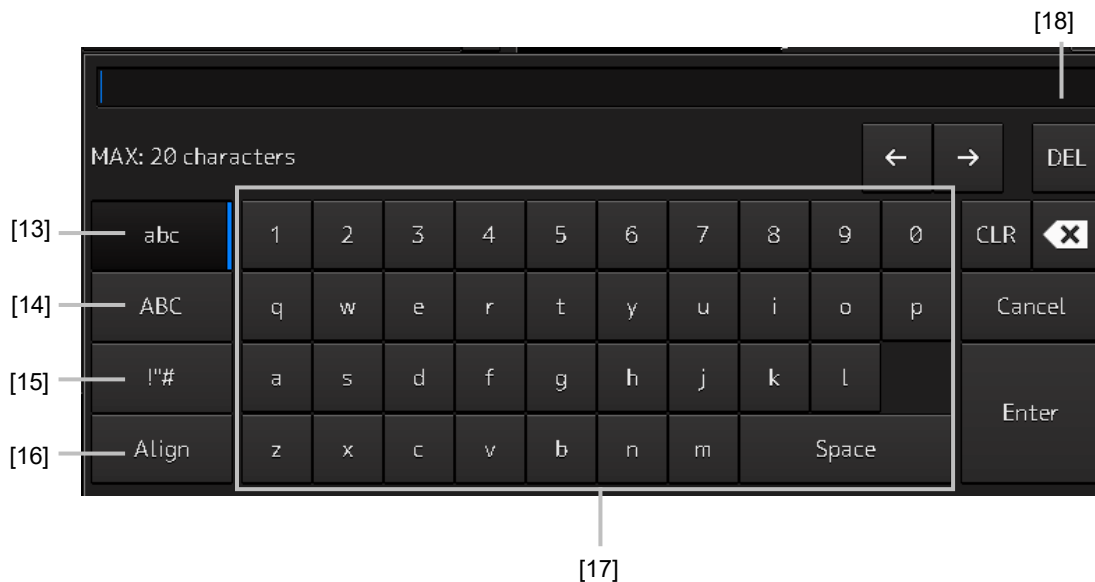
## 3.12.2 Name and function of each section of the keyboard

### Numeric value input software keyboard



### Software full keyboard for character input

\* The description of the functions common to those of a numeric value input software keyboard is omitted.

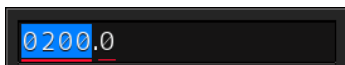


### [1] Input value display section

Displays the value that is input/edited through the software keyboard.

### [2] Spin button

- When the right spin button is clicked on, the minimum unit value that can be set is added to the value that is displayed. When the left spin button is clicked on, the minimum unit value that can be set is subtracted from the value that is displayed.



Example of addition

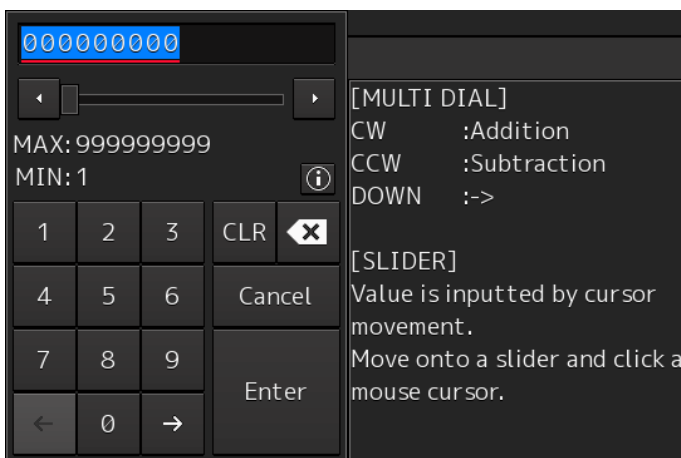
- When the mouse button is held down on the right spin button, the value is added consecutively. When the mouse button is held down on the left spin button, the value is subtracted consecutively.
- When the value set by the right spin button operation exceeds the maximum value, the minimum value is set subsequently. When the value set by the left spin button operation becomes lower than the minimum value, the maximum value is set subsequently.

### [3] Numeric value slider

When the value adjustment button on the value slider is clicked on, the input value increases or decreases.

### [4] Operation guide display button

Displays an operation guide.



To close the operation guide, click on the operation guide display button again or click on a location other than the operation guide.

### [5] [CLR] key

Clears the input value that is currently selected.

---

**[6] Back Space key**

Clears the input value on the left-side of the cursor position.

**[7] [Cancel] key**

Cancels the input operation and closes the software keyboard.

**[8] Option key**

Displays the following keys according to the type of the software keyboard.

- Signed keyboard: + key and - key

**[9] [Enter] key**

Determines the input operation.

**[10] Input range display section (format display section)**

Displays the values and character types that can be input.

**[11] Numeric keys**

Use the keys for input of numeric values.

**[12] Arrow keys**

When there are multiple input parts, the active part can be moved to the left/right by clicking on the arrow key.

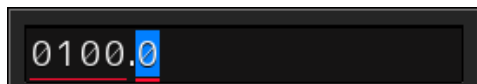
Example:



When the [left arrow key) is clicked on, the input section moves to "0100".



When the [right arrow key) is clicked on, the input section moves to "0".

**[13] Lowercase character switching key**

Changes the character input key mode to the lowercase character mode.

**[14] Uppercase character switching key**

Changes the character input key mode to the uppercase character mode.

**[15] Symbol switching key**

Changes the character input key mode to the symbol mode.

**[16] Key alignment switching key**

Switches the character key alignment between QWERTY alignment and alphabetic alignment.

**[17] Character input key**

Use this key for character input.

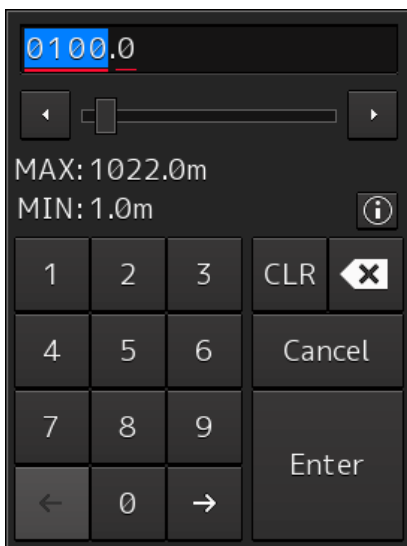
**[18] [DEL] key**

Deletes the character on the right-side of the cursor.

### 3.12.3 Example of numeric input

In this example, "241.5m" is input as the length of the ship.

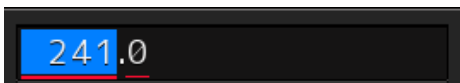
When the numeric input software keyboard is displayed, follow the procedure provided below.



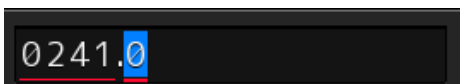
- 1 Enter "2".



- 2 Enter "4" and "1".



- 3 Click the right arrow key and move the input field to the right side of the decimal point.



- 4 Enter "5".

- 5 Click on the [Enter] key.

The input is fixed.

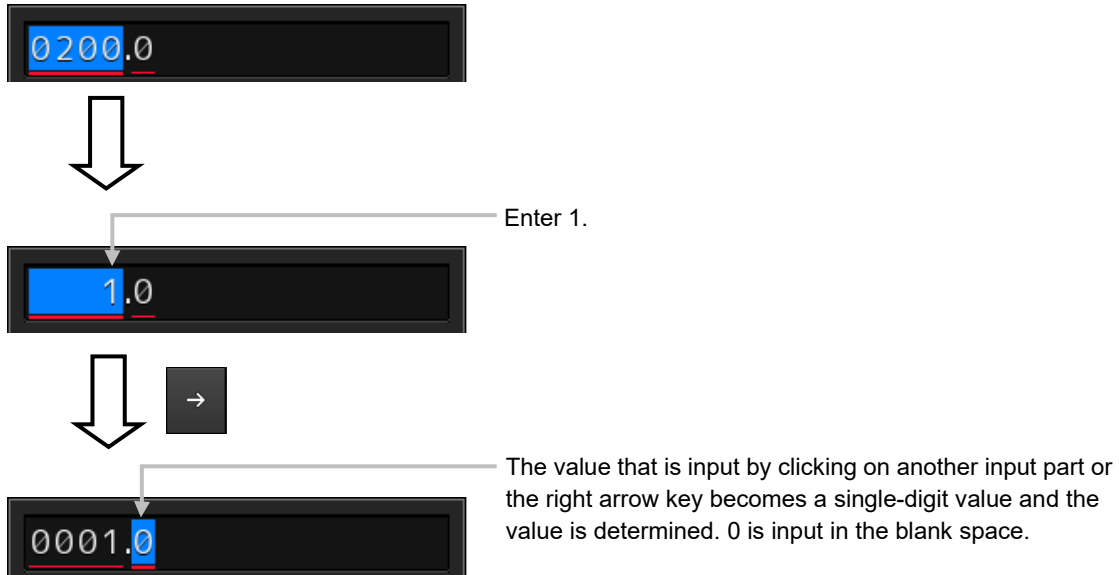


---

## Inputting a single-digit value

Enter a value and click on another input part or move the active part by using the right arrow key.

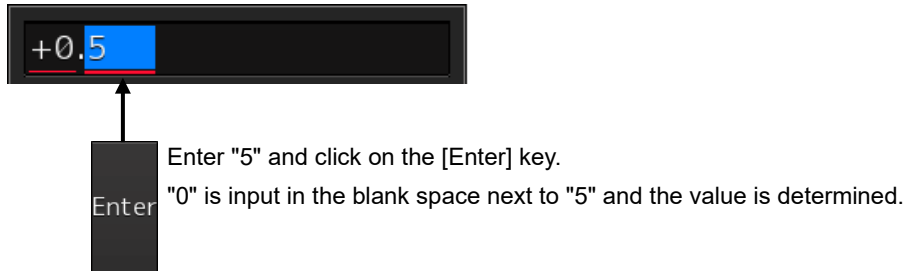
Example:



## Inputting blank space in the decimal fraction section [3 digits]

After a value is input and the [Enter] key is clicked on, the input of the decimal fraction section is determined.

Example:



---

## 3.12.4 Character input example

This section describes character input by using a full keyboard.

### Input caret

Indicates the character input position.



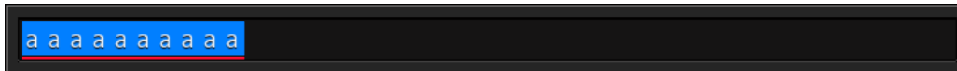
### Active mark

Indicates the character string that is being input.

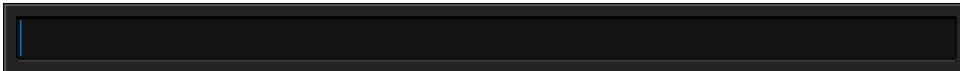
### Input example

#### 1 Start up a full keyboard.

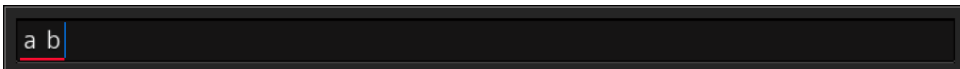
When a value (character) has been input in the text box, the full character string is selected at startup.



#### 2 Delete the character string by clicking the Back Space key.



#### 3 Input any character string.



#### 4 Determine the input by clicking on the [Enter] key.

---

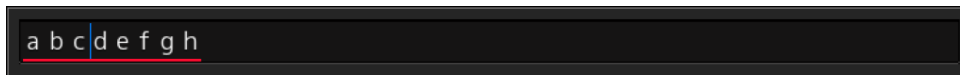
---

## Character modification example

- 1 Move the cursor to the left-end (or right-end) of the character string to be modified and click the mouse button.

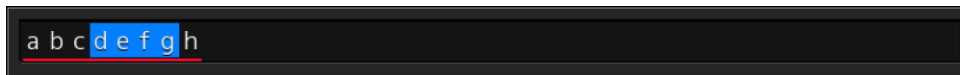


The input caret moves to the clicked position.



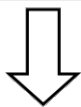
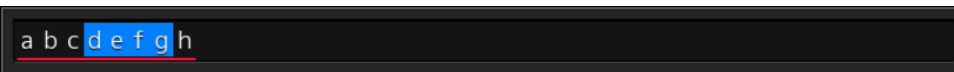
- 2 Click the mouse button on the input caret position and select the character string to be modified by dragging with the trackball.

\*When the character string is selected, the input caret is cleared.



- 3 Perform the following operation in the selected state.

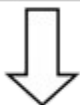
[Deleting a selected section]



When the Back Space key is clicked on, the selected section is deleted.



[Replacing a selected section]



Input any character in the selected state. (In this example, "i" is input.)



[Canceling a selected state]



Under a selected state, click on another section inside of the active mark to cancel the selection. The input caret moves to the clicked position.

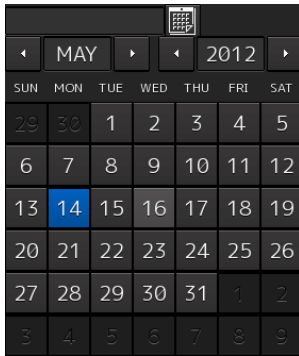


- 4 After modification is determined, determine the input by clicking on the [Enter] key.

## 3.13 Setting a Date and a Time (Calendar Operation)

Set a date and a time on the calendar input screen.

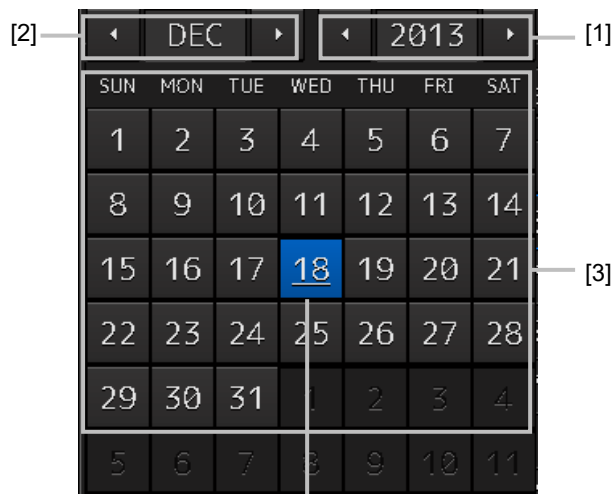
Use the following calendar for Conning Display.



Calendar picker

### 3.13.1 Details and usage of a calendar picker

#### 3.13.1.1 Details of a calendar



Selected date

#### [1] Year selection spin button

Selects a year to be displayed in the date selection box.

- When the right spin button is clicked on, the year is changed in the ascending order.
- When the left spin button is clicked on, the year is changed in the descending order.

#### [2] Month selection spin button

Selects a month to be displayed in the date selection box.

- When the right spin button is clicked on, the month is changed in the ascending order.
- When the left spin button is clicked on, the month is changed in the descending order.

---

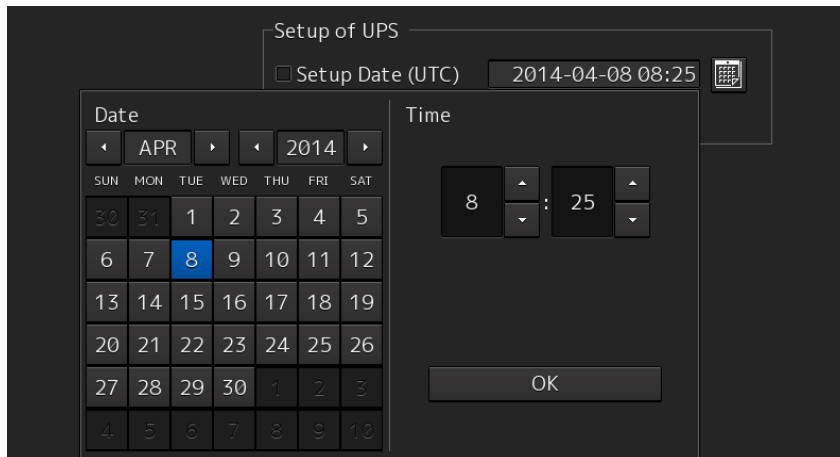
### [3] Day selection box

Selects a day.

#### 3.13.1.2 How to use a calendar

- 1 Click on  (calendar button) next to the date setting box.

A calendar is displayed.



- 2 Set a year and a month by using the year selection spin button and the month selection spin button respectively.
- 3 Click on the day to be set from the day selection box.  
\* In the case of a calendar picker only, the day is set at this stage and the calendar picker is closed.
- 4 Set a time by clicking on the time spin button of the time picker.
- 5 Click on the [OK] button.  
The setting is completed and the calendar is closed.

## 3.14 Help

Help information on the operation of this equipment can be displayed.

### Memo

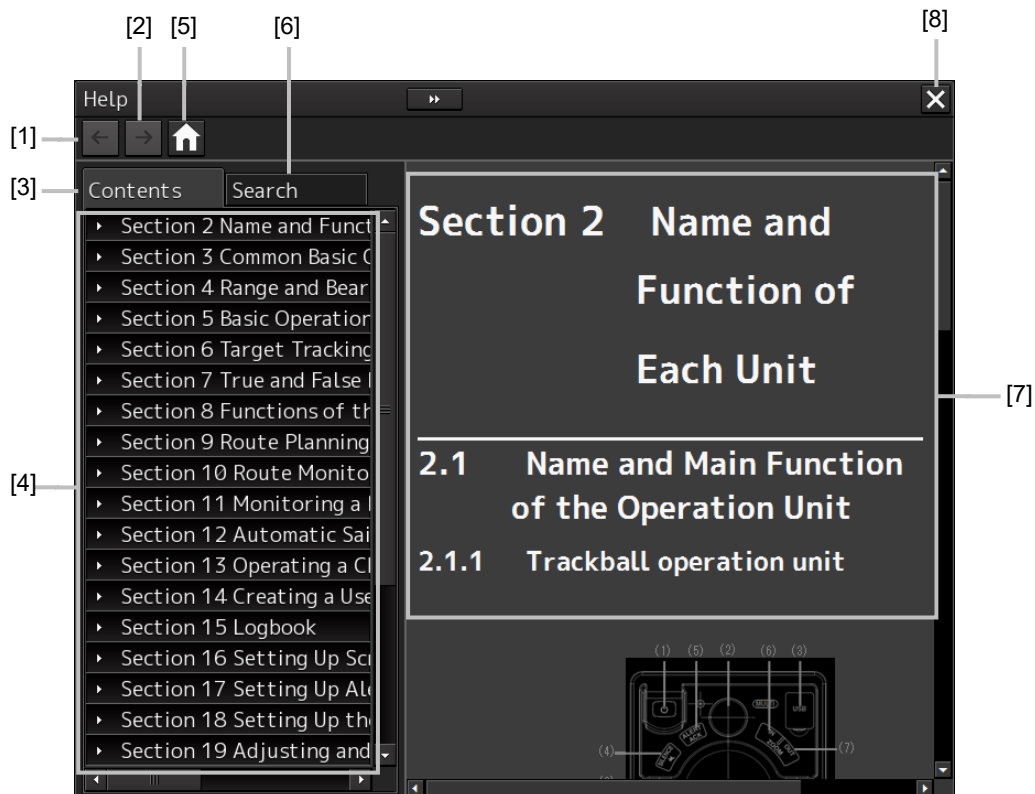
The Preface, Section 1 and Appendix A are not displayed in the Help.

#### 1 Click on the [Menu] button at the bottom left corner of the screen.

The menu is displayed.

#### 2 Click on the [Help] button on the menu.

The [Help] dialog box appears.



#### [1] Backward button

The display of the content display pane goes backwards by one.

#### [2] Forward button

The display of the content display pane goes forwards by one.

### [3] [Contents] tab

Displays the contents. The contents are displayed in the content pane.

For the procedure, refer to "Searching the required information from the contents".

### [4] Content pane

The contents are displayed in tree format. When an item is clicked on, the related contents are displayed in the content display pane.

### [5] Home button

Displays the home screen of the [Help] dialog box.

### [6] [Search] tab

Searches the character string in Help.

For the procedure, refer to "Searching terminologies".

### [7] Content display pane

Displays the contents of the item that was clicked on.

### [8] [×] button.

Closes the [Help] dialog box.

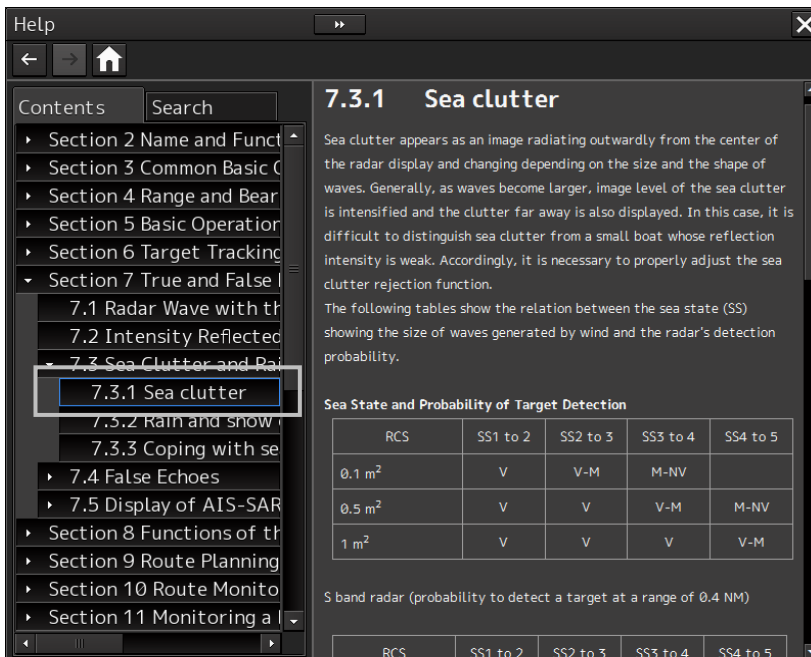
## Searching the required information from the contents

### 1 Click on the [Contents] tab.

The contents are displayed on the contents pane.

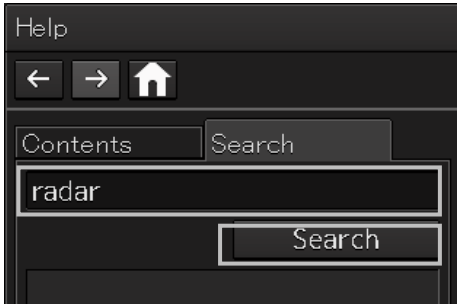
### 2 Click on the item containing the required information.

The contents of the item that was clicked on are displayed on the contents display pane.



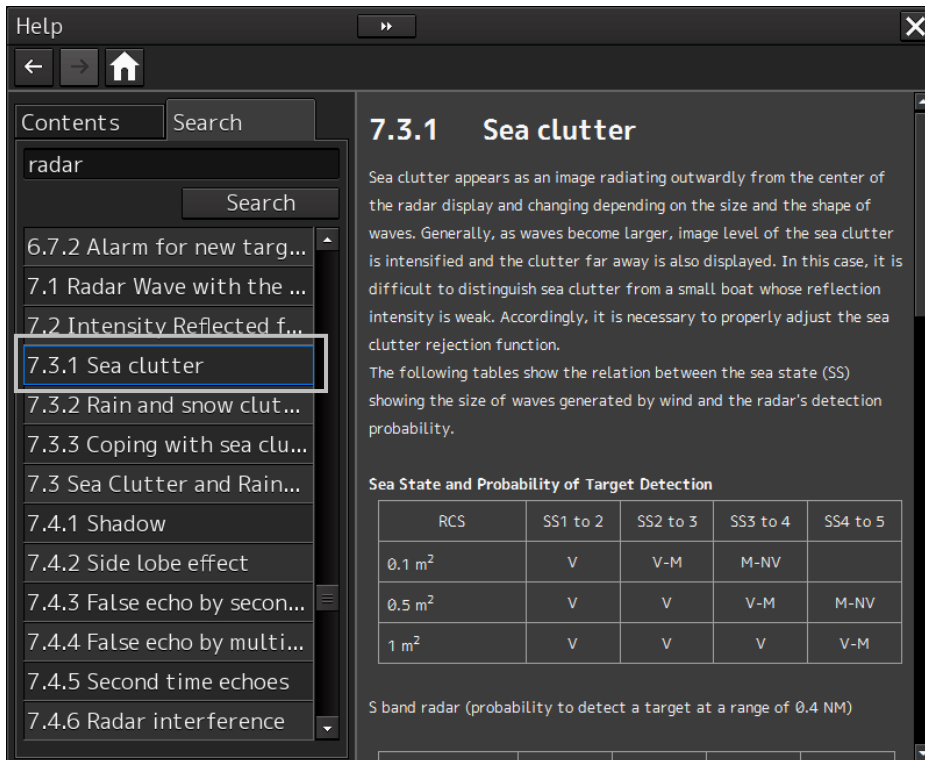
**Searching terminologies**

- 1 Click on the [Search] tab.**  
A search character input box is displayed.
- 2 Enter a required terminology and click on the [Search] button.**



Search is performed within Help. When the applicable terminology is hit, the item containing the terminology is displayed on the contents pane.

- 3 Click on the item containing the required information.**  
The contents of the item that is clicked on are displayed on the contents display pane.





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## 3.15 Password Input

Equipment settings are protected by a password. To open the dialog box of the protected setting function, the password input is necessary.

Use the following procedure to enter a password.

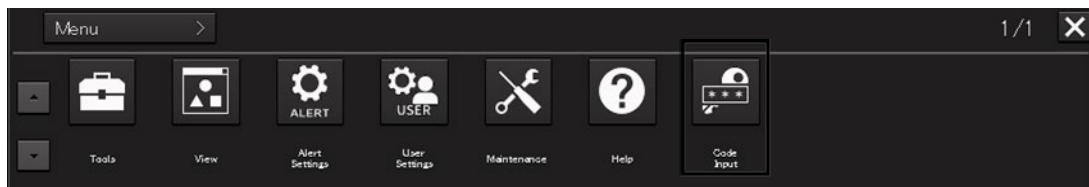
- 1 Click on the [Menu] button at the bottom left corner of the screen.



[Menu] button

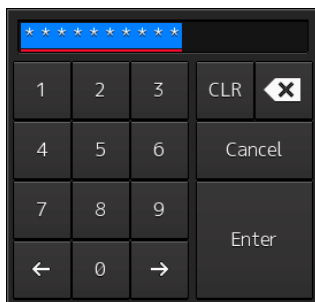
The menu is displayed.

- 2 Click on the [Code Input] button on the Menu.



The password input dialog box appears.

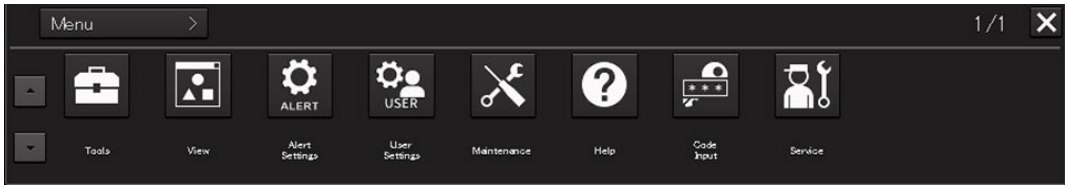
- 3 Enter "0" (zero) and click on the [Enter] key.



- 4 Click on the [Menu] button at the bottom left corner of the screen again.

The [Service] button is displayed in the menu.

**5** Click on the [Service] button.



Check that service-related menus are displayed in the sub-menu.



Subsequently, service-related menus can be set.

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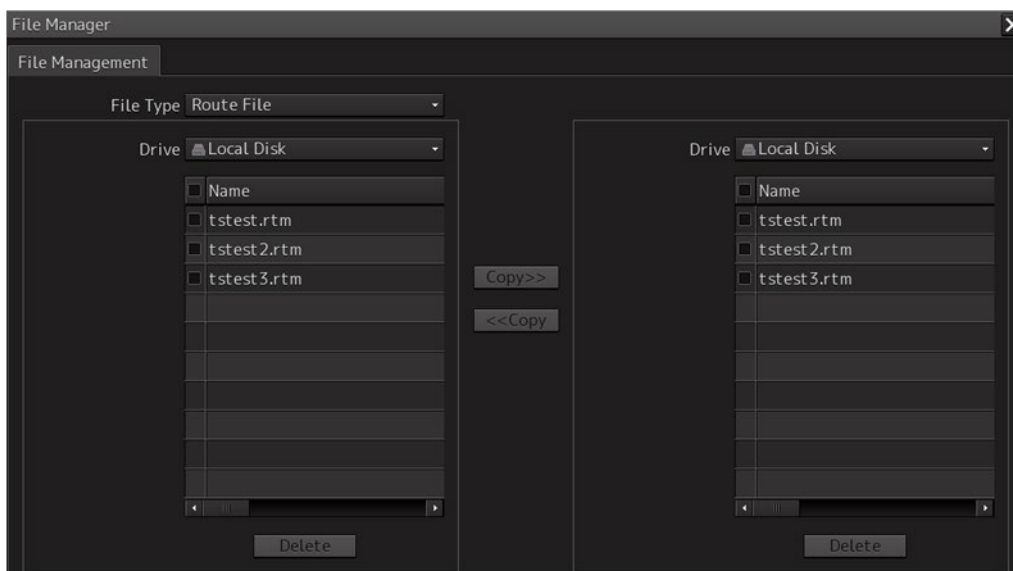
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## 3.16 Managing Files with File Manager

The file manager function enables the copying of route files and user map from the hard disk of this equipment to external storage media such as DVD or from external storage media to the hard disk of this equipment.

### 3.16.1 Displaying the [File Manager] dialog box

- 1 Click on the [Menu] on the left toolbar.**  
The menu is displayed.
- 2 Click on the [Tools] - [File Manager] button on the menu.**  
The [File Manager] dialog box appears.



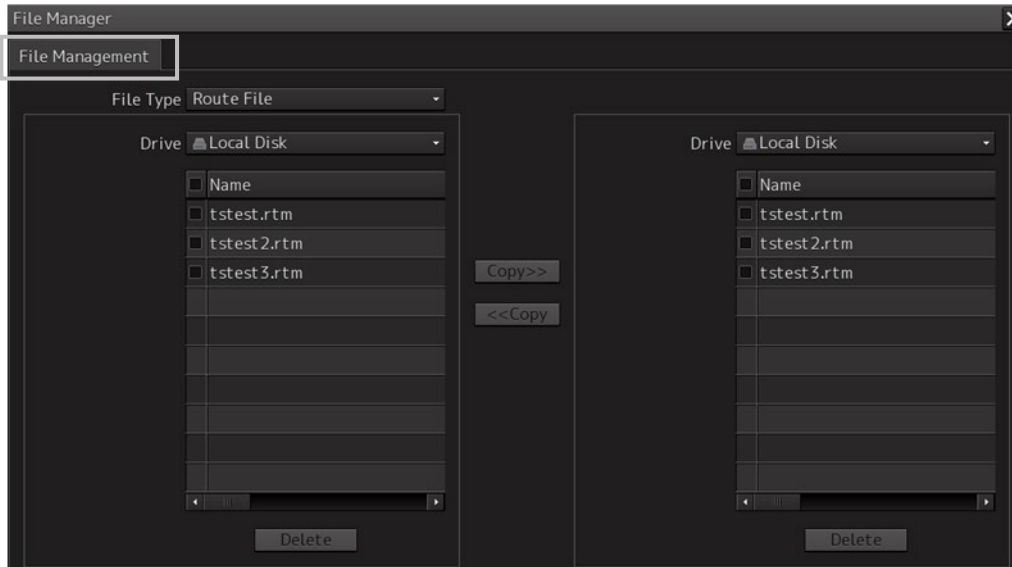
## 3.16.2 File management

The "File Management" tab enables file management.

File management copies files between SSD of this equipment and external storage media and deletes files.

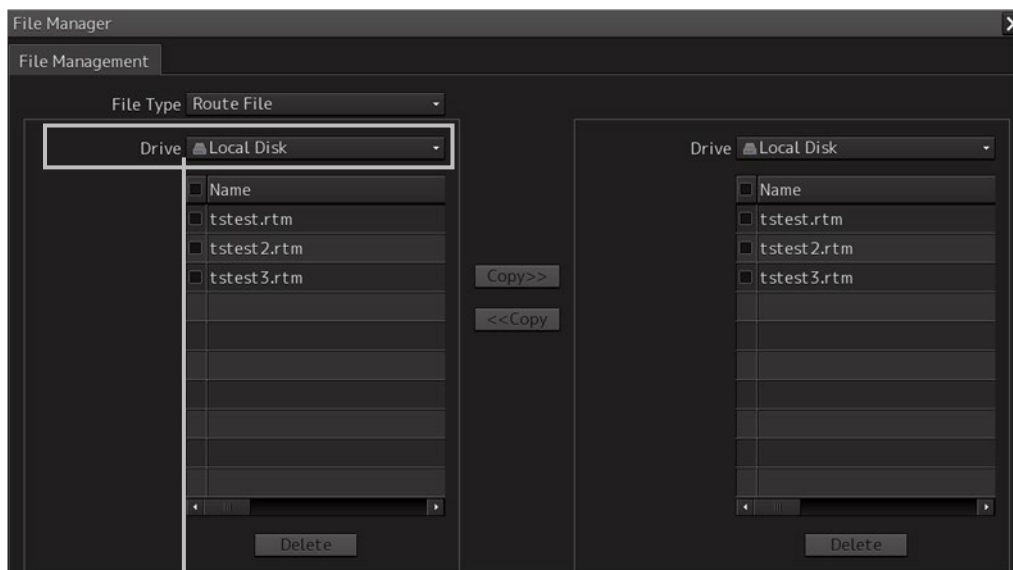
This section describes file management by using the example copying a file in the file list of the drive that is specified in the [Drive] list on the left hand side of the dialog box to the drive that is specified in the [Drive] list on the right hand side.

### 1 Click on the [File Management] tab.



### 2 Select the drive that contains the file to be copied from the [Drive] combo box.

Files in the drive are displayed in the list.

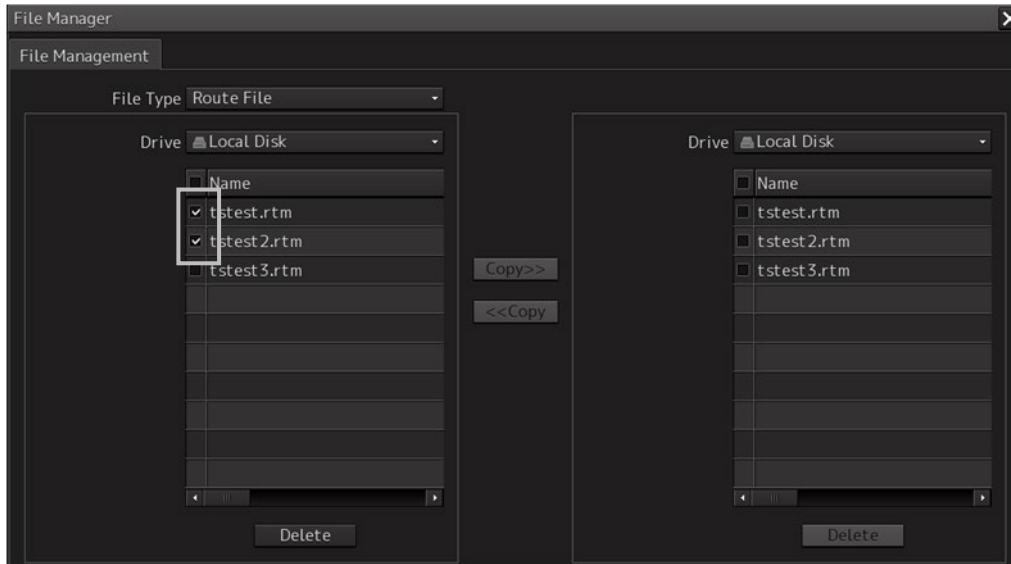


[Drive] combo box

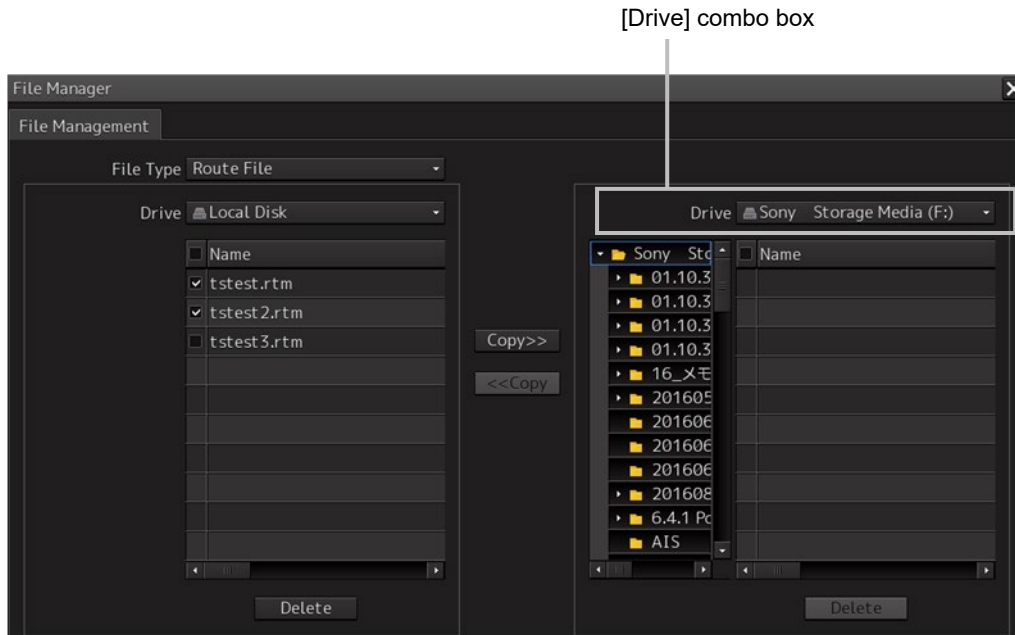
The following file types can be displayed by the file manager.

No.	File type	File extension	Contents
1	Route File	rtm	Route
2	Screen Shot (AUTO)	png	Automatically generated screen shot
3	Screen Shot (User)	png	Manually generated screen shot

**3** Select the files to be copied by checking them.

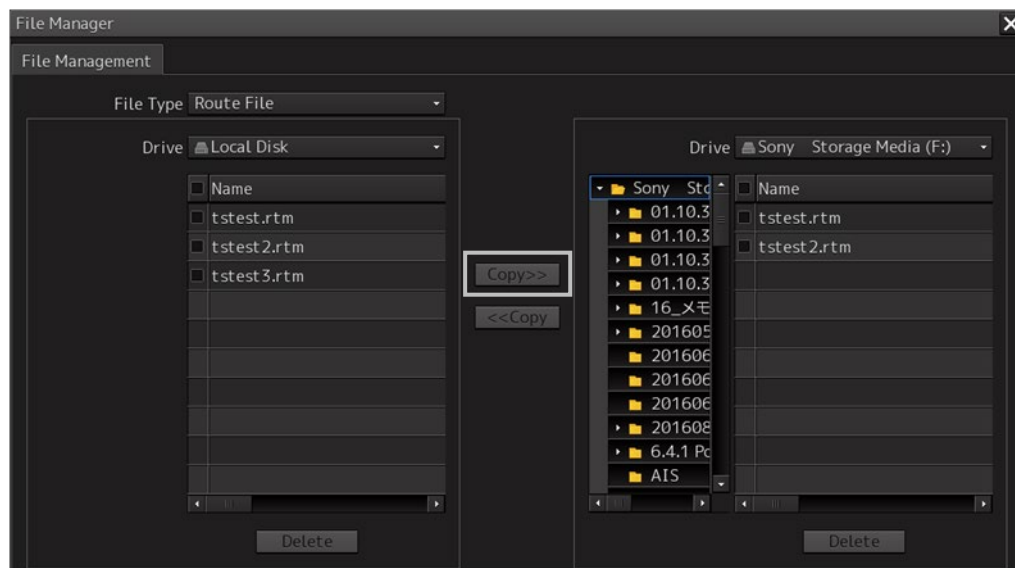


- 4 Select a drive of the storage destination from the [Drive] combo box and select a copy location from the folder tree that is displayed.



- 5 Click on the [Copy>>] (copy to the right) button.

The files are copied.



When the drive of the copy source and the drive of the copy destination are reversed, click on the [<<Copy] (copy to the left) in Step 5.

### Deleting a file

- 1 Click on the [Delete] button.  
A deletion confirmation dialog is displayed.
- 2 To delete the file, click on the [OK] button.

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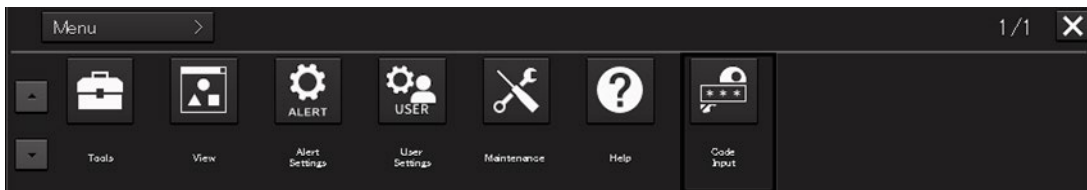
## 3.17 Returning to a Task Menu by Ending the Operation

- 1 Click on the [Menu] button at the bottom left corner of the screen.  
The menu is displayed.



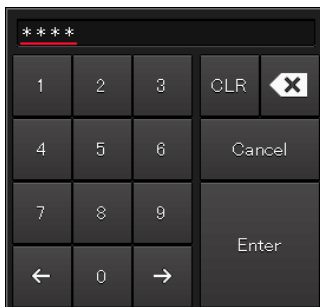
[Menu] button

- 2 Click on the [Code Input] button on the menu.

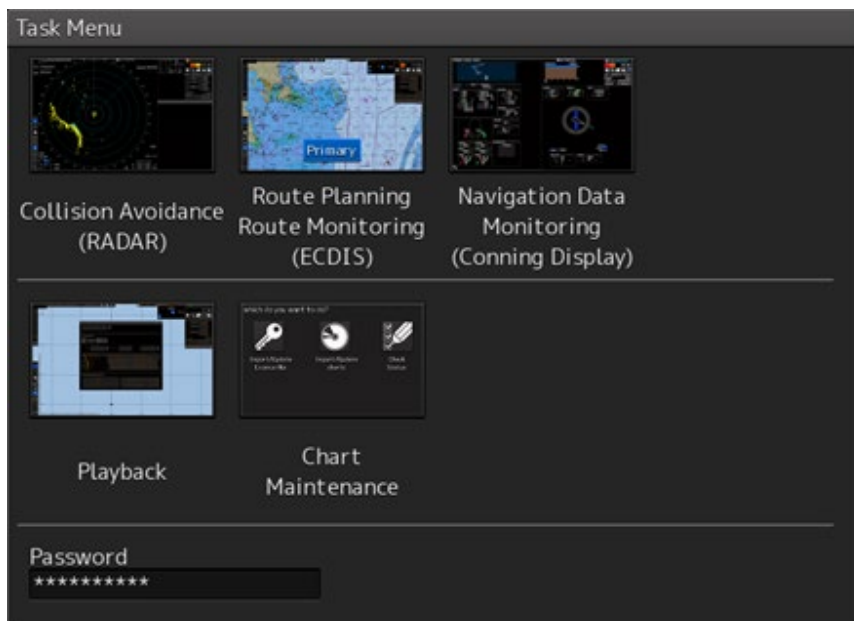


The password input dialog box appears.

- 3 Enter 9999 and click on the [Enter] key.



Returns to the task menu.



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## 3.18 Terminating this Equipment

### **WARNING**



Do not hold down the Power button of the operation unit when turning off the power supply. If the button is held down, the equipment may not be terminated normally, causing a failure.

- 1 Press the power supply button on the operation unit.**  
The power is turned off and the light of power supply button goes off.





# Section 4 Each Block of Conning Display

This chapter describes the screen configuration of Conning Display and the screen details.

## Conning Display

This equipment displays information from various equipment units and sensors that are installed on-board in the most suitable forms.

This supports a quick understanding of the condition of own ship, thereby enabling safe sailing and navigation.

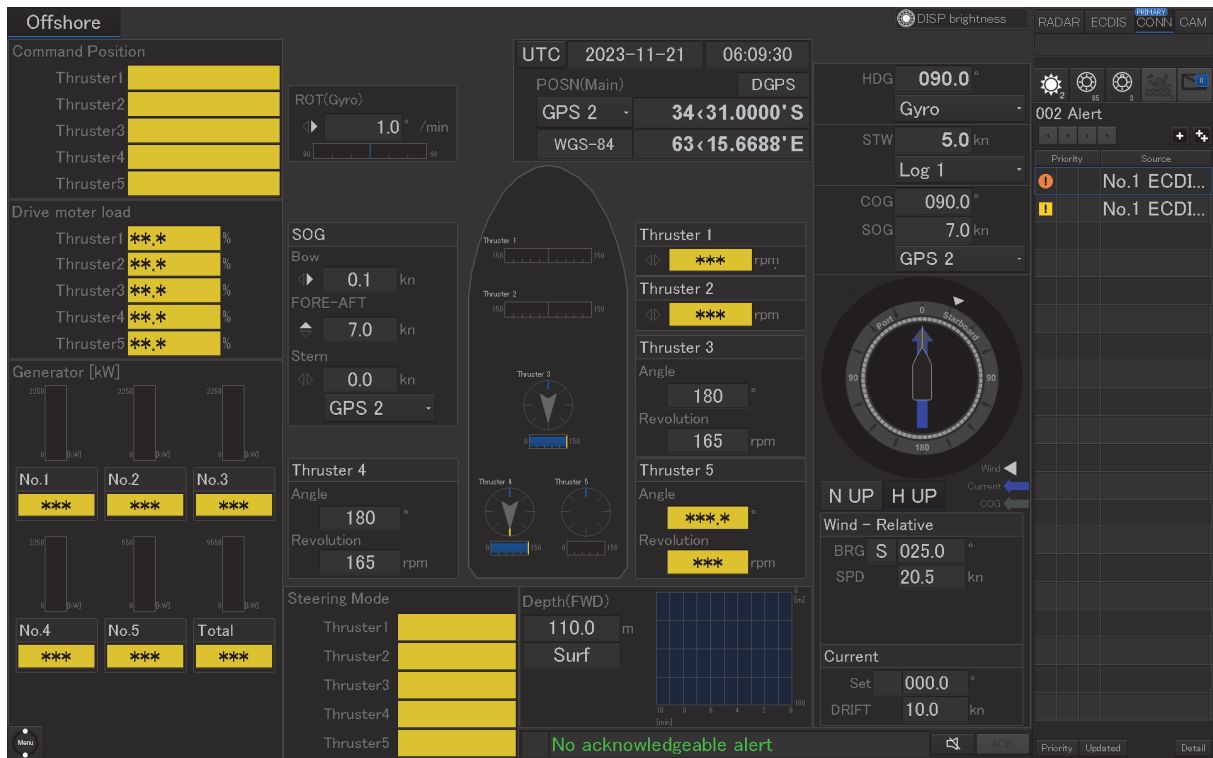
## 4.1 Display mode

One of the following two top screens is displayed depending on the Conning Display you use.

Display mode switching tab



Top screen (1)



Top screen (2)

On top screen (1), the mode can be switched to any of the three modes of Navigation mode, Docking mode, and Custom mode by using the display mode switching tabs (refer to “4.1.1 Switching to the Navigation mode/Docking mode/Custom mode”).

On top screen (2), the mode is fixed to Offshore mode. Unlike top screen (1), a green color that indicates the starboard/forward direction and a red color that indicates the port/backward direction are not used.

The following information is displayed in each display mode.

Display mode	Information that is displayed
Navigation mode	Information on the status of the ship that is navigating
Docking mode	Information on the status of the ship that is docking
Custom mode	Information that is arbitrarily selected to be displayed on the Custom screen
Offshore mode	Information required for offshore working ships

### 4.1.1 Switching to the Navigation mode/Docking mode/Custom mode

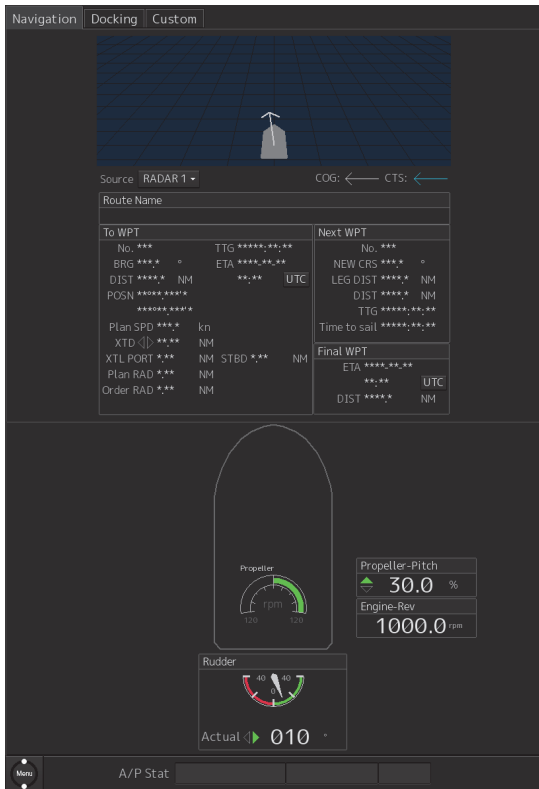
By using any of the display mode switching tabs at the top left side of the top screen, switching to any of the three display modes is enabled.

The selected mode is highlighted.

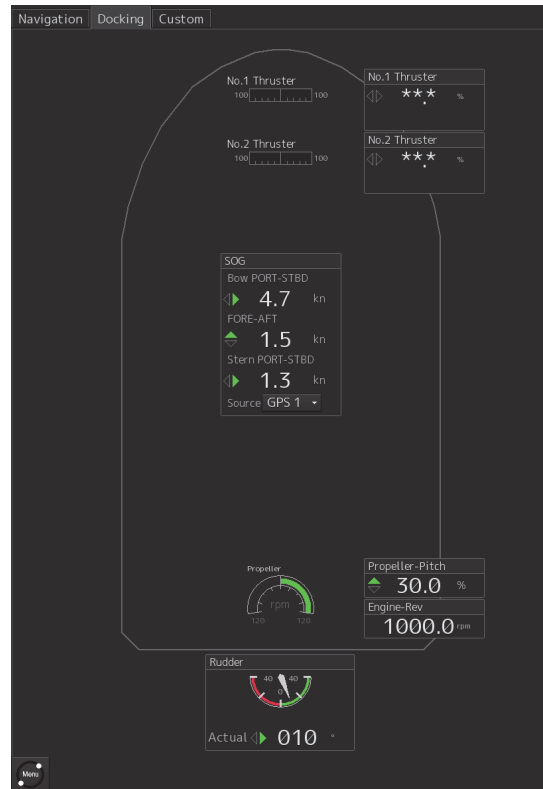


When the display mode is switched, the contents that are displayed in the area on the left side of the screen change.

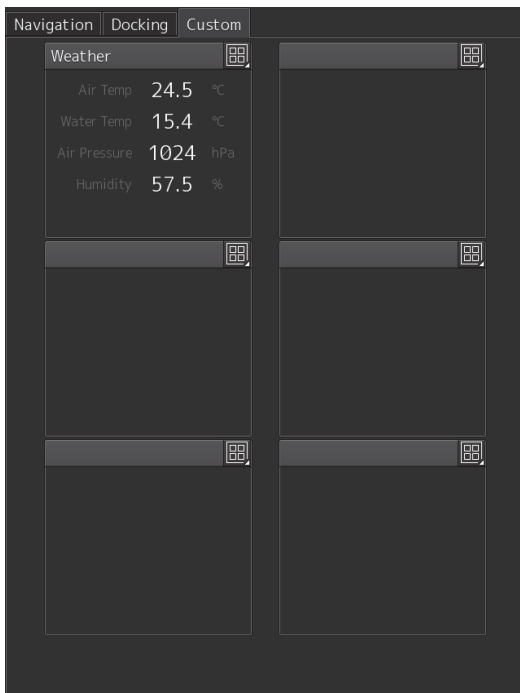
Examples of screens for each mode are shown below.



Navigation mode



Docking mode



Custom mode

## 4.2 How to view each block

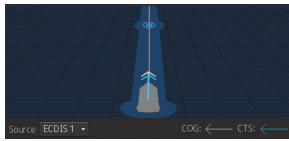
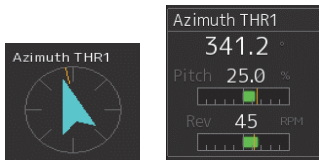

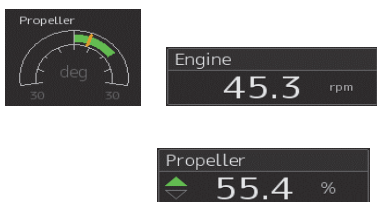
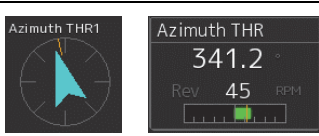

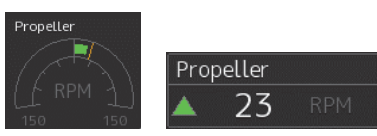

This section describes the information that is indicated in each block displayed on the Conning Display screen. The information is described on a per-block basis.


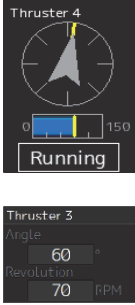
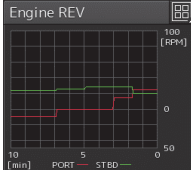
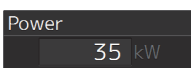
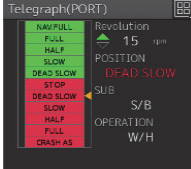
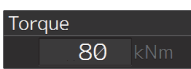
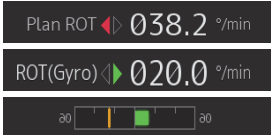
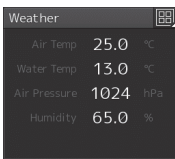
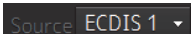
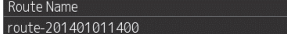
All the blocks that can be displayed by Conning Display are summarized in “4.2.1 Block list”.


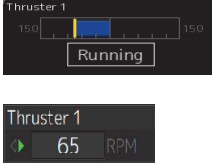
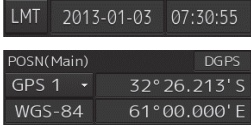
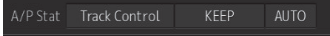
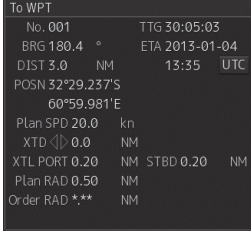
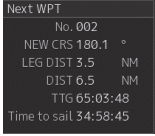
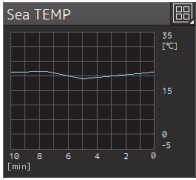
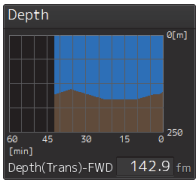
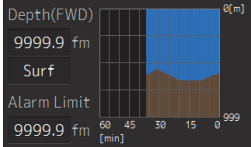
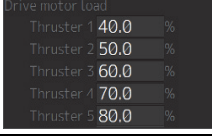
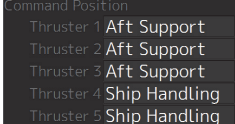
Search the block whose meaning of the displayed information you want to know from the list and refer to the corresponding description in “4.2.3 Description of each block”.

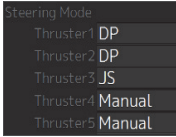
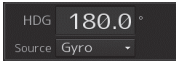

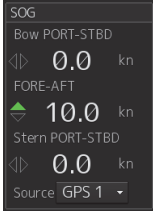

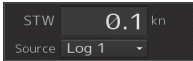

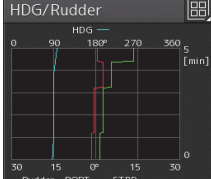
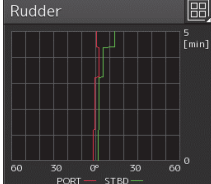
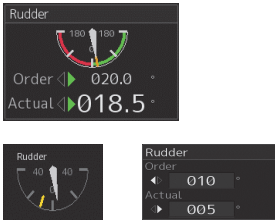
For the procedure for selecting a block to be displayed on the screen in Custom mode, refer to “4.2.2 Selecting a block to be displayed on the screen in Custom mode”.

### 4.2.1 Block list

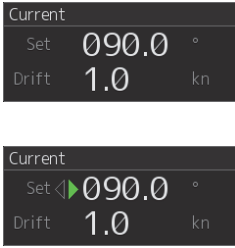

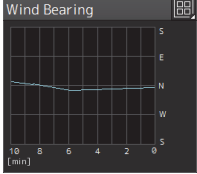

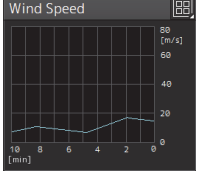


Block name	Example of the shape of the block	Reference section
3D Navigation information and the legend of the navigation		4.2.3.1
Information about azimuth thruster of CPP (controllable pitch propeller) type		4.2.3.2
Information about side thruster of CCP (controllable pitch propeller) type		4.2.3.3
Information about propeller engine of CPP (controllable pitch propeller) type		4.2.3.4
Information about azimuth thruster of FPP (fixed pitch propeller) type		4.2.3.5
Information about side thruster of FPP (fixed pitch propeller) type		4.2.3.6
Information about propeller engine of FPP (fixed pitch propeller) type		4.2.3.7
N-UP/H-UP switching button		4.2.3.8

Block name	Example of the shape of the block	Reference section
Ship block		4.2.3.9
Azimuth thruster information (with status)		4.2.3.10
Engine/propeller revolution graph		4.2.3.11
Engine output information		4.2.3.12
Engine telegraph information		4.2.3.13
Engine torque information		4.2.3.14
Rate Of Turn information		4.2.3.15
Weather information		4.2.3.16
Route information source		4.2.3.17
Route name information		4.2.3.18

Block name	Example of the shape of the block	Reference section
Final waypoint information		4.2.3.19
Side thruster information (with status)		4.2.3.20
Time/position information		4.2.3.21
Automatic sailing information		4.2.3.22
Next waypoint information		4.2.3.23
One after next waypoint information		4.2.3.24
Water temperature graph		4.2.3.25
Water depth graph		4.2.3.26
Water depth information		4.2.3.27
Thruster drive motor load information		4.2.3.28
Thruster operation position information		4.2.3.29

Block name	Example of the shape of the block	Reference section
Thruster steering mode information		4.2.3.30
Heading information		4.2.3.31
Graphic display of ship's heading, course over the ground, wind bearing/wind speed, and current information		4.2.3.32
Ship speed information		4.2.3.33
Steering position information		4.2.3.34
Ship speed through water information		4.2.3.35
Course/speed over the ground information		4.2.3.36
Rudder angle/ship's heading graph		4.2.3.37
Rudder angle graph		4.2.3.38
Rudder angle information		4.2.3.39



Block name	Example of the shape of the block	Reference section
Current information		4.2.3.40
Generator information		4.2.3.41
Wind bearing graph		4.2.3.42
Wind bearing/wind speed information		4.2.3.43
Wind speed graph		4.2.3.44
Course To Steer information		4.2.3.45
Hull Motion Trim		4.2.3.46

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## 4.2.2 Selecting a block to be displayed on the screen in Custom mode

Up to any six blocks can be assigned to the screen in Custom mode.

The following blocks can be assigned to the screen in Custom mode.

