# JAN-7202/9202

# Conning Display

Instruction Manual


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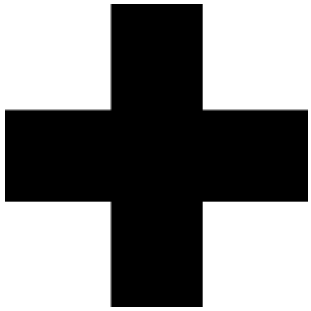
JRC Japan Radio Co.,Ltd.

# PREFACE

Thank you for purchasing JAN-7202/9202.
This equipment meets the performance standards of the IMO (International Maritime Organization) and the IHO (International Hydro graphic 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.

# 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.

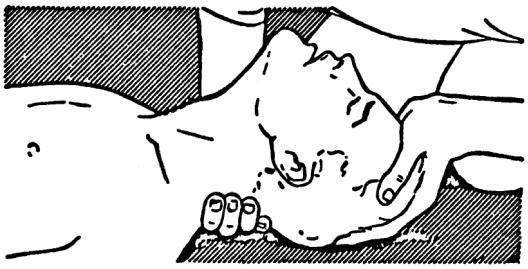
# ☆Treatment to Give When the Patient Has a Pulse Beating but Has Ceased to Breathe

∗ 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.

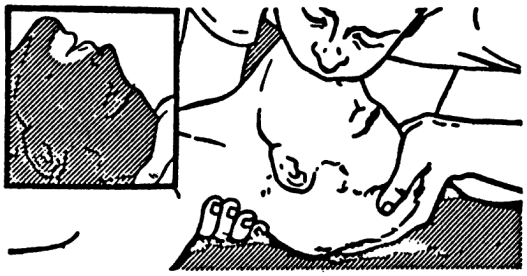
Mouth-to-mouth artificial respiration with the patient's head lifted

[1]



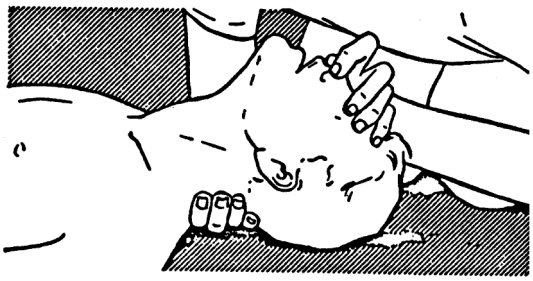
(1) Lift the back part of the patient's head. Support the forehead with one of your hand and the neck with the other hand.→ [1].
Many patients will have their airways opened by lifting their head in this way to ease mouth-to-mouth artificial respiration.

[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

# Flow of Cardiopulmonary Resuscitation (CPR)

A person is collapsing.
- Secure the safety of the surrounding area.
- Prevent secondary disasters.

↓

Check for response.
- Call while tapping the shoulder.

Responding → Listen to the appeal of the injured or ill person and give the necessary first-aid treatment.

Not responding ↓

Ask for help.
- Make an emergency call.
- Ask to bring an AED.

↓

Open the airway.
- Check for breathing.

Breathing → Recovery position
- Lay the injured or ill person on his/her side and wait for the arrival of the emergency services.

Not breathing ↓

Give 2 rescue breaths; omittable Note([1])

↓

Give CPR.
- 30 chest compressions
- Give 2 rescue breaths; omittable Note([1])

↓

Arrival of an AED
- Turn on the power.
- Use the AED by following its voice prompts. Fitting of the electrode pads, etc.

↓

Automatic electrocardiogram analysis
- Do not touch the injured or ill person.

Electric shock is not needed. →

Electric shock is needed. ↓

Delivery of electric shock

↓

Resume CPR from chest compressions by following the voice prompts of the AED.

When to stop CPR → When the injured or ill person has been handed over to the emergency services or 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.