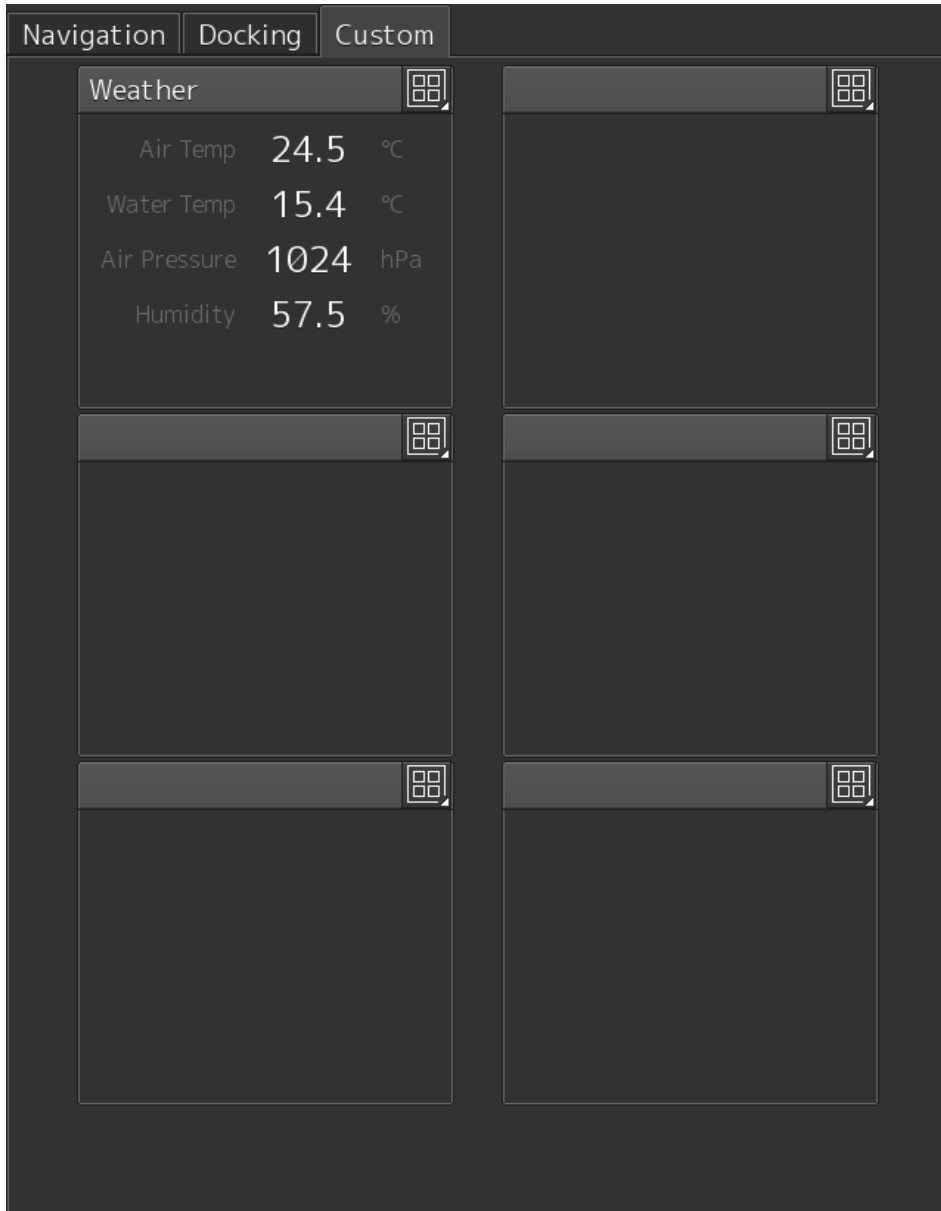
- Weather information
- Engine telegraph information
- Water depth graph
- Rudder angle graph
- Rudder angle/ship's heading graph
- Engine/propeller revolution graph
- Water temperature graph
- Wind bearing graph
- Wind speed graph

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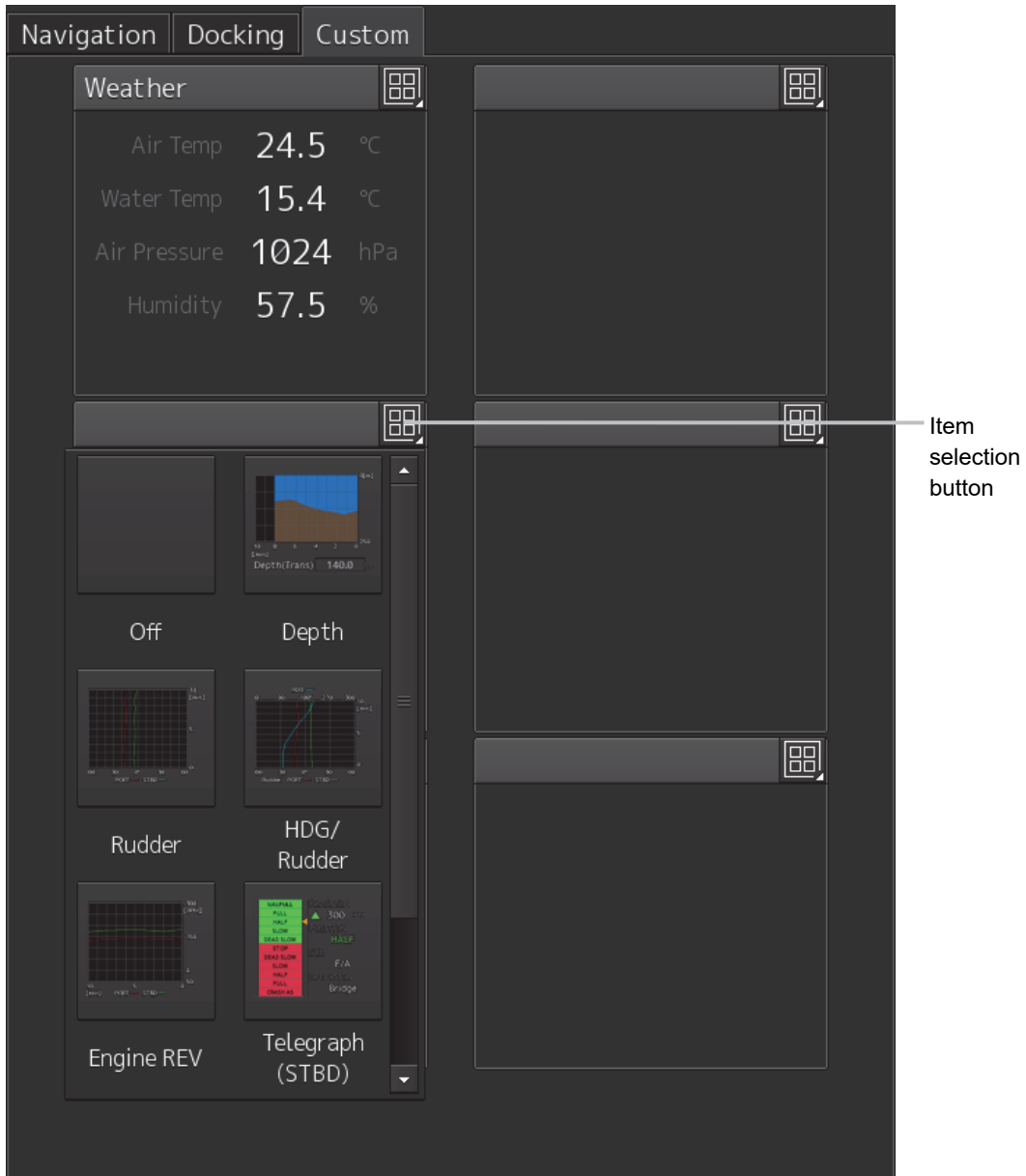
See below for the procedure for selecting a block to be displayed on the screen in Custom mode.

**1 Click on the Custom tab.**

The screen is switched to the Custom screen and the following six windows are displayed.

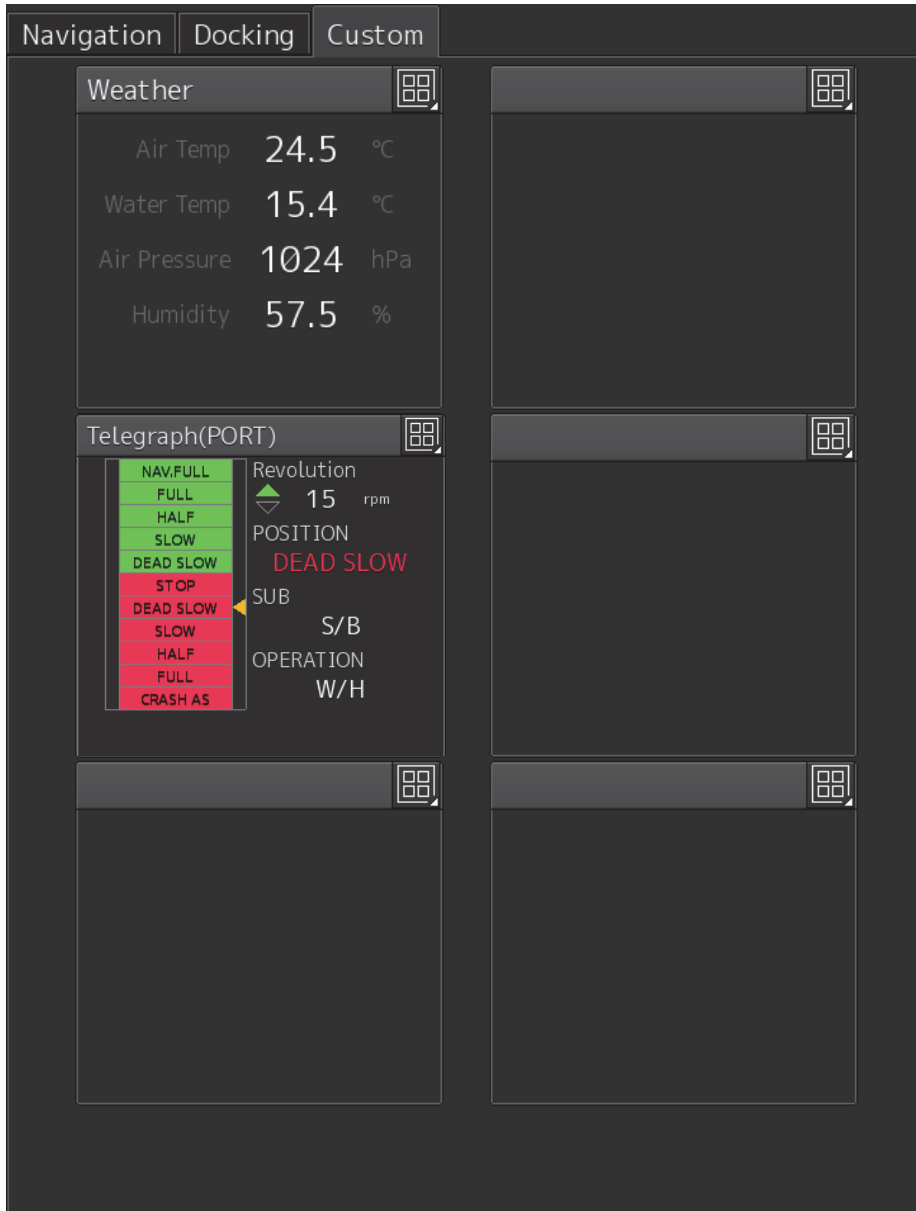


- 2 Click on the item selection button on the window for displaying items. Thumbnails of the items that are displayable on that window are displayed.



**3 Click on the thumbnail for the item to be displayed.**

The selected item is displayed on the selected window.



**Selectable items**

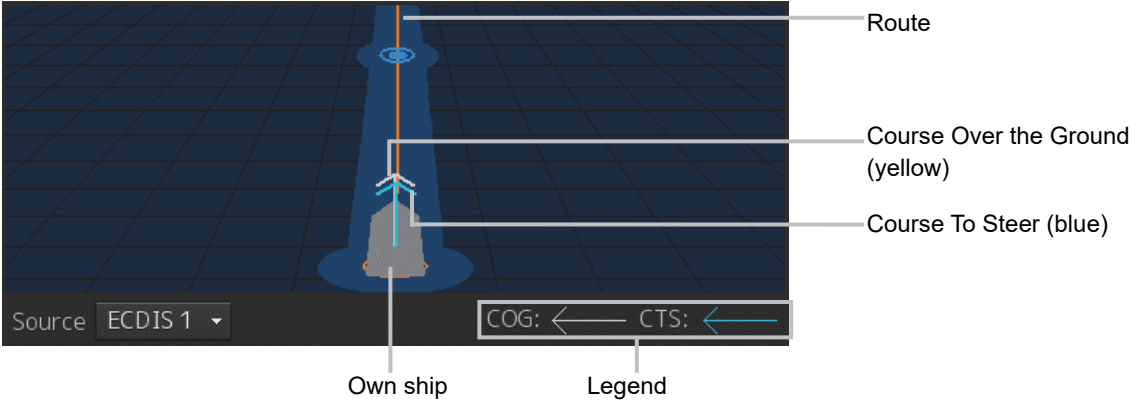
Normally, the item that is already displayed on another window cannot be selected.

**Setting the window to blank**

Click on [Off] in step 3 above.

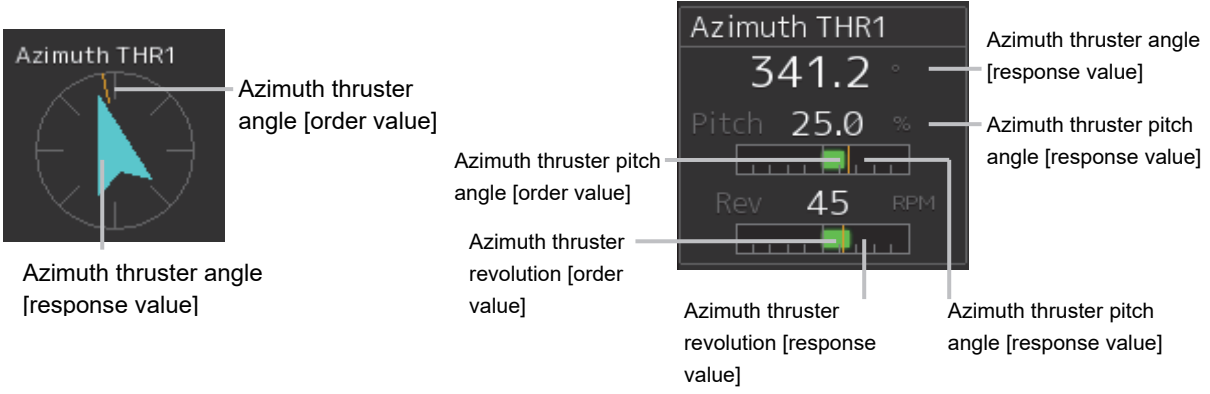
### 4.2.3 Description of each block

#### 4.2.3.1 3D Navigation information and the legend of the navigation



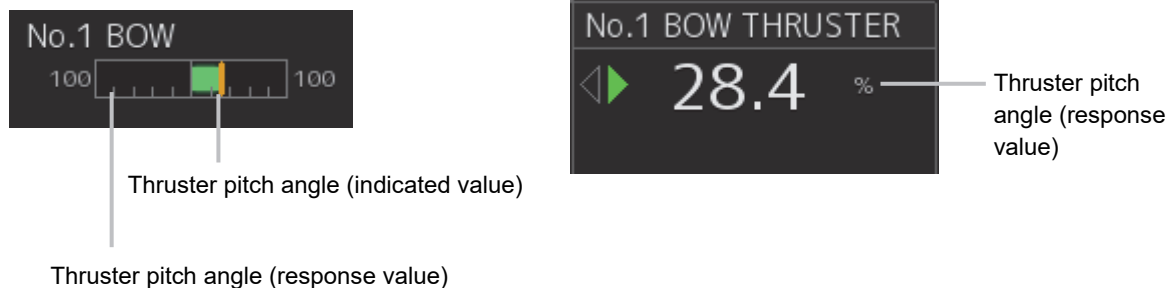
Item	Display contents
Own ship	Indicates the position of own ship. Displayed under H-UP (own ship is positioned at the center of the screen).
Course Over the Ground	Indicates the angle of the course over the ground. The sensor that is selected by the "Course/speed over the ground information" of the basic information display area is used as the source.
Route	Displays the route based on the route information that is received from ECDIS.
Course to Steer	Indicates the angle of the course to steer (CTS). *The course to steer is displayed in autopilot mode. In other modes, the information is not displayed.

#### 4.2.3.2 Information about azimuth thruster of CPP (controllable pitch propeller) type



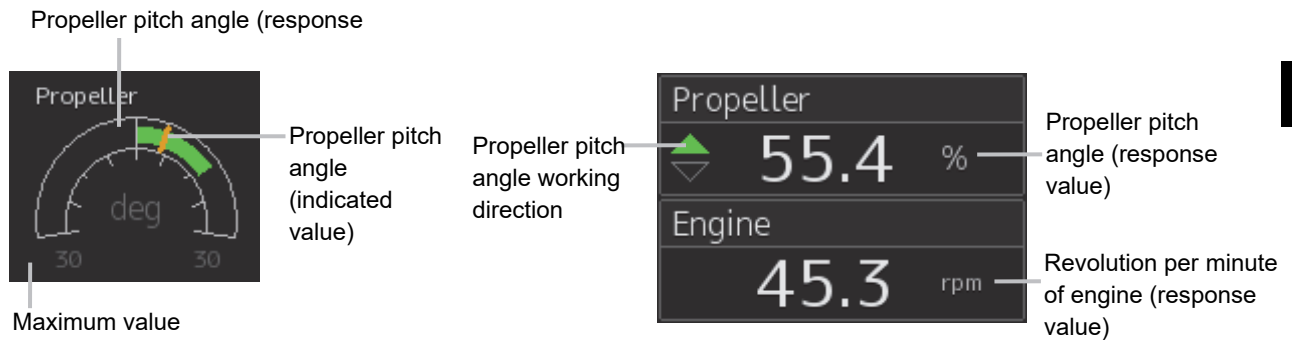
Item	Display contents
Azimuth thruster angle (response value)	Displays the azimuth thruster angle (response value) with a meter display and a numerical display.
Azimuth thruster angle (indication value)	Displays the azimuth thruster angle (indication value). On the meter display, the angle is displayed as a yellow line.
Azimuth thruster pitch angle (response value)	Displays the azimuth thruster pitch angle (response value) with a meter display and a numerical display. The unit can be changed on the View menu. For the details, refer to "5.1.2 Setting up the display of unit of setting value".
Azimuth thruster pitch angle (order value)	Displays the azimuth thruster pitch angle (order value). On the meter display, the pitch angle is displayed as a yellow line.
Azimuth thruster revolution (response value)	Displays the azimuth thruster revolution (response value) with a meter display and a numerical display. The unit can be changed on the View menu. For the details, refer to "5.1.2 Setting up the display of unit of setting value".
Azimuth thruster revolution (order value)	Displays the azimuth thruster revolution (order value). On the meter display, the revolution is displayed as a yellow line.

#### 4.2.3.3 Information about side thruster of CCP (controllable pitch propeller) type



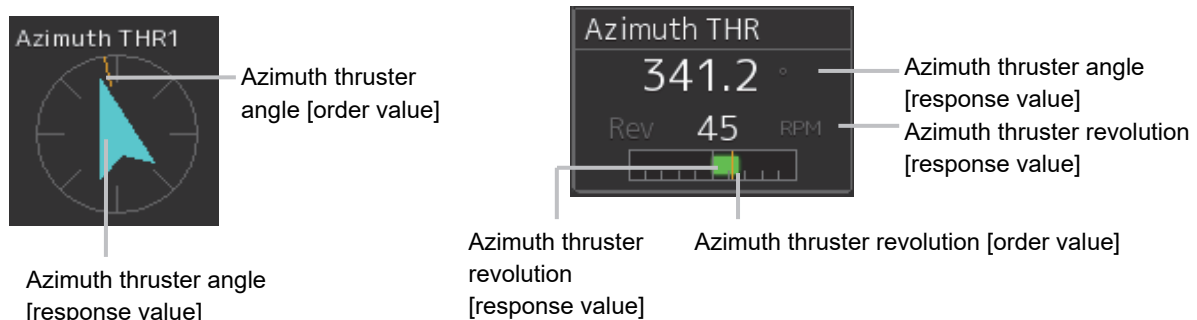
Item	Display contents
Thruster pitch angle (response value)	Displays the pitch angle (response value) of the side thruster. On the meter display, the angle is displayed as a red (Port direction) or green (Starboard direction) bar. The maximum value is displayed at both ends of the meter. In numerical display, a value with the port (red)/starboard (green) mark is displayed. The unit can be changed on the View menu. For the details, refer to "5.1.2 Setting up the display of unit of setting value".
Thruster pitch angle (order value)	Displays the pitch angle of side thruster (order value). On the meter display, the angle is displayed as a yellow line.

### 4.2.3.4 Information about propeller engine of CPP (controllable pitch propeller) type



Item	Display contents
Propeller pitch angle (response value)	Displays the propeller pitch angle (response value). On the meter display, the angle is displayed as green (forward direction) or red (backward direction) bar. In numerical display, a value with propeller pitch angle operation direction is displayed. The unit can be changed on the View menu. For the details, refer to "5.1.2 Setting up the display of unit of setting value".
Propeller pitch angle (order value)	Displays the propeller pitch angle (order value). On the meter display, the angle is displayed as a yellow line.
Engine revolution (response value)	Displays the engine revolution in numerical format. The unit can be changed on the View menu. For the details, refer to "5.1.2 Setting up the display of unit of setting value".

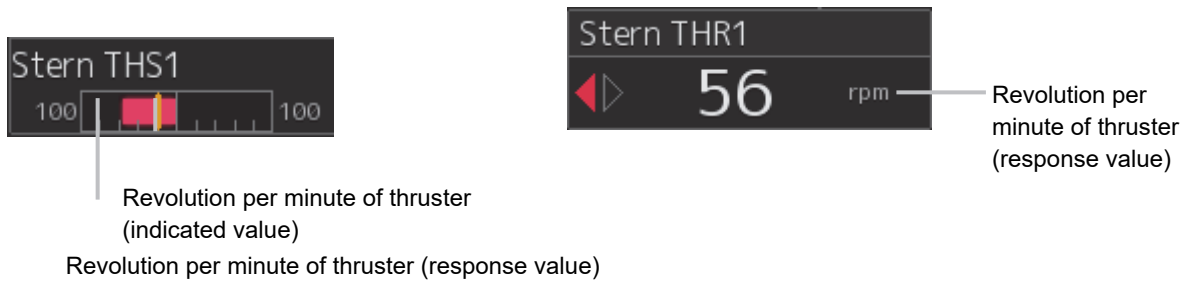
### 4.2.3.5 Information about azimuth thruster of FPP (fixed pitch propeller) type



Item	Display contents
Azimuth thruster angle (response value)	Displays the azimuth thruster angle (response value) with a meter display and a numerical display.
Azimuth thruster angle (order value)	Displays the azimuth thruster angle (order value). On the meter display, the angle is displayed as a yellow line.
Azimuth thruster revolution (response value)	Displays the azimuth revolution (response value) with a meter display and a numerical display. The unit can be changed on the View menu. For the details, refer to "5.1.2 Setting up the display of unit of setting value".
Azimuth thruster revolution (order value)	Displays the azimuth revolution (order value). On the meter display, the speed is displayed as a yellow line.

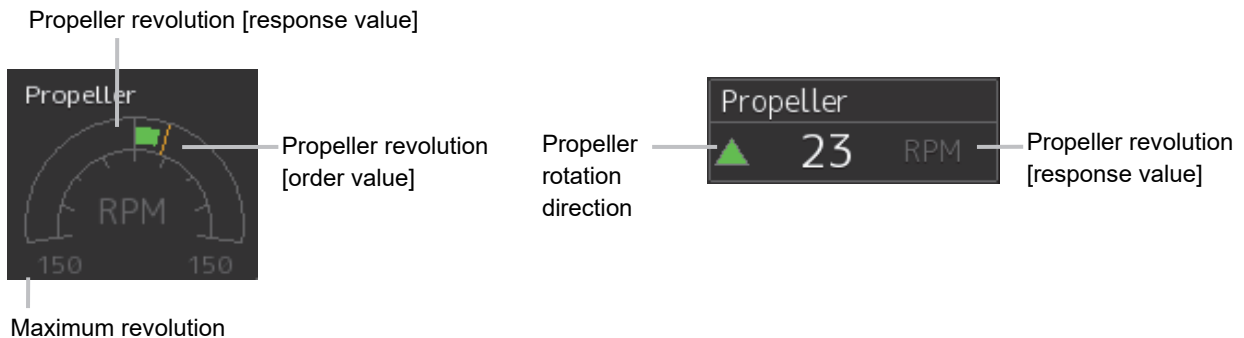


### 4.2.3.6 Information about side thruster of FPP (fixed pitch propeller) type



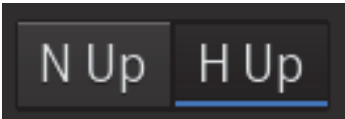
Item	Display contents
Thruster revolution (response value)	Displays the revolution (response value) of the side thruster. On the meter display, the speed is displayed as a red (Port direction) or green (Starboard direction) bar. The maximum value is displayed at both ends of the meter. In numerical display, a value with the port (red)/starboard (green) mark is displayed. The unit can be changed on the View menu. For the details, refer to "5.1.2 Setting up the display of unit of setting value".
Thruster revolution (order value).	Displays the revolution of the side thruster (order value). On the meter display, the speed is displayed as a yellow line.

### 4.2.3.7 Information about propeller engine of FPP (fixed pitch propeller) type



Item	Display contents
Propeller revolution (response value)	Displays the revolution (response value) of the engine/propeller. On the meter display, the speed is displayed as a green (forward direction) or red (backward direction) bar. In numerical display, a value with engine/propeller operation direction is displayed. The unit can be changed on the View menu. For the details, refer to "5.1.2 Setting up the display of unit of setting value".
Propeller revolution (order value)	Displays the revolution (order value) of the engine/propeller. On the meter display, the speed is displayed as a yellow line.

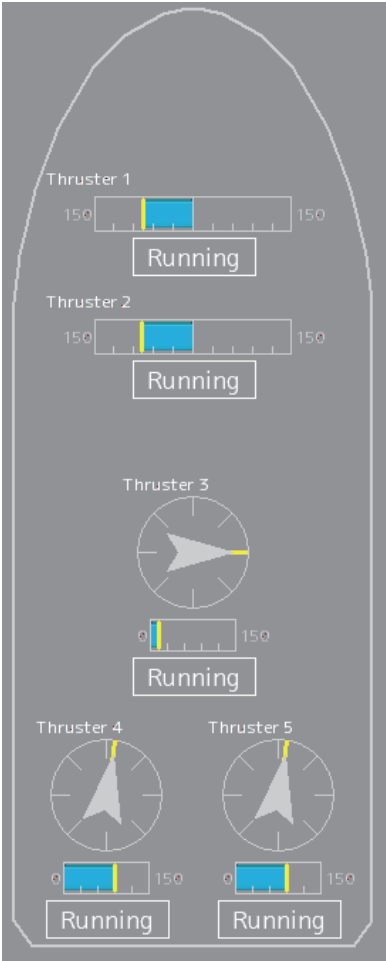
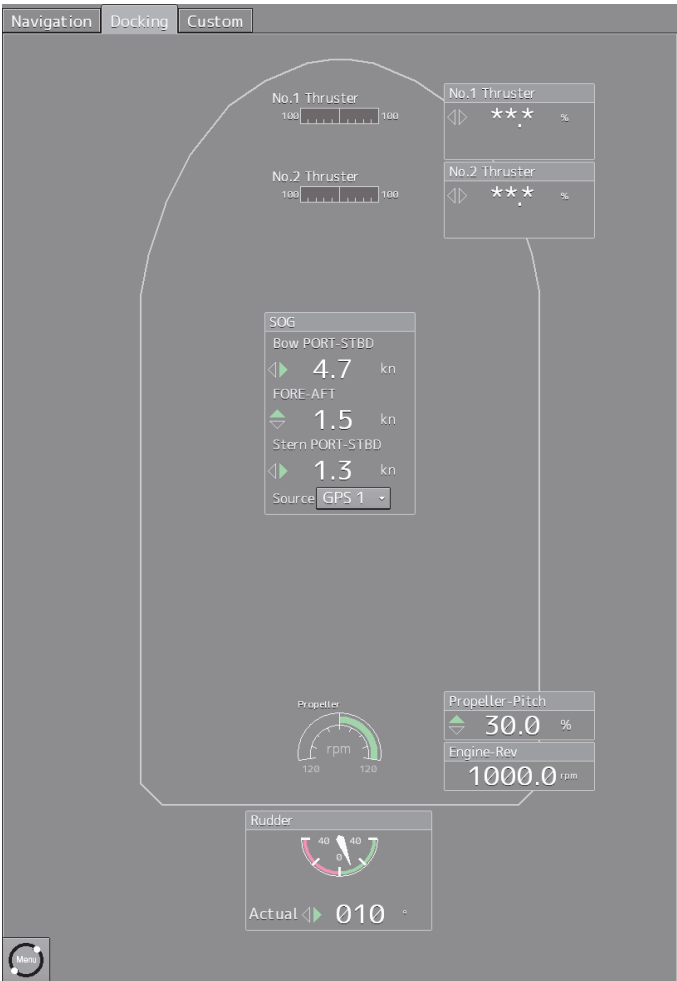
### 4.2.3.8 N-UP/H-UP switching buttons



The N-UP/H-UP switching buttons enable switching between N-UP display and H-UP display. The scale display in the illustration display such as course switches according to the N-UP/H-UP display switching. For the illustration display, refer to "4.2.3.33 Graphic display of ship's heading, course over the ground, wind bearing/wind speed, and current information".

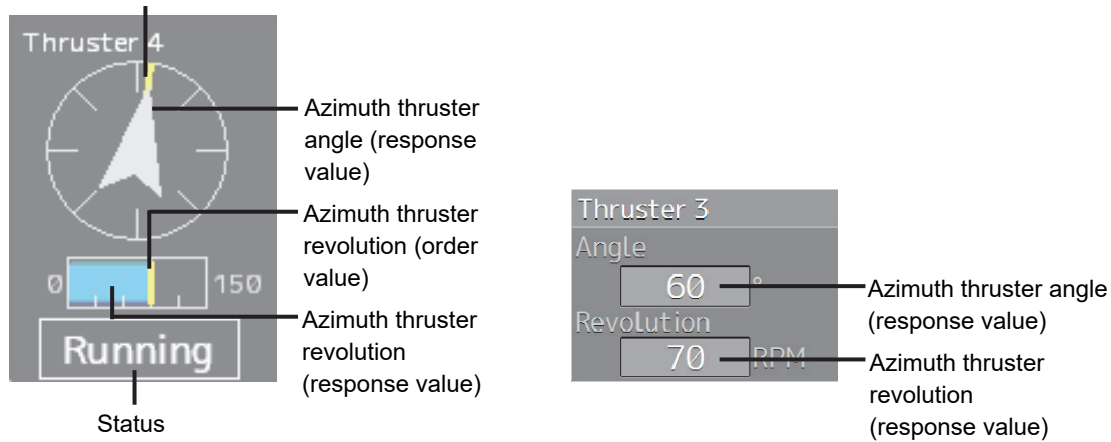
### 4.2.3.9 Ship block

In the Ship block, operation statuses such as the rudder angle, engine/propeller, and thruster are displayed within and surrounding the line drawing of a shape of a ship. Ship block display examples are shown below.



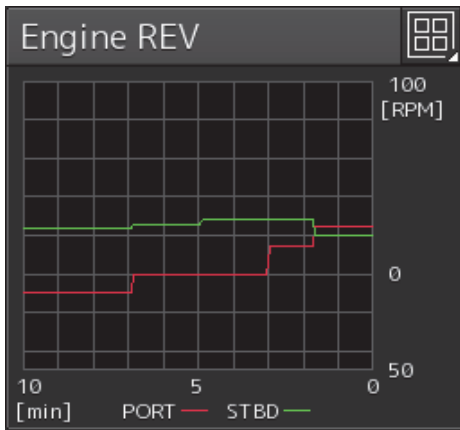
## 4.2.3.10 Azimuth thruster information (with status)

Azimuth thruster angle (order value)



Item	Display contents
Azimuth thruster angle (response value)	Displays an azimuth thruster angle (response value) in meter display and numeric value display.
Azimuth thruster angle (order value)	Displays an azimuth thruster angle (order value). Displayed on the meter with a yellow line.
Azimuth thruster revolution (response value)	Displays an azimuth thruster revolution (response value) in meter display and numeric value display. The unit can be changed in the View menu. For the details, refer to "5.1.2 Setting up the display of unit of setting value".
Azimuth thruster revolution (order value)	Displays an azimuth thruster revolution (order value). Displayed on the meter with a yellow line.
Status	Displays a status of the azimuth thruster. Running: Running Stop: Stopped

### 4.2.3.11 Engine/propeller revolution graph



Item	Display contents
Engine/shaft/ propeller revolution speed graph display	Displays the engine/propeller revolution speed graph. The graph range can be changed on the View menu. For the details, refer to "5.1.6 Setting an engine/propeller revolution graph ".

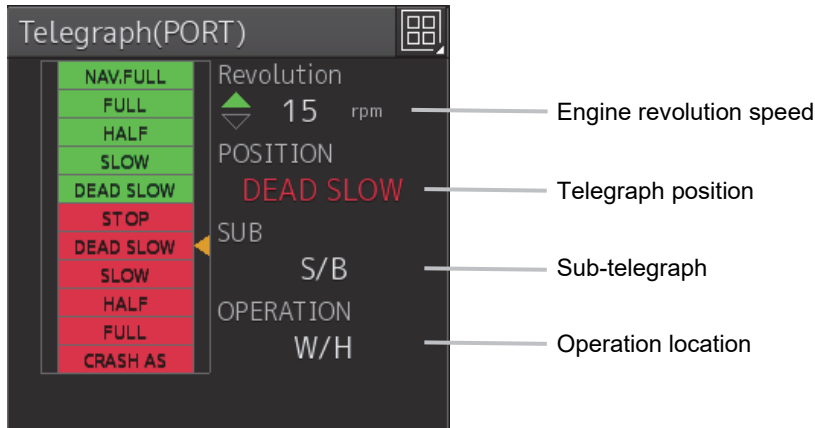
### 4.2.3.12 Engine output information



Item	Display contents
Engine output	Displays the engine output.

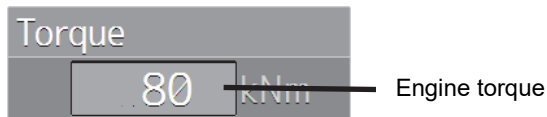
### 4.2.3.13 Engine telegraph information

When two engines are installed, the engine telegraph information that can be displayed on the Custom mode screen can be set to 2.



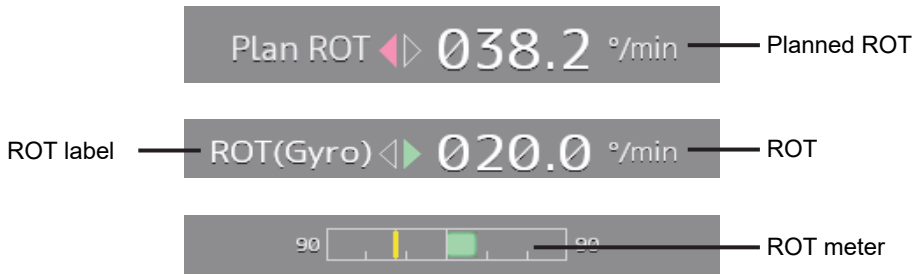
Item	Display contents
Engine revolution speed	Displays the engine revolution speed.
Telegraph position	Displays the telegraph position.
Sub-telegraph	Displays the sub-telegraph.
Operation location	Displays the engine telegraph operation location.

### 4.2.3.14 Engine torque information



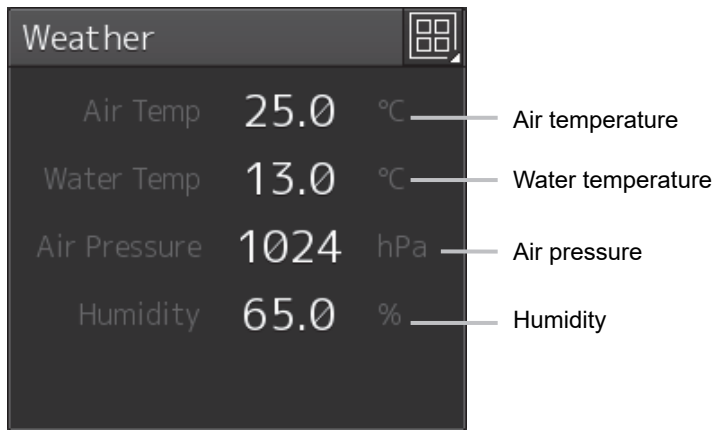
Item	Display contents
Engine torque	Displays an engine torque. The unit is kNm (kilo newton meter).

4.2.3.15 Rate Of Turn (ROT) information



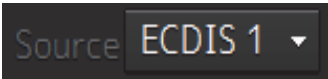
Item	Display contents
Rate of turn label	Displays the rate of turn sensor name. ROT[TRI]: Displays the rate of turn from TRI (Turn Rate Indicator). ROT[Gyro]: Displays the rate of turn from Gyro. * When two Gyro units are installed, Gyro1 or Gyro2 is displayed according to the sensor that is currently used for receiving information.
Planned rate of turn	Displays the planned rate of turn. The value is displayed following the port/starboard mark. * The planned rate of turn is displayed based on the route information that is received from ECDIS. The information is not displayed if the route is not monitored.
Rate of turn	Displays the rate of turn. The value is displayed following the port/starboard mark.
Rate of turn meter	Displays with the red bar when the ship is turning to the port side and with the green bar when the ship is turning to the starboard side. (In top screen (2), a white color is used in the display instead of red and green colors.) Planned rate of turn is displayed with the yellow line.

### 4.2.3.16 Weather information



Item	Display contents
Air temperature	Displays the air temperature. The display unit can be changed on the View menu. For the details, refer to "5.1.2 Setting up the display of unit of setting value".
Water temperature	Displays the water temperature. The display unit can be changed on the View menu. For the details, refer to "5.1.2 Setting up the display of unit of setting value".
Air pressure	Displays the air pressure. The display unit can be changed on the View menu. For the details, refer to "5.1.2 Setting up the display of unit of setting value".
Humidity	Displays the humidity.

### 4.2.3.17 Route information source



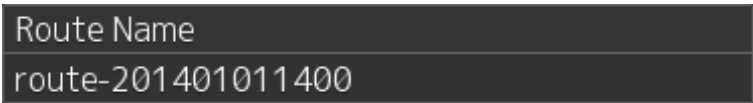
This combo box is displayed to display and change the sensor source for acquiring route monitoring information.

Select a sensor source in the combo box.

When [Menu] is selected, the [Sensor Selection/Status] dialog is displayed. Any of the following sensor sources can be selected.

Setting item	Setting contents	Setting value
Navigational Data	Select the source (sensor) for acquiring route monitoring information. *The sources that can be selected vary according to the installation. *When the Switch to equipment for Autosailing check box is selected, selection is disabled.	ECDIS x, MFD x ("x" indicates the unit number.)
Switch to equipment for Autosailing	When acquiring route monitoring information from the equipment that is performing Auto-Sailing, enable the item (ON) by selecting the check box. When acquiring route monitoring information from the source that is selected from Navigational, disable the item (OFF) by clearing the check box.	ON/OFF

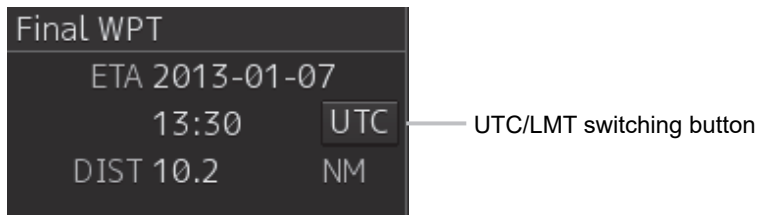
### 4.2.3.18 Route name information



The route name is displayed based on the route information that is received from ECDIS. The information is displayed only when the route is being monitored.

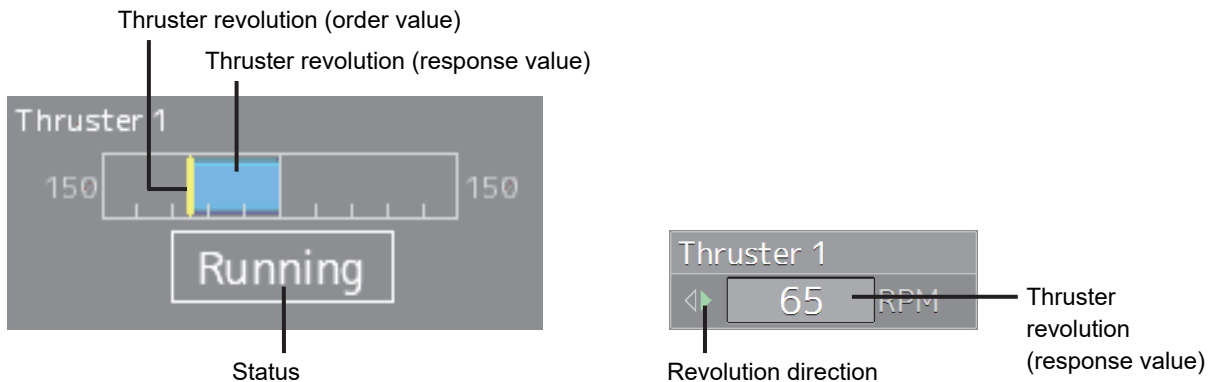


### 4.2.3.19 Final waypoint information



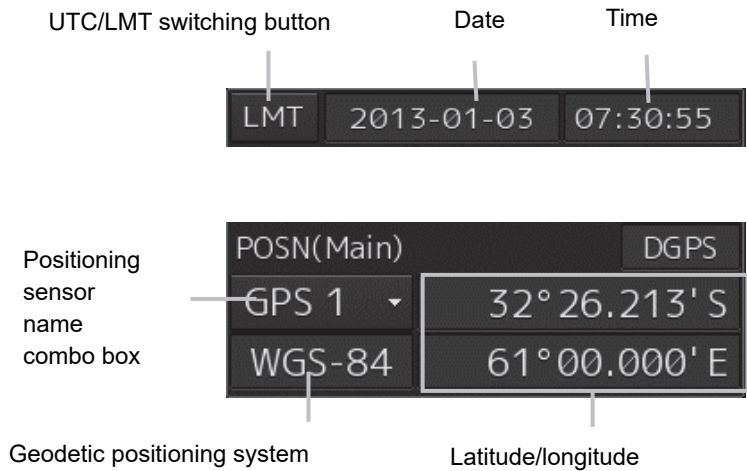
Item	Display contents
ETA	Displays the expected time of arrival at the final waypoint. The time display method can be changed by using the maintenance function. For the details, refer to "9.1.2 Setting Date/Time/Time Zone".
UTC/LMT switching button	Displays and switches UTC/LMT of ETA.
DIST	Displays the distance from own ship to the final waypoint.

### 4.2.3.20 Side thruster information (with status)



Item	Display contents
Thruster revolution (response value)	Displays a thruster revolution (response value) in meter display and numeric value display. The unit can be changed in the View menu. For the details, refer to "5.1.2 Setting up the display of unit of setting value".
Thruster revolution (Order value)	Displays a thruster revolution (order value). Displayed on the meter with a yellow line.
Status	Displays a status of the thruster. Running: Running Stop: Stopped

### 4.2.3.21 Time and position information



Item	Display contents
Date display	Displays the current date.
Time display	Displays the current time (Universal Time Coordinated or local time).
UTC/LMT switching button	When the button is clicked on, the display switches between the Universal Time Coordinated [UTC] and local time [LMT].
Latitude	Displays the latitude of own ship's position. North latitude is indicated as N and the South latitude is indicated as S.
Longitude	Displays the longitude of own ship's position. East longitude is indicated as E and West longitude is indicated as W.
Positioning sensor name combo box	Displays and changes the positioning sensor name. The following sensor sources can be selected. When [Menu] is selected, the [Sensor Selection/Status] dialog is displayed. GPSx <sup>*1</sup> For the details of the sensor source setting, refer to "9.1.5 Setting and confirming the sensor source".
Geodetic system	Displays the geodetic system.

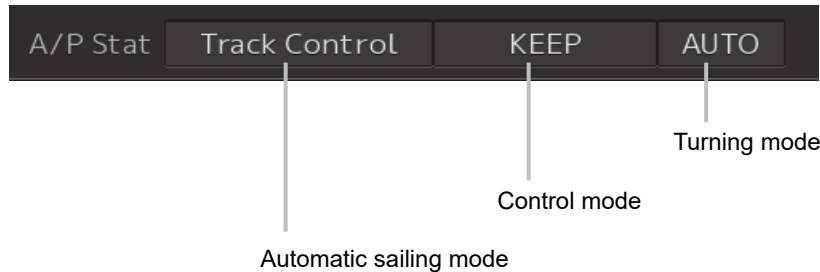
\*1: When two or more GPS units are present, "x" indicates the unit number.

### 4.2.3.22 Automatic sailing information

This section displays the status of the autopilot that is installed.

**Note**

Displayed when the automatic sailing option is attached.

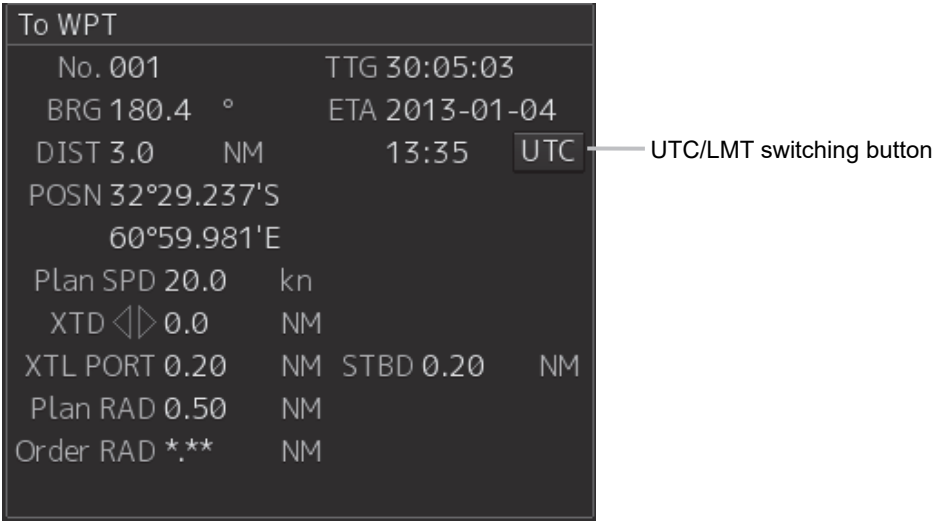


Item	Display contents
Autopilot mode	<p>Displays the automatic sailing mode.</p> <p>No display: The [Navigational Data] combo box is blank space and the Switch to equipment for Autosailing check box in the [Sensor Selection/Status] dialog is not checked.</p> <p>Track Control: The A/P (Autopilot) steering mode is set to Track Control.</p> <p>Heading Control: The A/P steering mode is set to Heading Control.</p> <p>Manual: The A/P steering mode is set to Manual.</p> <p>Override: Override steering (interrupt steering)</p>
Control mode	<p>Displays the automatic sailing control mode.</p> <p>No display: Automatic sailing is not set.</p> <p>KEEP: During automatic sailing/course keeping state</p> <p>TURN: During automatic sailing/turning (TCS category C)</p> <p>Assisted Turn: During automatic sailing/turning (TCS category B)</p>
Turn mode	<p>Displays the automatic sailing turn mode.</p> <p>No display: Automatic sailing is not set.</p> <p>AUTO: Automatic turn mode</p>

**Notes**

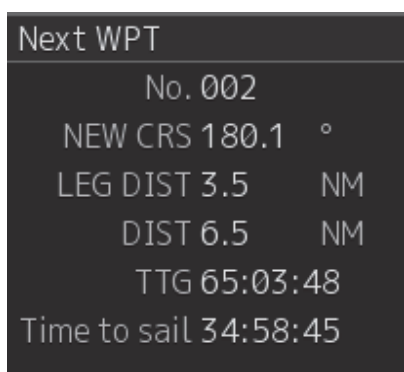
- When the mode is switched to Override steering on the Autopilot side in Track Control mode, Track Control is released and the mode is set to Override Steering.
- Refer to the following information for the override steering method.
  - Autopilot manufactured by TOKYO KEIKI:  
 "4.5 Override Steering Method (Option)" of the "Autopilot Additional Instruction Manual: TCS model Category C (TOKYO KEIKI PR-6000 and HCS-9000)"
  - Autopilot manufactured by YOKOGAWA:  
 "4.2.3 Override steering (option)" of the "Autopilot Additional Instruction Manual Autopilot: TCS model Category C (YOKOGAWA PT500A and PT900)"

### 4.2.3.23 Next waypoint information



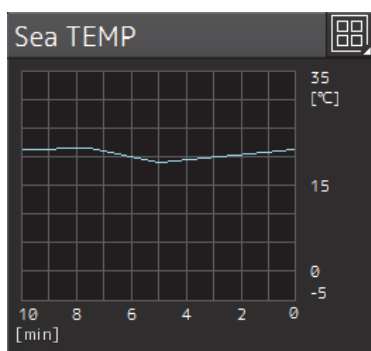
Item	Display contents
No.	Displays the next waypoint number.
BRG	Displays the bearing up to the next waypoint.
DIST	Displays the distance up to the next waypoint.
POSN	Displays the latitude and longitude of To Waypoint.
Plan SPD	Displays the planned ship speed.
XTD	Displays the cross track distance of own ship. Indicates the port (red)/starboard (green) with the color of the triangle mark. The display unit can be switched by using the View menu. For the details, refer to "5.1.2 Setting up the display of unit of setting value".
XTL PORT/STBD	XTL PORT displays the route width of the port side and XTL STBD displays the route width of the starboard side. The display unit can be switched in the View menu. For the details, refer to "5.1.2 Setting up the display of unit of setting value".
Plan RAD	Displays the planned turn radius.
Order RAD	Displays the order turn radius.
TTG	Displays the time required to arrive at the next waypoint.
ETA	The date display method can be changed by using the maintenance function. For the details, refer to "9.1.2 Setting Date/Time/Time Zone".
UTC/LMT switching button	Displays and switches UTC/LMT of ETA.

### 4.2.3.24 One after next waypoint information



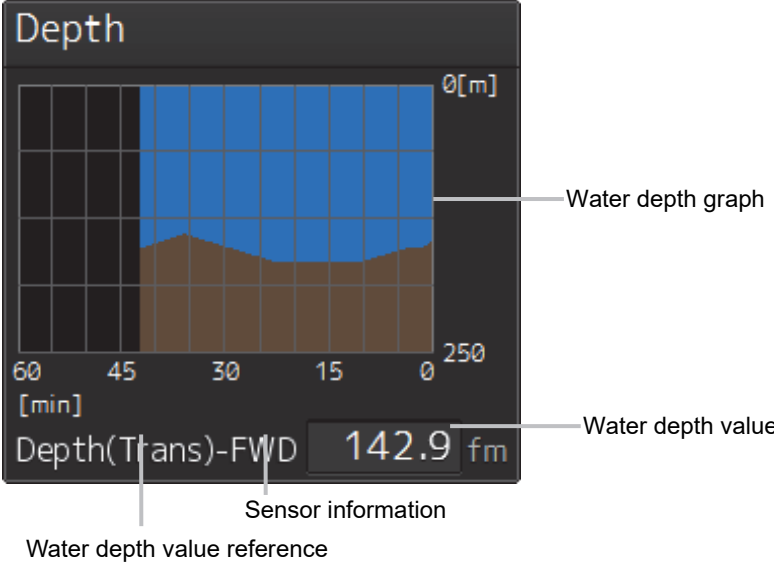
Item	Display contents
No.	Displays the number of one after the next waypoint.
New CRS	Displays the leg bearing of one after the next waypoint.
LEG DIST	Displays the distance from the next waypoint to one after the next waypoint.
DIST	Displays the distance from own ship to one after the next waypoint.
TTG	Displays the time required to arrive at one after the next waypoint.
Time to sail	Displays the time required from the next waypoint to one after the next waypoint.

### 4.2.3.25 Water temperature graph



Item	Display contents
Water temperature graph display	<p>Displays water temperatures in graph format.</p> <p>The unit can be selected on the View menu.</p> <p>For the details, refer to “5.1.2 Setting up the display of unit of setting value”.</p> <p>The range of the graph can be changed on the View menu.</p> <p>For the details, refer to “5.1.8 Setting a water temperature graph”.</p>

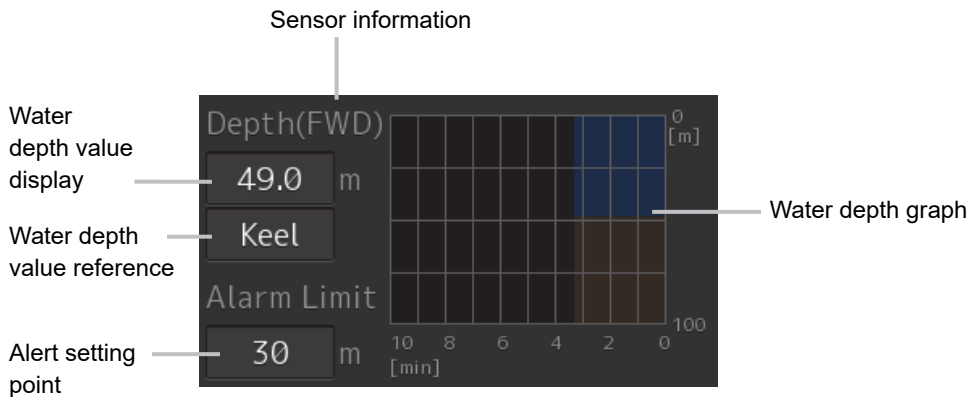
4.2.3.26 Water depth graph



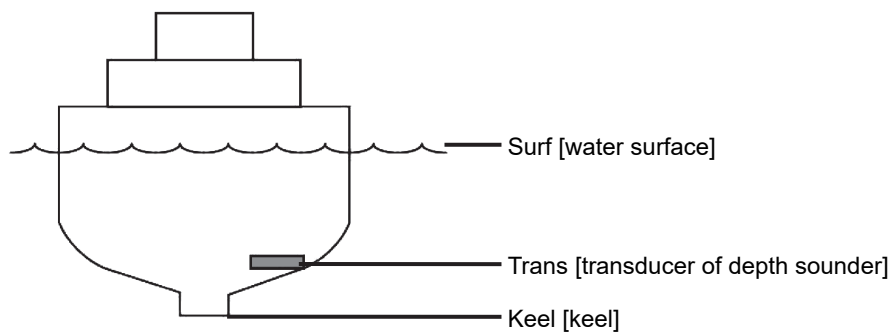
Item	Display contents
Water depth graph	Displays the water depth information. Water is indicated by light blue and ocean bed is indicated by brown. Therefore, the boundary between light blue and brown indicates the water depth. The graph range can be changed on the View menu. For the details, refer to "5.1.3 Setting up Water Depth display".
Water depth value	Displays the water depth value. The unit can be selected on the View menu. For the details, refer to "5.1.3 Setting up the display of unit of setting value".
Water depth value reference	Displays the water depth value reference (Surf/Trans/Keel).
Sensor information	Displays the water depth sensor source. FWD: Depth sounder installed at the front of the ship MID: Depth sounder installed at the center of the ship AFT: Depth sounder installed at the rear of the ship

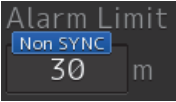
## 4.2.3.27 Water depth information

The following items are displayed regularly as water depth information.



Item	Display contents
Water depth value display	Indicates the water depth value.
Water depth graph	Indicates the water depth information. Water is indicated in blue and the sea bed is indicated in brown. Therefore, the boundary between blue and brown indicates the water depth. The graph setting range can be changed from the View menu. For the details, refer to "5.1.3 Setting up the Water Depth display".
Water depth value reference	Displays the water depth value reference [depth measurement point]. The depth measurement point is one of Surf, Trans, and Keel and the water depth value at each point is as follows. Surf: Water depth value from the water surface Trans: Water depth value from the transducer of the depth sounder Keel: Water depth value from the point below the keel



Item	Display contents
Sensor information	<p>Displays the water depth sensor source.</p> <p>FWD: Depth sounder installed at the front of the ship</p> <p>MID: Depth sounder installed at the center of the ship</p> <p>AFT: Depth sounder installed at the rear of the ship</p>
Alert setting point	<p>The water depth value measured from the bottom of the keel is displayed.</p> <p>The unit can be changed in the View menu.</p> <p>For the details, refer to "5.1.2 Setting up the display of unit of setting value".</p> <p>* PJRCM sentence must be received from the water depth sounder to display the alert setting point.</p> <p>*When the water depth value measured from the bottom of the keel is not received, the [Non SYNC] badge is displayed.</p> 



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### Sentence from the water depth sounder

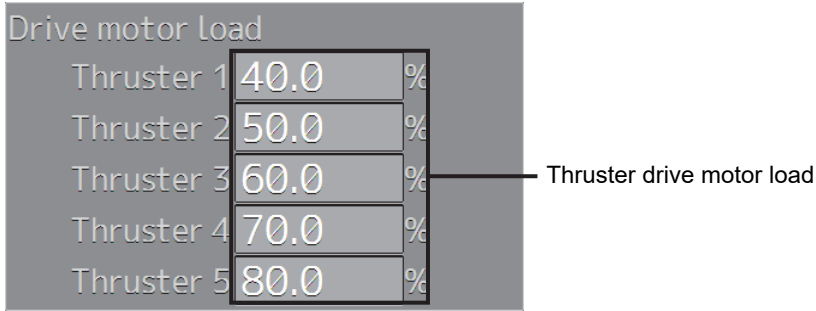
An alert setting point value is updated by the sentence from the water depth sounder.

A sentence is output at every 4 hours from 0 hour of UTC after the power supply of the depth sounder is turned on.

The contents of sentences are listed below.

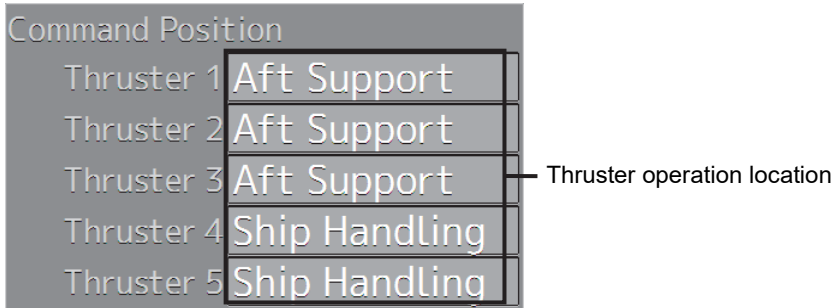
Field	Code	Data	Specification
1	\$	Header	Fixed
2	PJRCM	Sentence ID	
3	SD	Equipment ID	
4	88	System information command	
5	VXX.XX	Software version	
6	X	Image transmission	
7	X	Crack	
8	X	Interference prevention	
9	X	GAIN AUTO/NORMAL	
10	X	RANGE	
11	±XX	Draft adjustment value	
12	X	Cursor display ON/OFF	
13	X	Key ACK	
14	X	Relay contact point	
15	XX	Water depth alarm ON/OFF	OFF=0, ON=1
16	XX.X	Water depth alarm setting value	0.0 ~ 99.9
17	X	System alarm ON/OFF lost	
18	X	System alarm ON/OFF transmission	
19	X	System alarm ON/OFF reception	
20	X	System alarm ON/OFF foam forming	
21	X	System alarm ON/OFF printer	
22	X	Recording interval	
23	*hh	Check sum	
24	<CR><LF>	Delimiter	

### 4.2.3.28 Thruster drive motor load information



Item	Display contents
Thruster drive motor load	Displays a drive motor load of each thruster with a value between 0% and 100%.

### 4.2.3.29 Thruster operation location information



Item	Display contents
Thruster operation location	<p>Displays an operation location of each thruster.</p> <p>Ship Handling: After bridge (ship operation)</p> <p>Aft Support: After bridge (support)</p> <p>FWD Bridge: Forward bridge</p> <p>When there are multiple operation locations for the same thruster, the operation location of the highest priority is displayed.</p> <p>The operation locations are shown below in the order of descending priorities.</p> <p>Ship Handling&gt;Aft Support&gt;FWD Bridge</p>

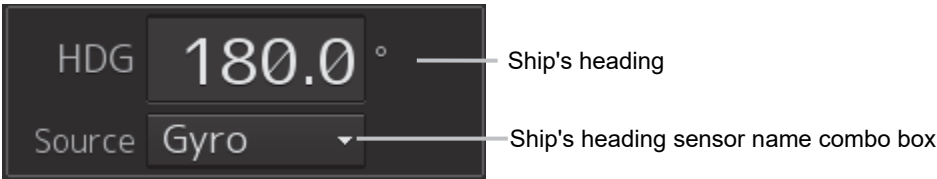
### 4.2.3.30 Thruster steering mode information

Steering Mode	
Thruster1	DP
Thruster2	DP —
Thruster3	JS
Thruster4	Manual
Thruster5	Manual

← Thruster steering mode

Item	Display contents
Thruster steering mode	<p>Displays a steering mode of each thruster.</p> <p>Backup: Backup control</p> <p>DP: Dynamic positioning</p> <p>DP(Locked): Dynamic positioning (locked)</p> <p>JS: Joystick</p> <p>JS(Locked): Joystick (locked)</p> <p>AP: Autopilot</p> <p>Manual: Manual</p> <p>When there are multiple steering modes for the same thruster, the steering mode of highest priority is displayed.</p> <p>The steering modes are shown below in the order of descending priorities.</p> <p>Backup&gt;DP/DP(Locked)&gt;JS/JS(Locked)&gt;AP&gt;Manual</p>

### 4.2.3.31 Heading information

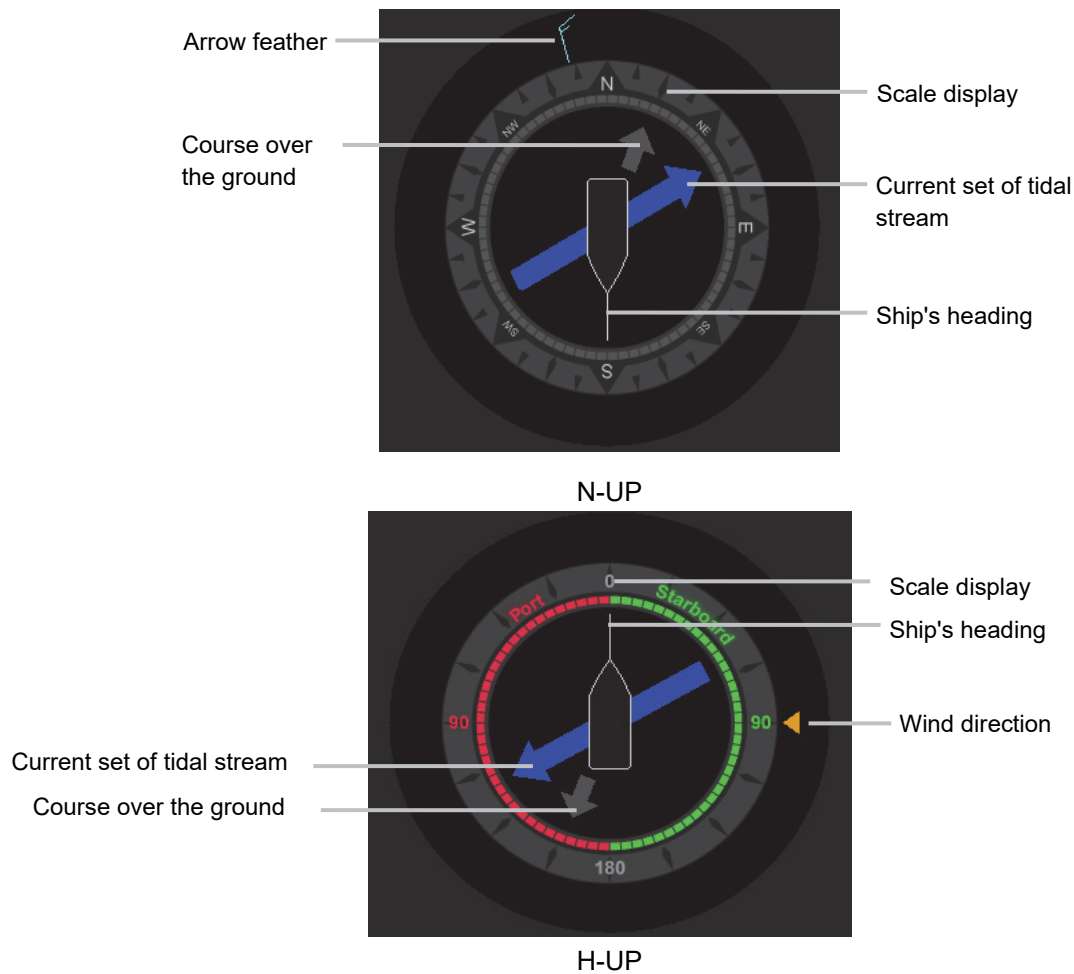


Item	Display contents
Ship's heading	<p>Displays the ship's heading.</p> <p>The reliabilities of the values are color coded into three colors.</p> <ul style="list-style-type: none"> <li>• Normal character color: Normal sensor value</li> <li>• Yellow: Deterioration of sensor value reliability</li> <li>• Orange: Abnormal sensor value</li> </ul>
Ship's heading sensor name combo box	<p>Displays and changes the ship's heading sensor name.</p> <p>The following sensor sources can be selected.</p> <p>When [Menu] is selected, the [Sensor Selection/Status] dialog is displayed.</p> <p>Gyro, Gyro1*1*2, Gyro2*1*2, MAG, G/C</p> <p>For the details of the sensor source setting, refer to "9.1.5 Setting and confirming the sensor source".</p>

\*1: Only for the case where two Gyro units are available.

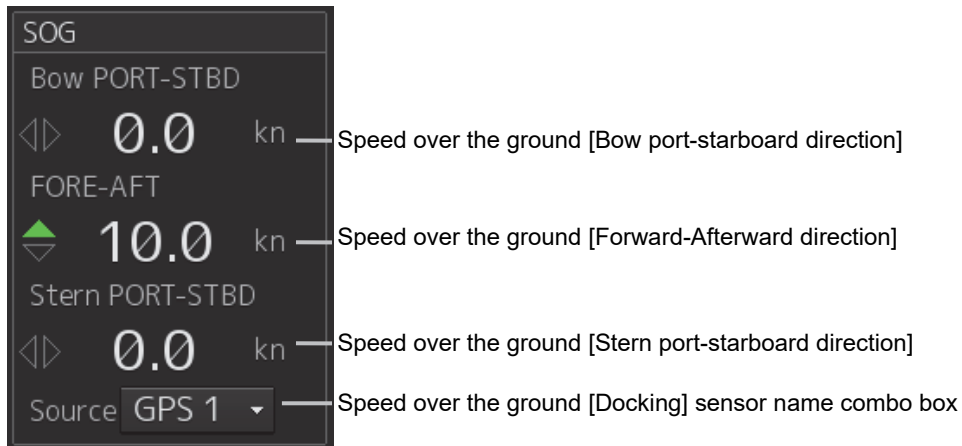
\*2: When the Gyro Compass system that is used has the automatic switching function, the sensor source display is switched automatically according to the switching condition.

### 4.2.3.32 Graphic display of ship's heading, course over the ground, wind bearing/wind speed, and current information



Item	Display contents
Ship's heading	Displays the ship's heading.
Scale display	The scale display changes according to the switching of H-UP/N-UP. <ul style="list-style-type: none"> <li>• N-UP: Indicates the scale of 32 points using North as the reference.</li> <li>• H-UP: Indicates the scale of 180 degrees each towards the starboard side and portside with reference to the bow of the ship. (In top screen (2), a white color is used in the display instead of red and green colors.)</li> </ul>
Course Over the Ground	Displays the course over the ground (COG).
Arrow feather	An arrow feather is displayed in the case of N-UP. The arrow tip indicates the downwind. The number of arrow feathers indicates the Beaufort wind-force scale.
Wind direction	A triangular arrow is displayed in the case of H-UP. The arrow tip indicates the downwind. The wind speed is not displayed.
Current set of tidal stream	The arrowhead indicates the direction of the tide.

### 4.2.3.33 Ship speed information



Item	Display contents
Speed over the ground (Bow port-starboard direction)	<p>Displays the ship speed over the ground (Bow port-starboard direction). When the ship is moving forward in the port direction, a red arrow is displayed. When the ship is moving forward in the starboard direction, the green triangle is displayed. (In top screen (2), a white color is used in the display instead of red and green colors.)</p> <p>If the ship speed is 1 kn or lower, the unit changes to cm/s.</p> <p>The unit can be changed on the View menu.</p> <p>For the details, refer to "5.1.2 Setting up the display of unit of setting value".</p>
Speed over the ground (Forward-Afterward direction)	<p>Displays the speed over the ground (Forward-Afterward direction). When the ship is moving forward, a green arrow is displayed. When the ship is moving backward, a red arrow is displayed. (In top screen (2), a white color is used in the display instead of red and green colors.)</p> <p>If the ship speed is 1 kn or lower, the unit changes to cm/s.</p> <p>The unit can be changed on the View menu.</p> <p>For the details, refer to "5.1.2 Setting up the display of unit of setting value".</p>
Speed over the ground (Stern port-starboard direction)	<p>Displays the speed over the ground (Stern port-starboard direction). When the ship is moving in the port direction, a red arrow is displayed. When the ship is moving in the starboard direction, a green arrow is displayed. (In top screen (2), a white color is used in the display instead of red and green colors.)</p> <p>If the ship speed is 1 kn or lower, the unit changes to cm/s.</p> <p>The unit can be changed on the View menu.</p> <p>For the details, refer to "5.1.2 Setting up the display of unit of setting value".</p>
Speed over the ground (Docking) sensor name combo box	<p>Displays and changes the speed over the ground (Docking) sensor name.</p> <p>The following sensor sources can be selected.</p> <p>When [Menu] is selected, the [Sensor Selection/Status] dialog is displayed.</p> <p>Log*<sup>1</sup>, Log1*<sup>1</sup>*<sup>2</sup>, Log2*<sup>1</sup>*<sup>2</sup> and GPSx*<sup>3</sup></p> <p>For the details of the sensor source setting, refer to "9.1.5 Setting and confirming the sensor source".</p>

\*1: When 1AX is installed for Log, Log cannot be selected from the sensor source.

\*2: Only for the case where two Log units are available.

\*3: When two or more GPS units are present, "x" indicates the unit number.

### 4.2.3.34 Steering position information

This function displays the steering position when override steering is set during Track Control.

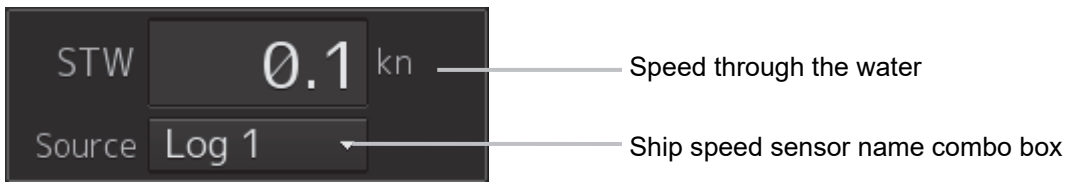


Item	Display contents
Steering position	<p>Displays the steering position when override steering is set during Track Control.</p> <p>Bridge: Bridge            PORT Wing: Port wing            STBD Wing: Starboard wing            Engine Room: Engine room            Engine Side: Near the engine            Wing: Wing (port or starboard is not specified)            MANO C: Specific definition of TOKYO KEIKI autopilot, steering console            Stand: Specific definition of TOKYO KEIKI autopilot, steering stand</p> <p>The Steering Position is displayed as follows when the YDK Steering Indicator is connected.</p> <p>STAND: Steering stand            CENTER: BCC (Bridge Center Control)            PORT/W: Port wing            STBD/W: Starboard wing            S/G ROOM: Steering gear room            AFTER: AFTER console            BRIDGE: Bridge            PORT: Port            STBD: Starboard            PORT/SJ: Port S-JOY            STBD/SJ: Starboard S-JOY</p>

**Memo**

The character string that has been initially set is displayed. The characters that are displayed may vary depending on the system.

### 4.2.3.35 Ship speed through water information

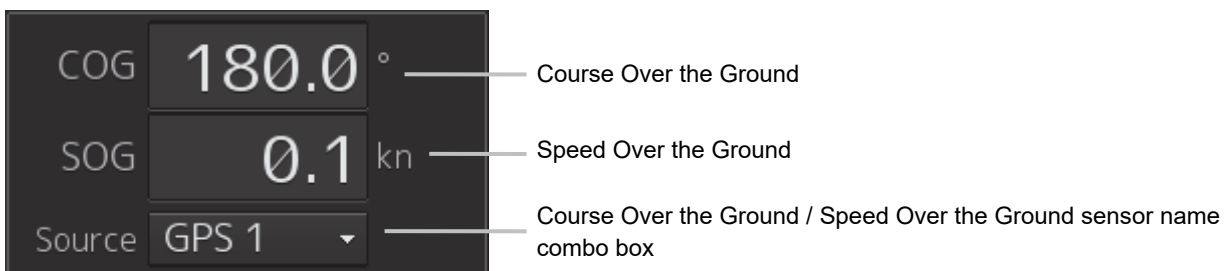


Item	Display contents
Speed through the water	<p>Displays the speed through the water.</p> <p>The reliabilities of the values are color coded into three colors:</p> <ul style="list-style-type: none"> <li>• Normal character color: Normal sensor value</li> <li>• Yellow: Deterioration of sensor value reliability</li> <li>• Orange: Abnormal sensor value</li> </ul> <p>The display unit can be switched in the View menu. For the details, refer to "5.1.2 Setting up the display of unit of setting value".</p>
Ship speed sensor name combo box	<p>Displays/changes a ship speed sensor name.</p> <p>The following sensor sources can be selected.</p> <p>When [Menu] is selected, the [Sensor Selection/Status] dialog is displayed.</p> <p>Log<sup>*1</sup>, Log1<sup>*1 *2</sup>, Log2<sup>*1 *2</sup></p> <p>For the details of sensor source setting, refer to "9.1.5 Setting and confirming sensor sources".</p>

\*1: When 1AX is installed for Log, Log cannot be selected from the sensor source.

\*2: Only when there are two Logs

### 4.2.3.36 Course/speed over the ground information



Item	Display contents
Course Over the Ground	<p>Indicates the course over the ground.</p> <p>The reliabilities of the values are color coded into three colors:</p> <ul style="list-style-type: none"> <li>• Normal character color: Normal sensor value</li> <li>• Yellow: Deterioration of sensor value reliability</li> <li>• Orange: Abnormal sensor value</li> </ul>



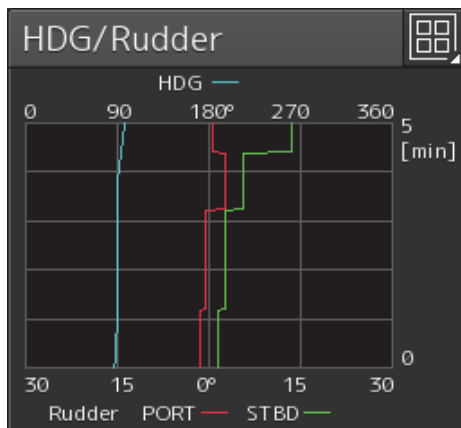
Item	Display contents
Speed Over the Ground	<p>Displays the speed over the ground.</p> <p>The reliabilities of the values are color coded into three colors:</p> <ul style="list-style-type: none"> <li>• Normal character color: Normal sensor value</li> <li>• Yellow: Deterioration of sensor value reliability</li> <li>• Orange: Abnormal sensor value</li> </ul> <p>The unit can be changed on the View menu.</p> <p>For the details, refer to "5.1.2 Setting up the display of unit of setting value".</p>
Course Over the Ground/Speed Over the Ground sensor name combo box	<p>Displays and changes the course over the ground/ speed over the ground sensor name.</p> <p>The following sensor sources can be selected.</p> <p>When [Menu] is selected, the [Sensor Selection/Status] dialog is displayed.</p> <p>Log<sup>*1</sup>, Log1<sup>*1*2</sup>, Log2<sup>*1*2</sup>, and GPSx<sup>*3</sup></p> <p>For the details of the sensor source setting, refer to "9.1.5 Setting and confirming the sensor source".</p>

\*1: When 1AX is installed for Log, Log cannot be selected from the sensor source.

\*2: Only for the case where two Log units are available.

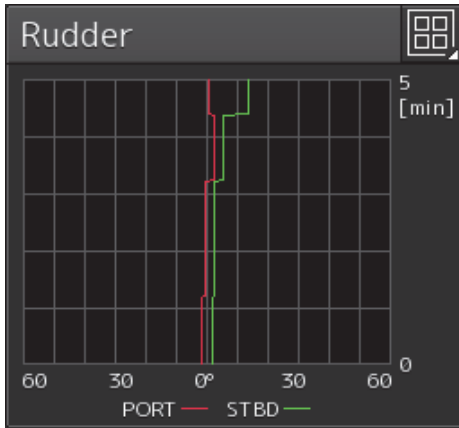
\*3: When two or more GPS units are present, "x" indicates the unit number.

#### 4.2.3.37 Rudder angle/ship's heading graph



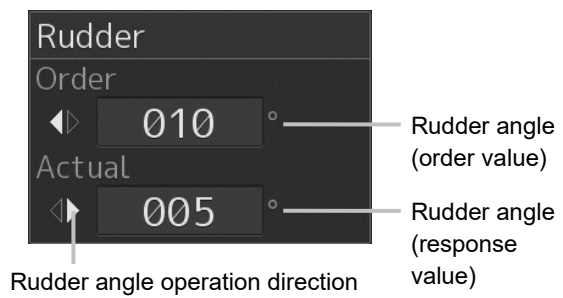
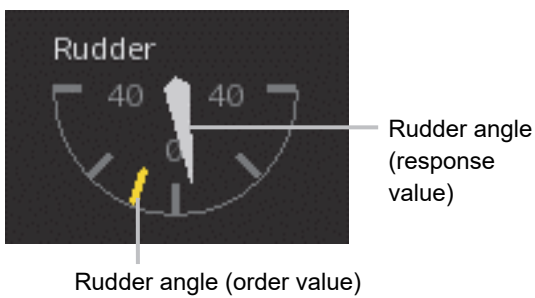
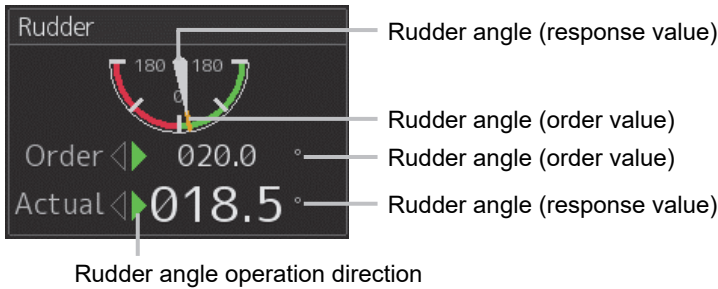
Item	Display contents
Ship's heading + Rudder angle graph display	<p>Displays the graph of the ship's heading and rudder angle.</p> <p>The graph range can be changed on the View menu.</p> <p>For the details, refer to "5.1.5 Setting a rudder angle/ship's heading graph".</p>

### 4.2.3.38 Rudder angle graph



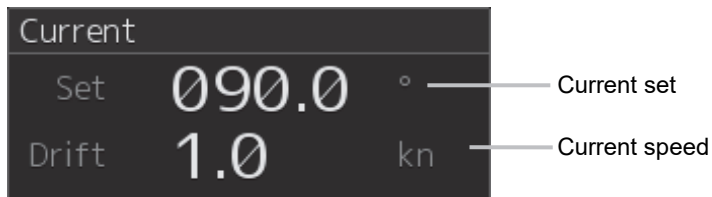
Item	Display contents
Rudder angle graph display	Displays the rudder angle graph. The graph range can be changed on the View menu. For the details, refer to "5.1.4 Setting a rudder angle graph".

### 4.2.3.39 Rudder angle information

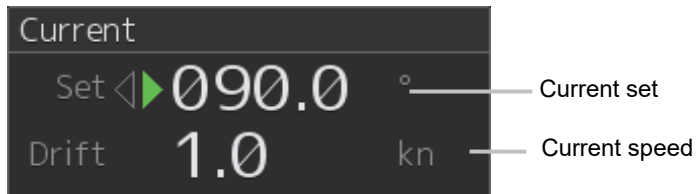


Item	Display contents
Rudder angle (response value)	Displays the rudder angle (response value). On the meter display, the rudder angle is indicated by a needle. In numerical display, the rudder angle operation direction and the value are displayed.
Rudder angle (order value)	Displays the rudder angle (order value). On the meter display, the angle is displayed as a yellow line.

## 4.2.3.40 Current information





Current (N-UP)



Current (H-UP)

Item	Display contents
Current set	Indicates the current set. N-UP: Displays in 360 degrees. H-UP: Displays the port/starboard mark and the degree within the range from 0 to 180°.
Current speed	Displays the current speed. The unit of current speed can be selected on the View menu. For the details, refer to "5.1.2 Setting up the display of unit of setting value".

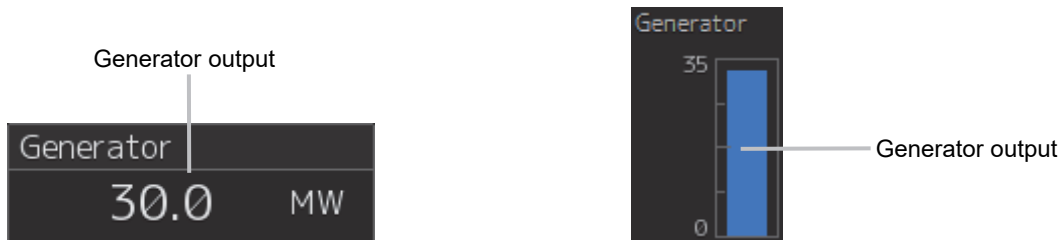
The meanings of the marks at H-UP are as follows.

- : The downstream is on the S (starboard) side.
- : The downstream is on the P (port) side.

### Memo

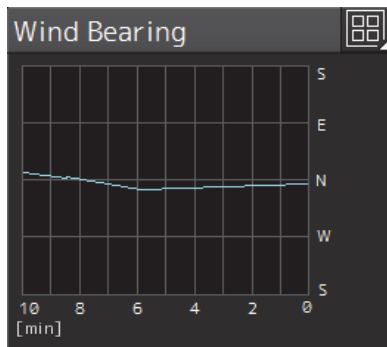
When the current set is 0° or 180°, no symbol is displayed.

### 4.2.3.41 Generator information



Item	Display contents
Generator output	Displays the output from the generator in meter display and numeric value display. “Total”, when displayed, indicates the total value of the multiple generator outputs.

### 4.2.3.42 Wind bearing graph

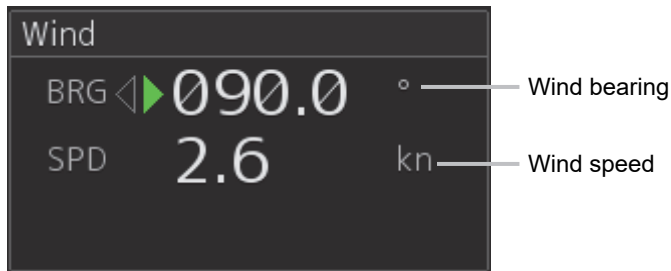


Item	Display contents
Wind bearing graph display	Displays a wind bearing graph. The unit can be selected on the View menu. For the details, refer to “5.1.2 Setting up the display of unit of setting value”. The range of the graph can be changed on the View menu. For the details, refer to “5.1.7 Setting wind direction graph/wind speed graph”.

### 4.2.3.43 Wind bearing/wind speed information





Wind bearing/wind speed-True (H-UP)



Wind bearing/wind speed-Relative (H-UP)










Item	Display contents
Wind bearing	<p>Indicates the wind bearing.</p> <ul style="list-style-type: none"> <li>• N-UP: Displays the true wind bearing in 16 bearings or 360 degrees.</li> <li>• H-UP: Displays the relative wind bearing with the port/starboard mark and the degree within the range from 0 to 180°.</li> </ul> <p>The display of bearing/degree can be selected on the View menu. For the details, refer to "5.1.2 Setting up the display of unit of setting value".</p>
Wind speed	<p>Displays the wind speed.</p> <ul style="list-style-type: none"> <li>• N-UP: Displays the true wind speed.</li> <li>• H-UP: Displays the relative wind speed.</li> </ul> <p>The unit of wind speed can be selected on the View menu. For the details, refer to "5.1.2 Setting up the display of unit of setting value".</p>
Beaufort wind-force scale	<p>Displays the Beaufort wind-force scale within the range of 13 scales for N-UP only according to the Beaufort wind-force scale table. For the details, refer to "Beaufort wind-force scale table".</p>




The meanings of the marks at H-UP are as follows.

-  : Indicates the windward is on S (starboard) side.
-  : Indicates the windward is on P (port) side.

**Memo**  
No symbol is displayed with the wind bearing 0° or 180°.

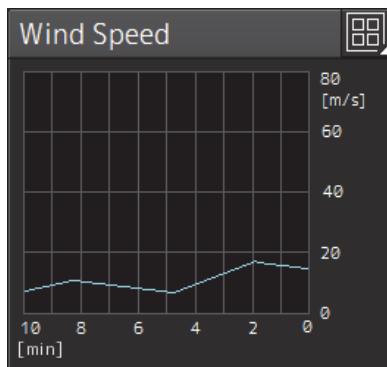
**Beaufort wind-force scale table**

Wind-force scale	Name	Equivalent wind force	Condition on the land	Condition on the sea	Shape of arrow feathers*1
0	Calm	0 to 0.2m/s	Smoke rises straight upwards.	The water surface is calm like a mirror.	No arrow feathers
1	Light air	0.3 to 1.5m/s	Smoke trails to the degree that indicates the wind direction.	The surface of the water ripples, such as fish scales.	
2	Light breeze	1.6 to 3.3m/s	Sensation of wind is felt on the face. Leaves sway.	The surface of water form definite ripples.	
3	Gentle breeze	3.4 to 5.4m/s	Leaves and small branches sway.	Wave crests are broken, starting to create white foam.	
4	Moderate breeze	5.5 to 7.9m/s	Wind raises cloud of dust and small rubbish and fallen leaves are blown up in the air.	Small waves appear and white foams increases.	
5	Fresh breeze	8.0 to 10.7m/s	Shrubs with leaves start to sway.	Wave crests appear on the water surface.	
6	Strong breeze	10.8 to 13.8m/s	Large branches of trees sway, making it difficult for anyone to hold umbrellas. Cables make a sound.	Wave crests with white foams spread.	
7	High wind / Moderate gale / Near gale	13.9 to 17.1m/s	Whole large trees sway, making difficult to walk against the wind.	Wave crests are broken and white foams are blown away by the wind.	
8	Gale / Fresh gale	17.2 to 20.7m/s	Small branches are broken, making impossible to walk against the wind.	Slightly small swell. Wave crests are broken, sending up clouds of spray and foams are blown away, creating trails of lines.	
9	Strong gale	20.8 to 24.4m/s	Roof tiles are blown away. The wind starts to cause some damage to houses.	Swell. Foams are blown away, drawing lines. Wave crests collapse and start whirling in reverse.	

Wind-force scale	Name	Equivalent wind force	Condition on the land	Condition on the sea	Shape of arrow feathers*1
10	Storm / Whole gale	24.5 to 28.3m/s	Rare in inland. Some trees started to fall down from the roots. The wind starts to cause serious damage to houses.	Swells leaning over. The water surface appears to be white by the white foams, creating trails of lines and the visibility deteriorates due to waves collapsing violently.	
11	Violent storm	28.4 to 32.5m/s	Hardly ever occurs. The wind causes a wide range of damages.	Mountain of swells. The water surface is entirely covered by white foams. Wave crests are blown away by the wind, creating spray and the visibility deteriorates further.	
12	Hurricane	32.6m/s or more	The wind causes more serious damage.	The atmosphere is filled with foam and splash and the water surface became entirely white. The visibility deteriorates further.	

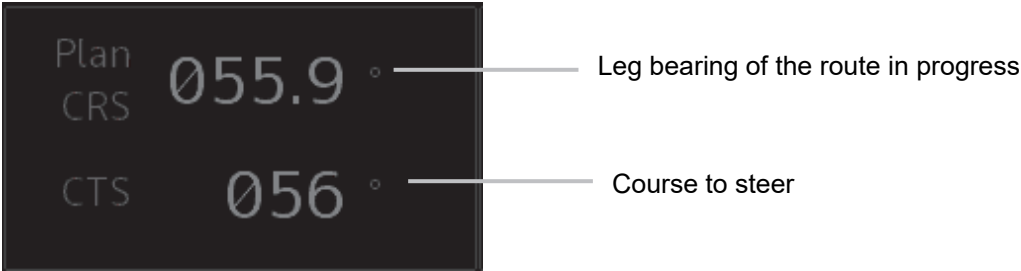
\*1: An arrow feather is displayed in the graphic display (refer to “4.2.3.33 Graphic display of ship’s heading, course over the ground, wind bearing/wind speed, and current information”).

#### 4.2.3.44 Wind speed graph



Item	Display contents
Wind speed graph display	<p>Displays a wind speed graph.</p> <p>The unit can be selected on the View menu.</p> <p>For the details, refer to “5.1.2 Setting up the display of unit of setting value”.</p> <p>The range of the graph can be changed on the View menu.</p> <p>For the details, refer to “5.1.7 Setting wind direction graph/wind speed graph”.</p>

**4.2.3.45 Course To Steer information**



Item	Display contents
Leg bearing of the route in progress	Displays the leg bearing of the route in progress
Course to steer	Indicates the angle of CTS (Course To Steer).

**4.2.3.46 Hull Motion Trim**



Item	Display contents
Hull Motion Trim Information	Indicates the angle of Hull Motion Trim





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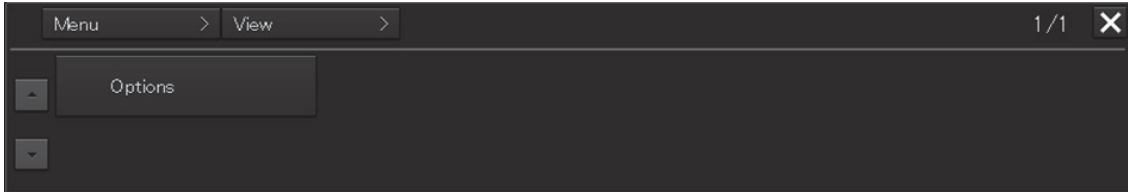
# Section 5 Setting Up Screen View

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Screen display detail is set in [View-Options] dialog box on the [View] menu.

The display procedure of the [View-Options] dialog box is as follows.

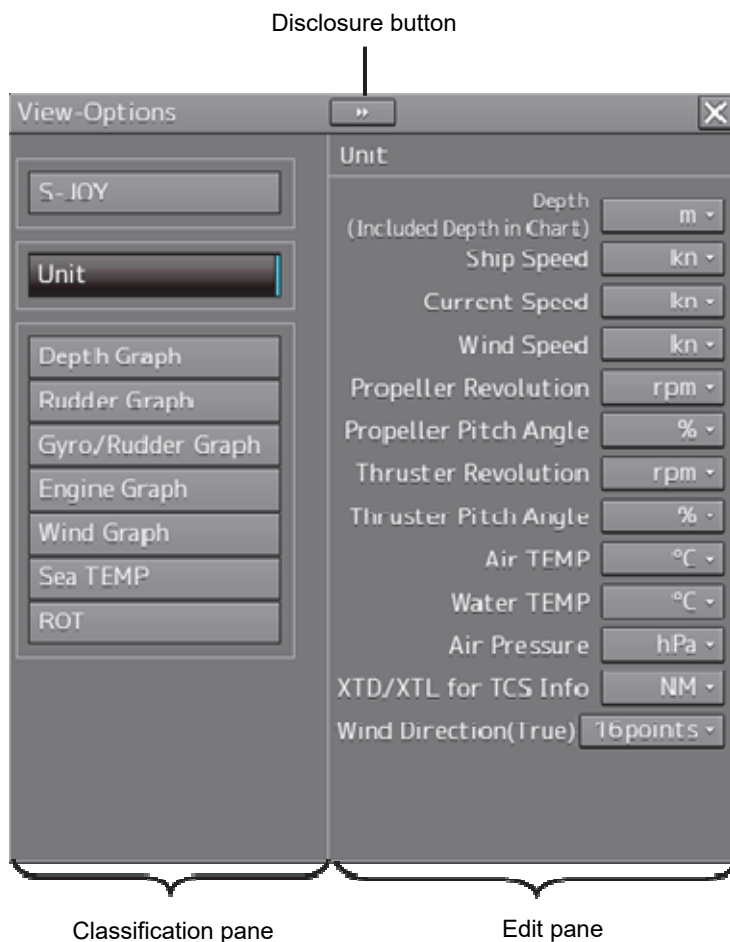
- 1 Click on the [Menu] button at the bottom left corner of the screen.**  
The menu is displayed.
- 2 Click on the [View] button on the menu.**  
The submenu is displayed.



- 3 Click on the [Options] button on the submenu.**  
The submenu [View-Options] dialog box is displayed.

# 5.1 Setting Screen Display Options

In the [View-Options] dialog box, the screen display options can be set.



The [View-Options] dialog box consists of the Classification pane and Edit pane. Click on the disclosure button to hide the Classification pane.

- 1 Click on the screen view of which you want to set up the options in the Classification pane.**  
The option setup dialog for the screen view you have selected appears in the Edit pane.
- 2 Set up in the Edit pane.**

## Screen display set in the [View-Options] dialog box

In the [View-Options] dialog box, the following screen display is set.

The following table shows the descriptions and the related sections of the classification panes that are displayed.

Classification pane	Reference section
S-JOY	5.1.1 Setting an S-JOY predicted position display interval
Unit	5.1.2 Setting up the display of unit of setting value
Depth Graph	5.1.3 Setting up the Water Depth display

Classification pane	Reference section
Rudder Graph	5.1.4 Setting a rudder angle graph
Gyro/Rudder Graph	5.1.5 Setting a rudder angle/ship's heading graph
Engine Graph	5.1.6 Setting an engine/propeller revolution graph
Wind Graph	5.1.7 Setting a wind direction graph/wind speed graph
Sea TEMP	5.1.8 Setting a water temperature graph
ROT	5.1.9 Setting up the graph range of the ROT slide bar

## 5.1.1 Setting an S-JOY predicted position display interval

When [S-JOY] is selected in the classification pane, the "S-JOY" dialog is displayed in the edit pane.

### Note

This dialog may not be displayed depending on the equipment setting.



Setting item	Setting contents	Setting value
Predictor Interval	Select an own ship predicted position display interval from the combo box.	1min, 2min, 3min, 5min, or 10min

### Memo

A display interval can also be set from the Conning Display screen. However, S-JOY cannot be operated from the Conning Display screen.

## 5.1.2 Setting up the display of unit of setting value

### Note

Some items may not be displayed depending on the installation setting.

When you select [Unit] in the Classification pane, the [Unit] dialog is displayed in the Edit pane.



The descriptions of settings are shown in the table below.

Setting Item	Description of Setting	Setting Value
Depth (water depth)	Select a unit of water depth from the combo box.	m, ft, fm
Ship Speed	Select a unit of the ship speed from the combo box.	kn, m/s, km/h
Current Speed	Select a unit of the current speed from the combo box.	kn, m/s, km/h
Wind Speed	Select a unit of the wind speed from the combo box.	kn, m/s, km/h
Propeller Revolution	Select a unit of the propeller's revolution per minute from the combo box.	rpm, min-1
Propeller Pitch Angle	Select a unit of the propeller's pitch angle from the combo box.	°/%
Thruster Revolution	Select the unit of thruster revolution from the combo box.	rpm, min-1
Thruster Pitch Angle	Select a unit of the thruster's pitch angle from the combo box.	°, %, NOTCH
Air TEMP	Select a unit of the air temperature from the combo box.	°C, °F

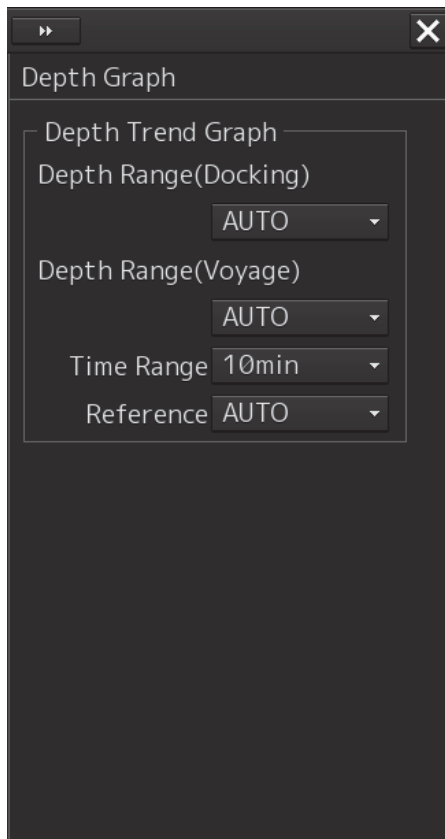
Setting Item	Description of Setting	Setting Value
Water TEMP	Select a unit of the water temperature from the combo box.	°C, °F
Air Pressure	Select a unit of the air pressure from the combo box.	hPa, mbar
XTD/XTL for TCS Info	Select a unit of the cross track limit from the combo box.	NM, m
Wind Direction(True)	Select a method for displaying the wind direction (true) from the combo box.	16points, Degree

### 5.1.3 Setting up the Water Depth display

When [Depth Graph] is selected on the classification pain, the [Depth Graph] dialog is shown on the Edit pain.

**Note**

This dialog may not be displayed depending on the equipment setting.



The following table shows the setting details:

Setting Item	Description of Setting	Setting Value
Depth Range(Docking)	Select a water depth range for the docking depth graph from the combo box.	AUTO, 10 m, 25 m, 50 m
Depth Range(Voyage)	Select a water depth range for the route depth graph from the combo box.	AUTO, 50 m, 100 m, 250 m

Setting Item	Description of Setting	Setting Value
Time Range	Select a time range for the water depth graph from the combo box.	10 min, 15 min, 30 min, 60 min, 12 hours
Reference (Priorities)	<p>Switch the reference of the water depth value.</p> <p>AUTO: Switch the reference of the water depth value according to the received value.</p> <p>Keel: Set the reference of the water depth to keel.</p> <p>Transducer: Set the reference of the water depth to transducer. It can be selected only when FURUNO is selected in [Device Installation] - [Echo Sounder 1].</p> <p>Surface: Set the reference of the water depth to surface. It can be selected only when FURUNO is selected in [Device Installation] - [Echo Sounder 1].</p>	AUTO, Keel, Transducer(When FURUNO is selected), Surface(When FURUNO is selected)

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## 5.1.4 Setting a rudder angle graph

When [Rudder Graph] is selected on the classification pain, the [Rudder Graph] dialog is displayed on the edit pain.

**Note**

This dialog may not be displayed depending on the equipment setting.



The following table shows the setting details:

Setting Item	Description of Setting	Setting Value
Time Range	Select a time range for the rudder angle graph from the combo box.	5 min, 10 min, 15 min, 30 min
Rudder Range	Select a rudder angle for the rudder angle graph from the combo box.	30°, 40°, 50°, 60°, 70°, 80°



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## 5.1.5 Setting a rudder angle/ship's heading graph

When [Gyro/Rudder Graph] is selected on the classification pain, the [Gyro/Rudder Graph] dialog is displayed on the edit pain.

**Note**

This dialog may not be displayed depending on the equipment setting.



The following table shows the setting details:

Setting Item	Description of Setting	Setting Value
Time Range	Select a time range for the rudder angle/ship's heading graph from the combo box.	5 min, 10 min, 15 min, 30 min
Rudder Range	Select a rudder angle for the rudder angle/ship's heading graph from the combo box.	30°, 40°, 50°, 60°, 70°, 80°

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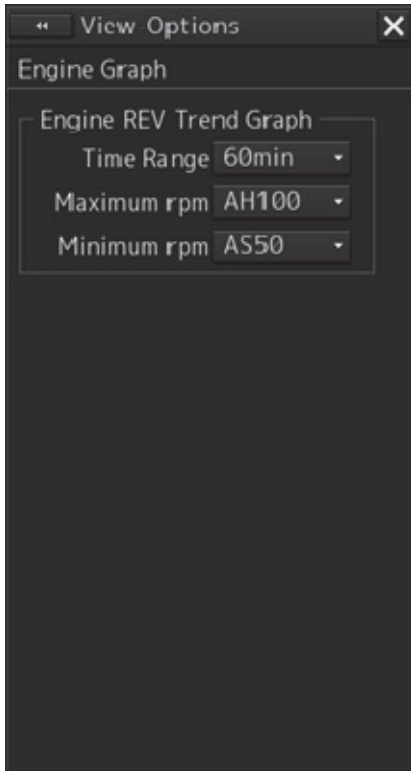
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## 5.1.6 Setting an engine/propeller revolution graph

When [Engine Graph] is selected on the classification pain, the [Engine Graph] dialog is displayed on the edit pain.

**Note**

This dialog may not be displayed depending on the equipment setting.

**5**

The following table shows the setting details:

Setting Item	Description of Setting	Setting Value
Time Range	Select a time range for the engine revolution graph form the combo box.	10 min, 15 min, 30 min, 60 min
Maximum rpm	Select an engine revolution on the Ahead side form the combo box.	AH100, AH200, AH300, AH500, AH1000
Minimum rpm	Select an engine revolution on the Astern side form the combo box.	0, AS50, AS100

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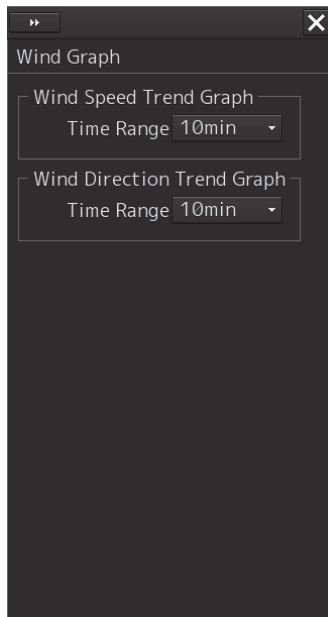
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## 5.1.7 Setting a wind direction graph/wind speed graph

When [Wind Graph] is selected in the classification pane, the “Wind Graph” dialog is displayed in the edit pane.

**Note**

This dialog may not be displayed depending on the equipment setting.



The following table shows the setting contents.

Setting item	Setting contents	Setting value
Wind Speed Trend Graph – Time Range (Wind speed graph time range)	Select a time range of the wind speed graph from the combo box.	10min, 15min, 30min, 60min, 12hours
Wind Direction Trend Graph – Time Range (Wind direction graph time range)	Select a time range of the wind speed graph from the combo box.	10min, 15min, 30min, 60min, 12hours

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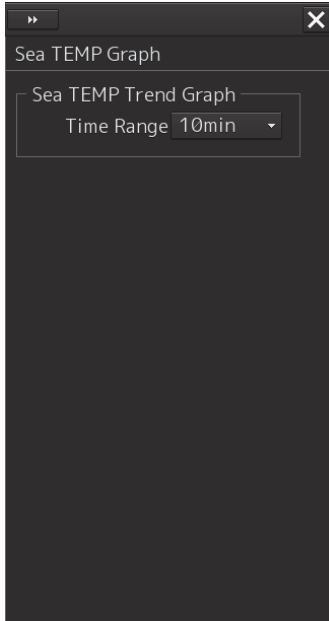
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## 5.1.8 Setting a water temperature graph

When [Sea TEMP] is selected in the classification pane, the “Sea TEMP Graph” dialog is displayed in the edit pane.

**Note**

This dialog may not be displayed depending on the equipment setting.

**5**

The following table shows the setting details:

Setting item	Setting contents	Setting value
Time Range (Time range)	Select a water temperature graph time range from the combo box.	10min, 15min, 30min, 60min, 12hours

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## 5.1.9 Setting up the graph range of the ROT slide bar

When [ROT] is selected on the classification pain, the [ROT] dialog is displayed on the edit pain.



The following table shows the setting details:

Setting item	Setting	Setting value
ROT Scale	Select a graph range for the ROT slide bar from the combo box.	30-0-30, 60-0-60, 90-0-90, 120-0-120, 150-0-150, 300-0-300

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# Section 6 Setting Up Alerts

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By setting this equipment to generate an alert when the own ship's position or the condition meets the specific condition, preliminary measures can be taken.

This section explains the method of setting conditions (threshold values) for generating alerts, alert processing operations, and alert timer setting using the [Alert] menu.

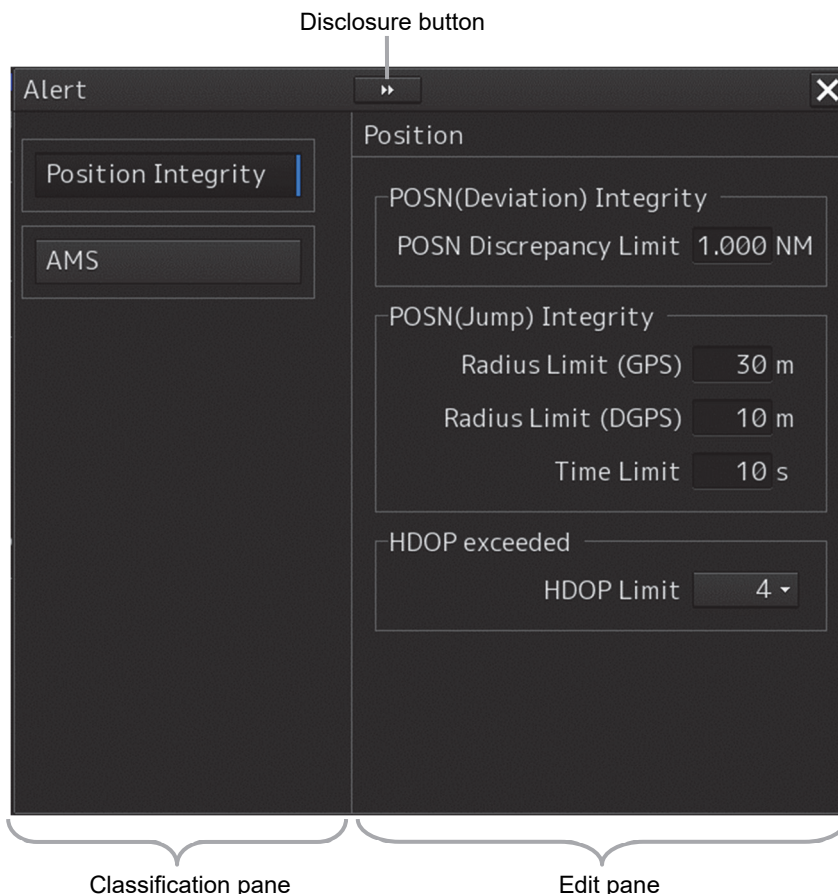
## 6.1 Selecting Setting Items

When the [Alert] menu is opened, the [Alert] dialog box appears.

By selecting a setting item in the [Alert] dialog box, the setting dialog of the selected item can be displayed.



### 6.1.1 Displaying the [Alert] dialog box

- 1 Click on the [Menu] button at the bottom left corner of the screen.**  
The menu is displayed.
- 2 Click on the [Alert] button on the menu.**  
The [Alert] dialog box appears.



---

The [Alert] dialog box consists of the classification pane and the edit pane.

By clicking the disclosure button (  ), you can hide the classification pane. To show the classification pane again, click the disclosure button (  ).

## 6.1.2 Selecting a setting item

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

The setting dialog of the selected item is displayed in the Edit pane.

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

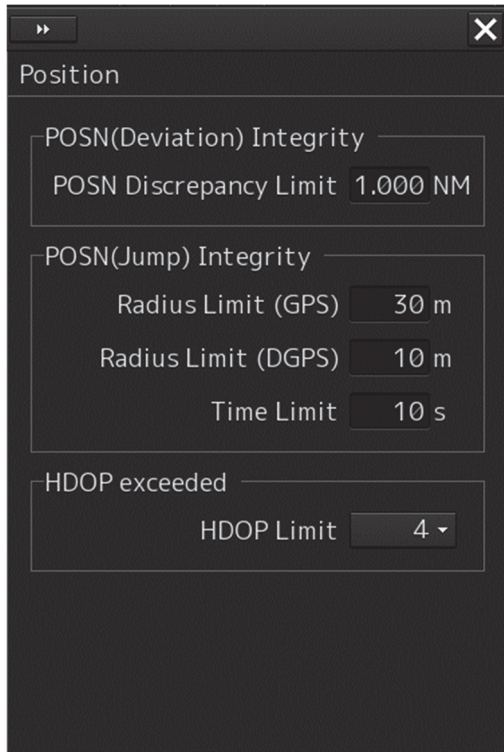
The following items can be set in the [Alert] dialog box.

Setting item	Setting contents
Position Integrity (Position sensor integrity)	Set the conditions for checking the Position Integrity and generating HDOP exceeded Maintenance Information. Refer to "6.2 Position Integrity Check Conditions".
CAM (Central Alert Management)	Set the actions to be taken at the next stage for an unacknowledged alert. Refer to "6.3 Setting Up Alert Processing".

## 6.2 Position Integrity Check Conditions

When [Position Integrity] is selected in the Classification pane, the [Position] dialog is displayed in the Edit pain.

In this dialog, the generation condition of the Position integrity limit and the HDOP limit can be set up.



The screenshot shows a dark-themed dialog box titled "Position". It contains three sections:

- POSN(Deviation) Integrity:** A text input field for "POSN Discrepancy Limit" with the value "1.000 NM".
- POSN(Jump) Integrity:** Three text input fields: "Radius Limit (GPS)" with "30 m", "Radius Limit (DGPS)" with "10 m", and "Time Limit" with "10 s".
- HDOP exceeded:** A text input field for "HDOP Limit" with a dropdown menu showing the value "4".

### 6.2.1 Setting up the condition of the Position Integrity Check

Enter the following threshold values for checking the Position Integrity.

#### Position Difference Limit:

The difference in distances when two GPS positions are compared at every second is used as a threshold value. Specify the difference in a range between 0.010 and 9.990 NM.

#### Note

- Position Difference Limit takes effect when two GPSs are installed.



---

**Radius Limit (GPS):**

The radius of a monitoring circle having the predicted position of a GPS 1 sec later at the center is used as a threshold value. If the position actually measured is not within the time monitoring circle specified in [Time Limit], it will be subjected to an alert. Specify the radius limit in a range between 10 and 100 m.

**Radius Limit (DGPS):**

The radius of a monitoring circle having the predicted position of DGPS 1 sec later at the center is used as a threshold value. If the position actually measured is not within the time monitoring circle specified in [Time Limit], it will be subjected to an alert. Specify the radius limit in a range between 10 and 100 m.

**Time Limit:**

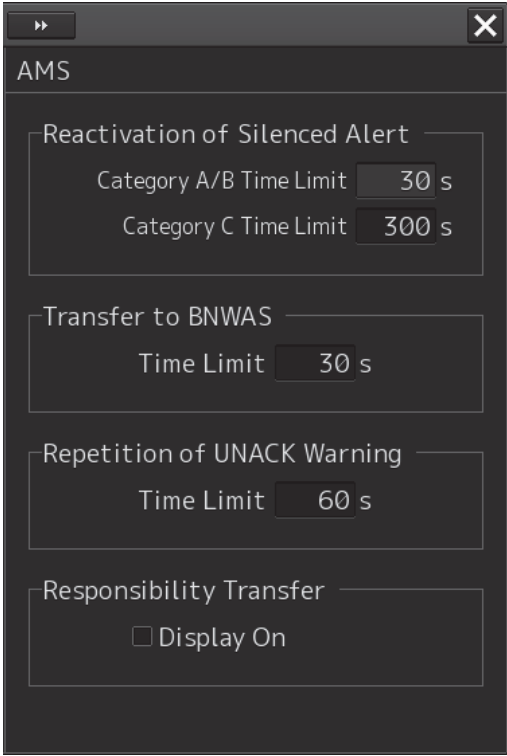
The time during which the position actually measured by a GPS/DGPS deviates from the monitoring circle is used as a threshold value. The time limit can be specified in a range between 1 and 29s.

## 6.2.2 Setting up the generation condition of the HDOP exceeded Maintenance Information

In the [HDOP Limit] combo box, select a threshold limit of HDOP.  
Select either one of [4], [10] and [20].

# 6.3 Setting Up Alert Processing

When [CAM] is selected in the Classification pane, the [CAM] dialog is displayed in the Edit pane. In this dialog, the time to activate the action at the next stage when acknowledge is not performed for an alert can be set up.



Enter the wait time until an alert at the next stage is generated in [Time Limit].

**Reactivation of Silenced Alert:**

Category A/B Time Limit: 30 seconds.  
Category C Time Limit: Set, within the range from 0 to 300s, the time required to reactivate the alert sound that was silenced temporarily.

**Transfer to BNWAS:**

When a BNWAS (Bridge Navigational Watch Alarm System) is connected, specify the time to transfer an unacknowledged alert to the BNWAS in the range between 0 and 30s.

**Repetition of UNACK Warning:**

Specify the time to regenerate an unacknowledged alert as an audible warning in the range between 16 and 300s. A warning will be generated repeatedly until it is acknowledged. The default value is 60 s.

**Responsibility Transfer:**

When click the check box, display of responsibility transferred alert is switched to ON or OFF.



Display of Responsibility transferred alert: ON



Display of Responsibility transferred alert: OFF



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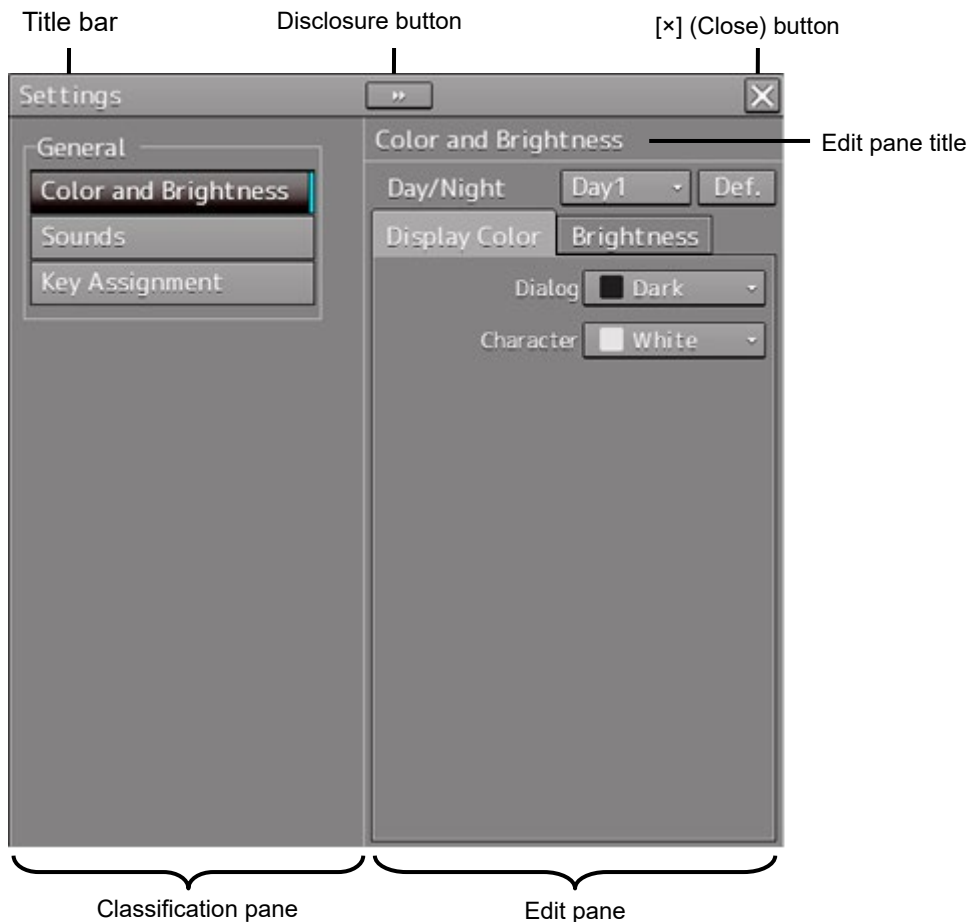
# Section 7 Setting Up the Operation Mode

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## 7.1 Basic Operation of the [Settings] Dialog Box

You can set up the operation mode in the [Settings] dialog box.

- 1 Click on the [Menu] button at the bottom left corner of the screen.**  
The menu is displayed.
- 2 Click on the [Settings] button.**  
The [Settings] dialog box appears.  
The [Settings] dialog box consists of the classification pane and the edit pane.  
Click on the disclosure button (<<) to hide the classification pane. To show the edit pane again, click on the disclosure button (>>).



---

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

The setup dialog of the item you selected is displayed.

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

**Classification pane display targets**

The table below provides the related sections of the classification panes and descriptions that are displayed by Conning Display.

Classification pane	Related section
Color and Brightness	7.2 Setting Color and Brightness
Sounds	7.3 Setting Sounds
Key Assignment	7.4 Setting Key Assignment

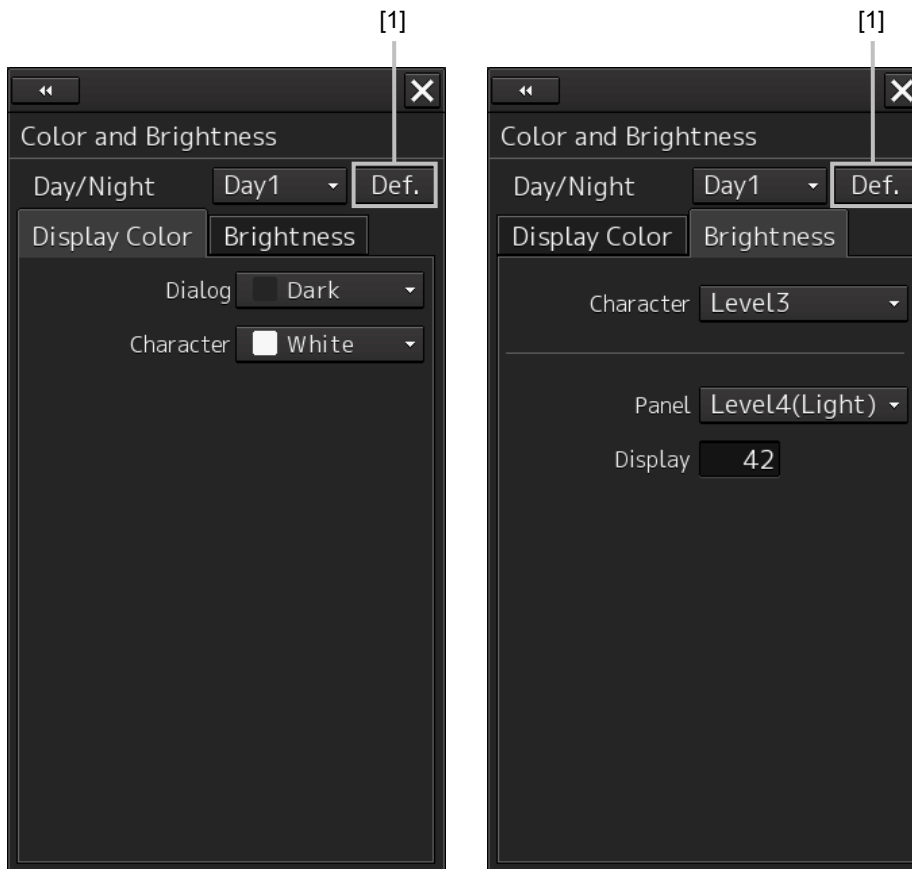
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## 7.2 Setting Color and Brightness

Select [Color and Brightness] in the classification pane.

Set the color and the brightness of the display contents in the setting dialog of the edit pane.



### [1] [Def.] (default value) button

When this button is clicked on, all the setting items of the mode that is selected on the [Day/Night] combo box are reset to the default values.

Setting Item	Description of Setting	Setting Value
Day/Night	Set up the color of the dialog box itself. Select the chart display colors from the three types of Day1, Day3 and Night when the ARCS is used.	Day1 [default] Day2 Day3 Dusk Night
<b>[Display Color] tab</b>		
Dialog	Set up the color of the dialog box.	Dark [default] Black
Character	Set up the text color.	White [default] Green
<b>[Brightness] tab</b>		
Character	Set up the text brightness.	Level1(Dark) [default of Day 3] Level2 [default of Day 2, Dusk] Level3 [default of Day 1] Level4(Light) [default of Night]
Panel	Set the brightness of the operation unit.	Off Level1(Dark) [default of Dusk / Night] Level2 [default of Day3] Level3 [default of Day2] Level4(Light) [default of Day1]
Display	Set the value that is input in the box for the brightness of the display unit.	0 to 100 <sup>*1</sup>

\*1 The table below provides the default value of brightness.

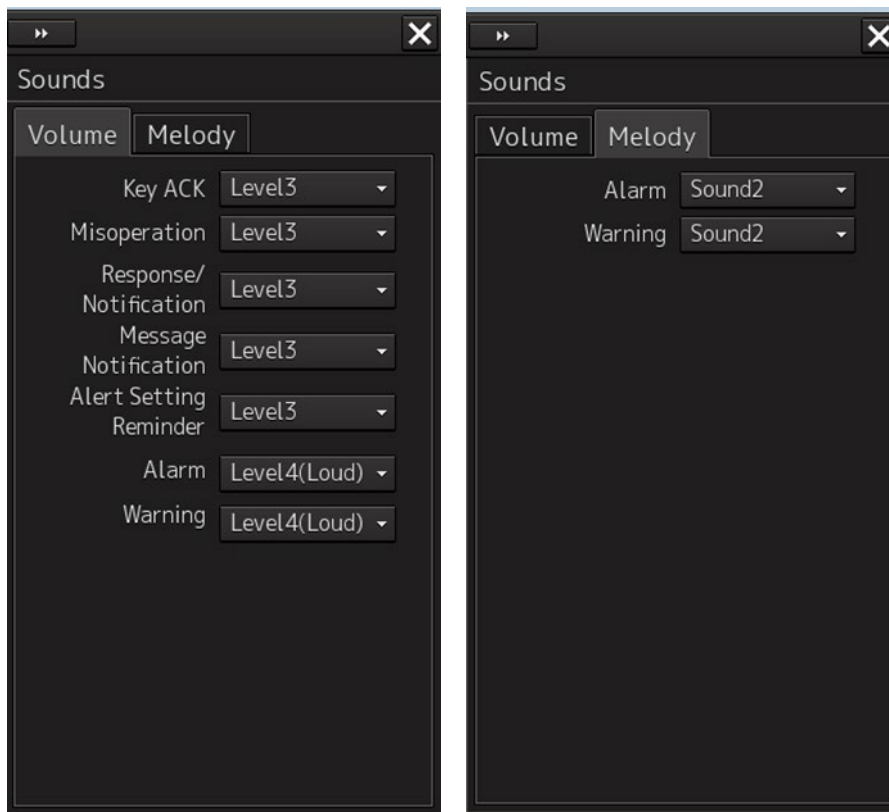
26inch screen (NWZ-208)	26inch screen (NWZ-208)	19inch screen (NWZ-207)	19inch screen (NWZ-214)
Day1/Day2 /Day3: 67	Day1/Day2 /Day3: 79	Day1/Day2 /Day3: 42	Day1/Day2 /Day3: 70
Dusk: 60	Dusk: 64	Dusk: 20	Dusk: 62
Night: 11	Night: 41	Night: 4	Night: 10

## 7.3 Setting Sounds

Select [Sounds] in the classification pane.

Set the volumes of the operation sound and operation error sound and alarm melody in the setting dialog of the edit pane.

When the volume or melody is changed, the selected volume or melody is played back, enabling the user to set while listening to the sound.



Setting Item	Description of Setting	Setting Value
<b>[Volume] tab</b>		
Key ACK	Set the volume of the sound emitted when the key is pressed.	Off Level1(Soft) Level2 Level3 [Default] Level4(Loud)
Misoperation	Set the volume of the operation error sound.	Off Level1(Soft) Level2 Level3 [Default] Level4(Loud)
Response/Notification	Set the volume of the control response sound to external equipment and control completion notification sound (including the interswitch control) from external equipment.	Off Level1(Soft) Level2 Level3 [Default] Level4(Loud)



Setting Item	Description of Setting	Setting Value
Message Notification	Set the volume of the message notification sound.	Off Level1(Soft) Level2 Level3 [Default] Level4(Loud)
Alert Setting Reminder	Set the volume of the sound notifying that the alarm condition has not been set.	Off Level1(Soft) Level2 Level3 [Default] Level4(Loud)
Alarm	Set the volume of the alarm sound. *1	Level4(Loud)
Warning	Set the volume of the warning sound. *1	Level4(Loud)
<b>[Melody] tab</b>		
Alarm	Set the melody of the alarm.	Sound1 Sound2[Default] Sound3 Sound4
Warning	Set up the melody of Warning.	Sound1 Sound2[Default] Sound3 Sound4

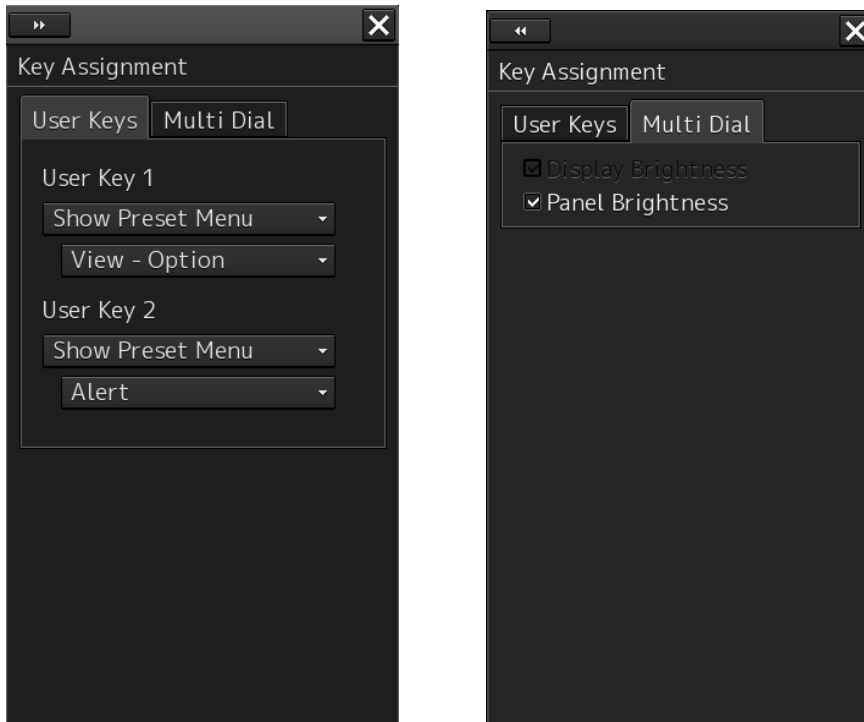
\*1 For these volumes, only Level 4 (Loud) is able to be selected.

## 7.4 Setting Key Assignment

Select [Key Assignment] in the classification pane.

Set the keys in the operation unit and the function assigned to the [MULTI] dial in the setting dialog of the edit pane.

Only the items whose functions are available on the task screen are displayed on the screen.



The [User Keys] tab is displayed only when the optional operation unit is installed.

Setting Item	Description of Setting	Setting Value
<b>[User Keys] tab</b>		
User Key 1	Select a function to assign to the USER1 key on the operation unit. [User Key 1] is displayed only when the optional operation unit is installed.	Show Preset Menu Capture Screen
User Key 2	Select a function to assign to the USER2 key on the operation unit. [User Key 2] is displayed only when the optional operation unit is installed.	Show Preset Menu Capture Screen
<b>[Multi Dial] tab</b>		
Display Brightness	When this is selected, the display brightness adjustment function will be manipulated with the [MULTI] control. It cannot be changed since power is always on.	To enable: Select. To disable: Clear.
Panel Brightness	When this is selected, the operation unit brightness adjustment function will be manipulated with the [MULTI] control. This item is always displayed.	To enable: Select. To disable: Clear.



Below is a list of functions that can be assigned to User Keys.

Function name	Function description
Show Preset Menu	The screen registered separately is displayed.
Capture Screen	Get screen capture.

Below is a list of screens that can be assigned to Show Preset Menu.

Screen name
View - Options
Alert
Settings

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# Section 8 Adjusting and Setting Up Equipment (for Services)

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

## CAUTION



Any adjustments must be made by specialized service personnel. Incorrect settings may result in unstable operation, and this may lead to accidents or equipment failure.

8

## 8.1 Service Menu

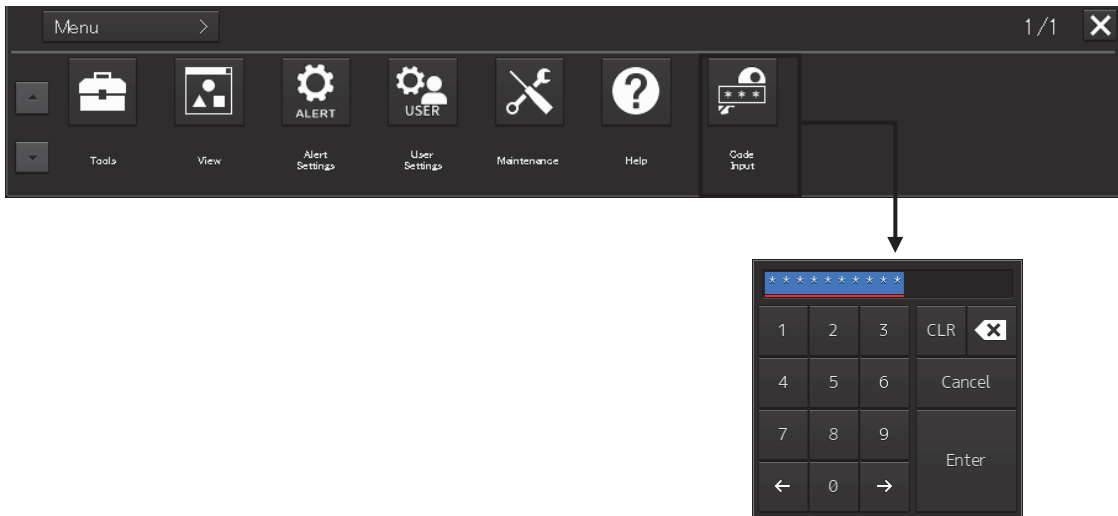
The Service menu consists of two submenus of Installation and Maintenance. To display the Service menu, a password is required.

### 8.1.1 To display the Service menu:

- 1 Click on the [Menu] button at the bottom left corner of the screen.  
The menu is displayed.

**2 Click the [Code Input] button on the menu.**

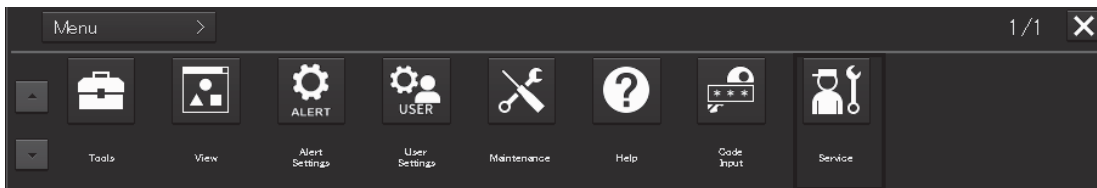
The password input dialog is displayed.



**3 Enter 0 in Password.**

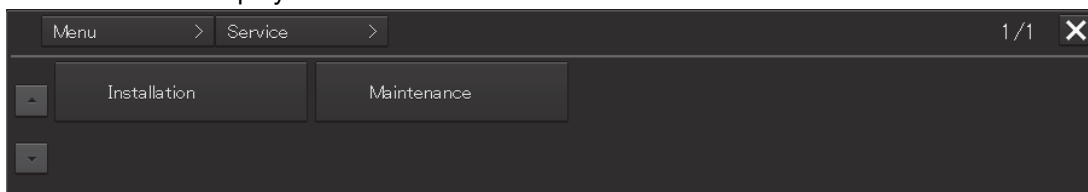
**4 Click on the [Menu] button at the bottom left corner of the screen.**

You can find the [Service] button added to the menu.



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

The submenu is displayed.



**6 Display a submenu dialog by clicking on one of the [Installation] and [Maintenance] buttons.**

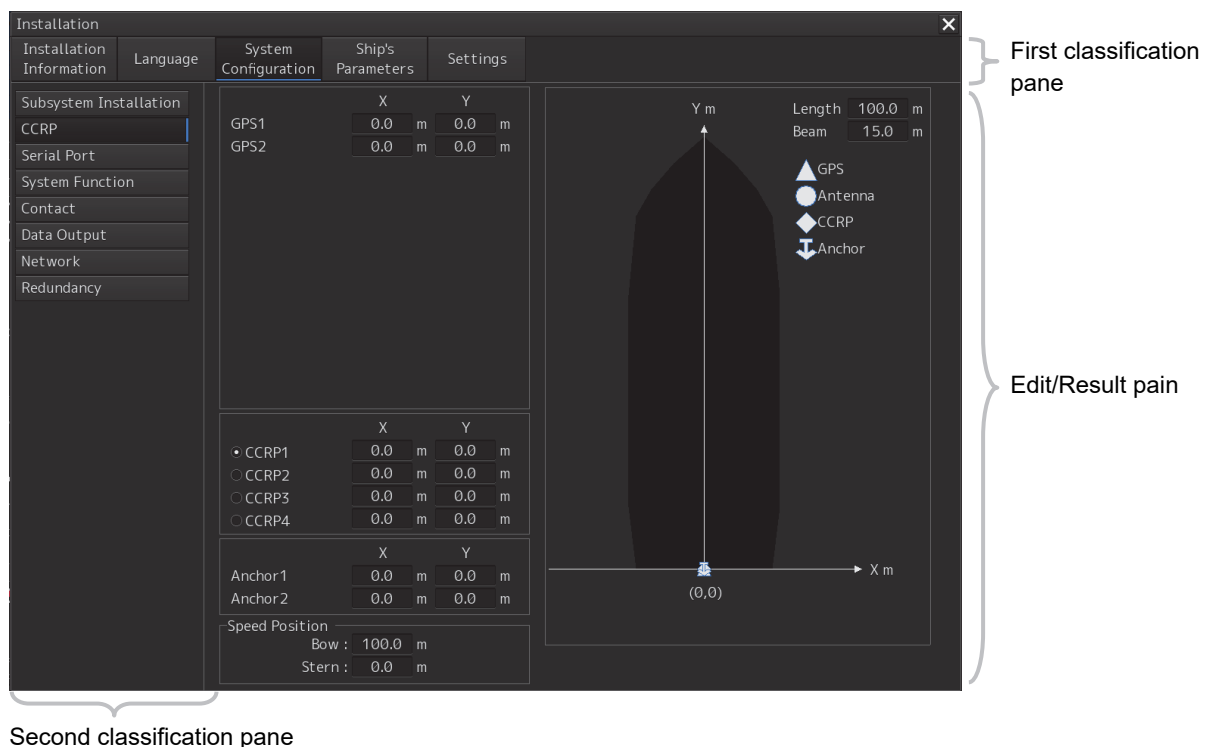
## 8.2 Verifying Installation and Initial Setting

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

### 8.2.1 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.



#### 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.

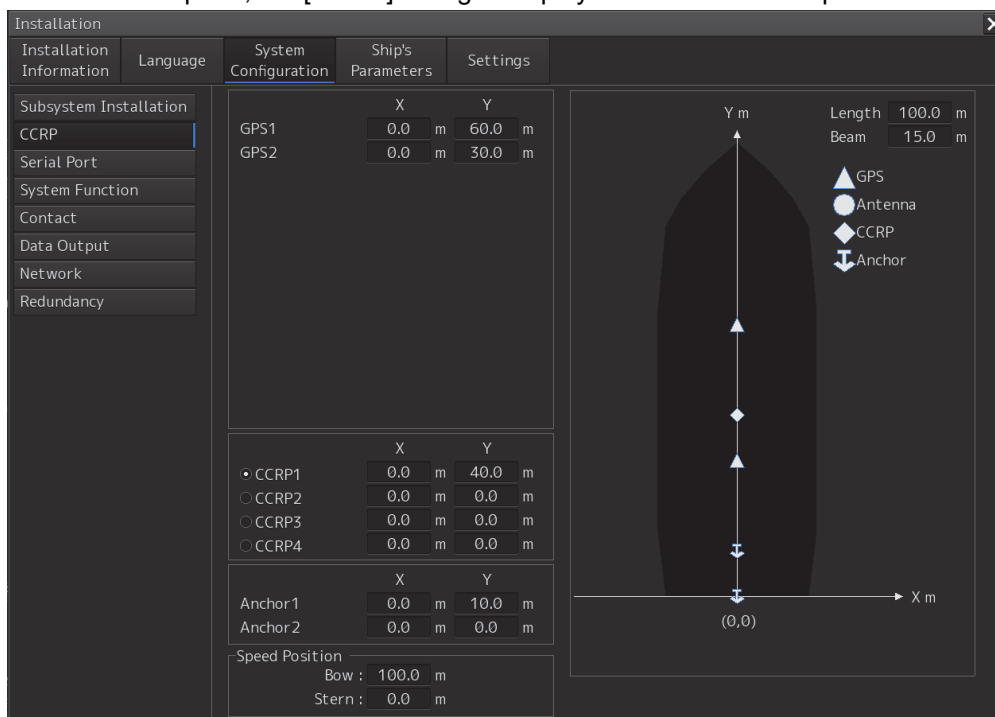
#### 2 Set up in the edit/result pane or check the setup result.

## 8.2.2 Verifying/Setting CCRP (Consistent Common Reference Point)

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

### 8.2.2.1 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 correctly. The latitude and longitude data received from the GPS is compensated and then displayed as own ship's latitude and longitude.

## 8.2.2.2 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.)	<p>Enter the equipment positions of GPSx in the boxes.</p> <p>X: Horizontal axis position on the ship of the applicable GPS (Center: 0)</p> <p>Y: Front-back axis position on the ship of the applicable GPS (Stern: 0)</p> <p><b>Note</b></p> <ul style="list-style-type: none"> <li>This item may not be displayed depending on the equipment setting.</li> <li>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.</li> </ul>	<p>Changes depending on the value of [Length] and [Beam].</p> <p>If Length=a and Beam=b:</p> <p>X <math>-b/2</math> to <math>b/2</math></p> <p>Y 0.0 to a</p> <p>For example,</p> <ul style="list-style-type: none"> <li>if Length=1.0 and Beam=1.0: X -0.5 to 0.5 Y 0.0 to 1.0</li> <li>if Length=700.0 and Beam=70.0: X -35.0 to 35.0 Y 0.0 to 700.0</li> </ul>
CCRP1/2/3/4	<p>Enter the positions of CCRP1 to CCRP4 of the ship in the boxes.</p> <p>X: Horizontal axis position of CCRP1/2/3/4 on the ship (Center: 0)</p> <p>Y: Front-back axis position of CCRP1/2/3/4 on the ship (Stern: 0)</p> <p><b>Note</b></p> <p>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.</p>	



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
Anchor1	An anchor position can be set as an offset from the stern center. It can not be set outside the boat. X: The horizontal axis position on the shipboard of Anchor 1 (center is 0) Y: Front-rear axis position on the shipboard of Anchor 1 (stern is 0)	If Length=a and Beam=b: X -b/2 to b/2 Y 0.0 to a
Anchor2	An anchor position can be set as an offset from the stern center. It can not be set outside the boat. X: The horizontal axis position on the shipboard of Anchor 2(center is 0) Y: Front-rear axis position on the shipboard of Anchor 2 (stern is 0)	If Length=a and Beam=b: X -b/2 to b/2 Y 0.0 to a
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.

### 8.2.3 Setting a Serial Port

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

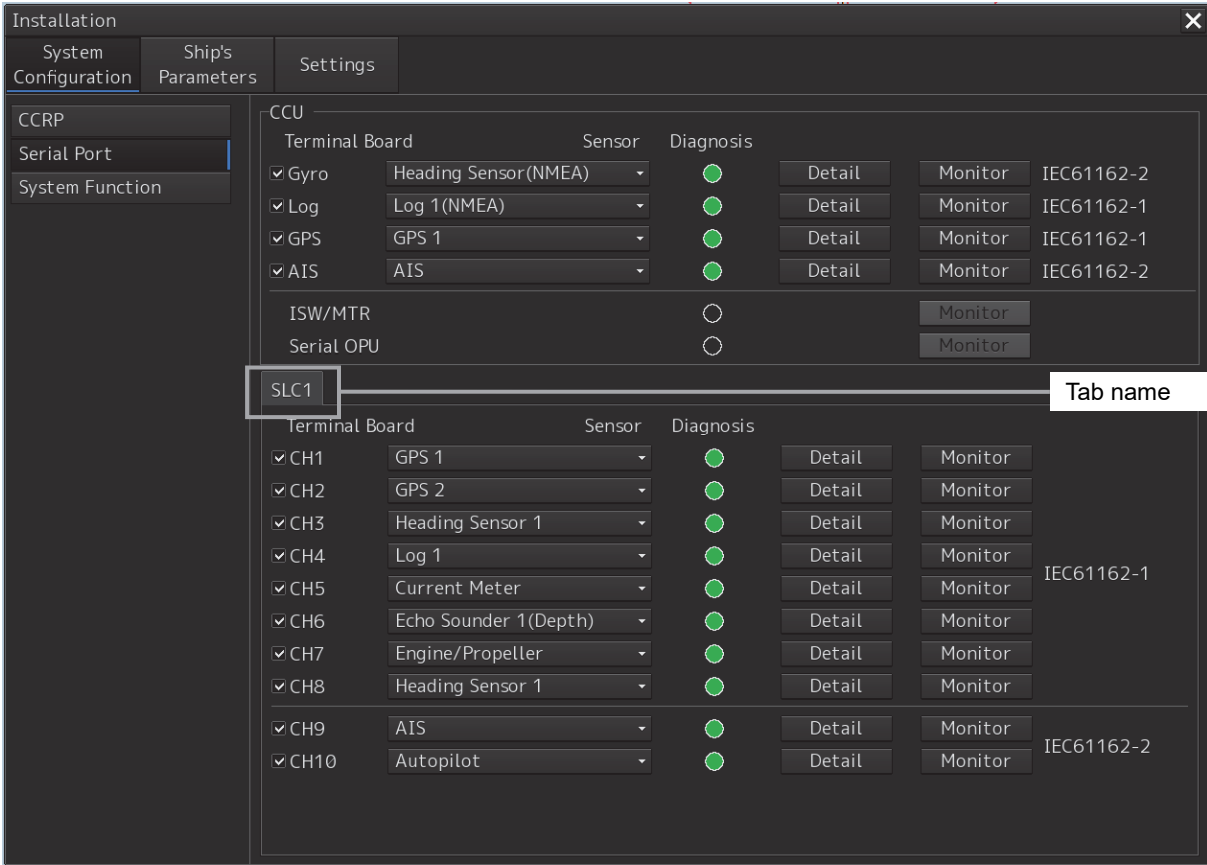
#### Synchronizing setting

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.

#### 8.2.3.1 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.



#### 8.2.3.2 [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.

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### 8.2.3.3 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 CCU

Set each item as follows.

"Table A: Sensors that can be selected 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 "Baud rates that can be selected" (setting at factory delivery).

Setting Item	Description of Setting	Setting Value
Gyro	<ol style="list-style-type: none"><li>1. Select the check box and enable the serial port for the Gyro.</li><li>2. Select a sensor to be connected to the serial port for Gyro from the [Sensor] combo box. When not selecting a sensor, set [ - ].</li></ol>	To enable: Select. To disable: Clear.
LOG	<ol style="list-style-type: none"><li>1. Select the check box and enable the serial port for the LOG.</li><li>2. Select a sensor to be connected to the serial port for LOG from the [Sensor] combo box. When not selecting a sensor, set [ - ].</li></ol>	To enable: Select. To disable: Clear.
GPS	<ol style="list-style-type: none"><li>1. Select the check box and enable the serial port for the GPS.</li><li>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 [ - ].</li></ol>	To enable: Select. To disable: Clear.
AIS	<ol style="list-style-type: none"><li>1. Select the check box and enable the serial port for the AIS.</li><li>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 [ - ].</li></ol>	To enable: Select. To disable: Clear.

Table A: Sensors that can be selected on CCU

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

\*1: Only when there are two Heading Sensors

\*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.

### Setting serial ports on SLC/ALC

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

Setting item	Description of Setting	Setting value
CH1 to CH8 (RS-422)	<ol style="list-style-type: none"> <li>Click on any of the tabs, SLC1(M) to SLC4(M)/SLC1(S) to SLC4(S)/ALC1 to ALC4.</li> <li>Enable the serial port of the corresponding channel by selecting the check box.</li> <li>Select a sensor<sup>*1</sup> to be connected to the corresponding channel on the [Sensor] combo box. When not selecting a sensor, select [ - ].</li> </ol>	Enable: Select. Disable: Clear.
CH9/CH10 (RS-422/RS485)	<ol style="list-style-type: none"> <li>Click on any of the tabs, SLC1(M) to SLC4(M)/SLC1(S) to SLC4(S)/ALC1 to ALC4.</li> <li>Enable the serial port of the corresponding channel by selecting the check box.</li> <li>Select a sensor<sup>*1</sup> to be connected to the corresponding channel on the [Sensor] combo box. When not selecting a sensor, select [ - ].</li> </ol>	Enable: Select. 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), Echo Sounder 2(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), Gyro Switch, Alert(to CAM), Alert(from Subsystem), Alert(to BNWAS), DSC, IAS(MODBUS), IAS(NMEA), NAV/Alert, Plotter, GPS Buoy

### 8.2.3.4 Changing the communication settings of the serial port

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

Serial Port - Detail

Source Device  Sensor

Terminal

Communication

Baud Rate  Stop Bits   Checksum

Data Length  Buffer Size

Parity  Time Out

Alert(from Sensor)

Sentence

Set

When selecting CH1 to CH7

Serial Port - Detail

Source Device  Sensor

Terminal

Communication

Baud Rate   Stop Bits   Checksum

Data Length  Buffer Size

Parity  Time Out

Alert(from Sensor)

Sentence

Set

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 corresponding serial port from 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 "Baud rates that can be selected".)
[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 for communication is determined by adding the additional ratio to the value that is set in the [Baud Rate] combo box. Example) $4800 \times (1 + 1.5 / 100) = 4872$ 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	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 in the box.	0 to 10240 bytes
Time Out	Enter the time-out duration of the corresponding serial port in the box.	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
Sentence	Select the sentence of Alert Handling. Displayed when the sensor is other than "Alert (BNWAS), "IAS(MODBUS)", "DSC" or "NAV/Alert".	Normal sensor such as GPS and Log: -/ALR/ALF "Alert (from Subsystem/to CAM)": ALR/ALF

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## Baud rates that can be selected

Serial port	Baud rate
Serial port on CCU	
Gyro (at selection Heading Sensor(NMEA))	4800/38400
Gyro (at selection Heading Sensor(Gyro I/F))	Fixed to 38400
Log (at selection Log(NMEA))	Fixed to 4800
Log (at selection 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

## 8.2.4 Setting a System Function

Verify the setting of the system function of this equipment and perform initial setting by using the [System Function] dialog.

### 8.2.4.1 Displaying a [System Function] dialog

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

	Equipment	Connection	System Function	SFI		Cluster	Control		Alert		
				Talker	No.		Tx		Tx	Rx	
<input type="checkbox"/>	No.1 RADAR	LAN	RADAR	RA	0002	Nav	TGTD		TGTD	CAM1	
<input type="checkbox"/>	No.2 RADAR	LAN	RADAR	RA	0003	Nav	TGTD		TGTD	CAM1	
<input type="checkbox"/>	No.1 ECDIS	LAN	ECDIS	EI	0004	Nav	NAVD		NAVD	CAM1	
<input type="checkbox"/>	No.1 ECDIS	LAN	Track Cont...	TC	0004	Nav	NAVD		NAVD	CAM1	
<input type="checkbox"/>	No.2 ECDIS	LAN	ECDIS	EI	0005	Nav	NAVD		NAVD	CAM1	
<input type="checkbox"/>	No.1 CON	LAN	CONNING	II	0001	Nav	MISC		MISC	CAM1	
<input type="checkbox"/>	VDR	LAN	VDR	VR	0001	Nav	MISC		MISC	CAM1	
<input type="checkbox"/>	Heading Sensor 1	SLC(Main)	Heading	HE	0003	Nav	SATD		SATD	CAM1	
<input type="checkbox"/>	Heading Sensor 1	CCU	Heading	---	---	---	---		---	---	
<input type="checkbox"/>	Log 1	SLC(Main)	Log	VD	0002	Nav	NAVD		NAVD	CAM1	
<input type="checkbox"/>	Log 1	CCU	Log	---	---	---	---		---	---	
<input type="checkbox"/>	GPS 1	SLC(Main)	GPS	GP	0001	Nav	NAVD		NAVD	CAM1	
<input type="checkbox"/>	GPS 1	CCU	GPS	---	---	---	---		---	---	
<input type="checkbox"/>	GPS 2	SLC(Main)	GPS	GP	0006	Nav	NAVD		NAVD	CAM1	
<input type="checkbox"/>	Echo Sounder 1(T/...	SLC(Main)	Depth	SD	0004	Nav	NAVD		NAVD	CAM1	
<input type="checkbox"/>	AIS	SLC(Main)	AIS	AI	0009	Nav	TGTD		TGTD	CAM1	
<input type="checkbox"/>	AIS	CCU	AIS	---	---	---	---		---	---	
<input type="checkbox"/>	NAVTEX	SLC(Main)	NAVTEX	CR	0007	Nav	RCOM		RCOM	CAM1	
<input type="checkbox"/>	Current Meter	SLC(Main)	Weather	WI	0010	Nav	NAVD		NAVD	CAM1	
<input type="checkbox"/>	Autopilot	SLC(Main)	Autopilot	AG	0008	Nav	NAVD		NAVD	CAM1	
<input type="checkbox"/>	Engine/Propeller	SLC(Main)	Engine/Pro...	ER	0005	Nav	MISC		MISC	CAM1	
<input type="checkbox"/>	SLC 1(Main)	LAN	SNGF	SI	0013	Nav	MISC		MISC	CAM1	

### 8.2.4.2 Lamp light colors

- The lamp of control indicates the Diagnosis result on whether or not the data of control of the specified for each equipment has been received successfully.
- The lamp of alert indicates the Diagnosis result on whether or not the data of Alert of the specified for each equipment has been received successfully.

**Lit in red:** Data not received.

**Lit in green:** Data is receiving.

**Lit in orange:** In Diagnosis (before decision).

**No color:** System function is disabled.



### 8.2.4.3 Setting a system function

In the [System Function] dialog, allocate the system functions to be connected for LAN.

#### Add a system function (New equipment)

Click the [Add] button and display the [System Function (Add)] dialog.

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

Setting Item		Description of Setting	Setting Value
Equipment		Select an Equipment <sup>*1</sup> on the combo box. In the case of "Add a system function (Existing equipment)", equipment can not be changed.	The Equipment that can be actually selected vary depending on the installation setting.
Talker ID <sup>*6</sup>	Mnemonic	Select the Mnemonic <sup>*2</sup> of Talker ID on the combo box.	The Mnemonic of Talker ID vary depending on the equipment.
	Instance No	Enter the Instance No of Talker ID.	0001 to 9999 The Instance No of Talker ID vary depending on the equipment.
Cluster ID		Enter the Cluster ID <sup>*3</sup> . It can also be set by selecting Equipment on the Reserved combo box. In the case of "Edit a system function", Cluster ID can not be changed.	Nav/Com/Aut/Cgo/Htl/ICT/SSe/Pos/.ROV
Transmission Group <sup>*6</sup> (Control/Data)		Select the Transmission Group <sup>*4</sup> for Control/Data.	The Transmission Group (Control/Data) vary depending on the equipment.
Transmission Group (Alert)	Transmit <sup>*6</sup>	Select the Transmission Group <sup>*4</sup> of Transmit for Alert.	The Transmission Group (Alert) vary depending on the equipment. <sup>*5</sup>
	Receive <sup>*6</sup>	Select the Transmission Group <sup>*4</sup> of Receive for Alert.	CAM1 <sup>*5</sup>
	Timeout	Enter the time-out duration.	0 to 120s (Default: 60s)
Use Wildcard for Alert Command		Select the check box and enable the Use Wildcard for Alert Command.	To enable: Select (Default) To disable: Clear

\*1: The Equipment that can be selected are indicated below.

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

Heading Sensor 1, Heading Sensor 2, Gyro Switch, Log 1, Log 2, GPS 1, GPS 2, GPS 3, GPS 4, Ship's Clock, Echo Sounder1(T/D 1, T/D2), Echo Sounder2(T/D 3), AIS, NAVTEX, Anemometer 1, Water TEMP Meter, Current Meter, Climate Meter, ROT Indicator, Autopilot, Rudder, Engine/Propeller, Engine Telegraph, Thruster, Azimuth

Thruster, Generator, S-JOY/Joystick 1~5, BNWAS, General Equipment(Alert)1~10, GPS Buoy, Plotter, DSC, IAS, CAM, NAV/Alert, RADAR1,RADAR2, VDR

Note:

IAS and NAVTEX: Only NMEA is supported.

CAM is settings for connecting to an external CAM by LAN.

\*2: The Mnemonic of Talker ID that can be selected are indicated below.

AG, AI, BN, CA, CR, EI, ER, GP, HC, HE, II, JA, JB, JC, JD, JE, JF, JG, JH, RA, SD, SG, SI, SS, TC, TI, U0, U1, U2, U3, U4, U5, U6, U7, U8, U9, VD, VR, WI, ZA

\*3: Clusters are groups of functionalities aimed at a responsible operator, which can be distributed over systems. Cluster ID is the identifier of the Cluster.

Set the Cluster ID to "Nav" for equipment in the navigation-bridge cluster. If CAM need category C alert from another cluster group, set the Cluster ID according to the transmission specifications of the equipment. Cluster ID can be set any string of a maximum of 15 characters. Cluster ID that equipment is task station is Nav and cannot be changed.

The cluster ID that can be selected are indicated below.

Cluster ID	Cluster group
Nav	Navigation
Com	Communication
Aut	Automation
Cgo	Cargo
Htl	Hotel
ICT	ICT
SSe	Safety/Security
Pos	Position control
ROV	Remote operated vehicle

\*4: The Transmission Group that can be selected are indicated below.

Transmission Group	IP Address	Port number
MISC	239.192.0.1	60001
TGTD	239.192.0.2	60002
SATD	239.192.0.3	60003
NAVD	239.192.0.4	60004
VDRD	239.192.0.5	60005
RCOM	239.192.0.6	60006
TIME	239.192.0.7	60007
PROP	239.192.0.8	60008
USR1	239.192.0.9	60009
USR2	239.192.0.10	60010
USR3	239.192.0.11	60011
USR4	239.192.0.12	60012
USR5	239.192.0.13	60013
USR6	239.192.0.14	60014
USR7	239.192.0.15	60015
USR8	239.192.0.16	60016
BAM1	239.192.0.17	60017
BAM2	239.192.0.18	60018
CAM1	239.192.0.19	60019
CAM2	239.192.0.20	60020
NETA	239.192.0.56	60056

\*5: BAM1/BAM2 and CAM1/CAM2 are available for system integrators to balance the traffic, for example higher volume radar in BAM1/CAM1 and low volume sensor, for example gyro, in BAM2/CAM2.

Equipment	Connection	System Function	SFI		Cluster	Control		Alert		
			Talker	No.		Tx		Tx	Rx	
No.1 RADAR	LAN	RADAR	RA	0001	Nav	TGTD		BAM1	CAM1	
Heading Sensor 1	LAN	Gyro,North	HE	0003	Nav	SATD		BAM2	CAM2	

\*6: Talker ID Mnemonic, Talker ID Instance No, Transmission Group (Control/Data), Transmission Group (Alert) Transmit and Transmission Group (Alert) Receive can also be set by selecting Equipment on the preset combo box. The following default values will be set.

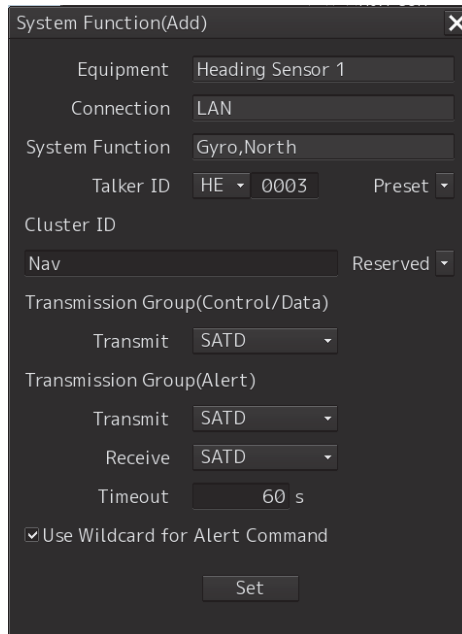
Equipment	System Function	TalkerID Mnemonic	TalkerID Instance No	Transmission Group (Control/Data)	Transmission Group (Alert) Transmit	Transmission Group (Alert) Receive
RADAR	RADAR	RA	(TaskStationNo.)	TGTD	TGTD	CAM1
ECDIS	ECDIS	EI	(TaskStationNo.)	NAVD	NAVD	CAM1
CONNING	CONNING	II	(TaskStationNo.)	MISC	MISC	CAM1
CAM	CAM	CA	(TaskStationNo.)	CAM1	CAM1	CAM1
TCS	TrackControl	TC	(TaskStationNo.)	NAVD	NAVD	CAM1
Heading Sensor 1	Heading	HE	0001	NAVD	NAVD	CAM1
Heading Sensor 2	Heading	HE	0002	NAVD	NAVD	CAM1
Gyro Switch	Heading	HE	0001	NAVD	NAVD	CAM1
Log 1	Log	VD	0001	NAVD	NAVD	CAM1
Log 2	Log	VD	0002	NAVD	NAVD	CAM1
GPS 1	GPS	GP	0001	NAVD	NAVD	CAM1
GPS 2	GPS	GP	0002	NAVD	NAVD	CAM1
GPS 3	GPS	GP	0003	NAVD	NAVD	CAM1
GPS 4	GPS	GP	0004	NAVD	NAVD	CAM1
Ship's Clock	Clock	ZA	0001	TIME	TIME	CAM1
Echo Sounder1(T/D 1, T/D2)	Depth	SD	0001	NAVD	NAVD	CAM1
Echo Sounder2(T/D 3)	Depth	SD	0002	NAVD	NAVD	CAM1
AIS	AIS	AI	0001	TGTD	TGTD	CAM1
NAVTEX	NAVTEX	CR	0001	RCOM	RCOM	CAM1
Anemometer 1	Weather	WI	0001	NAVD	NAVD	CAM1
Water TEMP Meter	Weather	WI	0001	NAVD	NAVD	CAM1
Current Meter	Weather	WI	0001	NAVD	NAVD	CAM1
Climate Meter	Weather	WI	0001	NAVD	NAVD	CAM1
ROT Indicator	TRI	TI	0001	SATD	SATD	CAM1
Autopilot	Auto Pilot	AG	0001	NAVD	NAVD	CAM1
Rudder	Rudder	SG	0001	MISC	MISC	CAM1
Engine/Propeller	Engine/Propeller	ER	0001	MISC	MISC	CAM1
Engine Telegraph	Engine Telegraph	ER	0001	MISC	MISC	CAM1
Thruster	Thruster	ER	0001	MISC	MISC	CAM1
Azimuth Thruster	Azimuth Thruster	ER	0001	MISC	MISC	CAM1
Generator	Generator	ER	0001	MISC	MISC	CAM1
S-JOY/Joystick	S-JOY/Joystick	SG	0001	MISC	-	-
BNWAS	BNWAS	BN	0001	-	VDRD	CAM1
General Equipment(Alert) 1	General 1	U0	0001	-	MISC	CAM1
General Equipment(Alert) 2	General 2	U0	0002	-	MISC	CAM1
General Equipment(Alert) 3	General 3	U0	0003	-	MISC	CAM1
General	General	U0	0004	-	MISC	CAM1

Equipment	System Function	TalkerID Mnemonic	TalkerID Instance No	Transmission Group (Control/Data)	Transmission Group (Alert) Transmit	Transmission Group (Alert) Receive
Equipment(Alert) 4	4					
General Equipment(Alert) 5	General 5	U0	0005	-	MISC	CAM1
General Equipment(Alert) 6	General 6	U0	0006	-	MISC	CAM1
General Equipment(Alert) 7	General 7	U0	0007	-	MISC	CAM1
General Equipment(Alert) 8	General 8	U0	0008	-	MISC	CAM1
General Equipment(Alert) 9	General 9	U0	0009	-	MISC	CAM1
General Equipment(Alert) 10	General 10	U0	0010	-	MISC	CAM1
GPS Buoy	GPS	GP	0001	NAVD	NAVD	CAM1
Plotter	GPS	GP	0001	NAVD	NAVD	CAM1
DSC	DSC	U1	0001	-	MISC	CAM1
IAS	IAS	JE	0001	MISC	MISC	CAM1
CAM	CAM	CA	0001	CAM1	CAM1	CAM1
NAV/Alert	NAV/Alert	ER	0001	MISC	-	-
RADAR1	RADAR	RA	0001	TGTD	-	-
RADAR2	RADAR	RA	0002	TGTD	-	-
VDR	VDR	VR	0001	MISC	MISC	CAM1
SLC 1(Main)	SNGF	SI	0013	MISC	-	-
SLC 2(Main)	SNGF	SI	0113	MISC	-	-
SLC 3(Main)	SNGF	SI	0213	MISC	-	-
SLC 4(Main)	SNGF	SI	0313	MISC	-	-
SLC 1(Sub)	SNGF	SI	0063	MISC	-	-
SLC 2(Sub)	SNGF	SI	0163	MISC	-	-
SLC 3(Sub)	SNGF	SI	0263	MISC	-	-
SLC 4(Sub)	SNGF	SI	0363	MISC	-	-
ALC 1	SNGF	SI	1213	MISC	-	-
ALC 2	SNGF	SI	1313	MISC	-	-
ALC 3	SNGF	SI	1413	MISC	-	-
ALC 4	SNGF	SI	1513	MISC	-	-

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## Add a system function (Existing equipment)

Select the check box and Click the [Add] button and display the [System Function (Add)] dialog.



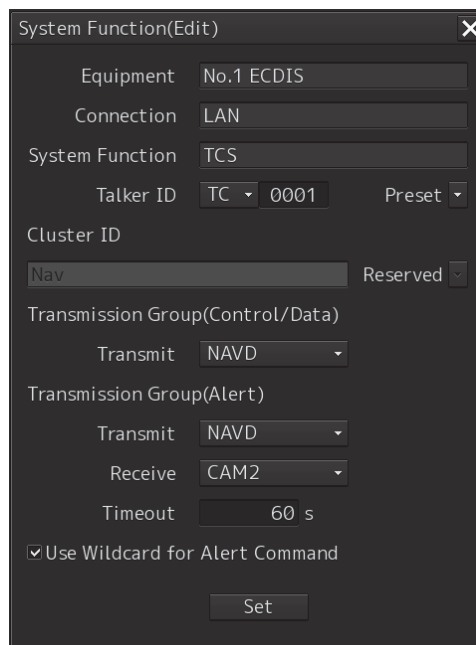
The screenshot shows the 'System Function(Add)' dialog box. It contains the following fields and settings:

- Equipment: Heading Sensor 1
- Connection: LAN
- System Function: Gyro,North
- Talker ID: HE (dropdown), 0003 (input), Preset (dropdown)
- Cluster ID: Nav (dropdown), Reserved (dropdown)
- Transmission Group(Control/Data): Transmit: SATD (dropdown)
- Transmission Group(Alert): Transmit: SATD (dropdown), Receive: SATD (dropdown)
- Timeout: 60 s
- Use Wildcard for Alert Command
- Set button

Perform the settings referring to **Add a system function (New equipment)**. Equipment can not be changed on the [System Function (Add)] dialog.

## Edit a system function

Select the check box and click the [Edit] button and display the [System Function (Edit)] dialog.



The screenshot shows the 'System Function(Edit)' dialog box. It contains the following fields and settings:

- Equipment: No.1 ECDIS
- Connection: LAN
- System Function: TCS
- Talker ID: TC (dropdown), 0001 (input), Preset (dropdown)
- Cluster ID: Nav (dropdown), Reserved (dropdown)
- Transmission Group(Control/Data): Transmit: NAVD (dropdown)
- Transmission Group(Alert): Transmit: NAVD (dropdown), Receive: CAM2 (dropdown)
- Timeout: 60 s
- Use Wildcard for Alert Command
- Set button

Perform the settings referring to **Add a system function (New equipment)**. Cluster ID can not be changed on the [System Function (Edit)] dialog.

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## Delete a system function

Select the check box and click the [Delete] button. Selected a system function is deleted.

**Note:**

- Set the each setting according to the transmission specifications of the equipment connected to the LAN.
- Equipment connected to the SLC / ALC serial port or CCU cannot add or edit or delete system functions. System function of Equipment connected to the SLC / ALC serial port or CCU are registered automatically by serial port setting on [Serial Port] dialog.
- The native system function of VDR, No.x RADAR, ECDIS, CONN, MFD, RPS can not delete on [System Function] dialog.

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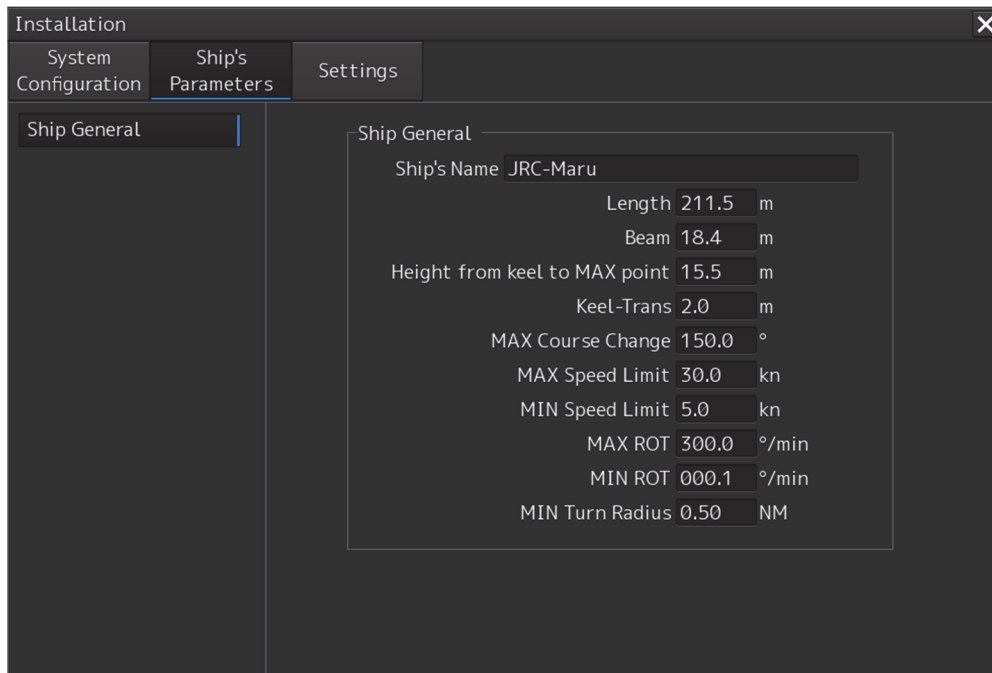
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## 8.2.5 Setting ship's parameters

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

### 8.2.5.1 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.



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## 8.2.5.2 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 1200.0°/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.



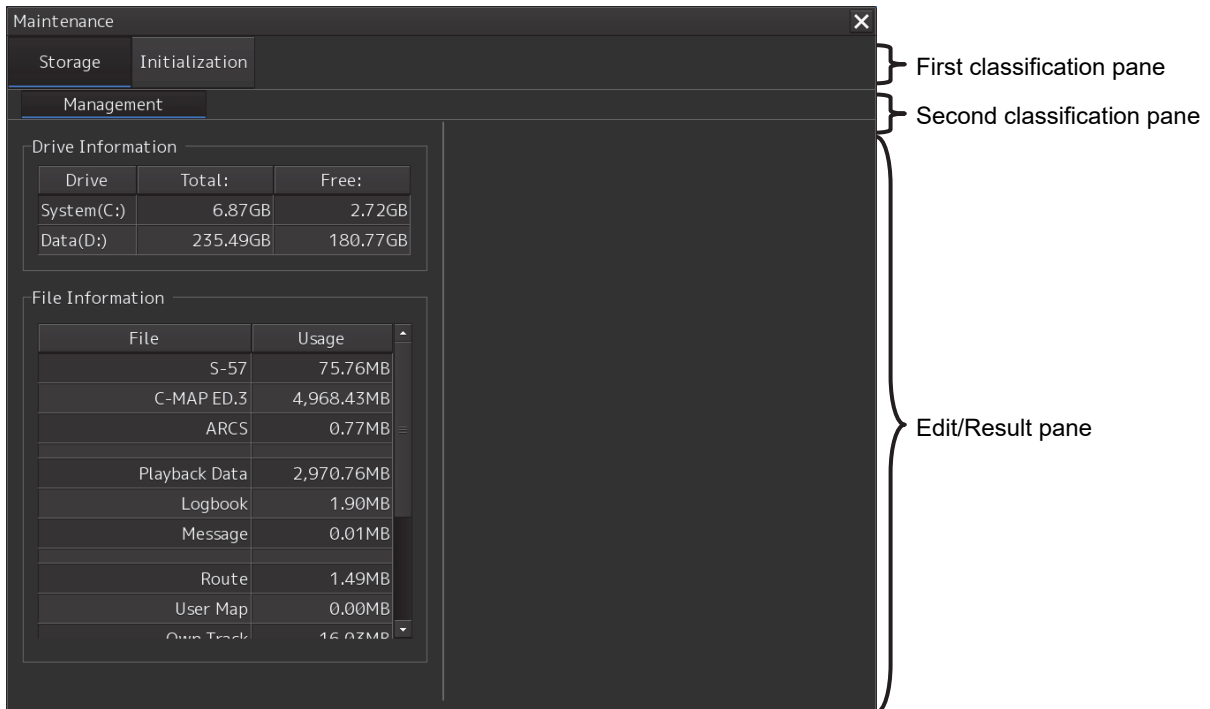
## 8.3 Maintenance

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

### 8.3.1 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.

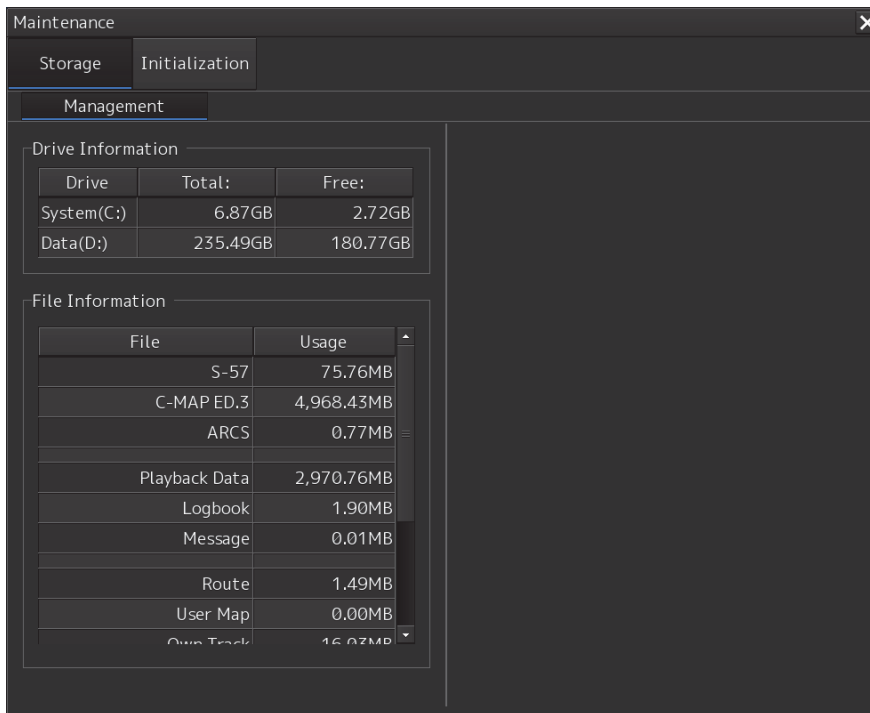


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## 8.3.2 Managing storage

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.



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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# Section 9 Maintenance & Inspection

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## 9.1 Maintenance Functions Executed from Menu

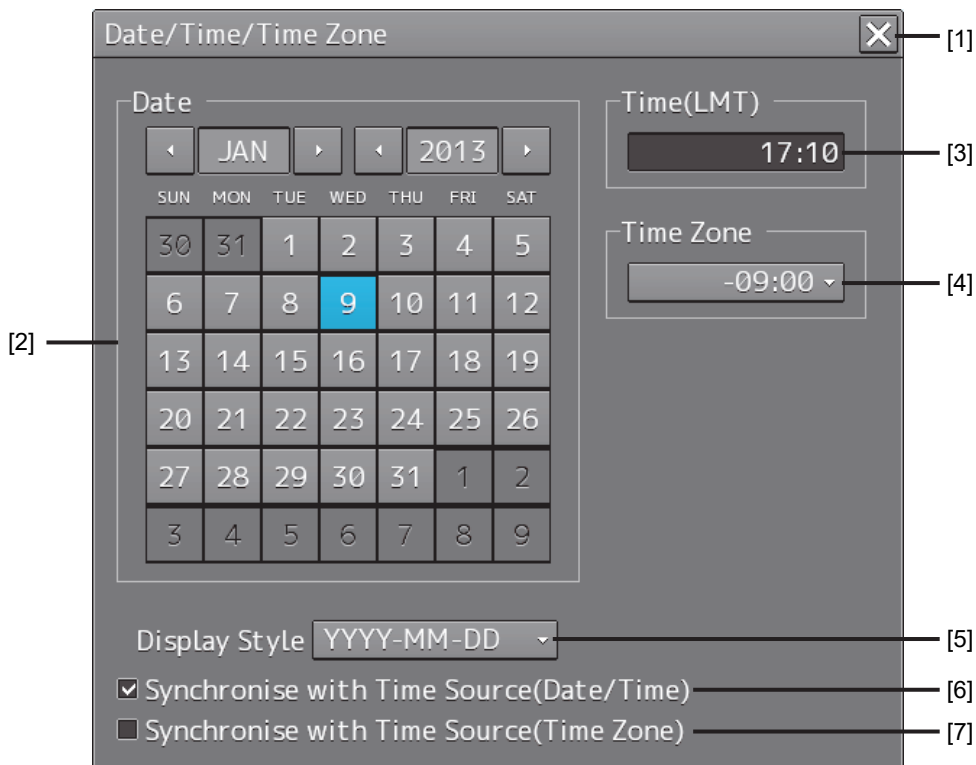
This section explains maintenance functions that are executed from the menu.

### 9.1.1 Starting maintenance functions

- 1 Click on the [Menu] button at the bottom left corner of the screen.**  
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 corresponding maintenance function is displayed.

### 9.1.2 Setting Date/Time/Time Zone

- 1 Click on the [Menu] button at the bottom left corner of the screen.**  
The menu is displayed.
- 2 Click on the [Maintenance] - [Date/Time/Time Zone] button on the menu.**  
The [Date/Time/Time Zone] dialog box appears.



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**[1] [X] button**

Click on this button to close the [Date/Time/Time Zone] dialog box.

**[2] [Date]**

Set the year, month and day on the calendar.

For the details of how to use the calendar, refer to "3.12 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 combo box.

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

**[5] [Display Style]**

From the combo box, select the style to display the date.

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

**[6][Synchronise with Time Source(Date/Time)](Synchronize time with GPS)**

When this item is checked, the date and time are synchronized by using the time information (ZDA sentence) from GPS and so on.

**[7] [Synchronise with Time Source(Time Zone)](Synchronize the time difference with GPS)**

When this item is checked, the time difference is synchronized by using the time information (ZDA sentence) from GPS and so on.

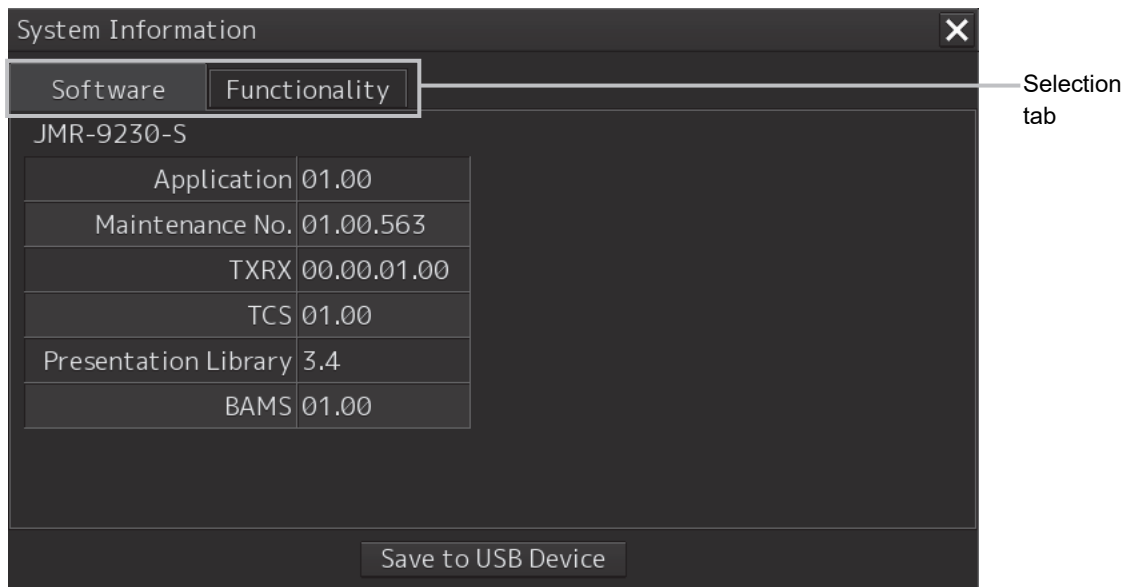
**Note**

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


## 9.1.3 Confirming System Information

System information can be confirmed.

- 1 Click on the [Menu] button at the bottom left corner of the screen.**  
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.




### 9.1.3.1 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 display unit is infected with a virus, other equipment may also be infected, with the result that a trouble may 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 or insert the USB flash memory when it is accessed, data may be destroyed and a trouble may occur.

Software information can be confirmed.

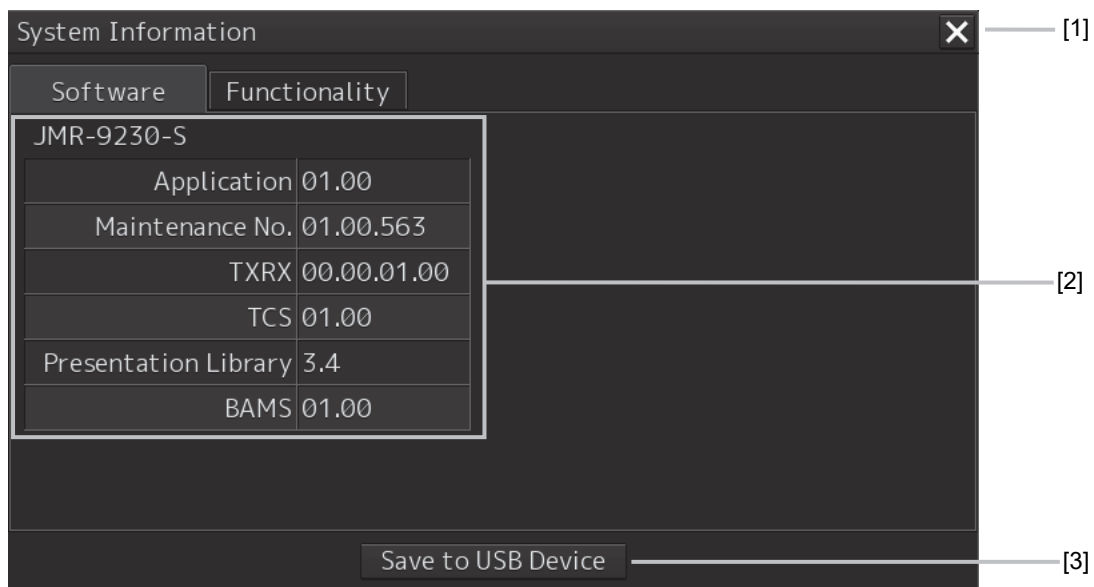
- 1 Click on the [Menu] button at the bottom left corner of the screen.**  
The menu is displayed.

**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 in case of ECDIS or RADAR (with ENC chart display licence)
BAMS	Software version of the BAM system Displayed when the AMS license is available.

**[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.

---

---

### 9.1.3.2 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 display unit is infected with a virus, other equipment may also be infected, with the result that a trouble may 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 or insert the USB flash memory when it is accessed, data may be destroyed and a trouble may occur.

**1 Click on the [Menu] button at the bottom left corner of the screen.**

The menu is displayed.

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

The [System Information] dialog box appears.

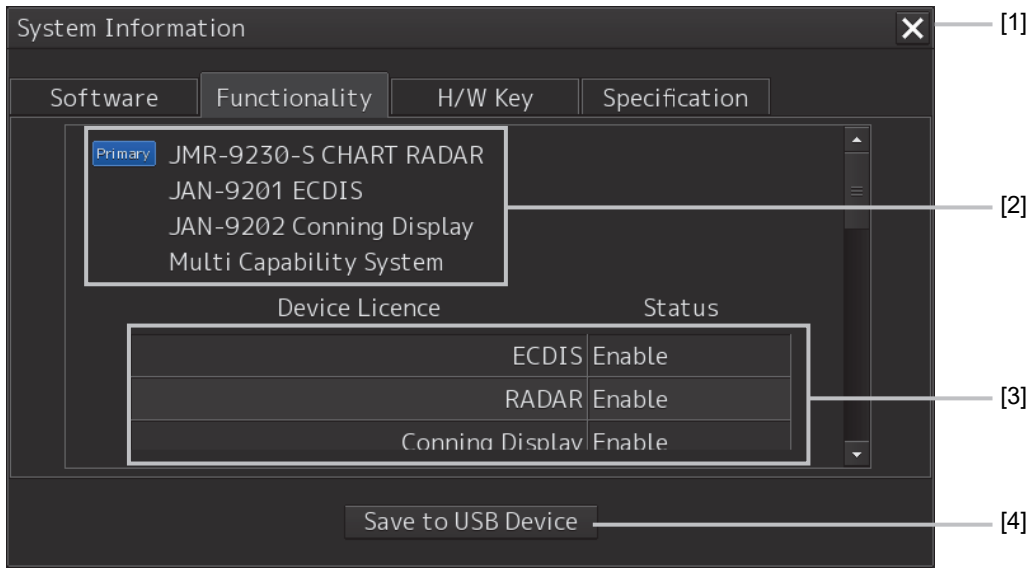
**3 Click on the [Functionality] tab.**

The functionality information is displayed.

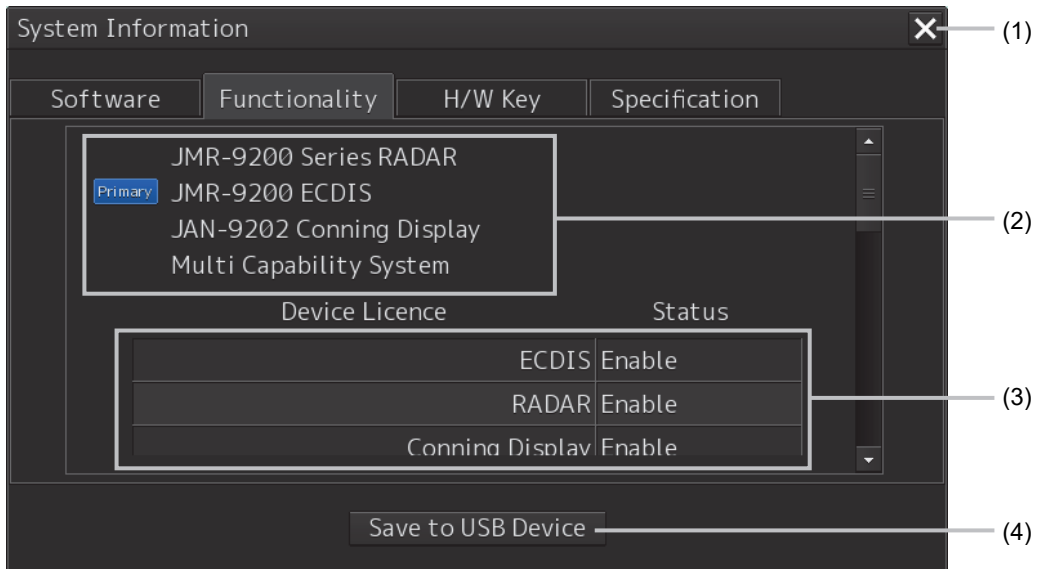
The display contents vary depending on the number of operation modes and whether the modes include the primary task (shown by the name of this equipment).



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



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



[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

Save to USB Device

[3]

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

Save to USB Device

[3]

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

Save to USB Device

[3]

---

---

### [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: JMR-xxxx-x CHART RADAR (for Chart RADAR)).

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 licence of the function.
Stand-alone	Indicates that the function can be used independently and cannot be used as the synchronization function with other devices.

### [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.

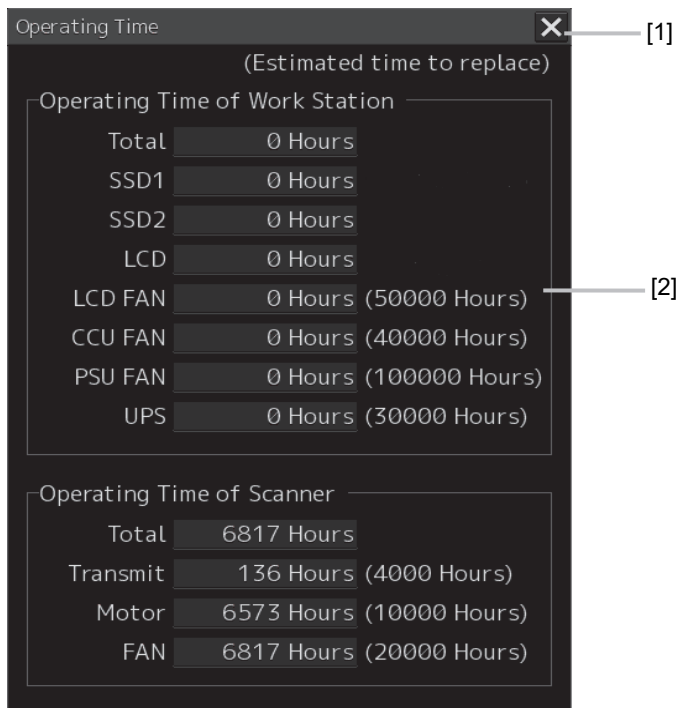
---

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## 9.1.4 Confirming operating time

Confirm the operating time of this system.

- 1 Click on the [Menu] button at the bottom left corner of the screen.**  
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.

[SSD2]: Total operating time of SSD2.

[LCD]: Total operating time of LCD.

[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

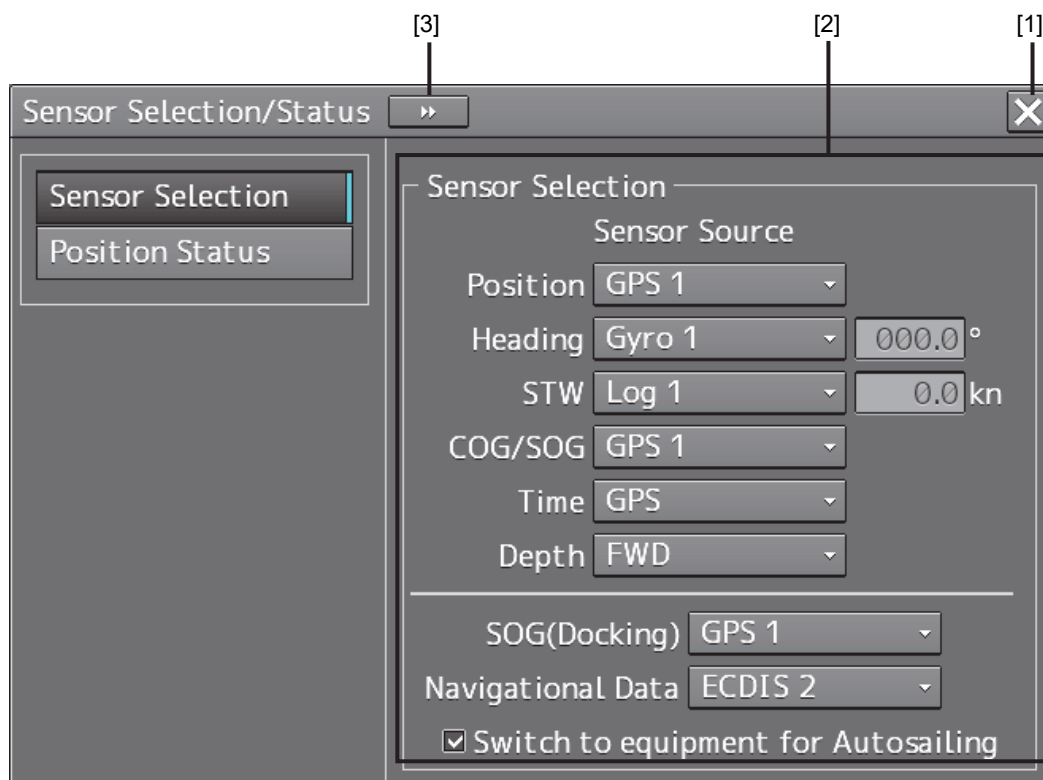
[UPS] is displayed only when UPS is installed as an option.

---

## 9.1.5 Setting and confirming the sensor source

### 9.1.5.1 Set and confirm the sensor source

- 1 Click on the [Menu] button at the bottom left corner of the screen.  
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

Click on this button to close [Sensor Selection/Status] dialog box.

## [2] [Sensor Selection]

Enables selection of a sensor source.

Setting item	Description of Setting	Setting value
Position	Select a Primary Position sensor source from the combo box.	GPS x, DR ("x" indicates the unit number)
Heading	Select a heading sensor source from the combo box. *The source that can be selected varies depending on the installation. *When GyroSW is enabled, only Gyro and MAN can be selected. When the sensor source is set to [Manual], the heading value can also be input in the input box. Heading value input range: 0.0-359.9°	MAN, Gyro x ("x" indicates the unit number)
STW (Speed Through Water)	Select a Speed Through Water sensor source from the combo box. *The sources that can be selected vary according to the installation. * When 1AX is installed for Log, Log cannot be selected from the sensor source. 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: -99.9-99.9kn	MAN, Gyro X, MAG, G/C ("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 selectable sources vary depending on the installation. When FURUNO is selected in [Device Installation] - [Echo Sounder 1], it is fixed to AUTO.	FWD, AFT, MID, AUTO <sup>1</sup>
SOG(Docking)	Select a sensor source of the Speed Over the Ground (Docking) from the combo box. *The source that can be selected varies depending on the installation.	Log x, GPS ("x" indicates the unit number)
Navigational Data	Select a source (sensor) from which route monitoring information is acquired. *The source that can be selected varies depending on the installation. * Cannot be selected when there is equipment that is performing Auto Sailing and the "Switch to equipment for Autosailing" check box is selected.	ECDIS x, MFD x ("x" indicates the unit number)

Setting item	Description of Setting	Setting value
Switch to equipment for Autosailing	When acquiring route monitoring information from the equipment that is performing Auto-Sailing, enable the item (ON) by selecting the check box. When acquiring route monitoring information from the source that is selected from Navigational Data, disable the item (OFF) by clearing the check box.	ON/OFF

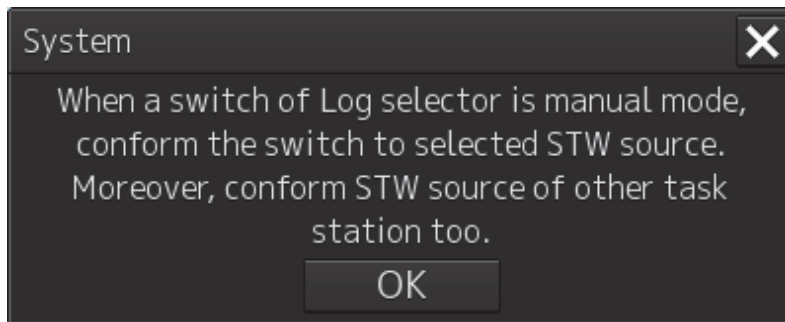
\*1 In this case, one Echo Sounder is installed. When two Echo Sounders are installed, E/S1(AUTO) and E/S2(AUTO) can be selected, not AUTO.

### [3] Disclosure button

When this button is clicked on, the left pane will be hidden.

#### Memo

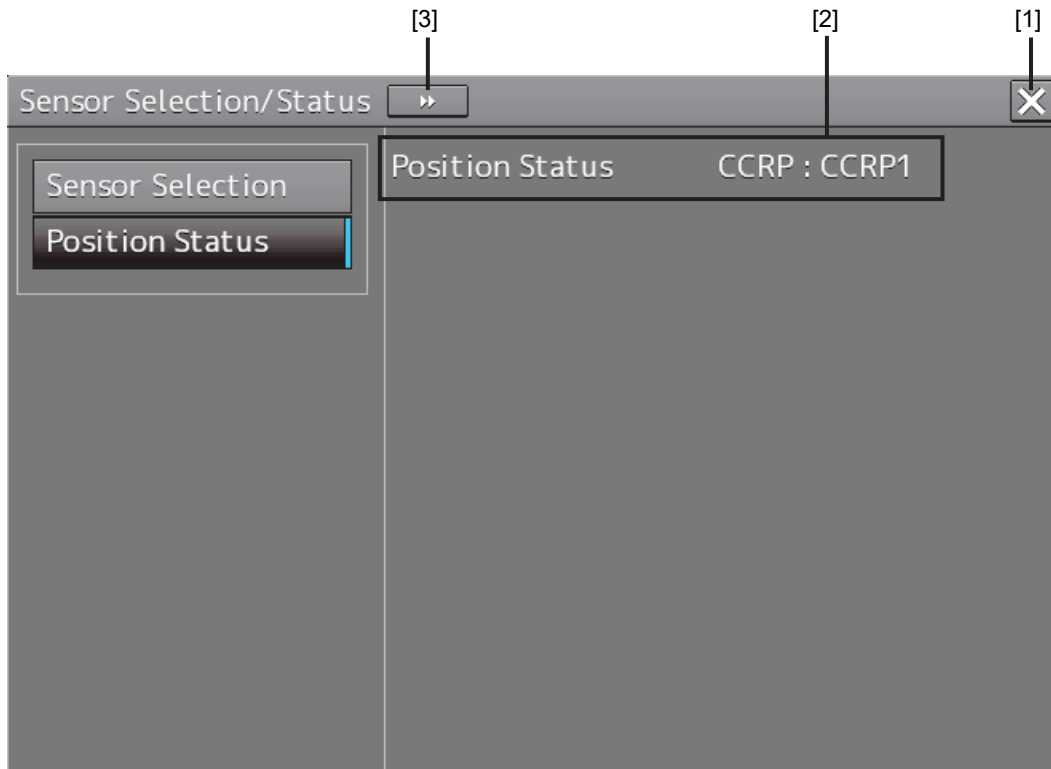
When a Log Selector is installed and the Log (speed) sensor is switched automatically, the following popup window is displayed indicating the effect.



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### 9.1.5.2 Displaying CCRP which is selected

- 1** Click on the [Menu] button at the bottom left corner of the screen.  
The menu is displayed.
- 2** Click on the [Maintenance] - [Sensor Selection/Status] button on the menu.  
The [Sensor Selection/Status] dialog box appears.
- 3** Click on the [Position Status] in the left pain.



#### [1] [x] button

Click on this button to close the [Sensor Selection/Status] dialog box.

#### [2] [Position Status]

The selected CCRP (CCRP1 to 4) is displayed.

For the details of how to change the CCRP, refer to "8.2.2.2 Verifying/Setting CCRP".

#### [3] Disclosure button

Click on the disclosure button to hide the left pain.



## 9.1.6 Confirming Maintenance INFO

### 9.1.6.1 Screen items/fields and their function

Maintenance INFO can be confirmed.

- 1 Click on the [Menu] button on the left Tool Bar.  
The menu is displayed.
- 2 Click on the [Maintenance] - [Maintenance INFO] button on the menu.

The screenshot shows the 'Information Reference' window with the 'Maintenance INFO' tab selected. The window displays a table of 20 maintenance items. A detailed view on the right shows the cause, raised, and rectified times for the selected item, along with details. Callouts (1) through (5) point to specific UI elements:

- (1) Points to the 'Maintenance INFO' tab.
- (2) Points to the 'Maintenance INFO' button in the menu.
- (3) Points to the table of maintenance information.
- (4) Points to the detailed view on the right.
- (5) Points to the 'Export' button.

Status	Cause	Raised(UTC)
!	SLC1-1(Communication failed, Mai...	2021-05-27 09:28:10
!	ALC1(Communication failed, Main ...	2021-05-27 09:28:10
!	No.1 Radar(Communication failed, ...	2021-05-27 09:28:10
!	OPU-USB(Communication error)	2021-05-27 09:28:03
!	Gyro 2(Communication Failed, Mai...	2021-05-27 09:27:35
!	Gyro 1(Communication Failed, Mai...	2021-05-27 09:27:35
!	Time(unavailable)	2021-05-27 09:27:26
!	DATUM(unavailable)	2021-05-27 09:27:26
!	Time(unavailable)	2021-05-27 09:27:26
!	Position(unavailable)	2021-05-27 09:27:25
!	COG/SOG(unavailable)	2021-05-27 09:27:25
!	Heading(unavailable)	2021-05-27 09:27:25
!	STW Speed(unavailable)	2021-05-27 09:27:25
!	GPS 2(Communication Failed, Main...	2021-05-27 09:27:25
!	BNWAS(Communication failed, Mai...	2021-05-27 09:27:25
!	Autopilot(Communication Failed, ...	2021-05-27 09:27:25
!	Anemometer(Communication faile...	2021-05-27 09:27:25
!	Log 1(Communication failed, Main ...	2021-05-27 09:27:25
!	GPS 1(Communication Failed, Main...	2021-05-27 09:27:25
!	CONNING Task	2021-05-27 09:27:10

Details for the selected item:

- Cause: SLC1-1(Communication failed, Main LAN)
- Raised(UTC): 2021-05-27 09:28:10
- Rectified(UTC): -
- Details: Communication with SLC1-1 cannot be performed via Main LAN.

The screen can be switched to either the standard window or the expanded window.

An example of an expanded window is shown above.

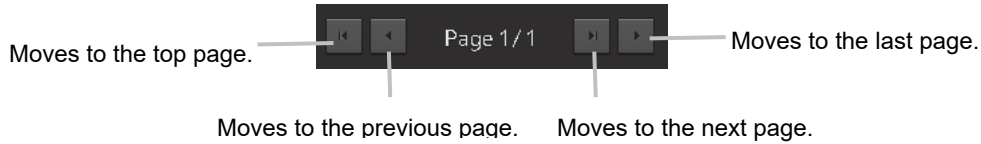
For the screen switching method, refer to "9.1.6.2 Switching to the standard window or the expanded window."

**(1) Number of pieces of maintenance information**

The number of pieces of maintenance information being generated is displayed.

**(2) Active page information**

Up to twenty pieces of maintenance information can be displayed on a page. If maintenance information exceeds 20 pieces and is displayed over multiple pages, the pages are switched by operating the page change buttons.



**(3) Maintenance information list**

Maintenance information being generated is displayed. Clicking any information selects the information.

- Details of the selected information are displayed in "(4) Detailed maintenance information."
- New maintenance information generated during screen display is added to the top of the list.
- Up to 1000 pieces of information can be displayed. When 1000 pieces are exceeded, information is sequentially deleted from the oldest information.
- Either of the following icons is displayed in the [Status] column.
  - ! : Generated
  - ✓ : Resolved
- Blank: Maintenance information which had been generated before the MFD was restarted
- The [Cause] column shows the names of maintenance information.
- The [Raised(UTC)] column shows the generation time and date (UTC) of maintenance information.
- Clicking any item in the title line rearranges the list with reference to the clicked item.

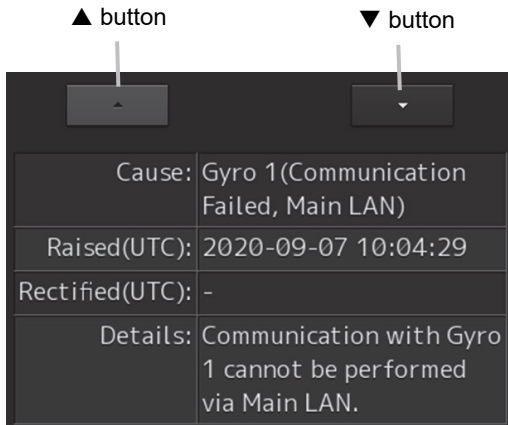
Status ▾	Cause	Raised(UTC)
!	Life Expectancy SSD1	2016-01-13 05:31:48
✓	Life Expectancy Magnetron1	2016-01-13 05:31:48
	Life Expectance UPS	2016-01-10 01:00:00

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#### (4) Detailed maintenance information

Details of the currently selected maintenance information are displayed.



Information	Description
Cause	The cause of the maintenance information is displayed.
Raised(UTC)	The generation time and date (UTC) of the maintenance information is displayed.
Rectified(UTC)	The resolution time and date (UTC) of the maintenance information is displayed.
Details	Detailed information is displayed.

#### **[▲] button**

Clicking this button displays the details of the information with higher priority than currently displayed information.

#### **[▼] button**

Clicking this button displays the details of the information with lower priority than currently displayed information.

#### (5) **[Export] button**

Use this button to export maintenance information.

Refer to "9.1.6.3 Exporting maintenance information."

## 9.1.6.2 Switching to the standard window or the expanded window

The Maintenance INFO screen can be switched to either the standard window or the expanded window.

To switch to the expanded window, click the list expansion button.

To switch to the standard window, click the list standard button.



[Example of expanded window]

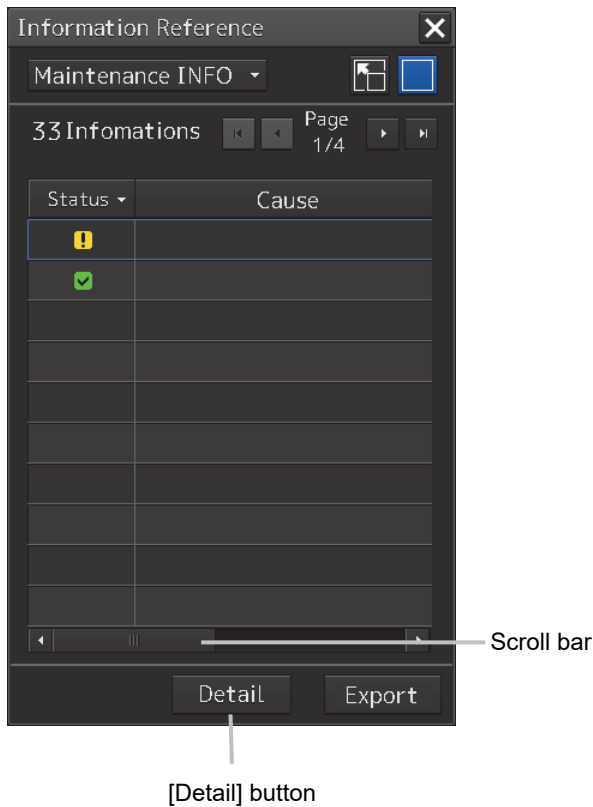
The screenshot shows the 'Information Reference' window in its expanded state. The 'Maintenance INFO' tab is active. The main area displays '20 Maintenance Informations' on 'Page 1/50'. A table lists various maintenance items with their status, cause, and raised time. A details panel on the right shows information for the first item.

Status	Cause	Raised(UTC)
!	SLC1-1(Communication failed, Mai...	2021-05-27 09:28:10
!	ALC1(Communication failed, Main ...	2021-05-27 09:28:10
!	No.1 Radar(Communication failed, ...	2021-05-27 09:28:10
!	OPU-USB(Communication error)	2021-05-27 09:28:03
!	Gyro 2(Communication Failed, Mai...	2021-05-27 09:27:35
!	Gyro 1(Communication Failed, Mai...	2021-05-27 09:27:35
!	Time(unavailable)	2021-05-27 09:27:26
!	DATUM(unavailable)	2021-05-27 09:27:26
!	Time(unavailable)	2021-05-27 09:27:26
!	Position(unavailable)	2021-05-27 09:27:25
!	COG/SOG(unavailable)	2021-05-27 09:27:25
!	Heading(unavailable)	2021-05-27 09:27:25
!	STW Speed(unavailable)	2021-05-27 09:27:25
!	GPS 2(Communication Failed, Main...	2021-05-27 09:27:25
!	BNWAS(Communication failed, Mai...	2021-05-27 09:27:25
!	Autopilot(Communication Failed, ...	2021-05-27 09:27:25
!	Anemometer(Communication faile...	2021-05-27 09:27:25
!	Log 1(Communication failed, Main ...	2021-05-27 09:27:25
!	GPS 1(Communication Failed, Main...	2021-05-27 09:27:25
!	CONNING Task	2021-05-27 09:27:10

Details for the first item:

- Cause: SLC1-1(Communication failed, Main LAN)
- Raised(UTC): 2021-05-27 09:28:10
- Rectified(UTC): -
- Details: Communication with SLC1-1 cannot be performed via Main LAN.

[Example of standard window]



The standard window includes the list screen and the details screen.

To switch to the details screen, click the [Detail] button. Then, the [Detail] button turns into the [List] button.

To switch to the list screen, click the [List] button.

If the screen contents do not fit in the screen width, the scroll bar is displayed.

Dragging the scroll bar displays the contents not currently shown.

**Memo**

The initial display is shown in the expanded window.

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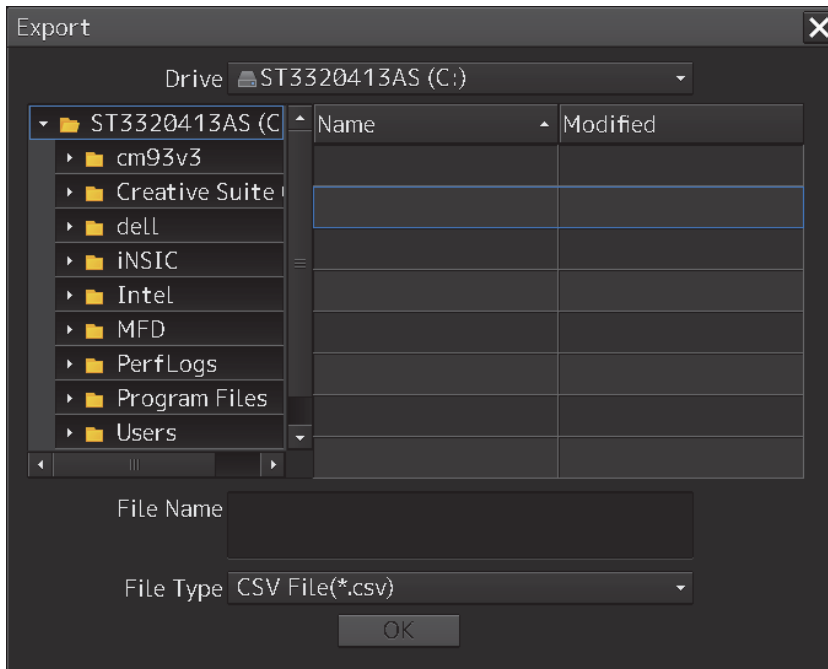
### 9.1.6.3 Exporting maintenance information

Maintenance information can be exported as a CSV file to USB memory.

Information to be exported is that in the Cause, Raised(UTC), Rectified(UTC), and Detail fields.

**1 Click the [Export] button on the Maintenance INFO screen.**

The "Export" dialog box will appear.



**2 Specify the Drive (name of the drive for the USB memory) to which information is exported, Folder, and File Name.**

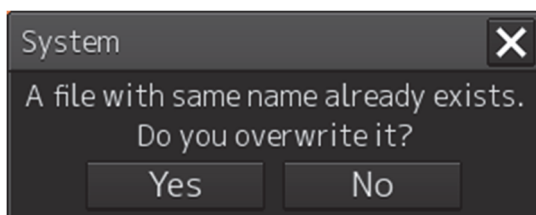
Only [CSV File(\*.csv)] can be selected for File Type.

**3 Click the [OK] button.**

To cancel information export, click the [x] button.

**If a file with the same name exists:**







The following pop-up window will appear.





To cancel the export, click the [No] button.

To overwrite the existing file with the same file name, click the [Yes] button.

# 9.2 General Maintenance

 <b>DANGER</b>	
	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. Especially when an UPS is used, make sure to turn it off since voltage is still outputted from the UPS even after the indicator and the ECDIS are turned off. Failure may result in equipment failure, or death or serious injury due to electric shock.

 <b>WARNING</b>	
	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.

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.

---

---

## 9.3 Maintenance on Unit

### 9.3.1 Display unit

#### **WARNING**



When cleaning the screen and Trackball of Operation Unit, do not wipe hard with a dry cloth. Also, do not use glass cleaner, alcohol, gasoline, or thinner to clean the screen. Also avoid wiping with water. It may cause surface damage or equipment failure.

#### 9.3.1.1 The Screen

Dust accumulated on the screen will reduce clarity and darken the video.

Use a soft cloth such as flannel and cotton to clean the screen to prevent damage or degradation of the screen coating.



### 9.3.1.2 The Trackball

Clean carefully the trackball operation unit in accordance with this procedure in order not to scratch the lens. The tools shown in the following table are required in this work.

	Required tools
1	Dry/Moist soft cloth (Lint-free)
2	Swab

#### Note

If you do not have the swab, please use lint-free cloth, moistened with water, instead.

- 4 Turn stopper ring in the direction of the triangle marks (counterclockwise), then remove the stopper ring together with the ball.



- 5 Clean the ball with a moist lint-free cloth, then wipe the ball with a dry soft cloth carefully.
- 6 Clean the inside of the stopper ring and the trackball housing, and the lens with a swab, moistened with water. Change the swab regularly so that dirt and dust build-up is easily removed. Wipe away moisture with a dry swab.



- 7 After cleaning them, reinstall the ball and the stopper ring. Don't forget to tighten the stopper ring.

# 9.4 Performance Check

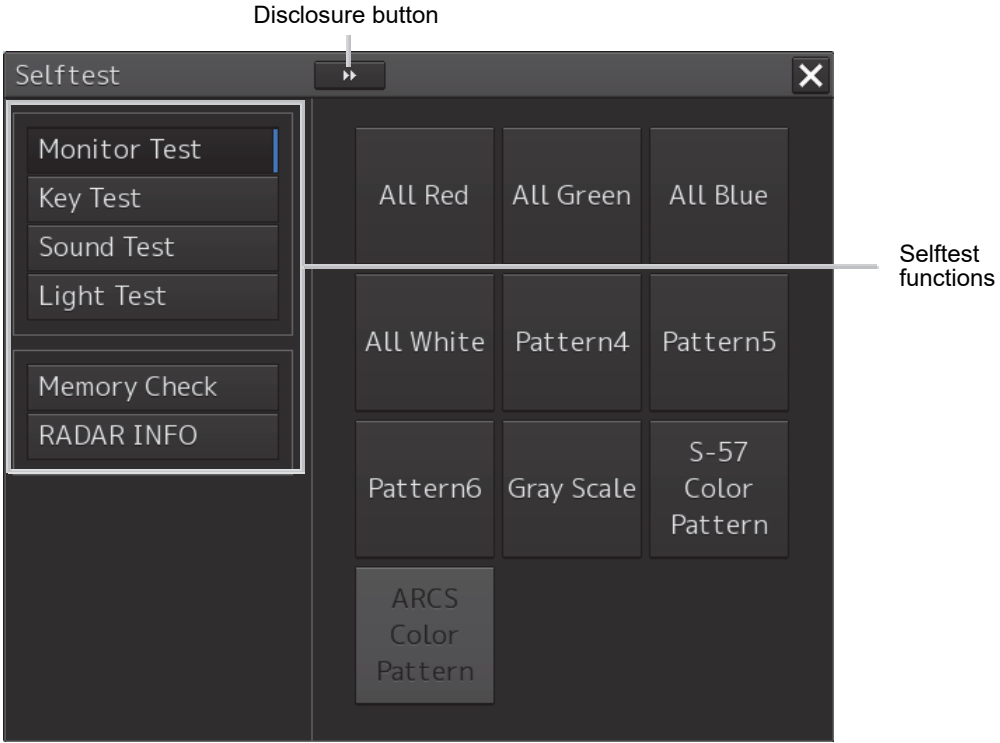
Make performance check on the radar equipment regularly and if any problem is found, investigate it immediately. Pay special attention to the high voltage sections in inspection and take full care that no trouble is caused by any error or carelessness in measurement. Take note of the results of inspection,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

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

Equipment	Item to be checked	Criteria
Transmitter-receive	Synchronization LED of Receiver	The LED is lit during operation
Display unit	Screen image Screen operation	Can be correctly controlled

## 9.4.1 Starting Selftest functions

- 8** Click on the [Menu] button at the bottom left corner of the screen.  
The menu is displayed.
- 9** Click on the [Maintenance] - [Selftest] button on the menu.  
The [Selftest] dialog box appears.



The Diagnosis functions are displayed in the left pane.  
Click on the disclosure button to hide the left pane.

- 10** Click on a **Diagnosis function to be executed**.  
The execution dialog of the selected diagnosis function is displayed.

---

---

## 9.4.2 Confirming the screen status [Monitor Test]

Confirm the screen status.

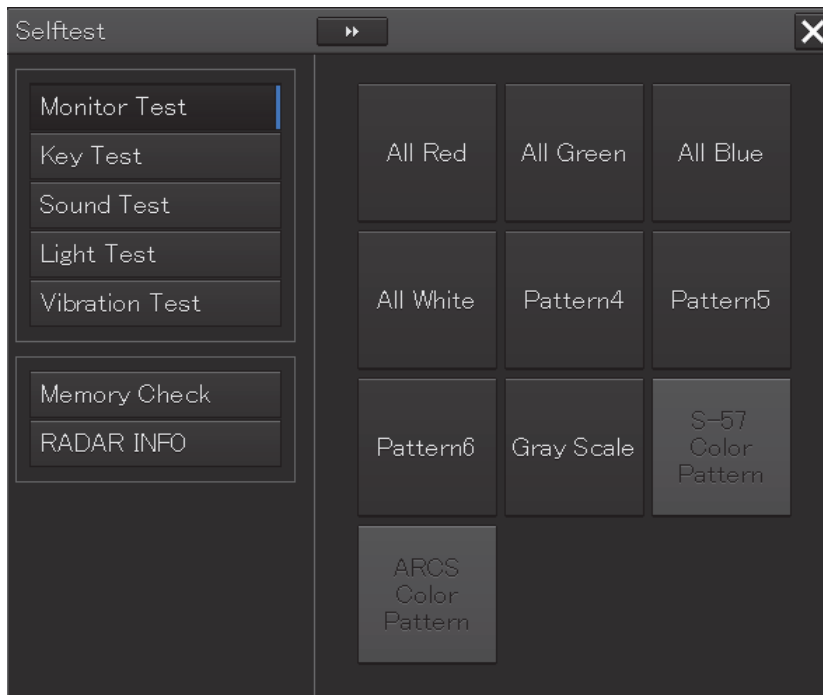
- 1 Click on the [Menu] button at the bottom left corner of the screen.**

The menu is displayed.

- 2 Click on the [Maintenance] - [Selftest] - [Monitor Test] button on the menu.**




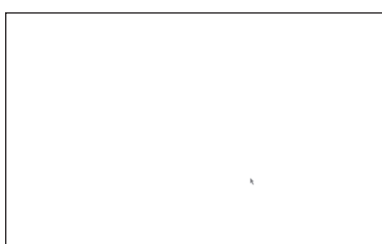
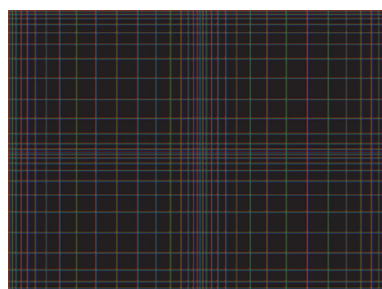
When the color or pattern of the dialog is clicked on, the color or pattern is displayed on the screen.

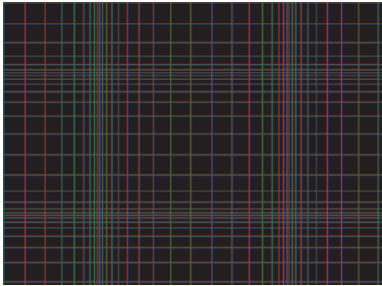
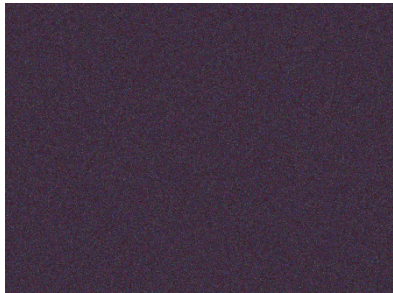

Check the screen status with the display status.

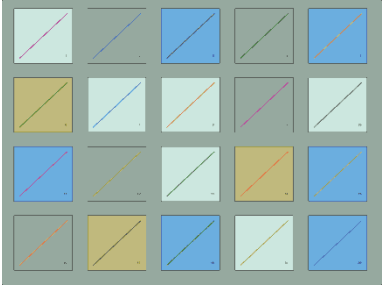
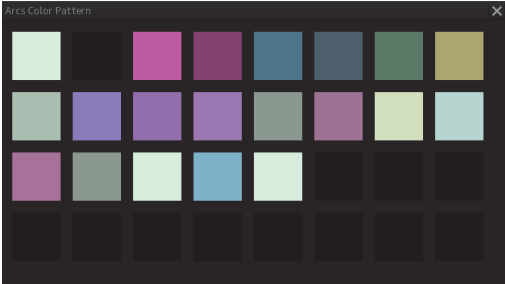


To reset the display, click the right mouse button on the button that was clicked.

Pattern list

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

Pattern button name	Display
Pattern5	 <p>Displays the pattern for checking the communication quality for VDR.</p>
Pattern6	 <p>Displays the pattern for checking the communication quality for VDR.</p>
Gray Scale	 <p>Displays the grey scale pattern for checking the monitor brightness adjustment.</p> <p>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.</p> <p>Use the Day/Night button on the right Tool Bar for switching between the day and night mode.</p> <p>For the details of the Day/Night button, refer to "2.2.2 Right Toolbar".</p>

Pattern button name	Display
S-57 Color Pattern	 <p>A color test pattern of the S-57 chart is displayed. Cannot be selected under Conning Display.</p>
ARCS Color Pattern	<p>The [ARCS Color Pattern] dialog is displayed.</p>  <p>A color test pattern of the ARCS chart is displayed. Cannot be selected under Conning Display.</p>

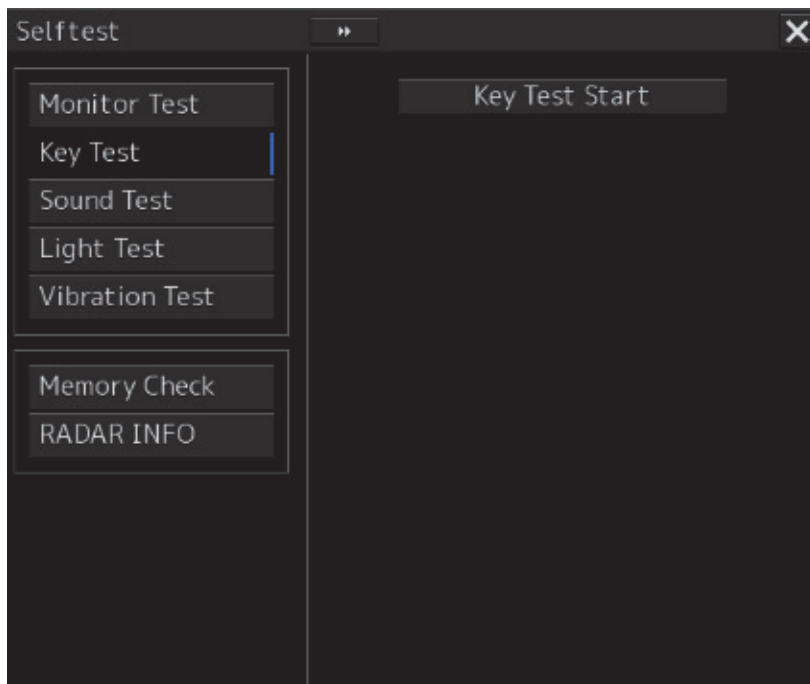
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## 9.4.3 Confirming the operation of the operation unit [Key Test]

Confirm the operation of the keys of the operation unit.

- 1 Click on the [Menu] button at the bottom left corner of the screen.  
The menu is displayed.
- 2 Click on the [Maintenance] - [Selftest] - [Key Test] button on the menu.
- 3 Click on the [Key Test Start] button.



Key Test window 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 [Selftest] dialog box.

## 9.4.4 Confirming the alert sound [Sound Test]

Confirm the alert sound.

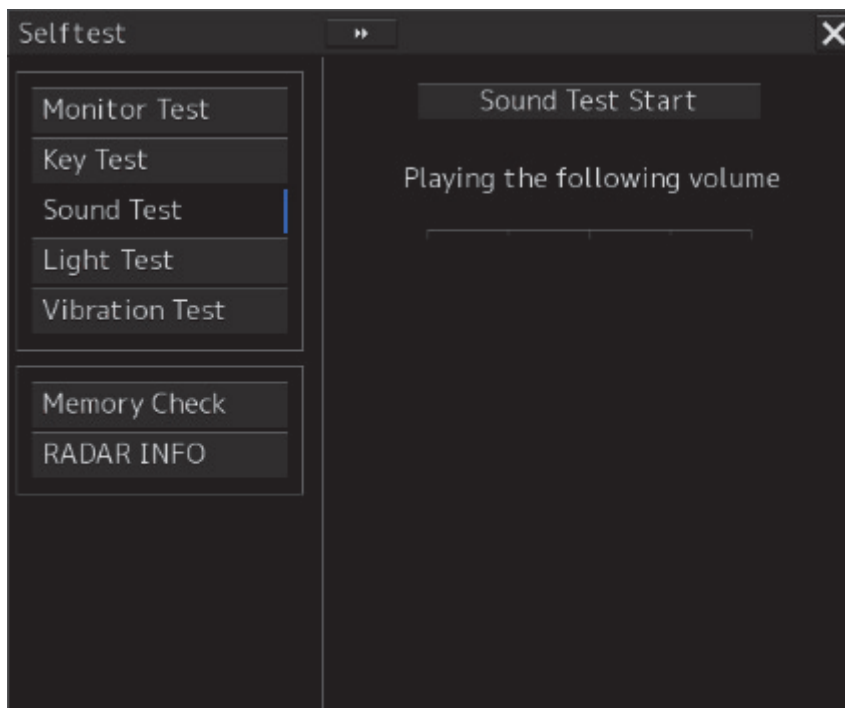
**1 Click on the [Menu] button at the bottom left corner of the screen.**

The menu is displayed.

**2 Click on the [Maintenance] - [Selftest] - [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.





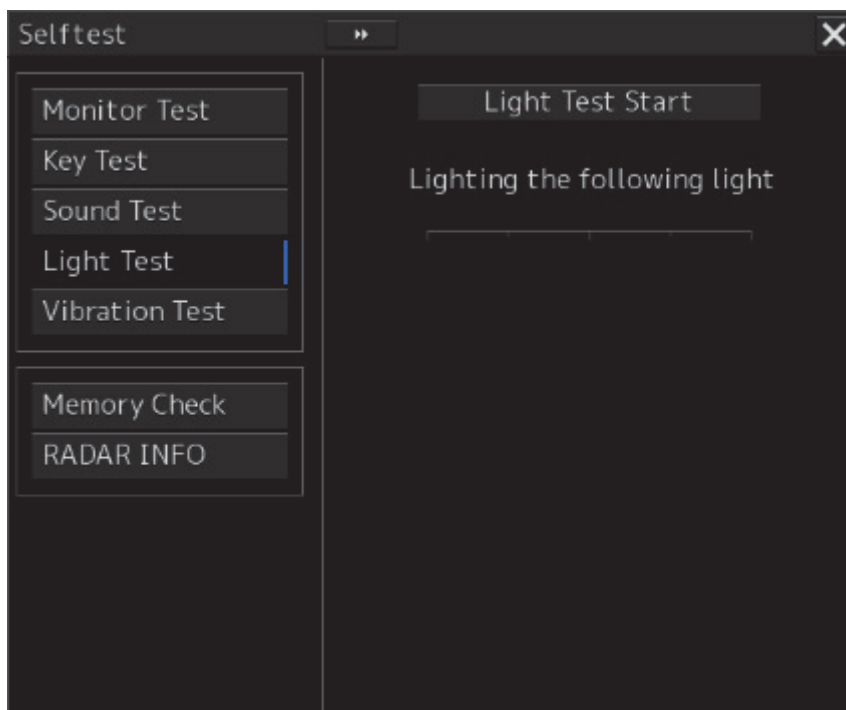
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## 9.4.5 Testing the brightness of LED [Light Test]

Test the brightness of LED.

- 1 Click on the [Menu] button at the bottom left corner of the screen.**  
The menu is displayed.
- 2 Click on the [Maintenance] - [Selftest] - [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.



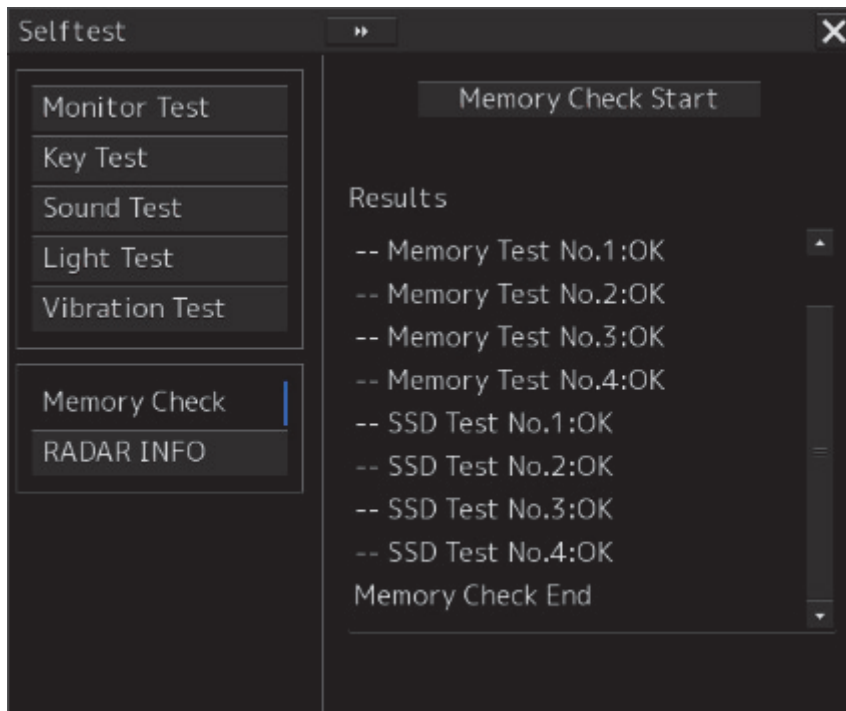
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## 9.4.6 Checking the memory [Memory Check]

Check the memory.

- 1 Click on the [Menu] button at the bottom left corner of the screen.**  
The menu is displayed.
- 2 Click on the [Maintenance] - [Selftest] - [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.






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## 9.5 Replacement of Major Parts

The system includes parts that need periodic replacement. The parts should be replaced as scheduled. Use of parts over their service life may cause a system failure.

 <b>CAUTION</b>	
	Turn off the main power source before inspecting and replacing parts. Otherwise, an electric shock or trouble may be caused.
	The liquid crystal monitor shall be replaced by two more persons. If only one person does this work, he may drop the LCD, resulting in injury.

### 9.5.1 Parts expected for periodic replacement

Here are parts expected for periodic replacement.

Part type	Name	Part name	Life expectancy	Replacement kit type
NWZ-207	19inch monitor	FAN	40,000 hours	7ZYNA4004
NWZ-214	19inch monitor	FAN	60,000 hours	7BFRD0008
NWZ-208	26inch monitor	FAN	40,000 hours	7ZYNA4005
NBD-913	Power supply unit	FAN	100,000 hours	7ZYNA4007
QUINT-BAT/24DC/3.4AH	UPS unit dedicated battery module	Battery	30,000 hours	QUINT-BAT/24DC/3.4AH
NDC-1590/A	Central control unit	FAN	40,000 hours	7ZYNA4006

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## 9.6 Software Update

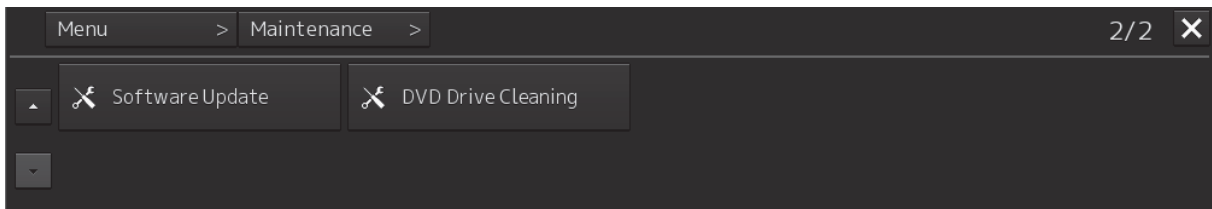
This section describes software update of this equipment.

### Note

When software update starts, the tasks that are active are automatically terminated. Complete the necessary operation such as saving of settings prior to the start of update.

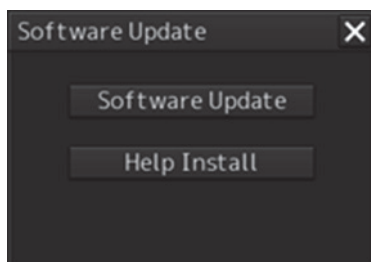
### 9.6.1 Local Update

- 1 Set the CD/DVD or USB flash memory containing the update data.
- 2 Click on the [Menu] button at the bottom left corner of the screen.  
The menu is displayed.
- 3 Change over to the second page using the page switching button, and click [Maintenance] - [Software Update].

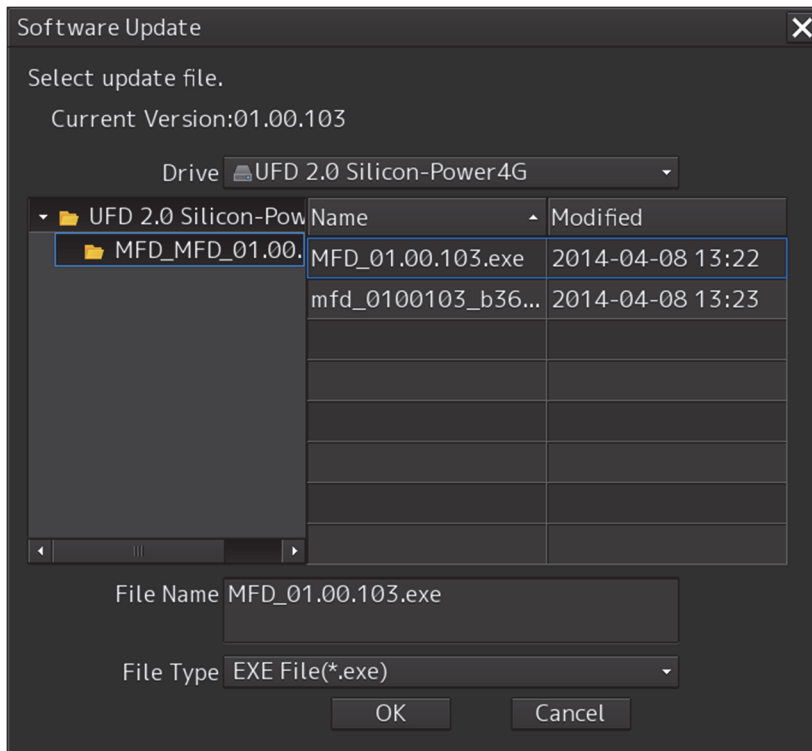


The [Software Update] dialog box appears.

- 4 Click on the [Software Update] button.



A file selection dialog box appears.



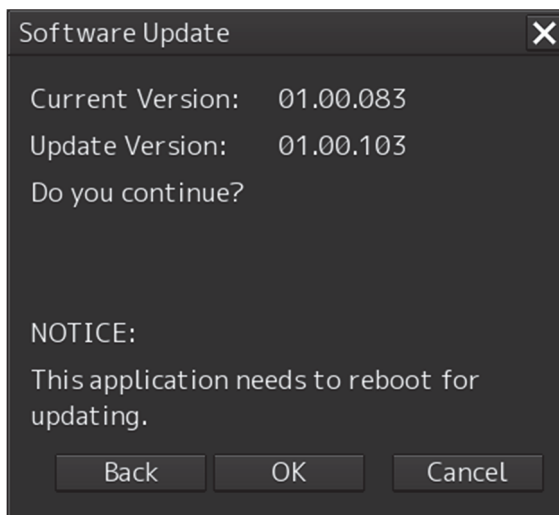
**5** From the [Drive] combo box, select the drive where the updating data is stored.

**6** From the file list, select the file MFD\_xx.xx.xxx.exe.

MFD\_xx.xx.xxx.exe is displayed in [File name].

**7** Click the [OK] button.

The update content confirmation dialog box appears.

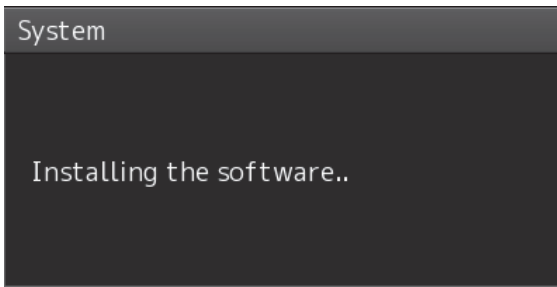


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**8 Confirm the contents and click [OK].**

Installation of the update is started and the following screen is displayed.

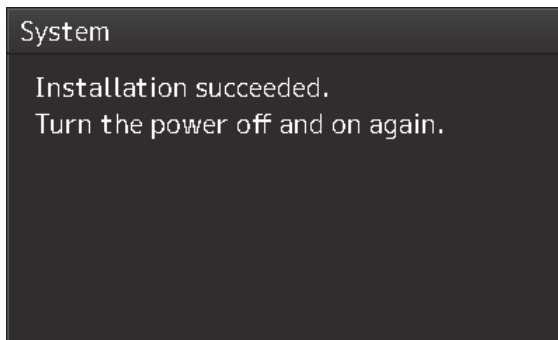


Wait for some time until the installation is completed.

**Note**

During installation, this equipment may reboot by itself..

When the installation is completed, the following screen is displayed.



**9 Turn off the power of this equipment.**

**10 Restart this equipment.**

**11 Start the Conning display and then confirm that the software version number has been updated correctly by the [Software] tab in [Maintenance] - [System Information].**

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## 9.6.2 Remote Update

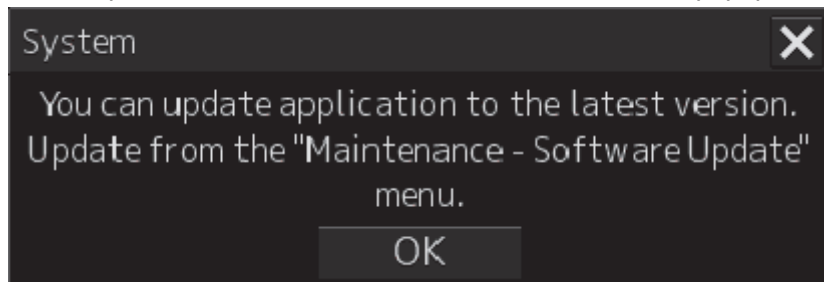
When Enable RMS of the menu [service] – [Installation] – [Settings] – [RMS] is valid, if you need to update the software, the installer will be downloaded automatically from the RMS server.

You can use this installer to update the software.

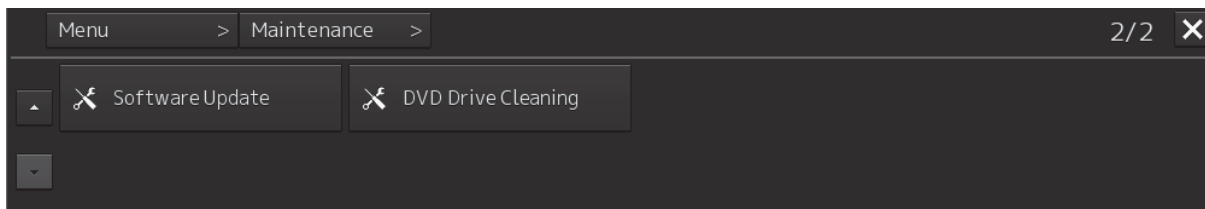
### Memo

Once a day, at 12:00 automatically check the version of the updater on the RMS server to see if software update is necessary, and if it needs updating, download it.

The completion of the download will be notified in the next popup.

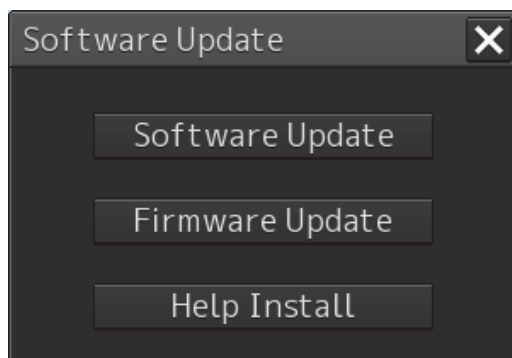


- 1 Click on the [Menu] button at the bottom left corner of the screen.**  
The menu is displayed.
- 2 Change over to the second page using the page switching button, and click [Maintenance] - [Software Update].**

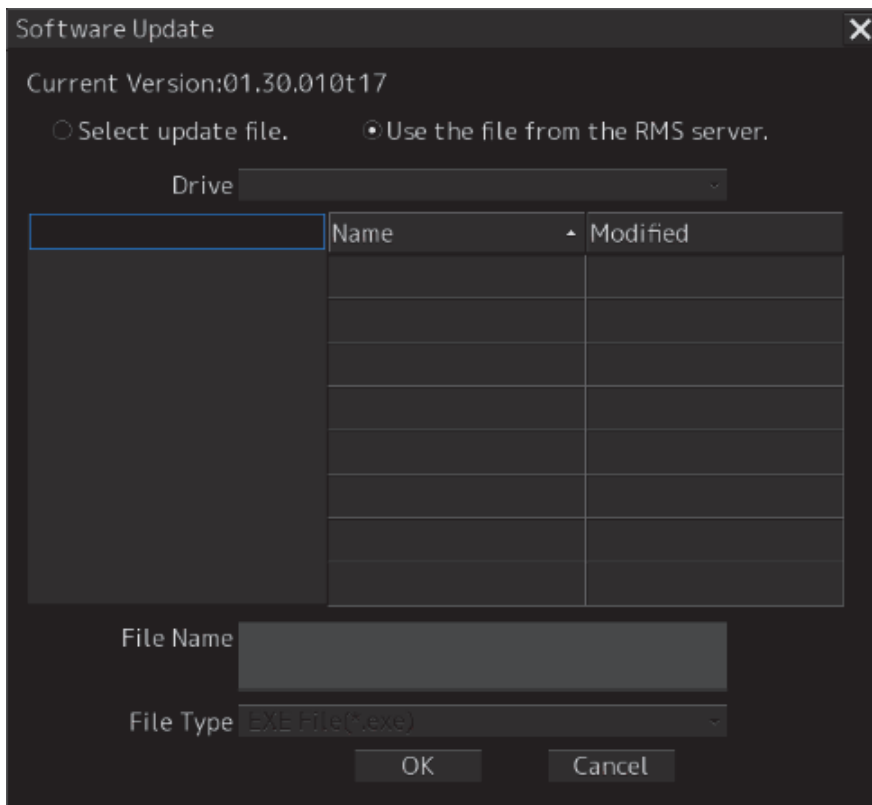


The [Software Update] dialog box appears.

- 3 Click on the [Software Update] button.**



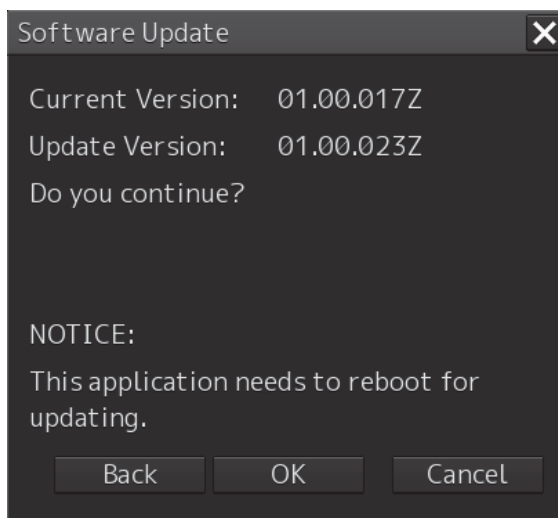
A file selection dialog box appears.



**4** Check "Use the file from the RMS server."

**5** Click the [OK] button.

The update content confirmation dialog box appears.

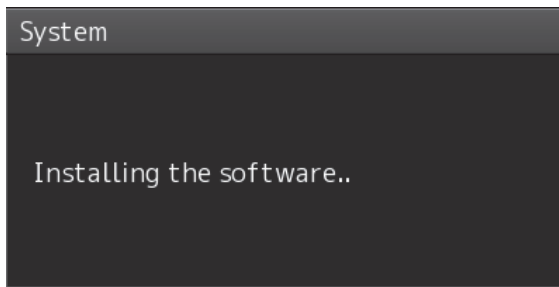




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**6 Check the contents and click on [OK].**

Installation of the update is started and the following screen is displayed.

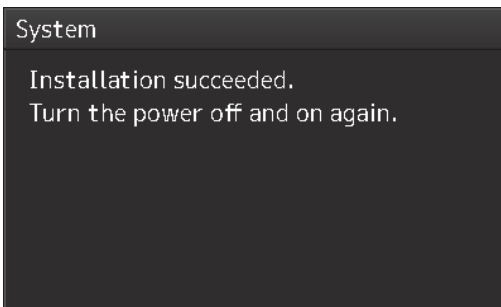


Wait for some time until the installation is completed.

**Note**

This equipment may restart during installation.

At completion of installation, the following screen is displayed.



**7 Switch OFF the power supply of this equipment.**

**8 Restart this equipment.**

**9 Start the Conning display, and confirm that the software version number has been updated in the "Software" tab by selecting [Maintenance] - [System Information].**

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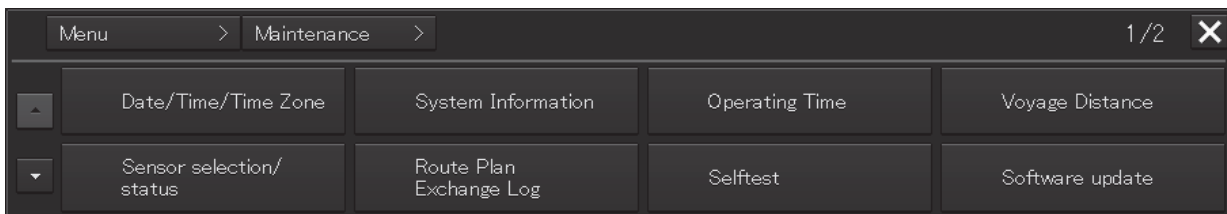
## 9.7 Firmware Update

Explain firmware update of this product.

### Note

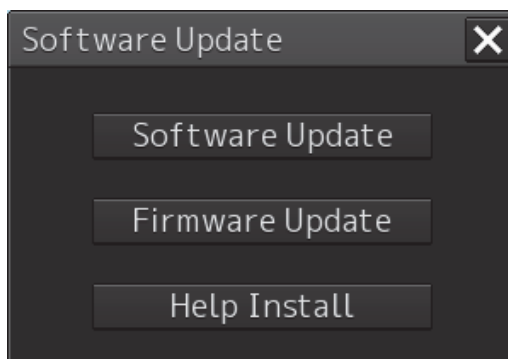
When the firmware update is started, the active task is automatically terminated.  
Please complete necessary operations, such as saving settings, before updating starts.

- 1 Click on the [Menu] button at the bottom left corner of the screen.**  
The menu is displayed.
- 2 Change over to the second page using the page switching button, and click [Maintenance] - [Software Update].**

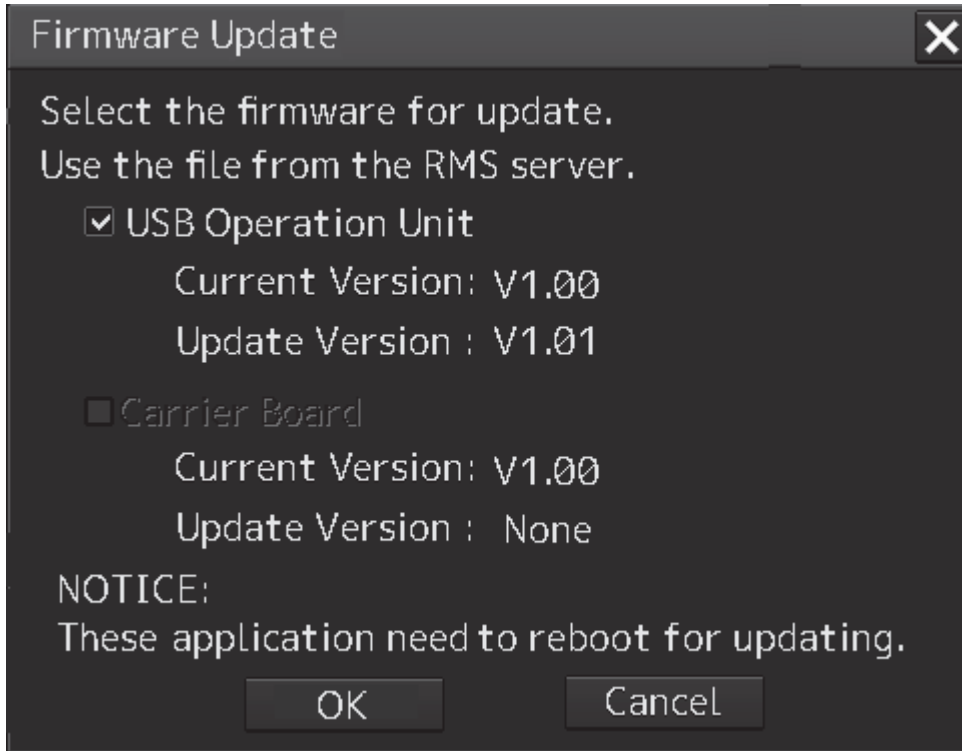


The [Software Update] dialog box appears.

- 3 Click on the [Software Update] button.**



A file selection dialog box appears.



**USB Operation Unit**

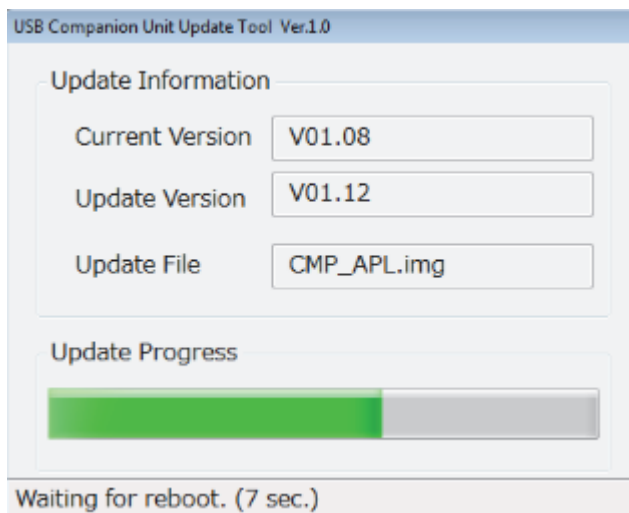
Select this when updating the firmware of the USB operation unit.

**Carrier Board**

Select this when updating the companion's firmware.

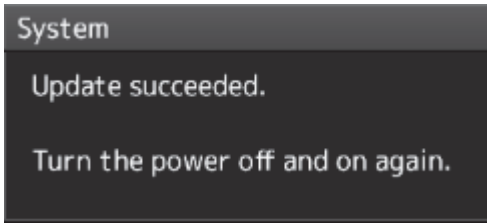
**4 Click the [OK] button.**

Firmware update is started and a popup is displayed.



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When the update is completed, the following screen will be displayed.



**5** Switch OFF the power supply of this equipment.

**6** Restart this equipment.

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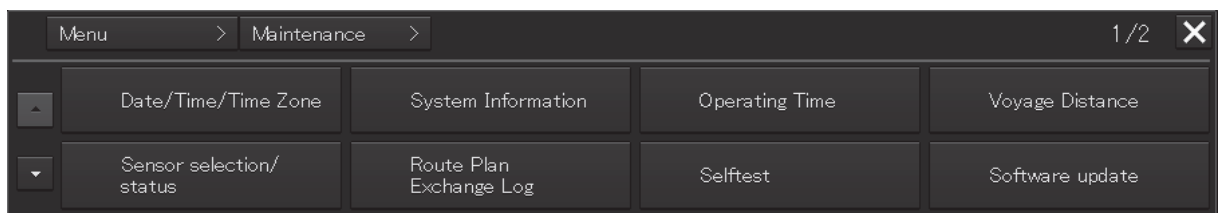
## 9.8 Updating Help Data

This section describes updating of help data of this product.

### Note

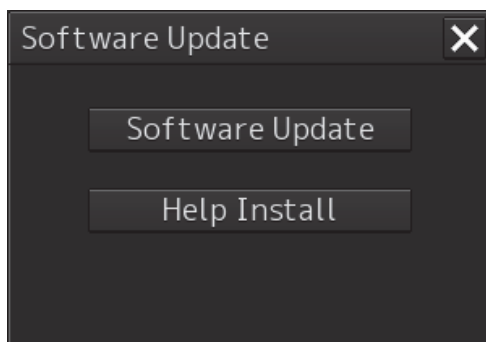
- Help data is classified to the data for RADAR, data for ECDIS, and data for Conning Display. To display help information on each of the RADAR screen, ECDIS screen, and Conning Display screen, install the help data for each display.
- When Help update starts, currently active tasks are terminated automatically. Complete the necessary operations, such as saving the settings, before the start of update.

- 1 Set the CD/DVD or USB memory where update data is stored.**
- 2 Click the [Menu] button at the bottom left corner of the screen.**  
A menu is displayed.
- 3 Click [Maintenance] - [Software Update].**

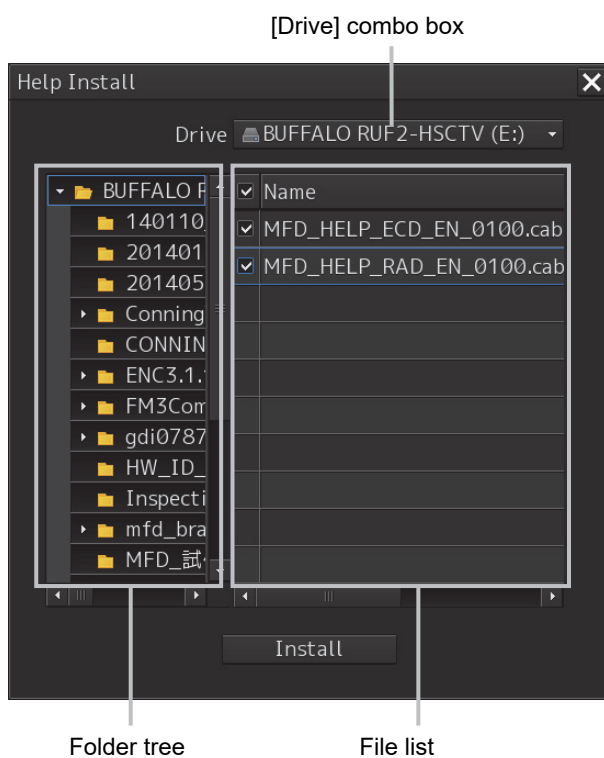


The [Software Update] dialog is displayed.

- 4 Click the [Help Install] button.**

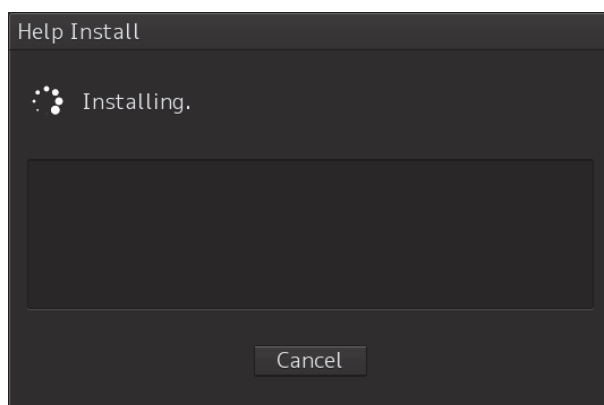


A file selection dialog is displayed.



- 5** Select the drive containing update data from the [Drive] combo box.
- 6** Select the folder containing update data from the folder tree and check the file to be updated from the file list.
- 7** Click the [Install] button.

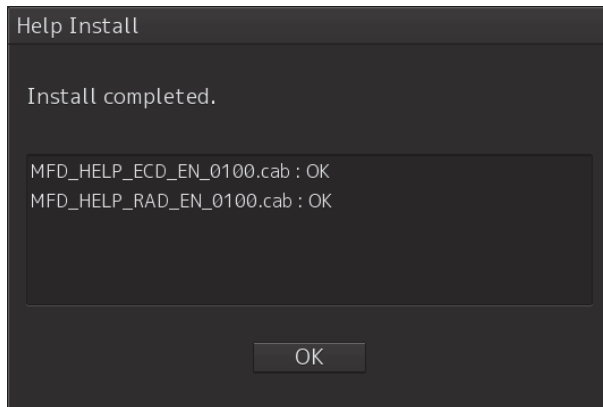
Installation starts and the following screen is displayed.



Wait until installation is completed.

---

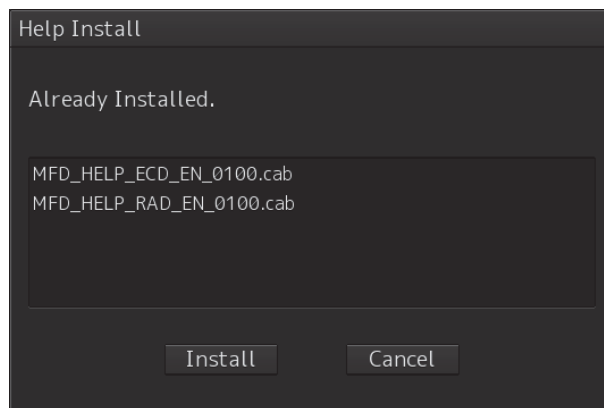
When installation is completed, the following screen is displayed.



**8 Click the [OK] button.**

**Memo**

- When the [Cancel] button is clicked during installation, installation of subsequent files is cancelled after the installation of the file that is currently being installed is completed.
- When the selected update file already exists, the following screen is displayed.



End the operation by clicking on the [Cancel] button.

## 9.9 Data Backup/Restore

### CAUTION



Do not turn off the power supply during backup/restore.  
Otherwise, a function fault occurs, leading to the possibility of an accident.



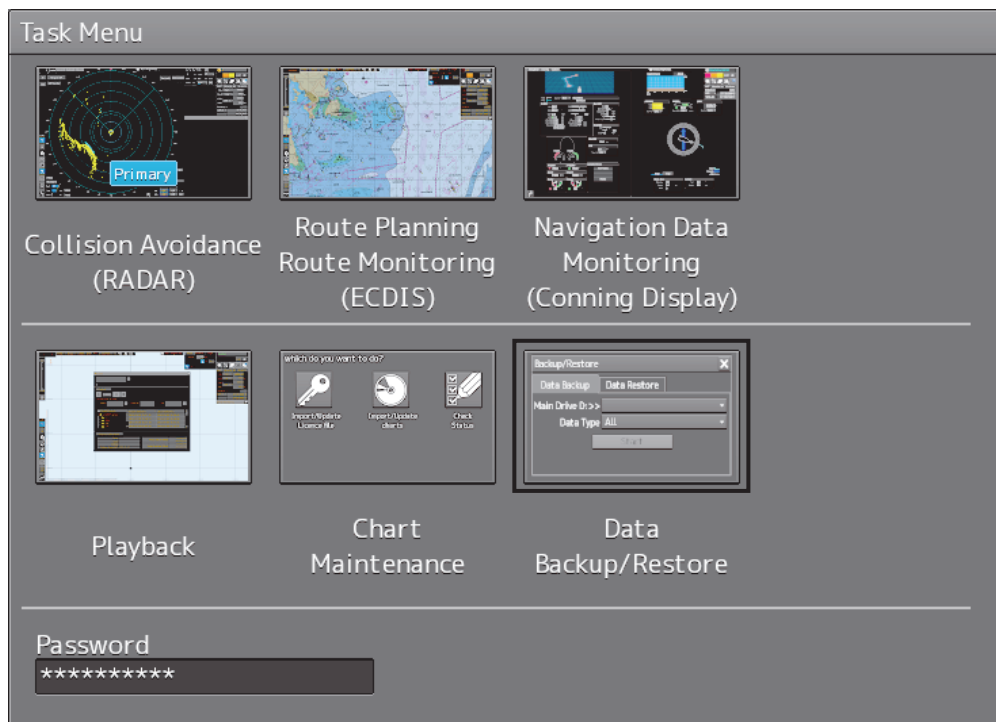
Do not back up data during sailing.  
To start backup data, the Conning Display application must be terminated.  
Otherwise, observation using the Conning Display is disabled, leading to the possibility of an accident.

9

### 9.9.1 Backing up data

To maintain customer data, back up the data regularly by using the following procedure.  
Connect an external medium such as USB memory for backup.

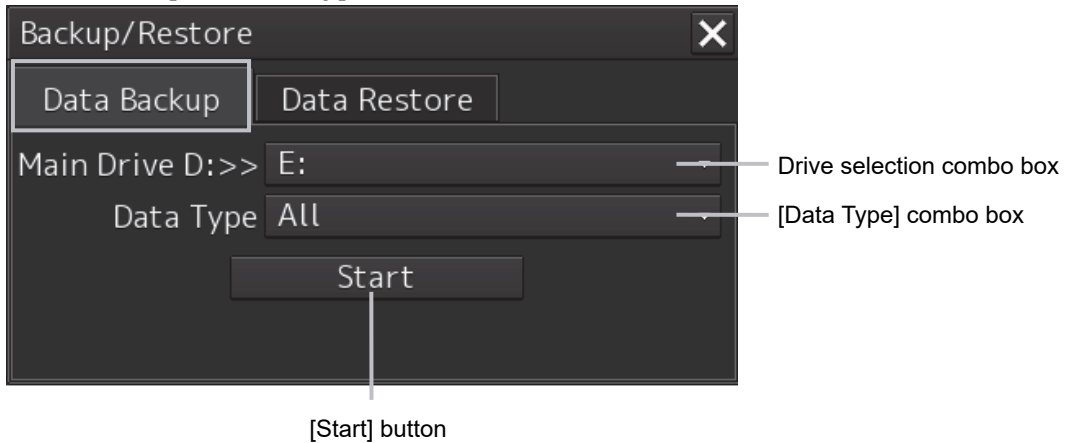
- 1 Press the Power supply button of the operation unit.**  
The power supply button is lit. Then, the task menu is displayed.
- 10 Click on the [Data Backup/Restore] button in the task menu.**



The [Backup/Restore] dialog is displayed.



**2 Click on the [Data Backup] tab.**



**11 Select a drive of the data backup destination from the drive selection combo box.**

**12 Select the type of the data to be backed up in the [Data Type] combo box.**

All: The entire user data is backed up.

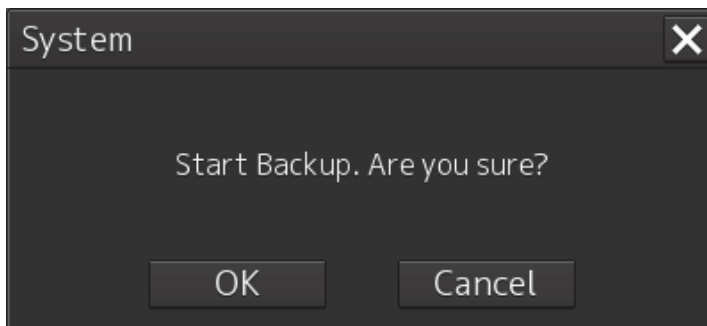
Except Charts: The user data excluding chart data is backed up.

**Note**

When All is selected and there are many charts, backup operation may take a long time.

**13 Click on the [Start] button.**

A confirmation dialog is displayed.



**14 Click on the [OK] button.**

Copying of data to the backup destination that is selected in the drive selection combo box starts.

**Note**

Do not perform any other operations until backup is completed. Otherwise, backup may fail.

## 9.9.2 Restoring backed up data

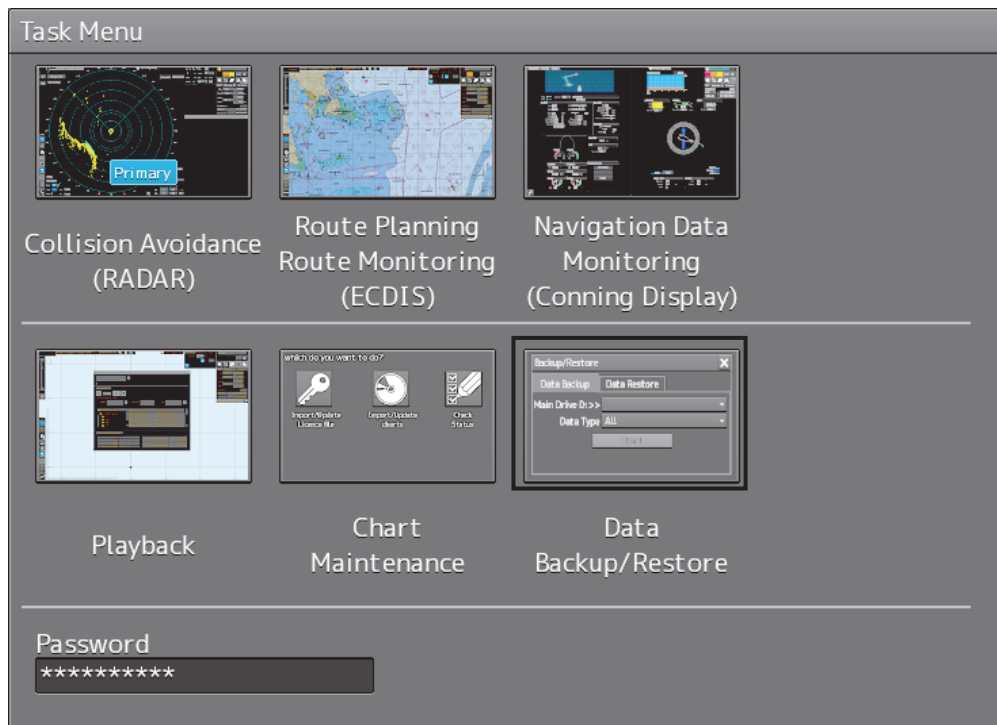
Use the following procedure to restore backed up data into this equipment.

Connect the external medium (USB memory, etc.) in which backup data has been saved.

**1 Press the power supply button of the operation unit.**

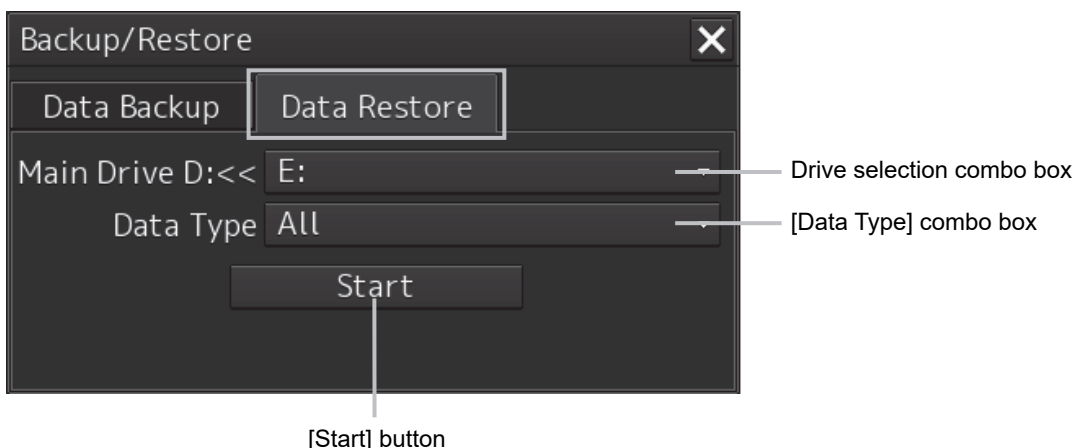
The power supply button is lit. Then the task menu is displayed.

**15 Click on the [Data Backup/Restore] button in the task menu.**



The [Backup/Restore] dialog is displayed.

**16 Click on the [Data Restore] tab.**



**17 Select the drive in which backup data has been saved from the drive selection combo box.**

**18 Select the type of the data to be restored in the [Data Type] combo box.**

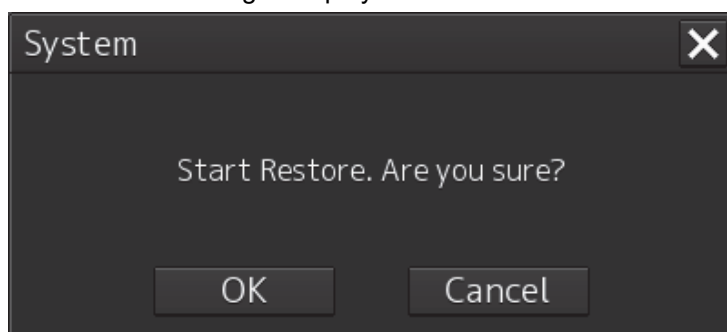
All: The entire user data is restored.

Except Charts: The user data excluding chart data is restored.

---

**19 Click on the [Start] button.**

A confirmation dialog is displayed.



**20 Click on the [OK] button.**

Restoration of data from the drive that was selected from the drive selection combo box to the hard disk of this equipment starts.

If data already exists in the hard disk, an overwriting confirmation dialog is displayed.

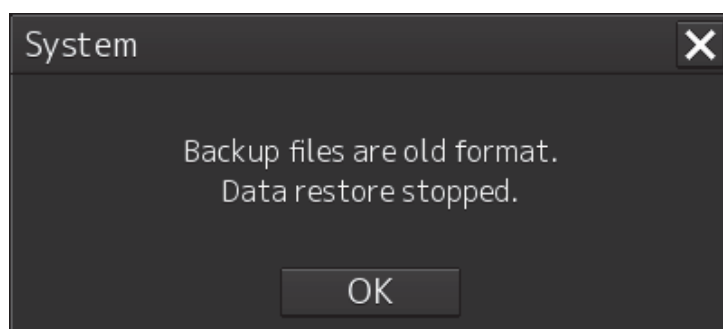
Click on the [OK] button to start the restoration.

**Note**

- Do not perform any operation until restoration is completed. If some operation is performed, restoration may fail.
- If backup is executed while enough free space is not available in the USB memory, the "Error" message is displayed. Secure free space before executing backup. For the size of the data to be backed up, check the "Usage" column in the "File Information" list in "8.3.2 Managing storage". (For instance, when the AVCS chart for the entire world is installed, the size will be about 11GB.)




**Memo**

If the data to be restored is incompatible with this equipment, the following dialog is displayed and data is not restored.



Cancel the task by clicking on the [OK] button.

# 9.10 Recovery of the Images in the C Drive

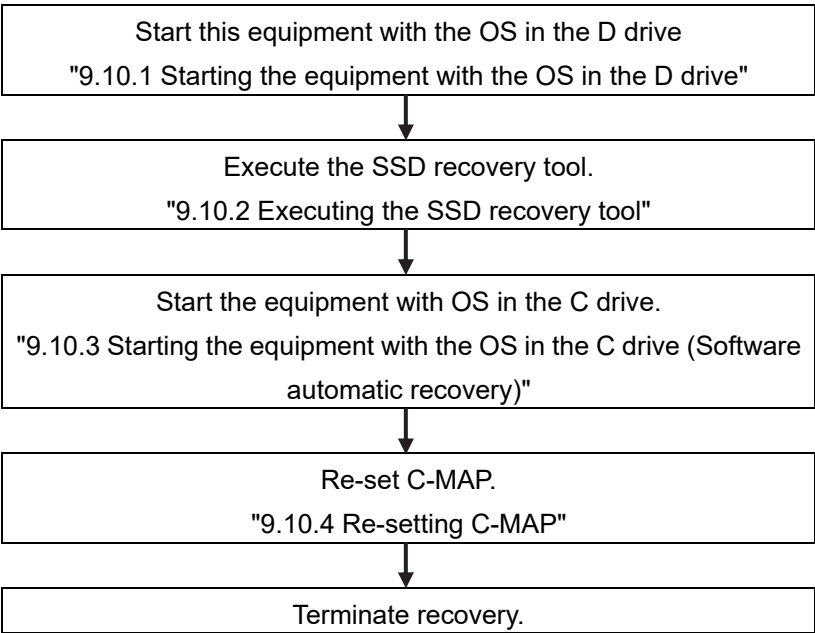
 <b>CAUTION</b>	
	The backup power supply (DC power supply, etc.) of the equipment must be connected when recovery of the C drive image is performed. If the power supply stops during recovery, an equipment activation fault occurs, causing an accident.
	Do not turn off the power supply during recovery of the C drive image. Otherwise, equipment malfunction occurs, possibly causing an accident.

The operating system (OS) of this equipment runs on the C drive.  
The contents of the C drive including the images are stored in the D drive.  
When the OS operation on the C drive becomes unstable, the images in the C drive can be written back from the D drive.

**Note**

When the images in the C drive are written back, the information relating to C-MAP is cleared. After writing back of images, re-register the database and licence of C-MAP and perform update as required. (Required when the equipment has the ECDIS function or chart radar function available as an option.)

The flow of writing back of images in the C drive is as follows.



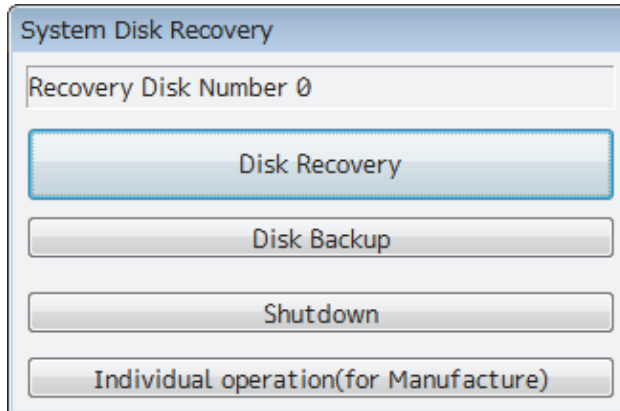
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## 9.10.1 Starting the equipment with the OS in the D drive

Start this equipment with OS in the D drive by using the following procedure.

- 1 Turn on the power supply of this equipment while pressing the [SILENCE] key and the [ZOOM OUT] key of the trackball operation unit simultaneously.

When the equipment starts, the following screen is displayed.



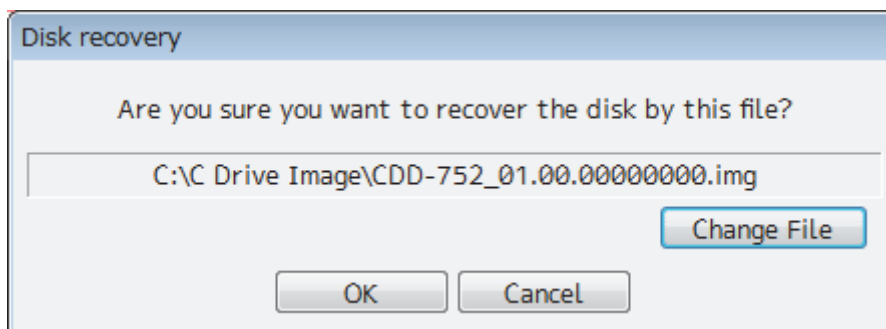
The SSD recovery tool can be executed in this state.

## 9.10.2 Executing the SSD recovery tool

Write back the images in the C drive by executing the SSD recovery tool.

- 1 Click on the [Disk Recovery] button on the screen that is displayed at activation from the D drive.

The following screen is displayed.



- 2 Select an image file to be written back to the C drive.

Normally, proceed with the next step with the image file that is currently displayed.

To specify a different image file, select a required image file from the list that is displayed by clicking on the [Change File] button.

**Note**

Since the equipment is started from the D drive, the usual C drive is displayed as the D drive and the usual D drive is displayed as C drive. Therefore, note this point when selecting an image file.

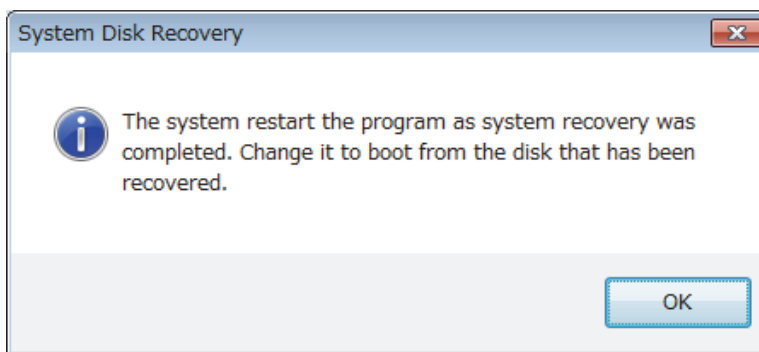
**3 Click on the [OK] button.**

Image file write-back operation starts.

**Note**

Do not perform any operation until write-back operation is completed. If any operation is performed, the image write-back operation may fail.

At termination of recovery, the following screen is displayed.



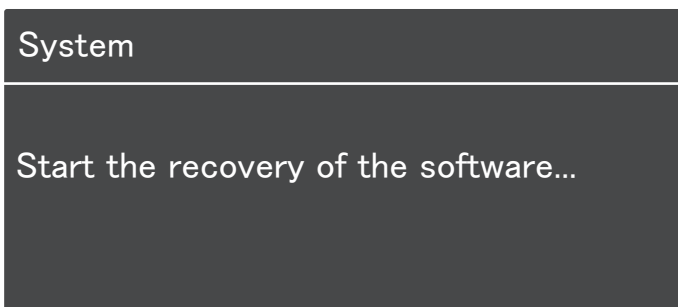
### 9.10.3 Starting the equipment with the OS in the C drive (Software automatic recovery)

Start this equipment with the OS that is written back to the C drive.

**1 Click on the [OK] button on the screen that is displayed at termination of write-back operation.**

The equipment starts from the C drive and, at the same time, the applications and various OS settings on the C drive are recovered automatically.

When recovery starts, the following screen is displayed for several seconds.



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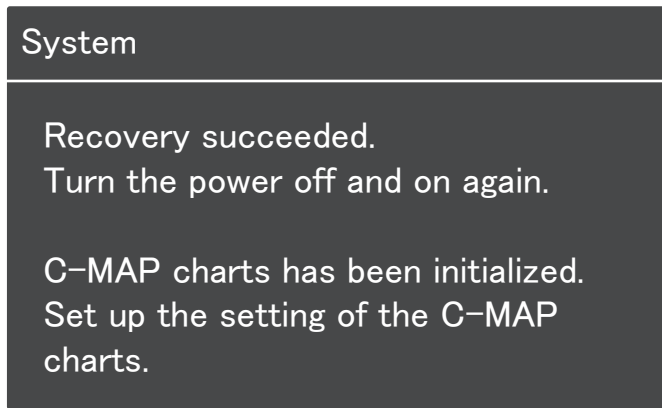
---

**Note**

This equipment restarts during the recovery operation. Do not perform any other operations until the recovery is completed.

Otherwise, recovery may fail, possibly causing an accident.

After completion of recovery, the following screen is displayed.



- 2** Turn off the power supply of this equipment by pressing the power button of the operation unit.

## 9.10.4 Re-setting C-MAP

Re-set the settings of C-MAP by restarting this equipment.

Re-register the database and the licence.

Update as required.

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# Section 10 Failures and After-Sale Services

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## 10.1 Failure Detection

Semiconductor circuits can be considered to be almost free from defective semiconductors and/or performance deterioration except when there are design and inspection errors, or external and human induced causes. Generally, the causes of comparably frequent failures include line disconnection due to humidity of the high resistor, failure of the variable resistor as well as contact failures of switches and relays.

In addition to faulty parts, faulty adjustments (especially faulty tuning) or faulty maintenance (especially faulty cable contact) occasionally make up causes of failures; thus, it is effective to reinspect or readjust these items.

### 10.1.1 About alerts

Failures can be detected from alerts.

For details on alerts, please refer to "Appendix B, Alert List."

### 10.1.2 Alert description

For a description of alerts to be displayed, please refer to "Appendix B, Alert List."

### 10.1.3 Fuse inspection

Because there is a specific cause for any fuse meltdown, it is necessary to check the related circuits even if there is no abnormality after changing a fuse. However, please give consideration that the fuse meltdown characteristics vary significantly. The following table shows a list of the fuses used in this unit.

List of Fuses Used

Fuse Name	Name of Model Used	Placement Location	Count	Part Spec.	Change Kit Model Name
Blade fuse (Auto fuse)	NBD-913	Power supply unit	2	32VDC 15A part	1015(5ZFCK00008)
Blade (mini) fuse (Auto fuse)	NQE-1143	JB	1	32VDC 15A part	1215(5ZFCK00017)
Blade (mini) fuse (Auto fuse)			2	32VDC 3A part	1203(5ZFCK00016)
Glass fuse			4	250V 0.5A part	MF51NR 250V 0.5(5ZFGD00019)



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## 10.2 Countermeasures for Failures

### 10.2.1 Repair circuit block

Repair Circuit Block (JAN-9202)

Location	Circuit Block Name	Model Name	Remarks
Display unit	Display unit	NWZ-208	
Display unit	FAN kit for changing the 26inch MNU	7ZYNA4005	
Display unit	Display unit	NWZ-233	
Trackball operation unit	Trackball unit	CCK-1060	
Trackball operation unit	Operation circuit A	CCK-1050	
Trackball operation unit	Operation circuit SW	CCK-1069	
Trackball operation unit	Operation circuit CN	CCK-1070	
Trackball operation unit	Interior of the Trackball operation unit	CMD-1103	
Keyboard operation unit	Operation circuit B	CCK-1059	
Keyboard operation unit	Keyboard unit	CCK-1061	
Keyboard operation unit	Interior of the Keyboard operation unit	CMD-1106	
Power supply unit	Power supply unit	NBD-913	
Power supply unit	FAN kit for changing the PSU	7ZYNA4007	
Central control unit	CCU repair kit	NZC-1590/A	
Central control unit	SSD 256GB	CDD-753	
Central control unit	FAN kit for changing the CCU	7ZYNA4006	

Repair Circuit Block (JAN-7202)

Location	Circuit Block Name	Model Name	Remarks
Display unit	Display unit	NWZ-207	
Display unit	FAN kit for changing the 19inch MNU	7ZYNA4004	For NWZ-207
Display unit	Display unit	NWZ-214	
Display unit	FAN kit for changing the 19inch MNU	7BFRD0008	For NWZ-214
Trackball operation unit	Trackball unit	CCK-1060	
Trackball operation unit	Operation circuit A	CCK-1050	
Trackball operation unit	Operation circuit SW	CCK-1069	
Trackball operation unit	Operation circuit CN	CCK-1070	
Trackball operation unit	Interior of the Trackball operation unit	CMD-1103	
Keyboard operation unit	Operation circuit B	CCK-1059	
Keyboard operation unit	Keyboard unit	CCK-1061	
Keyboard operation unit	Interior of the Keyboard operation unit	CMD-1106	
Power supply unit	Power supply unit	NBD-913	
Power supply unit	FAN kit for changing the PSU	7ZYNA4007	
Central control unit	CCU repair kit	NZC-1590/A	
Central control unit	SSD 256GB	CDD-753	
Central control unit	FAN kit for changing the CCU	7ZYNA4006	

## 10.3 Troubleshooting

When this equipment does not operate correctly, check the following points before asking for repairs. Consult with your nearest subsidiary company, branch office, or sales office if the problem does not get solved even after checking and correcting these points, or if there are any abnormally locations other than the following items.

Symptom	Cause	Action
The power is not supplied. Alternatively, the equipment does not start even if the Power button of the operation unit is pressed.	The AC or DC power supply is not connected.	Connect the AC or DC power supply.
	The breaker at the front of the power supply unit (NBD-913) is not set to ON.	Set the breaker to ON by pushing up the lever of the breaker.
	The AC or DC power supply is not input within the specified voltage range.	Connect the AC or DC power supply within the specified voltage range.
	The internal wiring is faulty.	Make a request to the distributor for repair.
	The power supply unit (NBD-913) is faulty.	Make a request to the distributor for repair.
	The central control unit (NDC-1590/A) is faulty.	Make a request to the distributor for repair.
	The operation unit (NCE-5605) is faulty.	Make a request to the distributor for repair.
The power is not supplied to the monitor.	The display unit is not activated.	Activate the display unit.
	The internal wiring is faulty.	Make a request to the distributor for repair.
	Display unit (NWZ-208/ NWZ-233/ NWZ-207/NWZ-214) is faulty.	Make a request to the distributor for repair.
Although the power is supplied to the monitor, the screen is not displayed.	The brightness of the monitor is set to the minimum level.	Adjust the brightness of the monitor to the appropriate level.
	The internal wiring is faulty.	Make a request to the distributor for repair.
	Display unit (NWZ-208/ NWZ-233/ NWZ-207/NWZ-214) is faulty.	Make a request to the distributor for repair.
The brightness of the monitor cannot be adjusted.	Display unit (NWZ-208/ NWZ-233/ NWZ-207/NWZ-214) is faulty.	Make a request to the distributor for repair.
The trackball or the option keyboard cannot be operated.	The internal wiring is faulty.	Make a request to the distributor for repair.
	The display unit (NCE-5605/NCE5625) is faulty.	Make a request to the distributor for repair.
The trackball does not move smoothly.	The trackball is dirty.	Clean the trackball.

Symptom	Cause	Action
Although the power is supplied and the screen is displayed, the display is frozen, disabling processing to advance up to display of the task menu.	The central control unit (NDC-1590/A) is abnormal.	Make a request to the distributor for repair.
Some task menus cannot be selected.	The device license has not been installed.	Install the license of the device to be used.
The cursor is not displayed correctly.	The central control unit (NDC-1590/A) is faulty.	Make a request to the distributor for repair.
Characters/symbols are not displayed correctly.	The central control unit (NDC-1590/A) is faulty.	Make a request to the distributor for repair.
Position information (GPS) is not displayed.	The communication is not set correctly.	Set the communication correctly.
	The power supply for the GPS equipment is not turned on.	Turn on the power supply for the GPS equipment.
	The GPS equipment does not perform positioning.	Check the state of the GPS equipment.
	The connection with the GPS equipment is abnormal.	Check the connection with the GPS equipment. When GPS equipment is connected to the serial LAN interface circuit, check if the LED of the corresponding port is lit at data reception.
	The power supply for the serial-LAN interface circuit (CMH-2370) is not turned on. (Case where the GPS equipment is connected to the serial-LAN interface circuit)	Turn on the power supply for the serial-LAN interface circuit.
	The serial-LAN interface circuit (CMH-2370) is faulty. (Case where the GPS equipment is connected to the serial-LAN interface circuit)	Make a request to the distributor for repair.
	The internal wiring is faulty.	Make a request to the distributor for repair.
The azimuth of the Gyro compass is not displayed. Alternatively, the azimuth rotation direction is not displayed correctly.	The communication is not set correctly.	Set the communication correctly.
	The power supply for the Gyro compass equipment is not turned on.	Turn on the power supply for the Gyro compass equipment.

Symptom	Cause	Action
The azimuth of the Gyro compass is not displayed. Alternatively, the azimuth rotation direction is not displayed correctly.	The connection with the Gyro compass equipment is abnormal.	Check the connection with the Gyro compass equipment. When gyro compass equipment is connected to the serial LAN interface circuit or gyro interface circuit, check if the corresponding LED is lit at signal reception.
	The power supply for the serial-LAN interface circuit (CMH-2370) is not turned on. (Case where the Gyro compass equipment is connected to the serial-LAN interface circuit)	Turn on the power supply for the serial-LAN interface circuit.
	The serial-LAN interface circuit (CMH-2370) is faulty. (Case where the Gyro compass equipment is connected to the serial-LAN interface circuit)	Make a request to the distributor for repair.
	The Gyro interface circuit(CMJ-554) is not set correctly (Case where the Gyro compass equipment is connected to the Gyro interface circuit)	Set the Gyro interface circuit correctly according to the Gyro compass equipment.
	The Gyro interface circuit (CMJ-554) is faulty. (Case where the Gyro compass equipment is connected to the Gyro interface circuit)	Make a request to the distributor for repair.
	The fuse of the Gyro interface circuit (CMJ-554) is blown out.	Replace the fuse of the Gyro interface circuit.
	The internal wiring is faulty.	Make a request to the distributor for repair.
	The central control unit (NDC-1590/A) is faulty.	Make a request to the distributor for repair.
Log is not displayed or the values are not displayed correctly.	The communication is not set correctly.	Set the communication correctly.
	The power supply for the log equipment is not turned on.	Turn on the power supply for the log equipment.
	The connection with the log equipment is abnormal.	Check the connection with the log equipment. When log equipment is connected to the serial LAN interface circuit or gyro interface circuit, check if the corresponding LED blinks at signal reception.

Symptom	Cause	Action
Log is not displayed or the values are not displayed correctly.	The power supply for the serial-LAN interface circuit (CMH-2370) is not turned on. (Case where the log equipment is connected to the serial-LAN interface circuit).	Turn on the power supply for the serial-LAN interface circuit.
	The serial-LAN interface circuit (CMH-2370) is faulty. (Case where the log equipment is connected to the serial-LAN interface circuit).	Make a request to the distributor for repair.
	The Gyro interface circuit (CMJ-554) is not set correctly. (Case where the log equipment is connected to the Gyro interface circuit).	Set the Gyro interface circuit correctly according to the log equipment.
	The Gyro interface circuit (CMJ-554) is faulty. (Case where the log equipment is connected to the Gyro interface circuit).	Make a request to the distributor for repair.
	The internal wiring is faulty.	Make a request to the distributor for repair.
	The central control unit (NDC-1590/A) is faulty.	Make a request to the distributor for repair.
Rudder angles are not displayed. Alternatively, the values are not displayed correctly.	The communication is not set correctly.	Set the communication correctly.
	The power supply for the rudder angle indicator is not turned on.	Turn on the power supply for the rudder angle indicator.
	The connection with the rudder angle indicator is abnormal.	Check the connection with the rudder angle indicator. When a rudder angle indicator is connected to the serial LAN interface circuit, check if the LED of the corresponding port is lit at data reception.
	The power supply for the serial-LAN interface circuit (CMH-2370) is not turned on. (Case where the rudder angle indicator is connected to the serial-LAN interface circuit or the rudder angle indicator is connected to the analog option circuit)	Turn on the power supply for the serial-LAN interface circuit.

Symptom	Cause	Action
Rudder angles are not displayed. Alternatively, the values are not displayed correctly.	The serial-LAN interface circuit (CMH-2370) is faulty. (Case where the rudder angle indicator is connected to the serial-LAN interface circuit or the rudder angle indicator is connected to the analog option circuit)	Make a request to the distributor for repair.
	The analog option circuit (CMJ-560) is not set correctly. (Case where the rudder angle indicator is connected to the analog option circuit)	Set the analog option circuit correctly according to the rudder angle indicator.
	The analog option circuit (CMJ-560) is faulty. (Case where the rudder angle indicator is connected to the analog option circuit)	Make a request to the distributor for repair.
	The internal wiring is faulty.	Make a request to the distributor for repair.
	The central control unit (NDC-1590/A) is faulty.	Make a request to the distributor for repair.
Wind direction/wind speed (anemoscope/anemometer) data is not displayed.	The communication is not set correctly.	Set the communication correctly.
	The power supply for the anemoscope/anemometer is not turned on.	Turn on the power supply for the anemoscope/anemometer.
	The connection with the anemoscope/anemometer is abnormal.	Check the connection with the anemoscope/anemometer. Check if the LED of the corresponding port of the serial LAN interface circuit is lit at data reception.
	The power supply for the serial-LAN interface circuit (CMH-2370) is not turned on.	Turn on the power supply for the serial-LAN interface circuit.
	The serial-LAN interface circuit (CMH-2370) is faulty.	Make a request to the distributor for repair.
	The internal wiring is faulty.	Make a request to the distributor for repair.
	The central control unit (NDC-1590/A) is faulty.	Make a request to the distributor for repair.
Water depth values are not displayed.	The communication is not set correctly.	Set the communication correctly.
	The power supply for the echo sounder is not turned on.	Turn on the power supply for the echo sounder.

Symptom	Cause	Action
Water depth values are not displayed.	The connection with the echo sounder is abnormal.	Check the connection with the echo sounder. Check if the LED of the corresponding port of the serial LAN interface circuit is lit at data reception.
	The power supply for the serial-LAN interface circuit (CMH-2370) is not turned on.	Turn on the power supply for the serial-LAN interface circuit.
	The serial-LAN interface circuit (CMH-2370) is faulty.	Make a request to the distributor for repair.
	The internal wiring is faulty.	Make a request to the distributor for repair.
	The central control unit (NDC-1590/A) is faulty.	Make a request to the distributor for repair.
Sensor signals are not displayed.	The communication is not set correctly.	Set the communication correctly.
	The power supply for the sensor equipment is not turned on.	Turn on the power supply for the sensor equipment.
	The connection with the sensor equipment is faulty.	Check the connection with the sensor equipment. Check if the LED of the corresponding port of the serial LAN interface circuit is lit at data reception.
	The power supply for the serial-LAN interface circuit (CMH-2370) is not turned on.	Turn on the power supply for the serial-LAN interface circuit.
	The internal wiring is faulty.	Make a request to the distributor for repair.
	The display unit such as the serial-LAN interface circuit (CMH-2370), analog option circuit (CMJ-560), and central control unit (NDC-1590/A) is faulty.	Make a request to the distributor for repair.



Symptom	Cause	Action
Contact signals are not output.	The power supply for the serial-LAN interface circuit (CMH-2370) is not turned on. (Case where contact signal output is acquired from the serial-LAN interface circuit)	Turn on the power supply for the serial-LAN interface circuit.
	The serial-LAN interface circuit (CMH-2370) is faulty. (Case where contact signal output is acquired from the serial-LAN interface circuit)	Make a request to the distributor for repair.
	The internal wiring is faulty.	Make a request to the distributor for repair.
	The central control unit (NDC-1590/A) is faulty.	Make a request to the distributor for repair.
UPS does not operation.	The connection with UPS is faulty.	Check the connection with UPS.
	UPS is not set correctly.	Set UPS correctly.
	The UPS battery is extremely depleted.	Replace the battery.  <b>[Note]</b> At the battery replacement, make a request for the work to the specialized service staff. During the replacement, turn off the corresponding power supply breaker in the ship. Otherwise, an unexpected accident may occur.
	The internal wiring is faulty.	Make a request to the distributor for repair.
	UPS is faulty.	Make a request to the distributor for repair.
The following popup window is displayed. System has detected an error. Turn the power off and on again.	A communication error occurred.	Close the popup window and after checking that there is no problem even if the power of this equipment is turned off, turn off the power and turn on again.
The following popup window is displayed.  Network failure has been detected. This system is operating under restricted mode. Contact JRC or JRC service agent. To restart this system, click the OK button at safe waters.	A network failure occurred.	Make a request to the distributor for repair.  And restart this system at safe waters.

Symptom	Cause	Action
<p>The following popup window is displayed.</p> <p>Main LAN is disabled. This system is operating with Sub LAN only. Contact JRC or JRC service agent. After recovering by service engineer, click the bellow button.</p>	<p>A network failure occurred on the main LAN.</p>	<p>Make a request to the distributor for repair.</p>
<p>The following popup window is displayed.</p> <p>Sub LAN is disabled. This system is operating with Main LAN only. Contact JRC or JRC service agent. After recovering by service engineer, click the bellow button.</p>	<p>A network failure occurred on the sub LAN.</p>	<p>Make a request to the distributor for repair.</p>
<p>The following popup window is displayed.</p> <p>Main/Sub LAN is disabled. This system is operating with serial in CCU only. Contact JRC or JRC service agent. After recovering by service engineer, click the bellow button.</p>	<p>A network failure occurred on the main LAN and sub LAN.</p>	<p>Make a request to the distributor for repair.</p>

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## 10.4 After-Sale Services

### 10.4.1 About the retaining period of service parts

The retaining period of the performance-critical parts for servicing this product (parts required to maintain the functionality of the product) is 10 years after the discontinuation of production.

### 10.4.2 When requesting a repair

If you suspect a failure, please read "10.3 Troubleshooting" thoroughly first and check the unit again. If you still detect abnormality, stop using the product and contact your sales representative, our sales department, nearest branch office or sales office.

- **Repair during the warranty period:** If a failure occurs in the course of using the product correctly according to the explanations and instructions in the Instruction Manual, your sales representative or our company shall repair the product at no charge. However, repairs of failures caused by misuse, negligence, or act of God such as natural disasters and fire shall be chargeable.
- **If the warranty period has expired:** If functionality can be recovered by repair, repair shall be made by the request of the customer for a fee.
- **Please provide the following information:**
  - Product name, model name, manufacturing date, serial number
  - Description of abnormality (as detail as possible) (Please refer to the next page "Radar Failure Checklist.")
  - Business name or organization name, address, phone number

### 10.4.3 Recommendation of inspection and maintenance

Although it depends on the usage state, performance may deteriorate by change in parts over time, Separately from regular care, inspection and maintenance are recommended.

Regarding inspection and maintenance, please contact your sales representative, our sales department, nearest branch office or sales office.

Please note that there is a charge for inspection and maintenance.

**If you have questions regarding after-sale services, please inquire your sales representative, our sales department, nearest branch office or sales office.**

### Conning Display Failure Checklist

[Important] Before ordering a repair, please check and fill in the following items and then contact the applicable repair office.

If there are unknown items, please contact the ship and fill in as accurate as possible.

Ship Name: \_\_\_\_\_ Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

Integrated Radar Model Name: JMR- \_\_\_\_\_ Serial Number: \_\_\_\_\_

(Please fill in all digits accurately.)

(1) Check the following items sequentially and circle either YES or NO for each item.

If none is applicable, please write down the specific reason in No. (7) Others.

No.	Check Item	Result	
(1)	The power turns ON. (The light of the operation unit illuminates.)	YES	NO
(2)	The starting screen is displayed.	YES	NO
(3)	The task screen is displayed.	YES	NO
(4)	The Conning Display screen is displayed.	YES	NO
(5)	Operation using the trackball or keyboard is possible.	YES	NO
(6)	The various sensors are displayed normally.	YES	NO
(7)	Others (error messages, etc.)		

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## 10.4.4 Extending the functions

The functions that are available for this equipment can be extended as an optional extra.

To extend a function, new license information (file) must be obtained and imported to this equipment.

For function extension, please request to our Sales Department or our branch office, sales office, or agent near your premises.

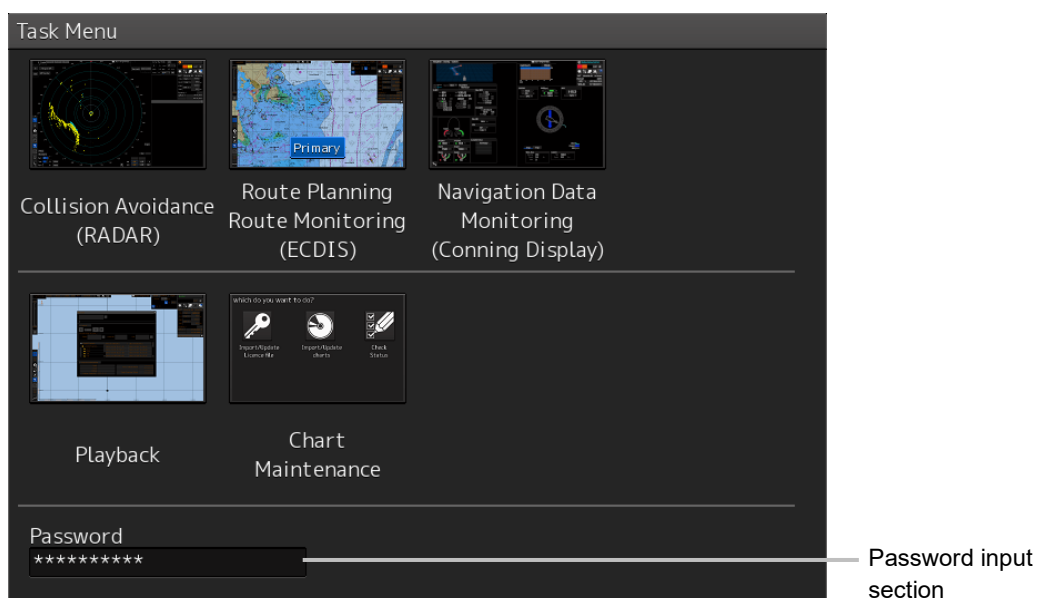
### 10.4.4.1 Importing License information

Import the license information that was obtained (license file) to this equipment via the USB memory.

Connect the USB memory in which the license information is stored.

#### 1 Press the Power button of the operation unit.

The Power button is lit. After a while, a task menu is displayed.

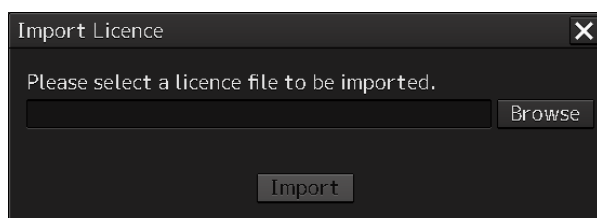


#### 2 Click on the password input section.

A password input dialog is displayed.

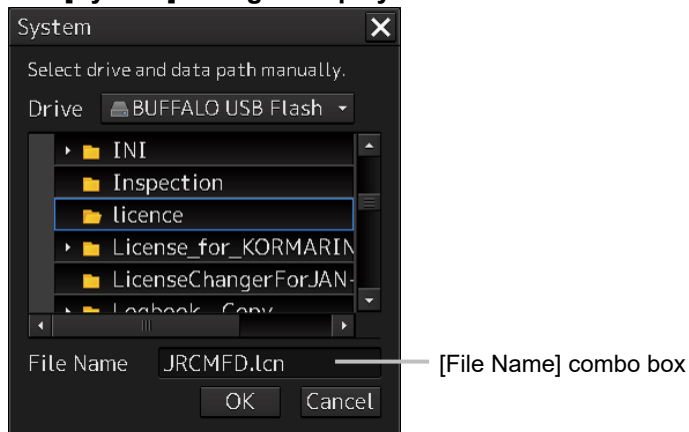
#### 3 Enter the password, 9380.

The [Import License] dialog is displayed.



- 4 Click on the [Browse] button.

The [System] dialog is displayed.



- 5 Select the name of the license file (example: JRCMFD.lcn) that is stored in the USB flash memory from the [File Name] combo box and click on the [OK] button.

The [System] dialog is closed.

- 6 Click on the [Import] button.

When import is completed, a confirmation dialog is displayed.

Close the dialog by clicking on the [OK] button.

- 7 Close the [Import License] dialog by clicking on the [x] button and return to the task menu.

In this case, a new license is adopted.



# Section 11 About Disposal

## 11.1 About Disposal of This Unit

When disposing of this equipment, follow the regulations and/or rules of the local regulatory authority which has control over the location of disposal.

## 11.2 Chinese Version RoHS

有毒有害物质或元素的名称及含量  
(Names & Content of toxic and hazardous substances or elements)

形式名 (Type): JAN-9202, JAN-7202 Series

名称 (Name): Conning Display

部件名称 (Part name)	有毒有害物质或元素 (Toxic and Hazardous Substances and Elements)					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr6+)	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
主船内装置 (Inboard Unit) · 显示装置 (Display Unit) · 键盘装置 (OperationUnit) · 信号处理装置 (Central Control Unit)	×	×	○	×	○	○
外部设备 (Peripherals) · 选择 (Options) · 电线类 (Cables) · 手册 (Documents)	×	×	○	×	○	○
○：表示该有毒有害物质在该部件所有均质材料中的含量均在SJ/T11306-2006 标准规定的限量要求以下。 (Indicates that this toxic, or hazardous substance contained in all of the homogeneous materials for this part is below the requirement in SJ/T11363-2006.)						
×：表示该有毒有害物质至少在该部件的某一均质材料中的含量超出SJ/T11363-2006 标准规定的限量要求。 (Indicates that this toxic or hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement in SJ/T 11363-2006.)						





# Section 12 Specifications

## 12.1 JAN-9202

GENERAL SPECIFICATION	JAN-9202
Display	26/27inch Wide LCD
Operation	Cursor and keys
External media	General purpose USB port × 1
Ambient Condition - Operating Temperature	-15°C to 55°C
Ambient Condition - Relative Humidity	+40°C, 93%
Ambient Condition - Vibration	2 to 13.2Hz: Amplitude ±1mm ±10% 13.2 to 100Hz: Acceleration 7m/s <sup>2</sup>
Power Supply Input	100 to 115VAC, 50/60Hz 1φ 220 to 240VAC, 50/60Hz 1φ 24VDC
Power Consumption	Approx. 240VA typical (DC:72W at AC power outage)
Power Supply Voltage Fluctuation	AC input ±10% DC input +30%, -10%
Central Control Unit	
Central Control Unit	NDC-1590/A
Power Supply Unit	NBD-913
Trackball Operation Unit	NCE-5605
Display	
Display	NWZ-208/NWZ-233
Option Unit	
Keyboard Operation Unit	NCE-5625
Operation unit desktop frame rack	CWB-1596
Large tray	CWB-1593
Junction Box	NQE-1143
Sensor LAN Switch Unit	NQA-2443/A
26/27inch DESKTOP FRAME RACK	CWB-1595/CWB-1660
26/27inch DISPLAY UNIT MOUNT KIT	CWA-246
DSC	NCT-82 (32 CH)/NCT-83 (64CH)
SAFE DISTANCE FOR STANDARD COMPASS	
Display unit	2.4m(2.6m when installed in the optional 26inch Display Unit Mount Kit)

## 12.2 JAN-7202

GENERAL SPECIFICATION	JAN-7202
Display	19inch LCD
Operation	Cursor and keys
External media	General purpose USB port × 1
Ambient Condition	
- Operating Temperature	-15°C to 55°C
Ambient Condition	
- Relative Humidity	+40°C, 93%
Ambient Condition	
- Vibration	2 to 13.2Hz: Amplitude ±1mm ±10% 13.2 to 100Hz: Acceleration 7m/s <sup>2</sup>
Power Supply Input	100 to 115VAC, 50/60Hz 1φ 220 to 240VAC, 50/60Hz 1φ 24VDC
Power Consumption	Approx. 200VA typical (DC:72W at AC power outage)
Power Supply Voltage Fluctuation	AC input ±10% DC input +30%, -10%
Central Control Unit	
Central Control Unit	NDC-1590/A
Power Supply Unit	NBD-913
Trackball Operation Unit	NCE-5605
Display	
Display	NWZ-207/NWZ-214
Option	
Keyboard Operation Unit	NCE-5625
OPERATION UNIT DESKTOP FRAME RACK	CWB-1596
Large tray	CWB-1593
Junction Box	NQE-1143
Sensor LAN Switch Unit	NQA-2443/A
19inch DESKTOP FRAME RACK	CWB-1594/CWB1659
19inch DISPLAY UNIT MOUNT KIT	CWA-245
DSC	NCT-82 (32 CH)/NCT-83 (64CH)
SAFE DISTANCE FOR STANDARD COMPASS	
Display unit	2.4m

## 12.3 Display Unit

FUNCTIONAL SPECIFICATION	
View	
Display mode	Sail mode/Docking mode/Custom mode
Wind direction and speed display mode	H UP/N UP
Trend graph	Water depth/Rudder angle/Heading/Heading + Rudder angle/Engine (propeller) revolution
Display data	
Heading	
Ship position	
Geodetic positioning system	
Time	
COG/SOG	
STW	
ROT	
Water depth	
Wind direction/wind speed	
Current direction and speed	Calculated from own ship's COG/SOG
Engine (propeller) revolution	Max. 2 units
Engine telegraph	Max. 2 units
Rudder angle	Max. 2 units
Side thruster	Max. 5 units (Bow: 3 units, Stern: 2 units)
Azimuth thruster	Max. 2 units
Route information	
Autopilot information	
Air temperature	
Water temperature	
Atmospheric pressure	
Humidity	
Other functions	
Self-diagnosis function	Present
Remote maintenance function	Present
Upgrading to multi-function display	Possible

Receivable signals (i)	
Ship heading	THS > HDT (over 40Hz)
Course	GGA > RMC > RMA > GNS > GLL
Geodetic positioning system	DTM
Date information	ZDA
COG/SOG	RMC > RMA > VTG
Ship speed through water	VBW
Turning speed	ROT
Water depth	DPT > DBS > DBK > DBT
Wind direction/wind speed	MWV > MWD
Engine (propeller) revolution	Serial: RPM(Response), PRC(Order) Analog: XDR
Engine telegraph	ETL
Rudder angle	Serial: RSA(Response), ROR(Order) Analog: XDR
Side thruster	Serial: TRD(Response), TRC(Order) Analog: XDR
Azimuth thruster	TRD(Response), TRC(Order)
Route information	ECDIS information notification (PJRC, EIF00/PJRC, EIS00/WPL)
Auto pilot information	ECDIS information notification (PJRC, EIF00)
Air temperature	MTA > MDA
Water temperature	MTW > MDA
Atmospheric pressure	MMB > MDA
Humidity	MHU > MDA
Alert	ACK, ALR, ACN, ALF, HBT
Transmittable signals	
Watch Timer Reset	EVE
Remote maintenance data	JRC format
Alert	ACK, ALR, ACN, ALC, ALF, ARC, HBT
Visual range	
Visual range	1.00m from the center of display(NWZ-208/207/214) 1.07m from the center of display(NWZ-233)

- i. The measuring precision of the speed sensor complies with IMO Resolution MSC.96(72).  
The measuring precision of the GPS sensor complies with IMO Resolution MSC.112(73).

## 12.4 Central Control Unit

GENERAL SPECIFICATION	NDC-1590/A: Central Control Unit
CPU	Intel Core i5 2515E 2.5GHz (NDC-1590) / CPU Intel Core i3 6100E 2.7GHz (NDC-1590A)
Main Memory	2GB (DDR3, NDC-1590) / 4GB (DDR4, NDC-1590A)
JRC ASIC	Yes
<b>Mechanical</b>	
Dimension	Width 400 x Depth 240 x Height 125 (mm)
Mass	5.6kg
FAN	1
<b>Environment</b>	
Operational Temperature	-15°C to +55°C
Operational Humidity	40°C RH 93%
Vibration	Sweep 2Hz to 13.2Hz at ± 1mm, 13.2Hz to 100Hz at 7m/s <sup>2</sup> and for 2h on each resonance, otherwise 2h at 30Hz in all three axes
EMC	IEC60945-Ed4.0
Ingress Protection Rating	IP20
<b>Interfaces</b>	
DVI-D	1
VGA	1 (Slave output with same resolution as DVI-D)
IEC61162-450	3 (IEEE802.3/IEEE802.3ab Compliance (100BASE-TX/1000BASE-T))
IEC61162-1	2 input (GPS and LOG)
IEC61162-2	2 input (AIS and THD (Transmitting Heading Devices))
LAN	3 (up to 1GBase-T)
Dry Contact Output	2 (Power Fail and Watch Timer Reset )
Normally Close	Power Fail (32V 0.8A MAX)
Normally Open	Watch Timer Reset (32V 0.8A MAX)
Operation Unit	1 (5m max)
Ext Operation Unit	1 (up to 30m)
USB I/F	3 (1 for MNU, Others are general purpose)
RADAR I/F	1 input for scanner unit, 1 output for other equipment
Power	Connecting with NBD-913

## 12.5 Power Supply Unit

GENERAL SPECIFICATION	NBD-913: Power Supply Unit
<b>AC Input</b>	
Voltage	100 to 115VAC, 50/60Hz 1φ 220 to 240VAC, 50/60Hz 1φ
Voltage Range	85 to 264VAC
Overvoltage Protection	295VAC±2V
Input Current	Max 6.8A(100VAC) / 3.4A(220VAC)
Over current Protection	YES
<b>DC Input</b>	
Voltage	24VDC
Voltage Range	21.6 to 31.2VDC
Overvoltage Protection	42V
Input Current	Max 16A
Over current Protection	YES
<b>Rated Output</b>	
Output 1	12.0V±0.24V 2A
Output 2A (for CCU)	24.0V±0.48V 4A
Output 2B (for MNU)	24.0V±0.48V 6A
Output 3 (for TXRX)	48.0V±0.96V 4A
<b>Mechanical</b>	
Dimension	Width 400 x Depth 240 x Height 85 (mm)
Mass	4.2kg
FAN	2
<b>Environment</b>	
Operational Temperature	-15°C to +55°C
Operational Humidity	40°C RH 93%
Vibration	Sweep 2Hz to 13.2Hz at ± 1mm, 13.2Hz to 100Hz at 7m/s <sup>2</sup> and for 2h on each resonance, otherwise 2h at 30Hz in all three axes
EMC	IEC60945-Ed4.0
Ingress Protection Rating	IP20

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## 12.6 Trackball Operation Unit

GENERAL SPECIFICATION	NCE-5605: Trackball Operation Unit
Pointing Device	2inch Trackball
Click Button	2-buttons (Left and Right)
USB I/F	1
Speaker	1
Keys	SILENCE/ALERT ACK/ZOOM IN/ZOOM OUT
Knob	Multi Function Knob
Cable Length	Up to 5m (Up to 30m when the extended option is used.)
<b>Mechanical</b>	
Dimension	Width 130 x Depth 210 x Height 77 (mm)
Mass	1.3kg
<b>Environment</b>	
Operational Temperature	-15°C to +55°C
Operational Humidity	40°C RH 93%
Vibration	Sweep 2Hz to 13.2Hz at $\pm 1\text{mm}$ , 13.2Hz to 100Hz at $7\text{m/s}^2$ and for 2h on each resonance, otherwise 2h at 30Hz in all three axes
EMC	IEC60945-Ed4.0
Ingress Protection Rating	Front : IP22



## 12.7 19inch Display (NWZ-207)

GENERAL SPECIFICATION	NWZ-207: Display
Screen Size	19inch
Aspect Ratio	5:4
Full Resolution	1280 × 1024
Supported format	1280 × 1024, 1280 × 960, 1024 × 768, 800 × 600, 640 × 480, 720 × 400
Dot Pitch	0.294mm
Viewing Area	376.32mm × 301.06mm
Display Colors	1.677 billion colors
Contrast Ratio	2000:1
Viewing Angles (H / V)	178°/178°
Back Light	LED
Brightness	500cd/m2 Type
Digital Scanning Frequency (H / V)	Horizon 30kHz to 80kHz Vertical 56Hz to 75Hz
DVI-D input	1
VGA input	1
VGA output	N/A
USB I/F	1
Power	21.6 to 31.2VDC
Overvoltage Protection	N/A
DC Reverse Connection Protection	Self Return Type
Cables	Up to 5m
Glass Bonding	Standard
<b>Mechanical</b>	
Dimension	Width 429 x Depth 76 x Height 382 (mm)
Mass	6.0kg
Fan	1
Glass	Tempered Glass + AR Coating
<b>Environment</b>	
Operational Temperature	-15°C to +55°C
Operational Humidity	40°C RH 93%
Vibration	Sweep 2Hz to 13.2Hz at ± 1mm, 13.2Hz to 100Hz at 7m/s2 and for 2h on each resonance, otherwise 2h at 30Hz in all three axes
EMS	IEC60945-Ed4.0
Ingress Protection Rating	Front:IP65 Back:IP22

## 12.8 19inch Display (NWZ-214)

GENERAL SPECIFICATION	NWZ-214 : Display
Screen Size	19inch
Aspect Ratio	5:4
Full Resolution	1280 × 1024
Supported format	1280 × 1024, 1280 × 960, 1024 × 768, 800 × 600, 640 × 480, 720 × 400
Dot Pitch	0.294 mm
Viewing Area	376.32 mm × 301.06 mm
Display Colors	16.77 million colors
Contrast Ratio	2000:1
Viewing Angles (H / V)	178°/ 178°
Back Light	LED
Brightness	1000cd/m <sup>2</sup> Type
Digital Scanning Frequency (H / V)	Horizon 30 kHz to 80 kHz Vertical 56 Hz to 75 Hz
DVI-D input	1
VGA input	1
VGA output	N/A
USB I/F	N/A
Power	21.6 to 31.2VDC
Overvoltage Protection	N/A
DC Reverse Connection Protection	Self Return Type
Cables	Up to 5m
Glass Bonding	Standard
<b>Mechanical</b>	
Dimension	Width 429 × Depth 76 × Height 382 (mm)
Mass	4.6kg
Fan	1
Glass	Tempered Glass + AR Coating
<b>Environment</b>	
Operational Temperature	-15°C to +55°C
Operational Humidity	40°C RH 93%
Vibration	Sweep 2Hz to 13.2Hz at ± 1mm, 13.2Hz to 100Hz at 7m/s <sup>2</sup> and for 2h on each resonance, otherwise 2h at 30 Hz in all three axes
EMC	IEC60945-Ed4.0
Ingress Protection Rating	Front:IP65 Back:IP22

## 12.9 26inch Display

GENERAL SPECIFICATION	NWZ-208: Display
Screen Size	26inch
Aspect Ratio	16:10
Full Resolution	1920 × 1200RB
Supported format	1920 × 1200RB, 1680 × 1050, 1680 × 1050RB, 1600 × 1200, 1600 × 1200RB, 1280 × 1024, 1024 × 768, 800 × 600, 640 × 480
Dot Pitch	0.2865mm
Viewing Area	550.08mm × 343.8mm
Display Colors	1.677 billion colors
Contrast Ratio	1500:1
Viewing Angles (H / V)	176°/176°
Back Light	LED
Brightness	400cd/m <sup>2</sup> Type
Digital Scanning Frequency (H / V)	Horizon 30kHz to 75kHz Vertical 56Hz to 75Hz
DVI-D input	1
VGA input	1
VGA output	1
USB I/F	1
Power	21.6 to 31.2VDC 85 to 265VAC 50/60Hz
Overvoltage Protection	N/A
DC Reverse Connection Protection	Self-Return Type
Cables	Up to 5m
Glass Bonding	Optional
<b>Mechanical</b>	
Dimension	Width 624 x Depth 85 x Height 456 (mm)
Mass	16kg
Fan	2
Glass	Tempered Glass + AR Coating
<b>Environment</b>	
Operational Temperature	-15°C to +55°C
Operational Humidity	40°C RH 93%
Vibration	Sweep 2Hz to 13.2Hz at ± 1mm, 13.2Hz to 100Hz at 7m/s <sup>2</sup> and for 2h on each resonance, otherwise 2h at 30Hz in all three axes
EMC	IEC60945-Ed4.0
Ingress Protection Rating	Front: IP65 Back: IP22

## 12.10 27inch Display

GENERAL SPECIFICATION	NWZ-233: Display
Screen Size	27inch
Aspect Ratio	16:9
Full Resolution	1920 × 1080
Supported format	1920x1200,1920x1080,1680x1050,1600x1200,1280x1024,1280x960,1024x768,800x600,720x400,640x480
Dot Pitch	0.311mm
Viewing Area	597.6mm × 336.2 mm
Display Colors	16.77 million colors
Contrast Ratio	3000:1
Viewing Angles (H / V)	178° / 178°
Back Light	LED
Brightness	350cd/m <sup>2</sup> Type
Digital Scanning Frequency (H / V)	Horizontal 31kHz to 76kHz Vertical 59Hz to 61Hz
DVI-D input	1
VGA input	1
DP input	1
USB I/F	1
Power	21.6 to 31.2VDC 85 to 265VAC 50/60Hz
Overvoltage Protection	N/A
DC Reverse Connection Protection	Reverse current protection with FET control
Cables	Up to 5m
Glass Bonding	Optional
<b>Mechanical</b>	
Dimension	Width 656 × Depth 62.5 × Height 454 (mm)
Mass	8.6kg
Fan	N/A
Glass	Tempered Glass + AR/AF Coating
<b>Environment</b>	
Operational Temperature	-15°C to +55°C
Operational Humidity	40°C RH 93%
Vibration	Sweep 2Hz to 13.2Hz at ± 1mm, 13.2Hz to 100Hz at 7m/s <sup>2</sup> and for 2h on each resonance, otherwise 2h at 30Hz in all three axes
EMC	IEC60945-Ed4.0
Ingress Protection Rating	Front: IP65 Back: IP22

## 12.11 Keyboard OPU

GENERAL SPECIFICATION	NCE-5625: Keyboard Operation Unit
PC Keyboard	
Layout	QWERTY
Pitch	15mm
Stroke	2mm
Dedicated Keys	
Keys	HOME, TX/STBY, PI, DISP OFF, AZ, PANEL, DAY/NIGHT, MOB, USER1, USER2
Knobs	EBL, VRM, SEA, RAIN, GAIN
Mechanical	
Dimension	Width 270 x Depth 210 x Height 30 (mm)
Mass	0.8kg
Environment	
Operational Temperature	-15°C to +55°C
Operational Humidity	40°C RH 93%
Vibration	Sweep 2Hz to 13.2Hz at ± 1mm, 13.2Hz to 100Hz at 7m/s <sup>2</sup> and for 2h on each resonance, otherwise 2h at 30Hz in all three axes
EMC	IEC60945-Ed4.0
Ingress Protection Rating	Front : IP22

## 12.12 26/27inch Display Unit Mount Kit

GENERAL SPECIFICATION	CWA-246: 26inch Display Unit Mount Kit
Mechanical	
Dimension	Width 680 x Depth 718 x Height 1100 (mm)
Mass	APPROX. 65kg
Environment	
Operational Temperature	-15°C to +55°C
Operational Humidity	40°C RH 93%
Vibration	Sweep 2Hz to 13.2Hz at ± 1mm, 13.2Hz to 100Hz at 7m/s <sup>2</sup> and for 2h on each resonance, otherwise 2h at 30Hz in all three axes
EMC	IEC60945-Ed4.0
Ingress Protection Rating	Front : IP22

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## 12.13 19inch DISPLAY UNIT MOUNT KIT

GENERAL SPECIFICATION	CWA-245: 19inch DISPLAY UNIT MOUNT KIT
Structure	
Dimension	Width 580 × Depth 718 × Height 1100 (mm)
Mass	Approx. 55kg
Environment	
Operational Temperature	-15°C to +55°C
Operational Humidity	40°C RH 93%
Vibration	Sweep 2Hz to 13.2Hz at ± 1mm, 13.2Hz to 100Hz at 7m/s <sup>2</sup> and for 2h on each resonance, otherwise 2h at 30Hz in all three axes
EMC	IEC60945-Ed4.0
Ingress Protection Rating	Front: IP22

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## 12.14 Sensor LAN switch unit

<b>GENERAL SPECIFICATION</b>		<b>NQA-2443: Sensor LAN switch unit</b>
<b>Technology</b>		
Standards		IEEE802.3, 802.3u, 802.3x
Processing type		Store and Forward, with IEEE802.3 full duplex, back pressure flow control
Forward and Filtering Rate		148810 pps
Latency		Less than 5us
<b>Interface</b>		
Number of ports		16
RJ45		10/100Base-T(X) auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection
LED		Power, Fault, Speed
<b>Power</b>		
Input Voltage		12 to 48 VDC
Input Current		0.34A max
Over Current Protection		1.6A
Reverse Polarity Protection		Yes
<b>Mechanical</b>		
Dimension		Width 75.0 x Depth 105 x Height 179 (mm)
Mass		1.5kg
<b>Environment</b>		
Operational Temperature		-15°C to +55°C
Operational Humidity		40°C RH 93%
Vibration		Sweep 2Hz to 13.2Hz at $\pm 1$ mm, 13.2Hz to 100Hz at 7m/s <sup>2</sup> and for 2h on each resonance, otherwise 2h at 30Hz in all three axes
EMC		IEC60945-Ed4.0

<b>GENERAL SPECIFICATION</b>		<b>NQA-2443A: Sensor LAN switch unit</b>
<b>Technology</b>		
Standards	IEEE802.3, 802.3u, 802.3x, 802.3ab	
Processing type	Store and Forward, with IEEE802.3 full duplex,	
Maximum throughput	14880 pps / port (10Mbps, 64byte pkt, uni-cast)	
	148810 pps / port (100Mbps, 64byte pkt, uni-cast)	
	1488100 pps / port (1000Mbps, 64byte pkt, uni-cast)	
*Wire speed : 100%		
<b>Interface</b>		
Number of ports	16	
RJ45	10/100/1000BASE-T(X) auto negotiation speed, F/H duplex mode, and auto MDI/MDI-X connection	
LED	PWR, UVP/OVP, RVP, LOOP, LINK/ACT	
<b>Power</b>		
Input Voltage	18 to 36 VDC	
Maximum Power Consumption	13.2 W and under	
Reverse Polarity Protection	Yes	
<b>Mechanical</b>		
Dimension	Width 75.0 x Depth 105 x Height 179 (mm)	
Mass	0.8kg	
<b>Environment</b>		
Operational Temperature	-25°C to +70°C	
Operational Humidity	40°C RH 93%	
Vibration	Sweep 2 Hz to 13.2 Hz at ± 1 mm, 13.2 Hz to 100 Hz at 7m/s <sup>2</sup>	
	and for 2h on each resonance, otherwise 2h at 30 Hz in all three axes	
EMC	IEC60945-Ed4.0	



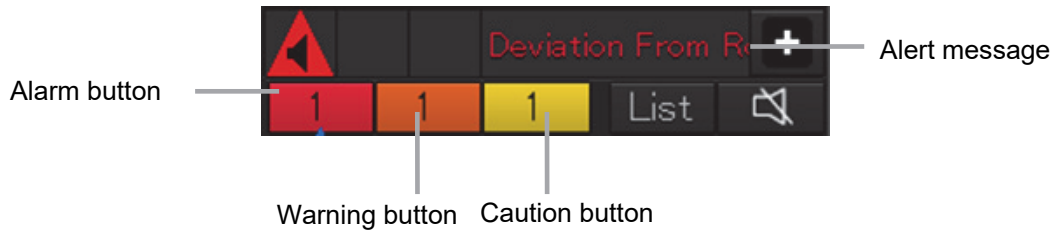
## 12.15 Junction Box

<b>GENERAL SPECIFICATION</b>		<b>NQE-1143: Junction Box</b>
<b>Mechanical</b>		
Dimension	Width 400 x Depth 86 x Height 261.5 (mm)	
Mass	3.8kg	
<b>Environment</b>		
Operational Temperature	-15°C to +55°C	
Operational Humidity	40°C RH 93%	
Vibration	Sweep 2Hz to 13.2Hz at ± 1mm, 13.2Hz to 100Hz at 7m/s <sup>2</sup> and for 2h on each resonance, otherwise 2h at 30Hz in all three axes	
EMC	IEC60945-Ed4.0	
Ingress Protection Rating	Front : IP20	
<b>Power</b>		
Power	21.6 to 31.2 VDC	
Input Voltage	48W MAX	
Power Consumption	3A × 2, 15A × 1 Mini Blade Fuse	
Over Current Protection	Yes	
<b>FUNCTIONAL SPECIFICATION</b>		<b>CMH-2370: Serial LAN Interface Circuit</b>
<b>Interface</b>		
IEC61162-1	8 input / 8 output	
IEC61162-2	2 input / 2 output	
IEC61162-450	1 (100Base-TX)	
Dry Contact Output (N.C/N.O selectable)	8 (32V, 0.8A sink MAX)	
Dry Contact Input	8 (5V, 50mA source MAX)	
Ingress Protection Rating	Front : IP20	
<b>FUNCTIONAL SPECIFICATION</b>		<b>CMJ-554: Gyro Interface Circuit</b>
<b>GYRO</b>		
STEP	22 to 70 VDC	
SYNC	24 to 115VAC, 50/60/400Hz	
RATIO	36×/90×/180×/360×	
OUTPUT	THS (50Hz)	
<b>LOG</b>		
PULSE	Dry contact: 30V(max), 50mA(max) Voltage signal: 0-50V (threshold level is 2V)	
RATIO	100/200/400/800 [P/NM]	
OUTPUT	VBW (1Hz), VLW (0.1Hz)	
<b>FUNCTIONAL SPECIFICATION</b>		<b>CMJ-556: Analog Option Circuit</b>
<b>Interface</b>		
Isolated Input	4	
Input Signal Range	-10 to 10 VDC or 4 to 20 mA	

# Appendix A Alert and Maintenance INFO and Permanent information

## A.1 Alert

When an alert occurs, alert information is displayed in the alert notification area.



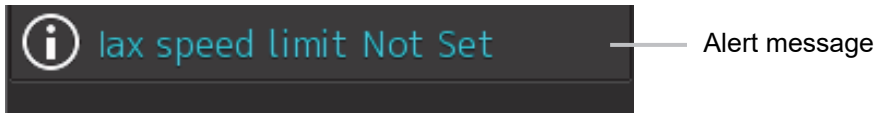
Alert notification area when there is no AMS license

The numbers displayed in the buttons indicate the number of such alerts that have occurred.

### Memo

The alert button of a category that has not occurred will not be displayed.

APP A



Alert notification area when there is an AMS license

The display colors of alert messages are defined as follows according to the type and seriousness of alerts.

Alert Type	Alert Class (Seriousness)	Display Color	Alert Display Status	Alert Sound
Alarms (An alert indicating a state asking sailors to pay immediate attention and take immediate action.)	Alarms	Red	Before alarm acknowledgement: Blinking After alarm acknowledgement: Lighting	3 short audible signals (repetitive)
Warnings (An alert indicating that the state has changed, which although not immediately dangerous, but may become so in the near future if no action is taken. Warnings are alerts displayed for preventing possible future hazardous states.)	Warnings	Orange	Before warning acknowledgement: Blinking After warning acknowledgement: Lighting	2 short audible signals (repetitive)

Alert Type	Alert Class (Seriousness)	Display Color	Alert Display Status	Alert Sound
Cautions (Although these are neither alarms nor warnings, these alerts indicate that it is necessary to pay more than normal attention to cautions, statuses, or to the supplied information.)	Cautions	Yellow	Lighting	No sound
No Alarm	-	Green	-	-

The list of alerts is shown below.

Types of alert categories is shown below.

Category A: Alert about grounding, collision

Category B: All alerts except category A

## A.1.1 Priority: Alarms

There are no alarms on the conning display.

## A.1.2 Priority: Warnings

Cause	Conditions to raise	Conditions to rectify	Detail	Category	Required standard
AC Power Failure	The AC input voltage is 75V or less	The AC input voltage is more than 75V	The AC input voltage is 75V or less	B	-
System Failure	CCU or PSU or OPU or GIF or RIF Abnormal is occurred (Check Maintenance info for details of the cause).	CCU and PSU and OPU and GIF and RIF Abnormal are repaired.	-	B	IEC 61174

## A.1.3 Priority: Cautions

Cause	Conditions to raise	Conditions to rectify	Detail	Category	Required standard
DC Power Failure	The DC input voltage is 18V or less	The DC input voltage is more than 18V	The DC input voltage is 18V or less	B	-

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## A.1.4 List of Alert escalation

There are unacknowledged alert that escalates as follows.

### - Warning to Warning

An unacknowledged warning will be generated repeatedly until it is acknowledged.

The Alerts to escalation are as shown below.

Cause	Escalation	Time	Explanation
All warning	Warning to Warning	60s (Default)	An unacknowledged warning will be generated repeatedly until it is acknowledged.

## A.1.5 List of Alerts with responsibility-transferred state

The responsibility-transferred state is a state for priority reduction. When the equipment managing the alert in the system requests a transfer of responsibility of alert, the requested equipment changes state of the alert to responsibility transferred.

Alerts in responsibility transferred state will not be displayed on the active alert list. Whether to display of the responsibility have been transferred alerts on the active alert list can be switched to ON or OFF in the setting. Refer to 6.4 Setting up Alert Processing.

**APP A**

These alerts with responsibility transferred states are as shown below.















Cause	Priority	Category
AC Power Failure	Warning	B
System Failure	Warning	B

## A.1.6 List of Aggregated Alerts

There are no Aggregated Alerts on the conning display.

## A.1.7 List of Alert Icons

The alert icons displayed in the alert status area are listed below.

No.	Name of alert icon	Functional outline	Alert icon
1	Active – unacknowledged alarm	A flashing red triangle. A symbol of loudspeaker in the middle of the triangle.	
2	Active – silenced alarm	A flashing red triangle. A symbol as in icon number 1 with a prominent diagonal line above it.	
3	Active – acknowledged alarm	A red triangle. An exclamation mark in the middle of the triangle.	
4	Active - responsibility transferred alarm	A red triangle. An arrow pointing towards the right in the middle of the triangle.	
5	Rectified – unacknowledged alarm	A flashing red triangle. A tick mark in the middle of the triangle.	
6	Active - unacknowledged warning	A flashing yellowish orange circle. A symbol of loudspeaker in the middle of the circle.	
7	Active – silenced warning	A flashing yellowish orange circle. A symbol as in icon number 6 with a prominent diagonal line above it.	
8	Active – acknowledged warning	A yellowish orange circle. An exclamation mark in the middle of the circle.	
9	Active - responsibility transferred warning	A yellowish orange circle. An arrow pointing towards the right in the middle of the circle.	
10	Rectified – unacknowledged warning	A flashing yellowish orange circle. A tick mark in the middle of the circle.	
11	Caution	A yellow square. An exclamation mark in the middle of the square.	
a	Aggregation	A plus sign. To be presented together with icons number 1 to 11	
b	Acknowledge not allowed for alarm	A red triangle with a cross in the middle of triangle. To be presented together with icons number 1, 2 and 5.	
c	Acknowledge not allowed for warning	A yellowish orange circle with a cross in the middle of circle. To be presented together with icons number 6, 7 and 10.	

## A.2 Maintenance INFO

The list of Maintenance INFO message is shown below.

Message	Explanation	Advice
Air Pressure(invalid)	There is a format error or a status error of the data.	Check the sensor condition.
Air Pressure(not plausible)	There is a range error of the data.	Check the sensor condition.
Air Pressure(unavailable)	The data cannot be received.	Check the condition of the sensor and the communication path.
Air TEMP(invalid)	There is a format error or a status error of the data.	Check the sensor condition.
Air TEMP(not plausible)	There is a range error of the data.	Check the sensor condition.
Air TEMP(unavailable)	The data cannot be received.	Check the condition of the sensor and the communication path.
AIS(Communication failed, Direct)	Communication with AIS cannot be performed via Serial.	Check the condition of AIS and Serial. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
AIS(Communication failed, Main LAN)	Communication with AIS cannot be performed via Main LAN.	Check the condition of AIS and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
AIS(Communication failed, Sub LAN)	Communication with AIS cannot be performed via Sub LAN.	Check the condition of AIS and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
ALC1(Communication failed, Main LAN)	Communication with ALC1 cannot be performed via Main LAN.	Check the condition of ALC1 and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.

**APP A**

Message	Explanation	Advice
ALC1(Communication failed, Sub LAN)	Communication with ALC1 cannot be performed via Sub LAN.	Check the condition of ALC1 and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
ALC2(Communication failed, Main LAN)	Communication with ALC2 cannot be performed via Main LAN.	Check the condition of ALC2 and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
ALC2(Communication failed, Sub LAN)	Communication with ALC2 cannot be performed via Sub LAN.	Check the condition of ALC2 and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
ALC3(Communication failed, Main LAN)	Communication with ALC3 cannot be performed via Main LAN.	Check the condition of ALC3 and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
ALC3(Communication failed, Sub LAN)	Communication with ALC3 cannot be performed via Sub LAN.	Check the condition of ALC3 and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
ALC4(Communication failed, Main LAN)	Communication with ALC4 cannot be performed via Main LAN.	Check the condition of ALC4 and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.

Message	Explanation	Advice
ALC4(Communication failed, Sub LAN)	Communication with ALC4 cannot be performed via Sub LAN.	Check the condition of ALC4 and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Anemometer(Communication failed, Main LAN)	Communication with Anemometer cannot be performed via Main LAN.	Check the condition of Anemometer and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Anemometer(Communication failed, Sub LAN)	Communication with Anemometer cannot be performed via Sub LAN.	Check the condition of Anemometer and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Autopilot malfunction	AP equipment error	Turn off the power of the device and request the distributor to repair.
Autopilot malfunction	AP equipment error	Turn off the power of the device and request the distributor to repair.
Autopilot(Communication Failed, Main LAN)	Communication with Autopilot cannot be performed via Main LAN.	Check the condition of Autopilot and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Autopilot(Communication Failed, Sub LAN)	Communication with Autopilot cannot be performed via Sub LAN.	Check the condition of Autopilot and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.



Message	Explanation	Advice
Autopilot(Invalid)	There is a format error or a status error of the Autopilot data.	Check the sensor condition. Switch to a sensor in good condition, if available.
Autopilot(Not Plausible)	There is a range error of Autopilot data.	Check the sensor condition. Switch to a sensor in good condition, if available.
Autopilot(Unavailable)	The Autopilot data cannot be received.	Check the condition of the sensor and the communication path. Switch to a sensor in good condition, if available.
Azimuth Thruster 1(invalid)	There is a format error or a status error of the data.	Check the sensor condition.
Azimuth Thruster 1(not plausible)	There is a range error of the data.	Check the sensor condition.
Azimuth Thruster 1(unavailable)	The data cannot be received.	Check the condition of the sensor and the communication path.
Azimuth Thruster 2(invalid)	There is a format error or a status error of the data.	Check the sensor condition.
Azimuth Thruster 2(not plausible)	There is a range error of the data.	Check the sensor condition.
Azimuth Thruster 2(unavailable)	The data cannot be received.	Check the condition of the sensor and the communication path.
Azimuth Thruster 3(invalid)	There is a format error or a status error of the data.	Check the sensor condition.
Azimuth Thruster 3(not plausible)	There is a range error of the data.	Check the sensor condition.
Azimuth Thruster 3(unavailable)	The data cannot be received.	Check the condition of the sensor and the communication path.
Azimuth Thruster 4(invalid)	There is a format error or a status error of the data.	Check the sensor condition.
Azimuth Thruster 4(not plausible)	There is a range error of the data.	Check the sensor condition.
Azimuth Thruster 4(unavailable)	The data cannot be received.	Check the condition of the sensor and the communication path.
Azimuth Thruster 5(invalid)	There is a format error or a status error of the data.	Check the sensor condition.
Azimuth Thruster 5(not plausible)	There is a range error of the data.	Check the sensor condition.
Azimuth Thruster 5(unavailable)	The data cannot be received.	Check the condition of the sensor and the communication path.
Azimuth Thruster 6(invalid)	There is a format error or a status error of the data.	Check the sensor condition.

Message	Explanation	Advice
Azimuth Thruster 6(not plausible)	There is a range error of the data.	Check the sensor condition.
Azimuth Thruster 6(unavailable)	The data cannot be received.	Check the condition of the sensor and the communication path.
Blizzard(Process Error)	The control circuit in the radar antenna is abnormal.	Restart the power. If it cannot be recovered after three times of restart, turn off the device and contact the distributor.
Blizzard(SYNC Signal Lost)	ASIC for radar detected an error in an interrupt signal.	Restart the device.
Blizzard1 DSP1(Load Failed)	DSP cannot be started.	Restart the power. If it cannot be recovered after three times of restart, turn off the device and contact the distributor.
Blizzard1 DSP2(Load Failed)	DSP cannot be started.	Restart the power. If it cannot be recovered after three times of restart, turn off the device and contact the distributor.
Blizzard1 High TEMP	The temperature of Blizzard is too high.	Turn off the power of the device and restart after ten minutes. If it cannot be recovered, turn off the device and contact the distributor.
Blizzard1-DSP1(Communication error)	There is an error in communication with DSP.	Restart the power. If it cannot be recovered after three times of restart, turn off the device and contact the distributor.
Blizzard2 DSP1(Load Failed)	DSP cannot be started.	Restart the power. If it cannot be recovered after three times of restart, turn off the device and contact the distributor.
Blizzard2 High TEMP	The temperature of Blizzard is too high.	Turn off the power of the device and restart after ten minutes. If it cannot be recovered, turn off the device and contact the distributor.
Blizzard2-DSP1(Communication error)	There is an error in communication with DSP.	Restart the power. If it cannot be recovered after three times of restart, turn off the device and contact the distributor.

**APP A**

Message	Explanation	Advice
BNWAS(Communication failed, Main LAN)	Communication with BNWAS cannot be performed via Main LAN.	Check the condition of BNWAS and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
BNWAS(Communication failed, Sub LAN)	Communication with BNWAS cannot be performed via Sub LAN.	Check the condition of BNWAS and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Bow Azimuth Thruster 1(invalid)	There is a range error of the data.	Check the sensor condition.
Bow Azimuth Thruster 1(not plausible)	There is a range error of the data.	Check the sensor condition.
Bow Azimuth Thruster 1(unavailable)	The data cannot be received.	Check the condition of the sensor and the communication path.
Bow Azimuth Thruster 2(invalid)	There is a format error or a status error of the data.	Check the sensor condition.
Bow Azimuth Thruster 2(not plausible)	There is a range error of the data.	Check the sensor condition.
Bow Azimuth Thruster 2(unavailable)	The data cannot be received.	Check the condition of the sensor and the communication path.
Bow Thruster 1(invalid)	There is a format error or a status error of the data.	Check the sensor condition.
Bow Thruster 1(invalid)	There is a format error or a status error of the data.	Check the sensor condition.
Bow Thruster 1(not plausible)	There is a range error of the data.	Check the sensor condition.
Bow Thruster 1(not plausible)	There is a range error of the data.	Check the sensor condition.
Bow Thruster 1(unavailable)	The data cannot be received.	Check the condition of the sensor and the communication path.
Bow Thruster 1(unavailable)	The data cannot be received.	Check the condition of the sensor and the communication path.
Bow Thruster 2(invalid)	There is a format error or a status error of the data.	Check the sensor condition.

Message	Explanation	Advice
Bow Thruster 2(invalid)	There is a format error or a status error of the data.	Check the sensor condition.
Bow Thruster 2(not plausible)	There is a range error of the data.	Check the sensor condition.
Bow Thruster 2(not plausible)	There is a range error of the data.	Check the sensor condition.
Bow Thruster 2(unavailable)	The data cannot be received.	Check the condition of the sensor and the communication path.
Bow Thruster 2(unavailable)	The data cannot be received.	Check the condition of the sensor and the communication path.
Bow Thruster 3(invalid)	There is a format error or a status error of the data.	Check the sensor condition.
Bow Thruster 3(not plausible)	There is a range error of the data.	Check the sensor condition.
Bow Thruster 3(unavailable)	The data cannot be received.	Check the condition of the sensor and the communication path.
Bow Thruster 4(invalid)	There is a format error or a status error of the data.	Check the sensor condition.
Bow Thruster 4(not plausible)	There is a range error of the data.	Check the sensor condition.
Bow Thruster 4(unavailable)	The data cannot be received.	Check the condition of the sensor and the communication path.
Bow Thruster 5(invalid)	There is a format error or a status error of the data.	Check the sensor condition.
Bow Thruster 5(not plausible)	There is a range error of the data.	Check the sensor condition.
Bow Thruster 5(unavailable)	The data cannot be received.	Check the condition of the sensor and the communication path.
CCU Fan	The CCU unit fan revolution per minute has been decreased.	Request the distributor to repair.
CIF(Communication error)	There is an error in communication with Companion MPU.	Restart the power. If it cannot be recovered after three times of restart, turn off the device and contact the distributor.
CMP RelaySoftware(Communication error)	There is an error in communication with Companion MPU.	Restart the power. If it cannot be recovered after three times of restart, turn off the device and contact the distributor.

Message	Explanation	Advice
COG/SOG(Invalid)	There is a format error or a status error of the SOG/COG data.	Check the sensor condition. Switch to a sensor in good condition, if available.
COG/SOG(not plausible)	There is a range error of SOG/COG data.	Check the sensor condition. Switch to a sensor in good condition, if available.
COG/SOG(unavailable)	The SOG/COG data cannot be received.	Check the condition of the sensor and the communication path. Switch to a sensor in good condition, if available.
CPU Core1 Clock down	The CPU core has been underclocked.	Turn off the power of the device and restart after ten minutes. If it cannot be recovered, turn off the device and contact the distributor.
CPU Core1 High TEMP	The CPU core temperature is too high.	Turn off the power of the device and restart after ten minutes. If it cannot be recovered, turn off the device and contact the distributor.
CPU Core2 Clock down	The CPU core has been underclocked.	Turn off the power of the device and restart after ten minutes. If it cannot be recovered, turn off the device and contact the distributor.
CPU Core2 High TEMP	The CPU core temperature is too high.	Turn off the power of the device and restart after ten minutes. If it cannot be recovered, turn off the device and contact the distributor.
CPU Fan	The RPS fan revolution per minute has been decreased.	Request the distributor to repair.
CPU High TEMP	The CPU temperature is too high.	Turn off the power of the device and restart after ten minutes. If it cannot be recovered, turn off the device and contact the distributor.
Current(Communication failed, Main LAN)	Communication with tidal current meter cannot be performed via Main LAN.	Check the condition of tidal current meter and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.

Message	Explanation	Advice
Current(Communication failed, Sub LAN)	Communication with tidal current meter cannot be performed via Sub LAN.	Check the condition of tidal current meter and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Current(Invalid)	There is a format error or a status error of the Tidal Current data.	Check the sensor condition. Switch to a sensor in good condition, if available.
Current(Invalid)	There is a format error or a status error of the Tidal Current data.	Check the sensor condition.
Current(not plausible)	There is a range error of Tidal Current data.	Check the sensor condition. Switch to a sensor in good condition, if available.
Current(not plausible)	There is a range error of Tidal Current data.	Check the sensor condition.
Current(unavailable)	The Tidal Current data cannot be received.	Check the condition of the sensor and the communication path. Switch to a sensor in good condition, if available.
Current(unavailable)	The Tidal Current data cannot be received.	Check the condition of the sensor and the communication path.
DATUM(unavailable)	The DTM data cannot be received.	Check the condition of the sensor and the communication path. Switch to a sensor in good condition, if available.
Depth(Invalid)	There is a format error or a status error of the Depth data.	Check the sensor condition. Switch to a sensor in good condition, if available.
Depth(unavailable)	The Depth data cannot be received.	Check the condition of the sensor and the communication path. Switch to a sensor in good condition, if available.
Dongle Disable Mode	It is operating in dongle-disabled mode when the USB dongle is in failure.	Request the distributor to provide a USB dongle.
Draft(Invalid)	There is a format error or a status error of the data.	Check the sensor condition.
Draft(not plausible)	There is a range error of the data.	Check the sensor condition.

Message	Explanation	Advice
Draft(unavailable)	The data cannot be received.	Check the condition of the sensor and the communication path.
DSC(Communication failed, Main LAN)	Communication with DSC cannot be performed via Main LAN.	Check the condition of DSC and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
DSC(Communication failed, Sub LAN)	Communication with DSC cannot be performed via Sub LAN.	Check the condition of DSC and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
DSP(Heading Data)	There is an error in the heading data received by DSP.	Restart the power. If it cannot be recovered after three times of restart, turn off the device and contact the distributor.
Dual Axis SOG(invalid)	There is a format error or a status error of the data.	Check the sensor condition.
Dual Axis SOG(not plausible)	There is a range error of the data.	Check the sensor condition.
Dual Axis SOG(unavailable)	The data cannot be received.	Check the condition of the sensor and the communication path.
Echo Sounder 1(Communication failed, Direct)	Communication with Echo Sounder cannot be performed via Serial.	Check the condition of Echo Sounder and Serial. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Echo Sounder 1(Communication failed, Main LAN)	Communication with Echo Sounder cannot be performed via Main LAN.	Check the condition of Echo Sounder and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.

Message	Explanation	Advice
Echo Sounder 1(Communication failed, Sub LAN)	Communication with Echo Sounder cannot be performed via Sub LAN.	Check the condition of Echo Sounder and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Echo Sounder 2(Communication failed, Direct)	Communication with Echo Sounder cannot be performed via Serial.	Check the condition of Echo Sounder and Serial. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Echo Sounder 2(Communication failed, Main LAN)	Communication with Echo Sounder cannot be performed via Main LAN.	Check the condition of Echo Sounder and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Echo Sounder 2(Communication failed, Sub LAN)	Communication with Echo Sounder cannot be performed via Sub LAN.	Check the condition of Echo Sounder and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Echo Sounder(Communicatio n failed, Direct)	Communication with Echo Sounder cannot be performed via Serial.	Check the condition of Echo Sounder and Serial. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.



Message	Explanation	Advice
Echo Sounder(Communication failed, Main LAN)	Communication with Echo Sounder cannot be performed via Main LAN.	Check the condition of Echo Sounder and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Echo Sounder(Communication failed, Sub LAN)	Communication with Echo Sounder cannot be performed via Sub LAN.	Check the condition of Echo Sounder and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Engine Telegraph 1(invalid)	There is a format error or a status error of the data.	Check the sensor condition.
Engine Telegraph 1(not plausible)	There is a range error of the data.	Check the sensor condition.
Engine Telegraph 1(unavailable)	The data cannot be received.	Check the condition of the sensor and the communication path.
Engine Telegraph 2(invalid)	There is a format error or a status error of the data.	Check the sensor condition.
Engine Telegraph 2(not plausible)	There is a range error of the data.	Check the sensor condition.
Engine Telegraph 2(unavailable)	The data cannot be received.	Check the condition of the sensor and the communication path.
Engine/Propeller 1(invalid)	There is a format error or a status error of the data.	Check the sensor condition.
Engine/Propeller 1(not plausible)	There is a range error of the data.	Check the sensor condition.
Engine/Propeller 1(unavailable)	The data cannot be received.	Check the condition of the sensor and the communication path.
Engine/Propeller 2(invalid)	There is a format error or a status error of the data.	Check the sensor condition.
Engine/Propeller 2(not plausible)	There is a range error of the data.	Check the sensor condition.
Engine/Propeller 2(unavailable)	The data cannot be received.	Check the condition of the sensor and the communication path.

Message	Explanation	Advice
e-Token(Communication error)	There is an error in communication with e-Token.	Restart the device. If it cannot be recovered after three times of restart, turn off the device and contact the distributor.
General Equipment1(Communication Failed, Main LAN)	Communication with General Equipment1 cannot be performed via Main LAN.	Check the condition of General Equipment1 and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
General Equipment1(Communication Failed, Sub LAN)	Communication with General Equipment1 cannot be performed via Sub LAN.	Check the condition of General Equipment1 and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
General Equipment10(Communication Failed, Main LAN)	Communication with General Equipment10 cannot be performed via Main LAN.	Check the condition of General Equipment10 and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
General Equipment10(Communication Failed, Sub LAN)	Communication with General Equipment10 cannot be performed via Sub LAN.	Check the condition of General Equipment10 and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
General Equipment2(Communication Failed, Main LAN)	Communication with General Equipment2 cannot be performed via Main LAN.	Check the condition of General Equipment2 and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.

Message	Explanation	Advice
General Equipment2(Communication Failed, Sub LAN)	Communication with General Equipment2 cannot be performed via Sub LAN.	Check the condition of General Equipment2 and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
General Equipment3(Communication Failed, Main LAN)	Communication with General Equipment3 cannot be performed via Main LAN.	Check the condition of General Equipment3 and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
General Equipment3(Communication Failed, Sub LAN)	Communication with General Equipment3 cannot be performed via Sub LAN.	Check the condition of General Equipment3 and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
General Equipment4(Communication Failed, Main LAN)	Communication with General Equipment4 cannot be performed via Main LAN.	Check the condition of General Equipment4 and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
General Equipment4(Communication Failed, Sub LAN)	Communication with General Equipment4 cannot be performed via Sub LAN.	Check the condition of General Equipment4 and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.

Message	Explanation	Advice
General Equipment5(Communication Failed, Main LAN)	Communication with General Equipment5 cannot be performed via Main LAN.	Check the condition of General Equipment5 and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
General Equipment5(Communication Failed, Sub LAN)	Communication with General Equipment5 cannot be performed via Sub LAN.	Check the condition of General Equipment5 and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
General Equipment6(Communication Failed, Main LAN)	Communication with General Equipment6 cannot be performed via Main LAN.	Check the condition of General Equipment6 and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
General Equipment6(Communication Failed, Sub LAN)	Communication with General Equipment6 cannot be performed via Sub LAN.	Check the condition of General Equipment6 and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
General Equipment7(Communication Failed, Main LAN)	Communication with General Equipment7 cannot be performed via Main LAN.	Check the condition of General Equipment7 and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.

Message	Explanation	Advice
General Equipment7(Communication Failed, Sub LAN)	Communication with General Equipment7 cannot be performed via Sub LAN.	Check the condition of General Equipment7 and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
General Equipment8(Communication Failed, Main LAN)	Communication with General Equipment8 cannot be performed via Main LAN.	Check the condition of General Equipment8 and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
General Equipment8(Communication Failed, Sub LAN)	Communication with General Equipment8 cannot be performed via Sub LAN.	Check the condition of General Equipment8 and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
General Equipment9(Communication Failed, Main LAN)	Communication with General Equipment9 cannot be performed via Main LAN.	Check the condition of General Equipment9 and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
General Equipment9(Communication Failed, Sub LAN)	Communication with General Equipment9 cannot be performed via Sub LAN.	Check the condition of General Equipment9 and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Generator (invalid)	There is a format error or a status error of the data.	Check the sensor condition.
Generator (not plausible)	There is a range error of the data.	Check the sensor condition.

Message	Explanation	Advice
Generator (unavailable)	The data cannot be received.	Check the condition of the sensor and the communication path.
Generator 1(invalid)	There is a format error or a status error of the data.	Check the sensor condition.
Generator 1(not plausible)	There is a range error of the data.	Check the sensor condition.
Generator 1(unavailable)	The data cannot be received.	Check the condition of the sensor and the communication path.
Generator 2(invalid)	There is a format error or a status error of the data.	Check the sensor condition.
Generator 2(not plausible)	There is a range error of the data.	Check the sensor condition.
Generator 2(unavailable)	The data cannot be received.	Check the condition of the sensor and the communication path.
Generator 3(invalid)	There is a format error or a status error of the data.	Check the sensor condition.
Generator 3(not plausible)	There is a range error of the data.	Check the sensor condition.
Generator 3(unavailable)	The data cannot be received.	Check the condition of the sensor and the communication path.
Generator 4(invalid)	There is a format error or a status error of the data.	Check the sensor condition.
Generator 4(not plausible)	There is a range error of the data.	Check the sensor condition.
Generator 4(unavailable)	The data cannot be received.	Check the condition of the sensor and the communication path.
Generator 5(invalid)	There is a format error or a status error of the data.	Check the sensor condition.
Generator 5(not plausible)	There is a range error of the data.	Check the sensor condition.
Generator 5(unavailable)	The data cannot be received.	Check the condition of the sensor and the communication path.
GIF(Communication error)	There is a communication error with Gyro IF.	Restart the power. If it cannot be recovered after three times of restart, turn off the device and contact the distributor.
GIF-RIF(Open)	GIF-RIF open is detected.	Check the status of the cable (W81 in Junction Box:NQE-1143).
GIF-SLC(Open)	GIF-SLC open is detected.	Check the status of the cable (W82 in Junction Box:NQE-1143).

Message	Explanation	Advice
GPS 1(Communication Failed, Direct)	Communication with GPS 1 cannot be performed via Serial.	Check the condition of GPS 1 and Serial. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
GPS 1(Communication Failed, Main LAN)	Communication with GPS 1 cannot be performed via Main LAN.	Check the condition of GPS 1 and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
GPS 1(Communication Failed, Sub LAN)	Communication with GPS 1 cannot be performed via Sub LAN.	Check the condition of GPS 1 and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
GPS 2(Communication Failed, Direct)	Communication with GPS 2 cannot be performed via Serial.	Check the condition of GPS 2 and Serial. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
GPS 2(Communication Failed, Main LAN)	Communication with GPS 2 cannot be performed via Main LAN.	Check the condition of GPS 2 and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
GPS 2(Communication Failed, Sub LAN)	Communication with GPS 2 cannot be performed via Sub LAN.	Check the condition of GPS 2 and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.

Message	Explanation	Advice
GPS 3(Communication Failed, Direct)	Communication with GPS 3 cannot be performed via Serial.	Check the condition of GPS 3 and Serial. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
GPS 3(Communication Failed, Main LAN)	Communication with GPS 3 cannot be performed via Main LAN.	Check the condition of GPS 3 and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
GPS 3(Communication Failed, Sub LAN)	Communication with GPS 3 cannot be performed via Sub LAN.	Check the condition of GPS 3 and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
GPS 4(Communication Failed, Direct)	Communication with GPS 4 cannot be performed via Serial.	Check the condition of GPS 4 and Serial. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
GPS 4(Communication Failed, Main LAN)	Communication with GPS 4 cannot be performed via Main LAN.	Check the condition of GPS 4 and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
GPS 4(Communication Failed, Sub LAN)	Communication with GPS 4 cannot be performed via Sub LAN.	Check the condition of GPS 4 and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.



Message	Explanation	Advice
GPS Compass 1(Communication failed, Direct)	Communication with GPS Compass 1 cannot be performed via Serial.	Check the condition of GPS Compass 1 and Serial. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
GPS Compass 1(Communication failed, Main LAN)	Communication with GPS Compass 1 cannot be performed via Main LAN.	Check the condition of GPS Compass 1 and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
GPS Compass 1(Communication failed, Sub LAN)	Communication with GPS Compass 1 cannot be performed via Sub LAN.	Check the condition of GPS Compass 1 and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
GPS Compass 2(Communication failed, Direct)	Communication with GPS Compass 2 cannot be performed via Serial.	Check the condition of GPS Compass 2 and Serial. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
GPS Compass 2(Communication failed, Main LAN)	Communication with GPS Compass 2 cannot be performed via Main LAN.	Check the condition of GPS Compass 2 and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.

Message	Explanation	Advice
GPS Compass 2(Communication failed, Sub LAN)	Communication with GPS Compass 2 cannot be performed via Sub LAN.	Check the condition of GPS Compass 2 and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
GPS Selector(Communication Failed, Direct)	Communication with GPS Selector cannot be performed via Serial.	Check the condition of GPS Selector and Serial. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Gyro 1(Communication Failed, Direct)	Communication with Gyro 1 cannot be performed via Serial.	Check the condition of Gyro 1 and Serial. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Gyro 1(Communication Failed, GIF-Direct)	Communication with Gyro 1 cannot be performed via Serial.	Check the condition of Gyro 1, GIF and Serial. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Gyro 1(Communication Failed, GIF-Main LAN)	Communication with Gyro 1 cannot be performed via Main LAN.	Check the condition of Gyro 1, GIF and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Gyro 1(Communication Failed, GIF-Sub LAN)	Communication with Gyro 1 cannot be performed via Sub LAN.	Check the condition of Gyro 1, GIF and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.

Message	Explanation	Advice
Gyro 1(Communication Failed, Main LAN)	Communication with Gyro 1 cannot be performed via Main LAN.	Check the condition of Gyro 1 and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Gyro 1(Communication Failed, Sub LAN)	Communication with Gyro 1 cannot be performed via Sub LAN.	Check the condition of Gyro 1 and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Gyro 2(Communication Failed, Direct)	Communication with Gyro 2 cannot be performed via Serial.	Check the condition of Gyro 2, GIF and Serial. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Gyro 2(Communication Failed, GIF-Direct)	Communication with Gyro 2 cannot be performed via Serial.	Check the condition of Gyro 2, GIF and Serial. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Gyro 2(Communication Failed, GIF-Main LAN)	Communication with Gyro 2 cannot be performed via Main LAN.	Check the condition of Gyro 2, GIF and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Gyro 2(Communication Failed, GIF-Sub LAN)	Communication with Gyro 2 cannot be performed via Sub LAN.	Check the condition of Gyro 2, GIF and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.

Message	Explanation	Advice
Gyro 2(Communication Failed, Main LAN)	Communication with Gyro 2 cannot be performed via Main LAN.	Check the condition of Gyro 2 and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Gyro 2(Communication Failed, Sub LAN)	Communication with Gyro 2 cannot be performed via Sub LAN.	Check the condition of Gyro 2 and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Gyro(Communication Failed, Direct)	Communication with Gyro cannot be performed via Serial.	Check the condition of Gyro, GIF and Serial. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Gyro(Communication Failed, GIF-Direct)	Communication with Gyro cannot be performed via Serial.	Check the condition of Gyro, GIF and Serial. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Gyro(Communication Failed, GIF-Main LAN)	Communication with Gyro cannot be performed via Main LAN.	Check the condition of Gyro, GIF and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Gyro(Communication Failed, GIF-Sub LAN)	Communication with Gyro cannot be performed via Sub LAN.	Check the condition of Gyro, GIF and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.

Message	Explanation	Advice
Gyro(Communication Failed, Main LAN)	Communication with Gyro cannot be performed via Main LAN.	Check the condition of Gyro and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Gyro(Communication Failed, Sub LAN)	Communication with Gyro cannot be performed via Sub LAN.	Check the condition of Gyro and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
HASP(Communication error)	There is an error in communication with HASP.	Restart the power. If it cannot be recovered after three times of restart, turn off the device and contact the distributor.
HDG(No Correction)	No correction included in heading	Perform the operation carefully.
HDOP exceeded(GPS1)	The GPS1 precision is deteriorated.	Check the sensor condition.
HDOP exceeded(GPS2)	The GPS2 precision is deteriorated.	Check the sensor condition.
HDOP exceeded(GPS3)	The GPS3 precision is deteriorated.	Check the sensor condition.
HDOP exceeded(GPS4)	The GPS4 precision is deteriorated.	Check the sensor condition.
Heading(invalid)	There is a format error or a status error of the Heading data.	Check the sensor condition. Switch to a sensor in good condition, if available.
Heading(not plausible)	There is a range error of Heading data.	Check the sensor condition. Switch to a sensor in good condition, if available.
Heading(unavailable)	The Heading data cannot be received.	Check the condition of the sensor and the communication path. Switch to a sensor in good condition, if available.
Hull Motion(invalid)	There is a format error or a status error of the data.	Check the sensor condition.
Hull Motion(not plausible)	There is a range error of the data.	Check the sensor condition.
Hull Motion(unavailable)	The data cannot be received.	Check the condition of the sensor and the communication path.

Message	Explanation	Advice
Humidity(invalid)	There is a format error or a status error of the data.	Check the sensor condition.
Humidity(not plausible)	There is a range error of the data.	Check the sensor condition.
Humidity(unavailable)	The data cannot be received.	Check the condition of the sensor and the communication path.
IAS Primary(Communication Failed, Main LAN)	Communication with IAS cannot be performed via Main LAN.	Check the condition of IAS and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
IAS Primary(Communication Failed, Sub LAN)	Communication with IAS cannot be performed via Sub LAN.	Check the condition of IAS and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
IAS Secondary(Communication Failed, Main LAN)	Communication with IAS cannot be performed via Main LAN.	Check the condition of IAS and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
IAS Secondary(Communication Failed, Sub LAN)	Communication with IAS cannot be performed via Sub LAN.	Check the condition of IAS and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
IAS(Communication failed, Main LAN)	Communication with IAS cannot be performed via Main LAN.	Check the condition of IAS and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.

Message	Explanation	Advice
IAS(Communication failed, Sub LAN)	Communication with IAS cannot be performed via Sub LAN.	Check the condition of IAS and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
ISW(Communication error)	There is a communication error with ISW.	If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Joystick(Communication Failed, MainLAN)	A communication error with MJS via Main LAN was detected.	Check MJS. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Joystick(Communication Failed, SubLAN)	A communication error with MJS via Sub LAN was detected.	Check MJS. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
LCD Fan1(LCD)	The fan in the display unit has stopped.	Restart the power. If it cannot be recovered after three times of restart, turn off the device and contact the distributor.
LCD Fan2(LCD)	The fan in the display unit has stopped.	Restart the power. If it cannot be recovered after three times of restart, turn off the device and contact the distributor.
LCD High TEMP	The temperature of LCD is too high. It will be dim or dark.	Turn off the power of the device and restart after ten minutes. If it cannot be recovered, turn off the device and contact the distributor.

Message	Explanation	Advice
Log 1(Communication failed, Direct)	Communication with Log 1 cannot be performed via Serial.	Check the condition of Log 1 and Serial. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Log 1(Communication failed, GIF-Direct)	Communication with Log 1 cannot be performed via Serial.	Check the condition of Log 1, GIF and Serial. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Log 1(Communication failed, GIF-Main LAN)	Communication with Log 1 cannot be performed via Main LAN.	Check the condition of Log 1, GIF and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Log 1(Communication failed, GIF-Sub LAN)	Communication with Log 1 cannot be performed via Sub LAN.	Check the condition of Log 1, GIF and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Log 1(Communication failed, Main LAN)	Communication with Log 1 cannot be performed via Main LAN.	Check the condition of Log 1 and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Log 1(Communication failed, Sub LAN)	Communication with Log 1 cannot be performed via Sub LAN.	Check the condition of Log 1 and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.



Message	Explanation	Advice
Log 2(Communication failed, Direct)	Communication with Log 2 cannot be performed via Serial.	Check the condition of Log 2 and Serial. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Log 2(Communication failed, GIF-Direct)	Communication with Log 2 cannot be performed via Serial.	Check the condition of Log 2, GIF and Serial. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Log 2(Communication failed, GIF-Main LAN)	Communication with Log 2 cannot be performed via Main LAN.	Check the condition of Log 2, GIF and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Log 2(Communication failed, GIF-Sub LAN)	Communication with Log 2 cannot be performed via Sub LAN.	Check the condition of Log 2, GIF and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Log 2(Communication failed, Main LAN)	Communication with Log 2 cannot be performed via Main LAN.	Check the condition of Log 2 and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Log 2(Communication failed, Sub LAN)	Communication with Log 2 cannot be performed via Sub LAN.	Check the condition of Log 2 and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.

Message	Explanation	Advice
Log Selector(Communication failed, Direct)	Communication with Log Selector cannot be performed via Serial.	Check the condition of Log Selector and Serial. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Magnetic Compass 1(Communication failed, Direct)	Communication with Magnetic Compass 1 cannot be performed via Serial.	Check the condition of Magnetic Compass 1 and Serial. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Magnetic Compass 1(Communication failed, Main LAN)	Communication with Magnetic Compass 1 cannot be performed via Main LAN.	Check the condition of Magnetic Compass 1 and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Magnetic Compass 1(Communication failed, Sub LAN)	Communication with Magnetic Compass 1 cannot be performed via Sub LAN.	Check the condition of Magnetic Compass 1 and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Magnetic Compass 2(Communication failed, Direct)	Communication with Magnetic Compass 2 cannot be performed via Serial.	Check the condition of Magnetic Compass 2 and Serial. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.

Message	Explanation	Advice
Magnetic Compass 2(Communication failed, Main LAN)	Communication with Magnetic Compass 2 cannot be performed via Main LAN.	Check the condition of Magnetic Compass 2 and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Magnetic Compass 2(Communication failed, Sub LAN)	Communication with Magnetic Compass 2 cannot be performed via Sub LAN.	Check the condition of Magnetic Compass 2 and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
MJS IF <-> AP(Communication error)	MJS detected a communication error with AP.	Check AP. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
MJS IF(Unit failure)	An error occurred in the MJS unit.	Turn off the power of the device and request the distributor to repair.
MJS OPE <-> MJS IF(Communication error)	MJS detected a communication error with MJS I/O.	Turn off the power of the device and request the distributor to repair.
MJS OPE(Unit failure)	An error occurred in the MJS equipment.	Turn off the power of the device and request the distributor to repair.
Multi Current(unavailable)	The data cannot be received.	Check the condition of the sensor and the communication path.
NAVTEX(Communication failed, Main LAN)	Communication with NAVTEX cannot be performed via Main LAN.	Check the condition of NAVTEX and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.

Message	Explanation	Advice
NAVTEX(Communication failed, Sub LAN)	Communication with NAVTEX cannot be performed via Sub LAN.	Check the condition of NAVTEX and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
No.1 Conning(Communication failed, Main LAN)	Communication with No.1 Conning cannot be performed via Main LAN.	Check the condition of No.1 Conning and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
No.1 Conning(Communication failed, Sub LAN)	Communication with No.1 Conning cannot be performed via Sub LAN.	Check the condition of No.1 Conning and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
No.1 ECDIS(Communication failed, Main LAN)	Communication with No.1 ECDIS cannot be performed via Main LAN.	Check the condition of No.1 ECDIS and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
No.1 ECDIS(Communication failed, Sub LAN)	Communication with No.1 ECDIS cannot be performed via Sub LAN.	Check the condition of No.1 ECDIS and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.

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Message	Explanation	Advice
No.1 Radar(Communication failed, Main LAN)	Communication with No.1 RADAR cannot be performed via Main LAN.	Check the condition of No.1 RADAR and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
No.1 Radar(Communication failed, Sub LAN)	Communication with No.1 RADAR cannot be performed via Sub LAN.	Check the condition of No.1 RADAR and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
No.1 Remote-Conning(Communication failed, Main LAN)	Communication with No.1 Remote-Conning cannot be performed via Main LAN.	Check the condition of No.1 Remote-Conning and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
No.1 Remote-Conning(Communication failed, Sub LAN)	Communication with No.1 Remote-Conning cannot be performed via Sub LAN.	Check the condition of No.1 Remote-Conning and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
No.1 RPS(Communication failed, Main LAN)	Communication with No.1 RPS cannot be performed via Main LAN.	Check the condition of No.1 RPS and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.

Message	Explanation	Advice
No.1 RPS(Communication failed, Sub LAN)	Communication with No.1 RPS cannot be performed via Sub LAN.	Check the condition of No.1 RPS and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
No.1 Wing-Conning(Communication failed, Main LAN)	Communication with No.1 Wing-Conning cannot be performed via Main LAN.	Check the condition of No.1 Wing-Conning and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
No.1 Wing-Conning(Communication failed, Sub LAN)	Communication with No.1 Wing-Conning cannot be performed via Sub LAN.	Check the condition of No.1 Wing-Conning and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
No.2 Conning(Communication failed, Main LAN)	Communication with No.2 Conning cannot be performed via Main LAN.	Check the condition of No.2 Conning and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
No.2 Conning(Communication failed, Sub LAN)	Communication with No.2 Conning cannot be performed via Sub LAN.	Check the condition of No.2 Conning and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.

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Message	Explanation	Advice
No.2 ECDIS(Communication failed, Main LAN)	Communication with No.2 ECDIS cannot be performed via Main LAN.	Check the condition of No.2 ECDIS and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
No.2 ECDIS(Communication failed, Sub LAN)	Communication with No.2 ECDIS cannot be performed via Sub LAN.	Check the condition of No.2 ECDIS and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
No.2 Radar(Communication failed, Main LAN)	Communication with No.2 RADAR cannot be performed via Main LAN.	Check the condition of No.2 RADAR and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
No.2 Radar(Communication failed, Sub LAN)	Communication with No.2 RADAR cannot be performed via Sub LAN.	Check the condition of No.2 RADAR and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
No.2 Remote-Conning(Communication failed, Main LAN)	Communication with No.2 Remote-Conning cannot be performed via Main LAN.	Check the condition of No.2 Remote-Conning and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.

Message	Explanation	Advice
No.2 Remote-Conning(Communication failed, Sub LAN)	Communication with No.2 Remote-Conning cannot be performed via Sub LAN.	Check the condition of No.2 Remote-Conning and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
No.2 RPS(Communication failed, Main LAN)	Communication with No.2 RPS cannot be performed via Main LAN.	Check the condition of No.2 RPS and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
No.2 RPS(Communication failed, Sub LAN)	Communication with No.2 RPS cannot be performed via Sub LAN.	Check the condition of No.2 RPS and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
No.2 Wing-Conning(Communication failed, Main LAN)	Communication with No.2 Wing-Conning cannot be performed via Main LAN.	Check the condition of No.2 Wing-Conning and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
No.2 Wing-Conning(Communication failed, Sub LAN)	Communication with No.2 Wing-Conning cannot be performed via Sub LAN.	Check the condition of No.2 Wing-Conning and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.



Message	Explanation	Advice
No.3 ECDIS(Communication failed, Main LAN)	Communication with No.3 ECDIS cannot be performed via Main LAN.	Check the condition of No.3 ECDIS and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
No.3 ECDIS(Communication failed, Sub LAN)	Communication with No.3 ECDIS cannot be performed via Sub LAN.	Check the condition of No.3 ECDIS and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
No.3 Radar(Communication failed, Main LAN)	Communication with No.3 RADAR cannot be performed via Main LAN.	Check the condition of No.3 RADAR and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
No.3 Radar(Communication failed, Sub LAN)	Communication with No.3 RADAR cannot be performed via Sub LAN.	Check the condition of No.3 RADAR and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
No.4 ECDIS(Communication failed, Main LAN)	Communication with No.4 ECDIS cannot be performed via Main LAN.	Check the condition of No.4 ECDIS and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.

Message	Explanation	Advice
No.4 ECDIS(Communication failed, Sub LAN)	Communication with No.4 ECDIS cannot be performed via Sub LAN.	Check the condition of No.4 ECDIS and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
No.4 Radar(Communication failed, Main LAN)	Communication with No.4 RADAR cannot be performed via Main LAN.	Check the condition of No.4 RADAR and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
No.4 Radar(Communication failed, Sub LAN)	Communication with No.4 RADAR cannot be performed via Sub LAN.	Check the condition of No.4 RADAR and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
OPA-OPB(Communication error)	-	-
OPU-Serial(Communication error)	There is a communication error with the operating portion.	Restart the power. If it cannot be recovered after three times of restart, turn off the device and contact the distributor.
OPU-USB(Communication error)	There is a communication error with the operating portion.	Restart the power. If it cannot be recovered after three times of restart, turn off the device and contact the distributor.
Port Main Propeller(Invalid)	There is a format error or a status error of the data.	Check the sensor condition.
Port Main Propeller(not plausible)	There is a range error of the data.	Check the sensor condition.
Port Main Propeller(unavailable)	The data cannot be received.	Check the condition of the sensor and the communication path.
Position(Invalid)	There is a format error or a status error of the Position data.	Check the sensor condition. Switch to a sensor in good condition, if available.

Message	Explanation	Advice
Position(not plausible)	There is a range error of Position data.	Check the sensor condition. Switch to a sensor in good condition, if available.
Position(unavailable)	The Position data cannot be received.	Check the condition of the sensor and the communication path. Switch to a sensor in good condition, if available.
POSN(GPS1) Not Differential	Differential operation is not performed by GPS1.	Check the sensor condition.
POSN(GPS2) Not Differential	Differential operation is not performed by GPS2.	Check the sensor condition.
POSN(GPS3) Not Differential	Differential operation is not performed by GPS3.	Check the sensor condition.
POSN(GPS4) Not Differential	Differential operation is not performed by GPS4.	Check the sensor condition.
POSN(Low Integrity, GPS1)	Integrity of the GPS position is low.	Perform the operation carefully.
POSN(Low Integrity, GPS2)	Integrity of the GPS position is low.	Perform the operation carefully.
POSN(Navigational Status Not Valid, GPS1)	Navigational status of GPS is not valid.	Perform the operation carefully.
POSN(Navigational Status Not Valid, GPS2)	Navigational status of GPS is not valid.	Perform the operation carefully.
Power Fail	Power incoming of 3.3V/2.5V/1.5V/1.2V etc. has decreased and stopped.	Check the electronic power supply.
Power(Fan)	A failure of the fan in the power supply unit has been detected.	Restart the power. If it cannot be recovered after three times of restart, turn off the device and contact the distributor.
Power(TXRX, Failed)	There is an error in the power supply unit for the radar antenna.	Turn off the power of the device and request the distributor to repair.
PROC(AZI)	An azimuth signal error has occurred at the signal processing unit.	Turn off the power of the device and check the connection of the equipment cable. If it cannot be recovered after three times of restart, turn off the device and contact the distributor.

Message	Explanation	Advice
PROC(HL)	A heading line signal error has occurred at the signal processing unit.	Turn off the power of the device and check the connection of the equipment cable. If it cannot be recovered after three times of restart, turn off the device and contact the distributor.
PROC(Interrupt1)	There is a stern interrupt error in the signal processing unit.	Restart the power. If it cannot be recovered after three times of restart, turn off the device and contact the distributor.
PROC(Interrupt2)	There is a stern interrupt error in the signal processing unit.	Restart the power. If it cannot be recovered after three times of restart, turn off the device and contact the distributor.
PROC(Trigger)	A trigger signal error has occurred at the signal processing unit.	Turn off the power of the device and check the connection of the equipment cable. If it cannot be recovered after three times of restart, turn off the device and contact the distributor.
PROC(Video)	A radar image signal error has occurred at the signal processing unit.	Turn off the power of the device and check the connection of the equipment cable. If it cannot be recovered after three times of restart, turn off the device and contact the distributor.
RADAR PROC(Data)	Control of radar signal/image processing failed.	Restart the power. If it cannot be recovered after three times of restart, turn off the device and contact the distributor.
RIF(Communication error)	There is an error in communication with RIF.	Restart the power. If it cannot be recovered after three times of restart, turn off the device and contact the distributor.
ROT(invalid)	There is a format error or a status error of the ROT data.	Check the sensor condition.
ROT(unavailable)	The ROT data cannot be received.	Check the condition of the sensor and the communication path.
RTC Abnormal	RTC is abnormal.	Restart the power. If it cannot be recovered after three times of restart, contact the distributor.

Message	Explanation	Advice
Rudder 1(invalid)	There is a format error or a status error of the Rudder data.	Check the sensor condition.
Rudder 1(invalid)	There is a format error or a status error of the Rudder data.	Check the sensor condition.
Rudder 1(not plausible)	There is a range error of Rudder data.	Check the sensor condition.
Rudder 1(not plausible)	There is a range error of Rudder data.	Check the sensor condition.
Rudder 1(unavailable)	The Rudder data cannot be received.	Check the condition of the sensor and the communication path.
Rudder 1(unavailable)	The Rudder data cannot be received.	Check the condition of the sensor and the communication path.
Rudder 2(invalid)	There is a format error or a status error of the Rudder data.	Check the sensor condition.
Rudder 2(invalid)	There is a format error or a status error of the Rudder data.	Check the sensor condition.
Rudder 2(not plausible)	There is a range error of Rudder data.	Check the sensor condition.
Rudder 2(not plausible)	There is a range error of Rudder data.	Check the sensor condition.
Rudder 2(unavailable)	The Rudder data cannot be received.	Check the condition of the sensor and the communication path.
Rudder 2(unavailable)	The Rudder data cannot be received.	Check the condition of the sensor and the communication path.
Rudder(Communication failed, Main LAN)	Communication with Rudder cannot be performed via Main LAN.	Check the condition of Rudder and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Rudder(Communication failed, Sub LAN)	Communication with Rudder cannot be performed via Sub LAN.	Check the condition of Rudder and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.

Message	Explanation	Advice
Sea TEMP(invalid)	There is a format error or a status error of the Water temperature data.	Check the sensor condition. Switch to a sensor in good condition, if available.
Sea TEMP(invalid)	There is a format error or a status error of the Water temperature data.	Check the sensor condition.
Sea TEMP(invalid)	There is a format error or a status error of the data.	Check the sensor condition.
Sea TEMP(unavailable)	The Water temperature data cannot be received.	Check the condition of the sensor and the communication path. Switch to a sensor in good condition, if available.
Sea TEMP(unavailable)	The Water temperature data cannot be received.	Check the condition of the sensor and the communication path.
Sea TEMP(unavailable)	The data cannot be received.	Check the condition of the sensor and the communication path.
Ship's clock(Communication failed, Main LAN)	Communication with Ship's clock cannot be performed via Main LAN.	Check the condition of Ship's clock and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Ship's clock(Communication failed, Sub LAN)	Communication with Ship's clock cannot be performed via Sub LAN.	Check the condition of Ship's clock and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
S-J I/O <-> AP(Communication error)	S-JOY detected a communication error with AP.	Check AP. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.

**APP A**

Message	Explanation	Advice
S-J I/O Time Out	A communication error with S-JOY was detected.	Check S-JOY. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
S-J I/O(Unit failure)	An error occurred in the S-JOY unit.	Turn off the power of the device and request the distributor to repair.
S-JOY <-> S-J I/O(Communication error)	S-JOY detected a communication error with S-JOY I/O.	Turn off the power of the device and request the distributor to repair.
S-JOY(Unit failure)	An error occurred in the S-JOY equipment.	Turn off the power of the device and request the distributor to repair.
SLC1-1(Communication failed, Main LAN)	Communication with SLC1-1 cannot be performed via Main LAN.	Check the condition of SLC1-1 and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
SLC1-2(Communication failed, Main LAN)	Communication with SLC1-2 cannot be performed via Main LAN.	Check the condition of SLC1-2 and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
SLC1-3(Communication failed, Main LAN)	Communication with SLC1-3 cannot be performed via Main LAN.	Check the condition of SLC1-3 and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
SLC1-4(Communication failed, Main LAN)	Communication with SLC1-4 cannot be performed via Main LAN.	Check the condition of SLC1-4 and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.

Message	Explanation	Advice
SLC2-1(Communication failed, Sub LAN)	Communication with SLC2-1 cannot be performed via Sub LAN.	Check the condition of SLC2-1 and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
SLC2-2(Communication failed, Sub LAN)	Communication with SLC2-2 cannot be performed via Sub LAN.	Check the condition of SLC2-2 and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
SLC2-3(Communication failed, Sub LAN)	Communication with SLC2-3 cannot be performed via Sub LAN.	Check the condition of SLC2-3 and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
SLC2-4(Communication failed, Sub LAN)	Communication with SLC2-4 cannot be performed via Sub LAN.	Check the condition of SLC2-4 and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Stbd Main Propeller(Invalid)	There is a format error or a status error of the data.	Check the sensor condition.
Stbd Main Propeller(not plausible)	There is a range error of the data.	Check the sensor condition.
Stbd Main Propeller(unavailable)	The data cannot be received.	Check the condition of the sensor and the communication path.
Stern Thruster 1(Invalid)	There is a format error or a status error of the data.	Check the sensor condition.
Stern Thruster 1(Invalid)	There is a format error or a status error of the data.	Check the sensor condition.
Stern Thruster 1(not plausible)	There is a range error of the data.	Check the sensor condition.
Stern Thruster 1(not plausible)	There is a range error of the data.	Check the sensor condition.
Stern Thruster 1(unavailable)	The data cannot be received.	Check the condition of the sensor and the communication path.



Message	Explanation	Advice
Stern Thruster 1(unavailable)	The data cannot be received.	Check the condition of the sensor and the communication path.
Stern Thruster 2(invalid)	There is a format error or a status error of the data.	Check the sensor condition.
Stern Thruster 2(invalid)	There is a format error or a status error of the data.	Check the sensor condition.
Stern Thruster 2(not plausible)	There is a range error of the data.	Check the sensor condition.
Stern Thruster 2(not plausible)	There is a range error of the data.	Check the sensor condition.
Stern Thruster 2(unavailable)	The data cannot be received.	Check the condition of the sensor and the communication path.
Stern Thruster 2(unavailable)	The data cannot be received.	Check the condition of the sensor and the communication path.
Stern Thruster 3(invalid)	There is a format error or a status error of the data.	Check the sensor condition.
Stern Thruster 3(not plausible)	There is a range error of the data.	Check the sensor condition.
Stern Thruster 3(unavailable)	The data cannot be received.	Check the condition of the sensor and the communication path.
Stern Thruster 4(invalid)	There is a format error or a status error of the data.	Check the sensor condition.
Stern Thruster 4(not plausible)	There is a range error of the data.	Check the sensor condition.
Stern Thruster 4(unavailable)	The data cannot be received.	Check the condition of the sensor and the communication path.
Stern Thruster 5(invalid)	There is a format error or a status error of the data.	Check the sensor condition.
Stern Thruster 5(not plausible)	There is a range error of the data.	Check the sensor condition.
Stern Thruster 5(unavailable)	The data cannot be received.	Check the condition of the sensor and the communication path.
STW Speed(invalid)	There is a format error or a status error of the STW data.	Check the sensor condition. Switch to a sensor in good condition, if available.
STW Speed(unavailable)	The STW data cannot be received.	Check the condition of the sensor and the communication path. Switch to a sensor in good condition, if available.

Message	Explanation	Advice
Time(Invalid)	There is a format error or a status error of the Time data.	Check the sensor condition. Switch to a sensor in good condition, if available.
Time(Invalid)	There is a format error or a status error of the Time data.	Check the sensor condition.
Time(unavailable)	The Time data cannot be received.	Check the condition of the sensor and the communication path. Switch to a sensor in good condition, if available.
Time(unavailable)	The Time data cannot be received.	Check the condition of the sensor and the communication path.
TXRX(AZI)	Azimuth signals cannot be recognized in the radar antenna.	<p>Confirm that the status is standby and, if the status is transmitting, set the status to standby.</p> <p>After that, set the status to transmitting again.</p> <p>If it cannot be recovered in this transmitting state, visually confirm that the antenna of radar antenna is rotating in a proper way.</p> <p>If the rotation of the antenna has been able to be confirmed, turn off the power of the device and, after confirming cable connection of the encoder in the radar antenna, turn the power on again.</p> <p>If it cannot be recovered after the operation above, turn off the device and contact the distributor.</p>
TXRX(Communication error)	There is a communication error with radar antenna.	<p>Confirm that the setting of the instruction machine is Master.</p> <p>If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.</p>

Message	Explanation	Advice
TXRX(DRV AC LKV)	The supply voltage of the motor driver circuit in the radar antenna falls short of the rated value.	Turn off the power of the device and check the connection of the equipment cable. If it cannot be recovered after three times of restart, turn off the device and contact the distributor. Turn off the power of the device if it is equipped and check the AC power voltage provided to the radar antenna and the DIP switch setting of the motor driver circuit.
TXRX(DRV AC OVV)	The supply voltage of the motor driver circuit in the radar antenna exceeds the rated value.	Turn off the power of the device and check the connection of the equipment cable. If it cannot be recovered after three times of restart, turn off the device and contact the distributor. Turn off the power of the device if it is equipped and check the AC power voltage provided to the radar antenna and the DIP switch setting of the motor driver circuit.
TXRX(DRV COM)	The communication with the motor driver circuit in the radar antenna is abnormal.	Restart the power. If it cannot be recovered after three times of restart, turn off the device and contact the distributor.
TXRX(DRV CPU1)	The control unit of the motor driver circuit in the radar antenna is abnormal.	Restart the power. If it cannot be recovered after three times of restart, turn off the device and contact the distributor.
TXRX(DRV Hall Sensor)	The rotation sensor of the motor in the radar antenna is abnormal.	Restart the power. If it cannot be recovered after three times of restart, turn off the device and contact the distributor.
TXRX(DRV High Rotate)	The rotation speed of the antenna is higher than the specification.	Confirm that the status is standby and, if the status is transmitting, set the status to standby. After that, set the status to transmitting again. If it cannot be recovered after repeating the above operation three times, turn off the device and contact the distributor.

Message	Explanation	Advice
TXRX(DRV IPM OVH)	The temperature of IPM of the motor driver circuit in the radar antenna is abnormal.	Turn off the power of the device and restart after ten minutes. If it cannot be recovered, turn off the device and contact the distributor.
TXRX(DRV Low Rotate)	The rotation speed of the antenna is lower than the specification.	Confirm that the status is standby and, if the status is transmitting, set the status to standby. After that, set the status to transmitting again. If it cannot be recovered after repeating the above operation three times, turn off the device and contact the distributor.
TXRX(DRV MOT OVH)	The temperature of the motor in the radar antenna is abnormal.	Turn off the power of the device and restart after ten minutes. If it cannot be recovered, turn off the device and contact the distributor.
TXRX(DRV OVC)	The supply current of the motor in the radar antenna exceeds the rated value.	Confirm that the status is standby and, if the status is transmitting, set the status to standby. Then, after confirming that there is no obstruction in the swing circle of the antenna, set the status to transmitting again. If it cannot be recovered after the operation above, turn off the device and contact the distributor.
TXRX(DRV Over Rotate)	The rotation speed of the antenna is abnormally higher than the specification.	Confirm that the status is standby and, if the status is transmitting, set the status to standby. After that, set the status to transmitting again. If it cannot be recovered after repeating the above operation three times, turn off the device and contact the distributor.
TXRX(DRV VBUS LKV)	The supply voltage of the motor in the radar antenna falls short of the rated value.	Restart the power. If it cannot be recovered after three times of restart, turn off the device and contact the distributor.
TXRX(DRV VBUS OVV)	The supply voltage of the motor in the radar antenna exceeds the rated value.	Restart the power. If it cannot be recovered after three times of restart, turn off the device and contact the distributor.

Message	Explanation	Advice
TXRX(Fan1)	Fan 1 in the radar antenna is abnormal.	Restart the power. If it cannot be recovered after three times of restart, turn off the device and contact the distributor.
TXRX(Fan2)	Fan 2 in the radar antenna is abnormal.	Restart the power. If it cannot be recovered after three times of restart, turn off the device and contact the distributor.
TXRX(Fan3)	Fan 3 in the radar antenna is abnormal.	Restart the power. If it cannot be recovered after three times of restart, turn off the device and contact the distributor.
TXRX(Heater)	The heater voltage of the magnetron in the radar antenna is abnormal.	Restart the power. If it cannot be recovered after three times of restart, turn off the device and contact the distributor.
TXRX(High Temperature)	The temperature in the radar antenna is abnormal.	Turn off the power of the device and restart after ten minutes. If it cannot be recovered, turn off the device and contact the distributor.
TXRX(HL)	Azimuth reference signals cannot be recognized in the radar antenna.	Confirm that the status is standby and, if the status is transmitting, set the status to standby. After that, set the status to transmitting again. If it cannot be recovered in this transmitting state, visually confirm that the antenna of radar antenna is rotating in a proper way. If the rotation of the antenna has been able to be confirmed, turn off the power of the device and, after confirming cable connection of the encoder in the radar antenna, turn the power on again. If it cannot be recovered after the operation above, turn off the device and contact the distributor.
TXRX(IF PLL)	The transmitting signal clock in the radar antenna part is in an error state.	Restart the power. If it cannot be recovered after three times of restart, turn off the device and contact the distributor.

Message	Explanation	Advice
TXRX(LO PLL)	The radar antenna detected a problem with the LO frequency.	Restart the device.
TXRX(MHV)	The supply voltage to the magnetron in the radar antenna is abnormal.	Restart the power. If it cannot be recovered after three times of restart, turn off the device and contact the distributor.
TXRX(Option)	The option equipment in the radar antenna is abnormal.	Restart the power. If it cannot be recovered after three times of restart, turn off the device and contact the distributor.
TXRX(PROC)	The radar antenna detected a problem with the signal control circuit.	Restart the device.
TXRX(PS)	The power supply circuit in the radar antenna is abnormal.	Restart the power. If it cannot be recovered after three times of restart, turn off the device and contact the distributor.
TXRX(Trigger)	There is possibility that timing reference signals are not normally output from the radar antenna.	Restart the power. If it cannot be recovered after three times of restart, turn off the device and contact the distributor.
TXRX(Video)	There is possibility that radar image signals are not normally output from the radar antenna.	Restart the power. If it cannot be recovered after three times of restart, turn off the device and contact the distributor.
VDR(Communication failed, Main LAN)	Communication with VDR cannot be performed via Main LAN.	Check the condition of VDR and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
VDR(Communication failed, Sub LAN)	Communication with VDR cannot be performed via Sub LAN.	Check the condition of VDR and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.

Message	Explanation	Advice
Water Thermometers(Communication failed, Main LAN)	Communication with Water Thermometer cannot be performed via Main LAN.	Check the condition of Water Thermometer and Main LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Water Thermometers(Communication failed, Sub LAN)	Communication with Water Thermometer cannot be performed via Sub LAN.	Check the condition of Water Thermometer and Sub LAN. If it cannot be recovered after you check the connection of the equipment cable in power-off status and restart, turn off the power of the device and contact your distributor.
Wind(Invalid)	There is a format error or a status error of the Wind data.	Check the sensor condition. Switch to a sensor in good condition, if available.
Wind(Invalid)	There is a format error or a status error of the Wind data.	Check the sensor condition.
Wind(not plausible)	There is a range error of Wind data.	Check the sensor condition. Switch to a sensor in good condition, if available.
Wind(not plausible)	There is a range error of Wind data.	Check the sensor condition.
Wind(unavailable)	The Wind data cannot be received.	Check the condition of the sensor and the communication path. Switch to a sensor in good condition, if available.
Wind(unavailable)	The Wind data cannot be received.	Check the condition of the sensor and the communication path.

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# Appendix B Menu List and Materials

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## B.1 Menu List

This section shows the menus and dialog items of this equipment by target menu.

\* Items that are enclosed by a frame of broken lines indicate the dialog and window names that are displayed by selecting the relevant menu.

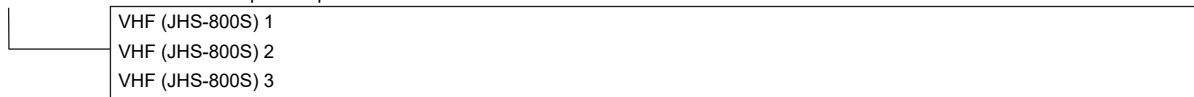
### B.1.1 Tools

File Manager



VHF Call

\* Case where the VHF radiotelephone option is attached



Timer



APP B



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## B.1.2 View

View-Options

Unit

- Depth (Included depth in Chart)
- Ship Speed
- Current Speed
- Wind Speed
- Propeller Revolution
- Propeller Pitch Angle
- Thruster Revolution
- Thruster Pitch Angle
- Air TEMP
- Water TEMP
- Air Pressure
- XTD for TCS info
- Wind Direction(True)

Depth Graph \*

\* Case where the depth sensor is connected.

- (Depth Trend Graph)
  - Depth Range(Docking)
  - Depth Range(Voyage)
  - Time Range
  - Reference

Rudder Graph

\* Case where the gyro and rudder is connected.

(Rudder Trend Graph)
[Time Range]
[Rudder Range]

Gyro/Rudder Graph \*

\* Case where the depth sensor is connected.

(Gyro/Rudder Trend Graph)
[Time Range]
[Rudder Range]

Engine Graph \*

\* Case where the engine is connected.

(Engine REV Trend Graph)
[Time Range]
Maximum rpm
[Minimum rpm]

Wind Graph\*

\* Case where the anemometer is connected

(Wind Speed Trend Graph)
[Time Range]
(Wind Direction Trend Graph)
[Time Range]

Sea TEMP Graph\*

\*Case where the water temperature meter is connected

(Sea TEMP Trend Graph)
[Time Range]

Tooltips/Infotips

Tooltips
[Mouse Over Information]

ROT

(ROT)
[ROT Scale]

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## B.1.3 Alert

Position Integrity

- (POSN(Deviation) Integrity)
- POSN Discrepancy Limit
- (POSN(Jump) Integrity)
- Radius Limit (GPS)
- Radius Limit (DGPS)
- Time Limit
- (HDOP exceeded)
- HDOP Limit

CAM

- (Reactivation of Silenced Alert)
- Category A/B Time Limit
- Category C Time Limit
- (Transfer to BNWAS)
- Time Limit
- (Repetition of UNACK Warning)
- Time Limit
- (Responsibility Transfer)
- Display On

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## B.1.4 Settings

VHF

\* Case where the VHF radiotelephone is connected.

Call Device

Color and Brightness

Day/Night  
Def.  
Display Color tab  
Dialog  
Character  
ALL GPS Buoy  
GPS Buoy1~10  
Other  
Brightness tab  
Character  
Panel  
Day1 : Level4 / Day2 : Level3 / Day3 : Level2 / Dusk,Night : Level1  
Display  
<26 inch> [0~100]Day1/Day2/Day3 : 67 / Dusk : 60 / Night : 11  
<19 inch> Day1/Day2/Day3 : 42 / Dusk : 20 / Night : 4

Sounds

Volume tab  
Key ACK  
Misoperation  
Response/Notification  
Message Notification  
Alert Setting Reminder  
Alarm  
Warning  
Melody tab  
Alarm  
Warning

Key Assignment

Multi Dial tab  
Display Brightness  
Panel Brightness

APP B

## B.1.5 Maintenance

### Date/Time/Time Zone

- (Date)
  - Month
  - Year
  - Day
- Time(LMT)
- Time Zone
- Display Style
- Synchronise with Time Source(Date/Time)
- Synchronise with Time Source(Time Zone)

### System Information

- Software tab
  - Type
  - Application
  - Maintenance No.
  - TXRX
  - TCS
  - Presentation Library
- Functionality tab
  - Device Licence Status
  - Option Licence Status
- Save to USB Device

### Operating Time

- (Operating Time of Work Station)
  - Total
  - SSD1
  - SSD2
  - LCD
  - LCD FAN
  - CCU FAN
  - PSU FAN
  - UPS
- (Operating Time of Scanner)\*
  - \* Under radar connection
  - Total
  - Transmit
  - Motor
  - FAN

### Voyage Distance

- (Current Voyage Distance)
  - Ground
  - Water
  - Clear

### Sensor Selection/Status

- Sensor Selection
  - (Sensor Selection)
    - Position
    - Heading
    - STW
    - COG/SOG
    - Time
    - Depth
  - SOG (Docking)
  - Navigational Data
  - Switch to equipment for Autosailing
- Position Status
  - Position Status
  - CCRP

Selftest



Software Update



DVD Drive Cleaning

Maintenance INFO

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## B.1.6 Help

←

→

Home

(Contents tab)

(Search tab)

[ keyword ]  
[ Search ]  
[ Results ]



# B.1.7 Code Input

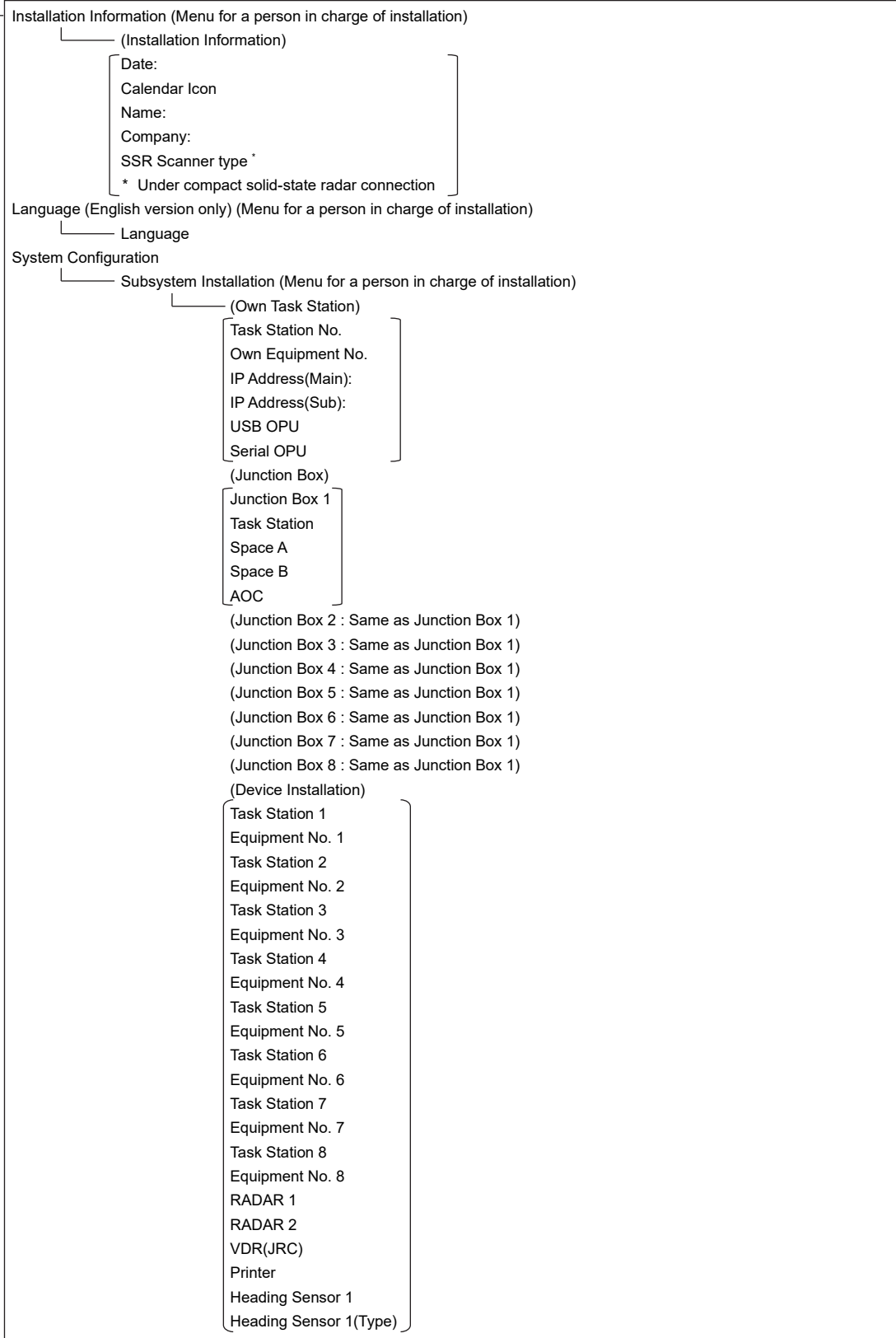
Password

**APP B**

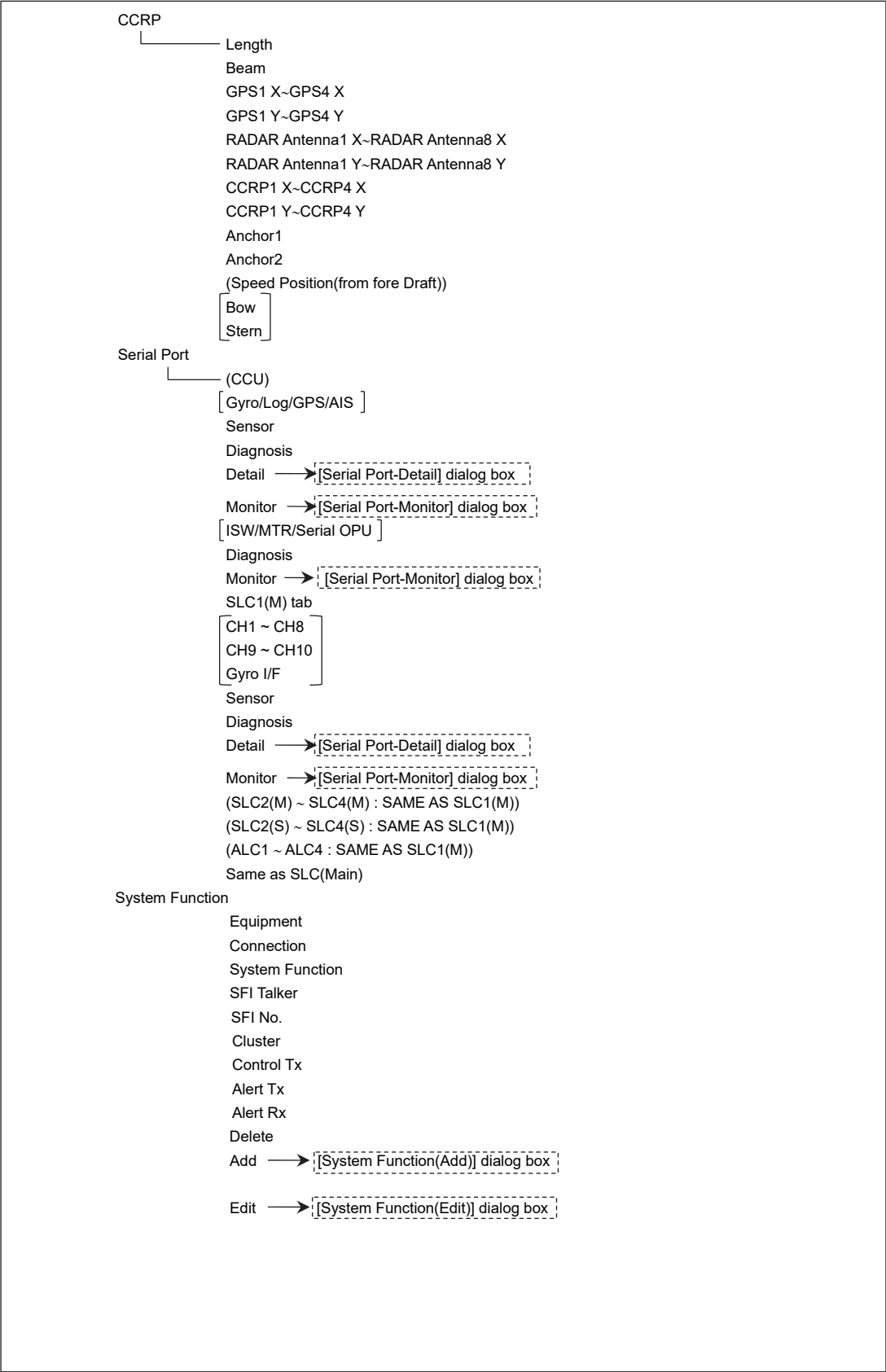


## B.1.8 Service

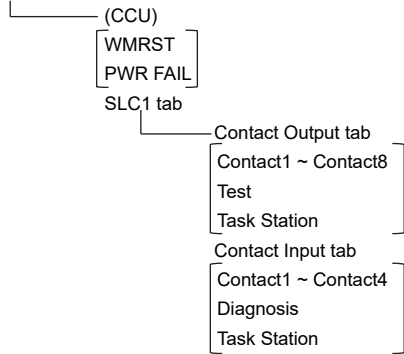
Installation



Heading Sensor 2  
Heading Sensor 2(Type)  
Log 1  
Log 1 Interface/Type  
Log 2  
Log 2 Interface/Type  
GPS 1  
GPS 2  
GPS 3  
GPS 4  
Ship's Clock  
Echo Sounder 1  
Transducer 1  
Transducer 2  
Echo Sounder 2  
Transducer 3  
AIS  
NAVTEX  
Anemometer  
Water TEMP Meter  
Current Meter  
Climate Meter  
Autopilot  
Autopilot Type  
Rudder  
Rudder Number  
Engine/Propeller  
Engine/Propeller Number  
Engine Telegraph  
Engine Telegraph Number  
Bow Thruster  
Bow Thruster Number  
Stern Thruster  
Stern Thruster Number  
Azimuth Thruster  
Azimuth Thruster Number  
Generator  
Generator Number  
S-JOY/Joystick 1  
S-JOY/Joystick 2  
S-JOY/Joystick 3  
S-JOY/Joystick 4  
S-JOY/Joystick 5  
GPS Selector  
Log Selector  
Inmarsat-C 1  
Inmarsat-C 2  
Satellite Terminal 1  
Satellite Terminal 2  
Satellite Terminal 3  
Satellite Terminal 4  
BNWAS  
BNWAS Type  
General Equipment(Alert)  
General Equipment(Alert) Number  
GPS Buoy  
Plotter  
VHF (JHS-800S) 1  
VHF (JHS-800S) 2  
VHF (JHS-800S) 3  
Hull Motion  
Set

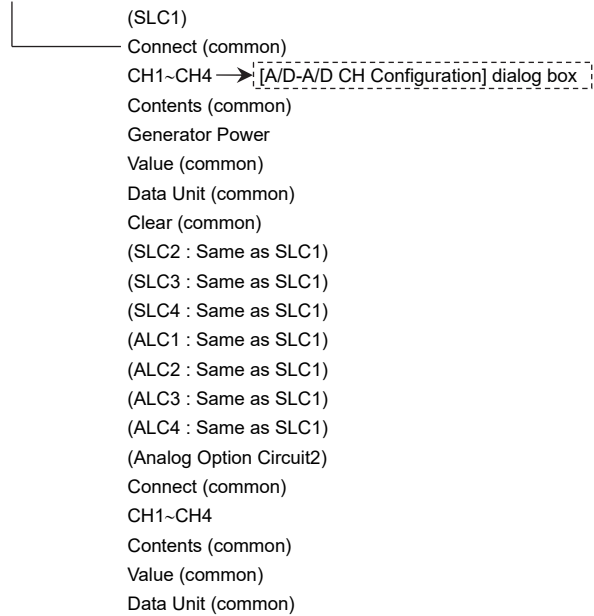


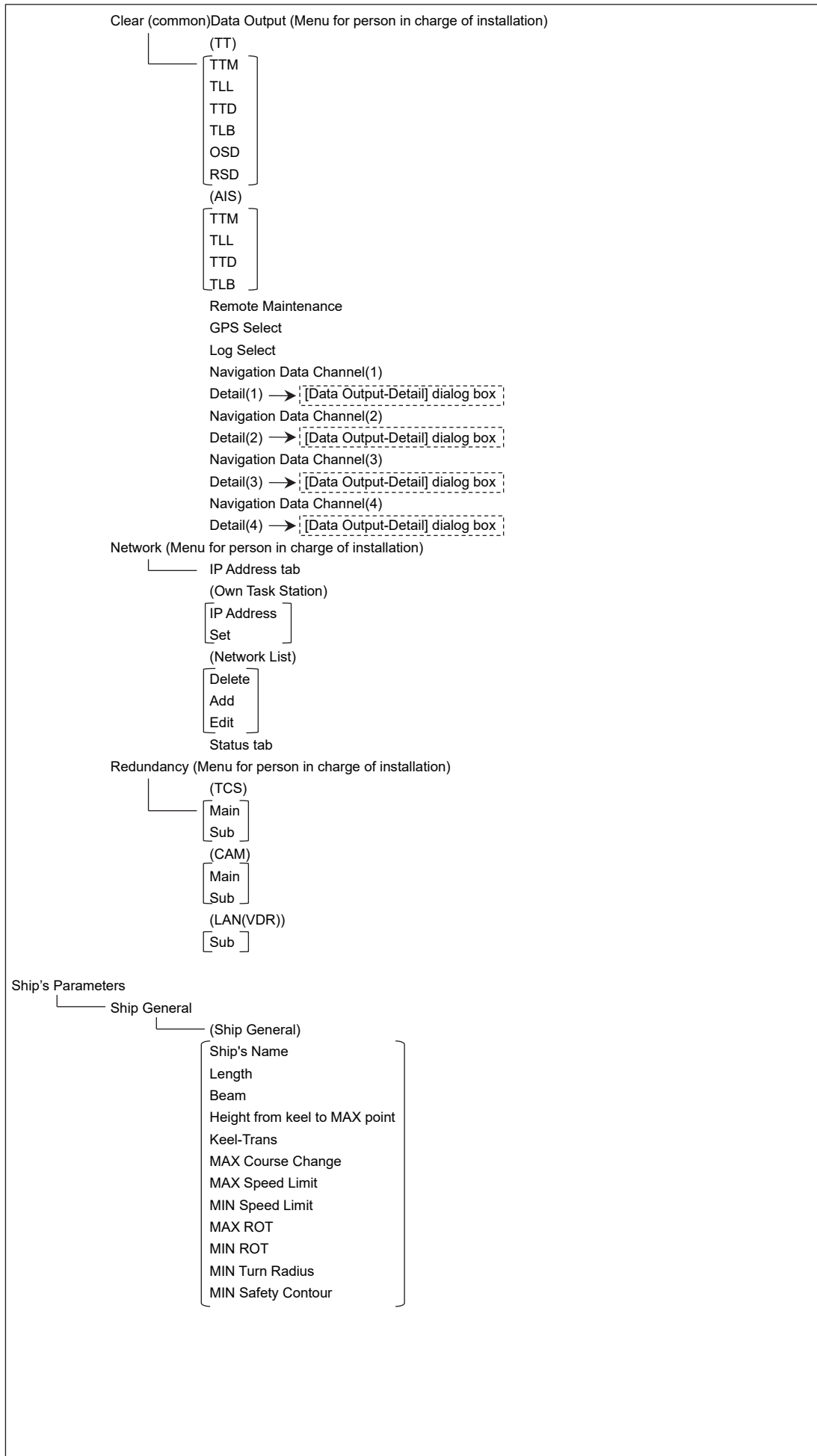
Contact (Menu for a person in charge of installation)

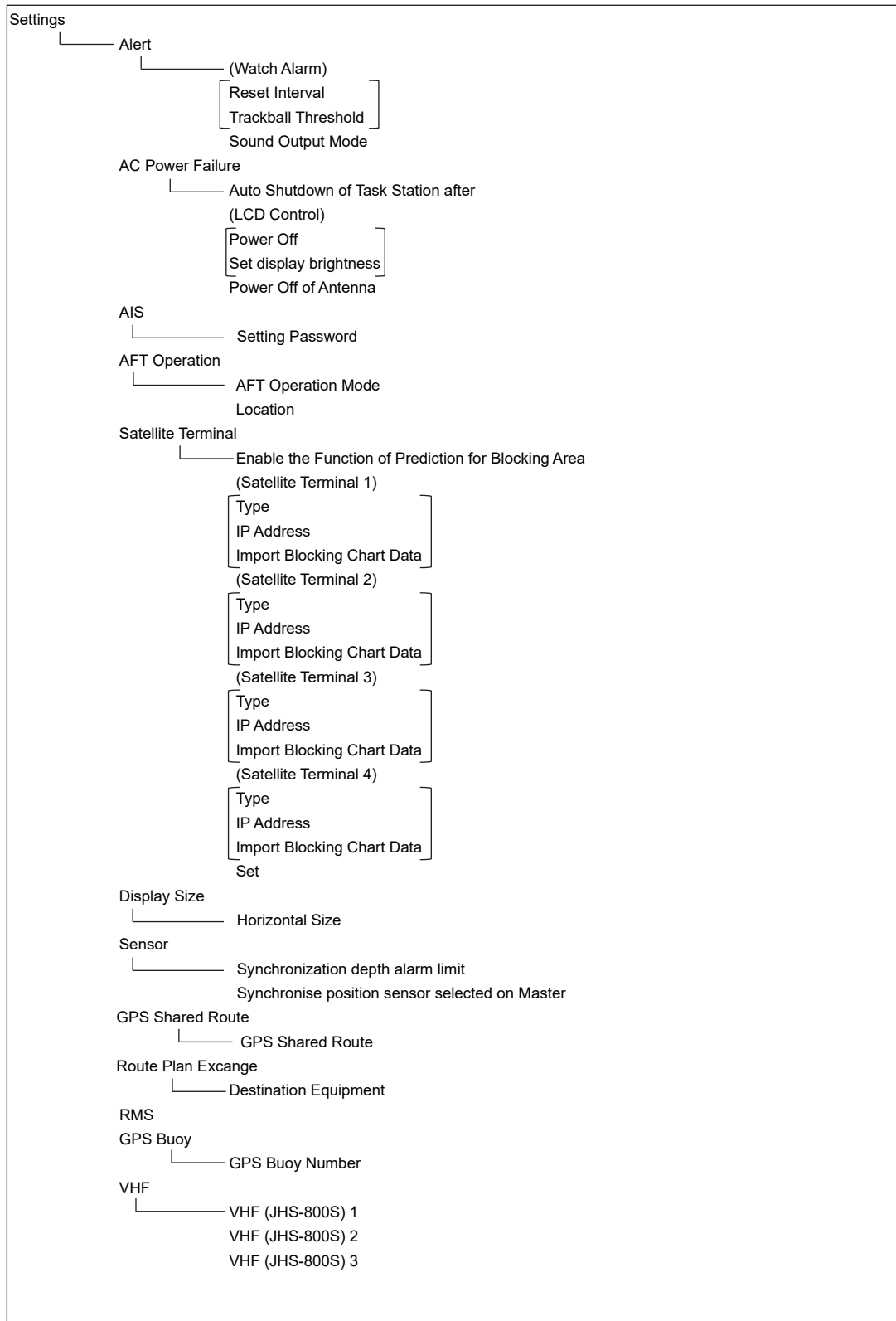


- (SLC2 : Same as SLC1)
- (SLC3 : Same as SLC1)
- (SLC4 : Same as SLC1)
- (ALC1 : Same as SLC1)
- (ALC2 : Same as SLC1)
- (ALC3 : Same as SLC1)
- (ALC4 : Same as SLC1)

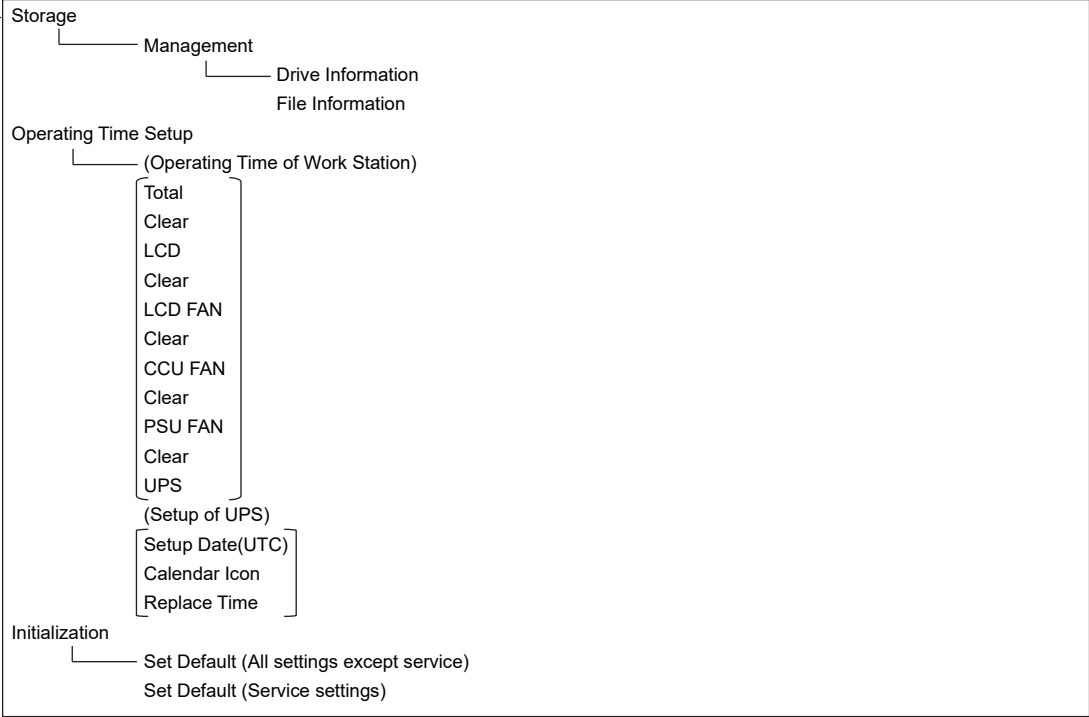
A/D (Menu for a person in charge of installation)







Maintenance



## B.2 Abbreviations of Geodetic Data

No.	Geodetic Data	Display to the top screen	DTM sentence	
			Abbreviation	User-defined No.
0	WGS 84	WGS 84	W84	0
1	WGS 72	WGS 74	W74	1
2	Tokyo	TOY	TOY	2
3	North American 1927(USA)	NAS	NAS(*2)	3
4	North American 1927(Canada & Alaska)	NAS	NAS(*2)	4
5	European 1950	EUR	EUR	5
6	Australian Geodetic 1966	AUA	AUA	6
7	Ordnance Survey of Great Britain	OGB	OGB	7
8	North American 1983	NAR	NAR	8
9	No Use	Blank display	-	9
10	No Use	Blank display	-	10
11	Adindan	ADI	ADI	11
12	Arc 1950	ARF	ARF	12
13	Australian Geodetic 1984	AUG	AUG	13
14	Bermuda 1957	BER	BER	14
15	Bogota Observatory	BOO	BOO	15
16	Campo Inchauspe	CAI	CAI	16
17	Chatam Island Astro 1971	CHI	CHI	17
18	Chua Astro	CHU	CHU	18
19	Corrego Alegre	COA	COA	19
20	Djakarta (Batavia)	BAT	BAT	20
21	European 1979	EUS	EUS	21
22	Geodetic Datum 1949	GEO	GEO	22
23	Guam 1963	GUA	GUA	23
24	Hayford 1910	024	024(*1)	24
25	Hjorsey 1955	HJO	HJO	25
26	Indian	IND	IND	26
27	Ireland 1965	IRL	IRL	27
28	Kertau 1948	KEA	KEA	28
29	L. C. 5 Astro 1961	LCF	LCF	29
30	Liberia 1964	LIB	LIB	30
31	Luzon	LUZ	LUZ	31
32	Merchich	MER	MER	32
33	Minna	MIN	MIN	33



No.	Datum	Display to the top screen	DTM sentence	
			Abbreviation	User-defined No.
34	Nahrwan	NAH	NAH	34
35	Naparima, BWI	NAP	NAP	35
36	Old Egyptian 1907	OEG	OEG	36
37	Old Hawaiian	OHA	OHA	37
38	Pico de las Nieves	PLN	PLN	38
39	Provisional South American 1956	PRP	PRP	39
40	Provisional South Chilean 1963	HIT	HIT	40
41	Puerto Rico	PUR	PUR	41
42	Qornoq	QUO	QUO	42
43	RT 90	043	043(*1)	43
44	Sao Braz	SAO	SAO	44
45	South American 1969	SAN	SAN	45
46	Graciosa Base SW 1948	GRA	GRA	46
47	Timbalai 1948	TIL	TIL	47
48	No Use	Blank display	-	48
49	No Use	Blank display	-	49

## B.3 Lists of Terminologies, Units, and Abbreviations

Abbreviation	Term
<b>A</b>	
A/D = AD	Analog/ Digital
A/P = AP	Auto Pilot
AC	Alternating Current
ACC	Actual Course Change
ACCA	Actual Course Change Alarm
ACK	Acknowledge
ACQ	Acquire, Acquisition
ACT	Activate
AFT	After
AIO	Admiralty Information Overlay (additional information to the navigation)
AIS	Automatic Identification System
ALC	Alert LAN Converter
AMP	Amplifiers
AMS	Alert Management System
ANT	Antenna
ARCS	Admiralty Raster Chart Service (A raster chart published by UKHO.)
ASCII	American Standard Code for Information Interchange
ASIC	Application Specific Integrated Circuit
AtoN	Aids to Navigation
AUTO = auto	Automatic
Av. = AVE	Average
AVCS	Admiralty Vector Chart Service
<b>AZ</b>	
AZI	Azimuth Stabilization Mode
<b>B</b>	
BAM	Bridge Alert Management
BCR	Bow Crossing Range
BCT	Bow Crossing Time
BFT	Beaufort
BNWAS	Bridge Navigational Watch Alarm System
BP	Bearing Pulse
BRG	Bearing
BWW	Bearing to waypoint to waypoint
BZ	Bearing Zero
<b>C</b>	
C UP	Course Up
CA-CFAR	Cell Averaging CFAR
Cargo.Cat	Cargo Category

<b>Abbreviation</b>	<b>Term</b>
CAM	Central Alert Management
CCRP	Consistent Common Reference Point
CCRS	Consistent Common Reference System
CCU	Central Control Unit
CCW	Counterclockwise
CFAR	Constant False Alarm Rate
CH	Channel
CHG	Change
CID=CONN	Conning Information Display
CIF	Companion MPU Interface
CLR	Clear
COG	Course Over the Ground
COM	Communication Port
CONT	Contrast, Control
CONV	Conventional
CORREL	Correlation
CPA	Closest Point of Approach
CPP	Controllable Pitch Propeller
CPU	Central Processing Unit
CRS	Course
CTS	Course to Steer
CTW	Course Through the Water
Curr.	Current
CW	Clockwise
<b>D</b>	
D/N	Day/Night
DC	Direct Current
Def.	Definition
DGPS	Differential GPS
DIFF	Difference
DIR = Dir.	Direction
DISP = Disp	Display
DIST	Distance
DR	Dead Reckoning, Dead Reckoned Position
DSC	Digital Selective Calling
DSP	Digital Signal Processor
DWOL	Distance to Wheel Over Line
<b>E</b>	
EBL	Electronic Bearing Line
ECC	Early Course Change
ECDIS	Electronic Chart Display and Information System
Ed.	Edition
EGC	Enhanced Group Calling

<b>Abbreviation</b>	<b>Term</b>
ENC	Electronic Navigational Chart
ENH	Enhance
EOT	End of Track
EP	Estimated Position
EPA	Electronic Plotting Aids
EPFS	Electronic Position Fixing System
EQUIP	Equipment
ETA	Estimated Time of Arrival
<b>F</b>	
FPGA	Field Programmable Gate Array
FTC	Fast Time Constant
FWD	Forward
<b>G</b>	
GC	Great Circle
GIF	Gyro Interface
GLONASS	Global Orbiting Navigation Satellite System
GND	Ground
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
GZ	Guard Zone
<b>H</b>	
H UP	Head Up
H/W = HW	HardWare
HASP	Hardware Against Software Piracy
HC	Heading Control
HCS	Heading Control System
HDG	Heading
HDOP	Horizontal Dilution of Precision
HL	Heading Line
HO	Hydrographic Organization
HSC	High Speed Craft
<b>I</b>	
I/F = IF	Interface
I/O	Input/Output
IALA	International Association of Marine Aids to Navigation and Lighthouse Authorities
IALA-A	IALA - Region A
IALA-B	IALA - Region B
ID	Identification
IMO	International Maritime Organization
IND	Indication
INFO	Information
INIT	Initialisation
INS	Integrated Navigation System

<b>Abbreviation</b>	<b>Term</b>
INT	Interval
IP Address	Internet Protocol Address
IR	Interference Rejection
ISW	Interswitch
<b>J</b>	
JB	Junction Box
<b>K</b>	
KOPU	Keyboard Operation Unit
<b>L</b>	
L/L = LL	Latitude/ Longitude
LAN	Local Area Network
LAT	Latitude
LCD	Liquid Crystal Display
LMT	Local Mean Time
LON	Longitude
LOP	Line of Position
LORAN	Long Range Navigation
LP	Long Pulse
<b>M</b>	
M/E	Main Engine
MAG	Magnetic
MAN	Manual
MAX	Maximum
MBS	Main Bang Suppression
MFDF	Medium Frequency Direction Finding
MHV	Modulator High Voltage
MIC	Microphone
MID	Middle
MIN	Minimum
MMSI	Maritime Mobile Services Identity Number
MOB	Man Overboard
MON	Monitor
MP	Medium Pulse
MSC	Maritime Safety Committee
MSG	Message
<b>N</b>	
N UP	North Up
NAV = NAVI	Navigation
NAVTEX	Navigational Telex
NE	North East
NFU	Non Follow Up
NLT	Not Less Than
NMEA	National Marine Electronics Association

<b>Abbreviation</b>	<b>Term</b>
NMEA0183	NMEA 0183 standards
NMT No. = NUM	Not More Than Number
NW	North West
<b>O</b>	
OPE	Operation
OPU	Operation Unit
OSD	Own Ship Data
OVRD	Override
<b>P</b>	
PI	Parallel Index Line
PIN	Personal Identification Number
PL	Pulse Length
PORT	Port/ Portside
POS = POSN	Position
PPI	Plan Position Indicator
PRF	Pulse Repetition Frequency
PROC	Process
PS	Power Supply
PSU	Power Supply Unit
PWR	Power
<b>Q</b>	
<b>R</b>	
R	Relative
RADAR	Radio Detecting and Ranging
RAND	Random
RCID	Raster Chart Issue Date
REF	Reference
REL	Relative
Rev.	Revolution
RIF	Radar I/F Circuit
RL	Rhumb Line
RM	Relative Motion
RM(R)	Relative Motion. Relative Trails.
RM(T)	Relative Motion. True Trails.
RMS	Root Mean Square
RNC	Raster Navigational Chart
RNG	Range
RoRo	Roll On/ Roll Off (Vessel)
ROM	Read Only Memory
ROT	Rate of Turn
RPS	Route Planning System
RX	Receiver

Abbreviation	Term
<b>S</b>	
SA	Scheme Administrator
SAR	Search and Rescue
SART	Search and Rescue Transponder
SATNAV	Satellite Navigation
SBAS	Satellite Based Augmentation System
SCL	Serial LAN Converter
SDK	Software Development Kit
SE	South East
SEL	Select
SENC	System Electronic Navigational Chart
Seq	Sequence
SFI	System Function ID
S-JOY	Steering Joystick Controller
SLC	Serial LAN Interfaces CircuitSerial LAN Converter
SOG	Speed Over the Ground
SP	Short Pulse
SPD	Speed
SprsLvl	Spurious Level
SSD	Solid State Drive
SSE	Security Scheme Error
SSR	Solid State Radar
SSW	Safety Switch
STAB	Stabilised, Stabilisation
STBD	Starboard, Starboard Side
STC	Sensitivity Time Control
STD	Standard
STW	Speed Through the Water
Surf	Surface
SW HUB	Switching Hub
SYNC	Synchronisation
SYS	System
<b>T</b>	
T	True
T & P	Temporary and Preliminary Notice to Mariners
TCPA	Time to CPA
TCS	Track Control System
TD	Time Difference
TEMP / Temp.	Temperature
TGT	Target
TM	True Motion
TNI	Tune Indicator
TOPU	Trackball Operation Unit

<b>Abbreviation</b>	<b>Term</b>
TPL	Transferred Line of Position
Trans	Transducer
TRX	Transceiver
TT	Target Tracking
TTG	Time to Go
TWOL	Time to Wheel Over Line
TX	Transmitter
TXRX	Transceiver
<b>U</b>	
U.Map	User Map
UNACK	Un-Acknowledge
Up.No.	Update Number
USB	Universal Serial Bus
UTC	Coordinated Universal Time
<b>V</b>	
VD	Video
VDIN	Video In
VDR	Voyage Data Recorder
Ver.	Version
VHF	Very High Frequency
VOL	Volume
VRM	Variable Range Marker
<b>W</b>	
W UP	Waypoint Up
WGS	World Geodetic System
WIG	Wing-in-ground effect craft
WOL	Wheel Over Line
WPT	Waypoint
WS	Work Station
WTRST	Watch Timer Reset
<b>X</b>	
XTD	Cross Track Distance
XTE	Cross Track Error
XTL	Cross Track Limit, Route Width
<b>Y</b>	
<b>Z</b>	
<b>Unit</b>	
bps	bit per second
cm	centimetre
dB	decibel
deg	degree
fm	fathom
ft	feet, foot



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<b>Abbreviation</b>	<b>Term</b>
h = hr	hour
hPa	hecto pascal
Hz	hertz
kg	kilogram
km	kilometre
kn = kts	knot
m	metre
mbar	millibar
min	minute
mph	mile per hour
NM	nautical mile
RAD	radius
rpm	revolutions per minute
s	second
sm	statute mile

## B.4 List of Icons/Icon Buttons

The icons/icon buttons displayed in this equipment are listed below.

No.	Name	Functional outline	Displayed image
1	Active indicator	Indicates that the computer is processing by an animation.	
2	Delete	Deletes the item.	
3	Setting mark	Displayed when the operation is valid.	
4	Drive	Displayed at the left of the name when a drive is selected.	
5	Folder	Displayed at the left of the name when a folder is selected.	
6	Close	Closes the dialog box.	
7	Date selection	Displays the calendar picker.	
8	Day/Night	Displays the state of the current Day/Night setting by an icon.	
9	Screen brightness	Enables adjustment of the screen brightness.	
10	Panel brightness	Enables adjustment of the brightness of operation unit.	
11	MOB	Starts the MOB (Man Over Board) mode. In the MOB mode, a symbol display of the position of the sailor falling over board and a dotted line connecting it to the own ship are displayed graphically.	
12	Menu	[Menu] button with freeze indicator function. Displays the menu. Indicates using animation that the system is operating.	
13	Silencing	Silences the alert sound.	
14	Multiple knob (small knob)	Displays the functions assigned to the multiple knob. Displayed as an icon with the function name at left.	

No.	Name	Functional outline	Displayed image
15	Brightness	Sets the brightness of the screen.	
16	Page selection	Selects the item to be displayed in the custom tab.	
17	View	Opens the View related menu. Sets the graph display.	
18	Alert	Opens the alert related menu. When clicked, the [Alert] dialog box appears. Alert settings can be made in the dialog box.	
19	Settings	Opens the menu related to the operation settings of the equipment.	
20	Maintenance	The maintenance related menu for the users is displayed. It is possible to check the software version and to monitor the status of the equipment.	
21	Help	Opens the help screen.	
22	Code Input	Input the password.	
23	Service	The menu related to adjustment, servicing, and maintenance is displayed for the servicing personnel.	
24	Back space	Carries out a backspace operation.	
25	Backward movement of the input position	Moves back the input position.	
26	Forward movement of the input position	Moves the input position forward	
27	Operation guide	Displays the operation guide when clicked.	
28	Search	Displayed in the search text box.	

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**APP B**

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**APP B**

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    - (b) any additional file created by the font developing program in the course of creating the Derived Program that can be used for further modification of the Derived Program, if any.
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Marine Service Department

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