The AED automatically analyzes the heart rhythm every 2 min. → Automatic electrocardiogram analysis

Note([1]) Omission of rescue breathing:
If there is a fear of infection because the injured or ill person has an intraoral injury, you are hesitant about giving mouth-to-mouth resuscitation, or preparing the mouthpiece for rescue breathing takes too long, omit rescue breathing and proceed to the next step.

# 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.

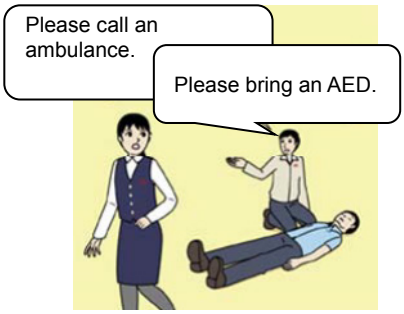
## 2. Check for responsiveness

a) Tap the shoulder of the injured or ill and shout in the ear saying, "Are you OK?"

b) It 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. Open the airway

a) Touch the forehead with one hand. Lift the chin with the two fingers of the middle finger and forefinger of the other hand and push down on the forehead as you lift the jaw to bring the chin forward to open the airway. If neck injury is suspected, open the airway by lifting the lower jaw.

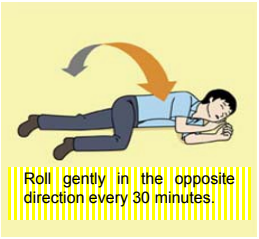
## 6. Check for breathing

a) After opening the airway, check quickly for breathing for no more than 10 seconds. Put your cheek down by the mouth and nose area of the injured or ill person, look at his/her chest and abdomen, and check the following three points.

- Look to see if the chest and abdomen are rising and falling.
- Listen for breathing.
- Feel for breath against your cheek.

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, maintain a clear and open airway by pushing the head backward while positioning their mouth downward. To maintain proper blood circulation, roll him/her gently to position them in the recovery position in the opposite direction every 30 minutes.




## 7. Give 2 rescue breaths (omittable)

a) If opening the airway does not cause the injured or ill person to begin to breathe normally, give rescue breaths.

b) If there is a fear of infection because the injured or ill person has an intraoral injury, you are hesitant about giving mouth-to-mouth resuscitation, or getting and preparing the mouthpiece for rescue breathing takes too long, omit rescue breathing and perform chest compressions.

c) When performing rescue breathing, it is recommended to use a mouthpiece for rescue breathing and other protective devices to prevent infections.

d) While maintaining an open airway, pinch the person's nose shut with your thumb and forefinger of the hand used to push down the forehead.

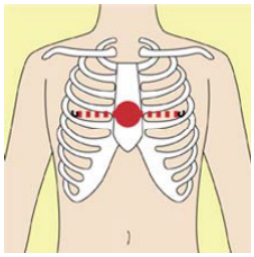
e) Open your mouth widely to completely cover the mouth of the injured or ill person so that no air will escape. Give rescue breathing twice in about 1 second and check if the chest rises.

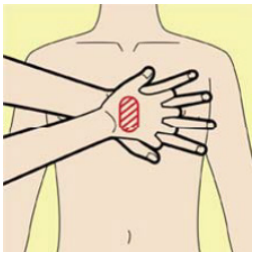
## 8. Cardiopulmonary resuscitation (CPR) (combination of chest compressions and rescue breaths)

a) Chest compressions

1) Position of chest compressions

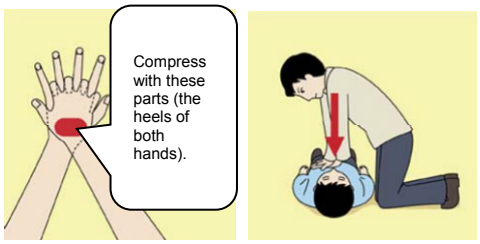
- Position the heel of one hand in the center of the chest, approximately between the nipples, and place your other hand on top of the one that is in position.





2) Perform chest compressions

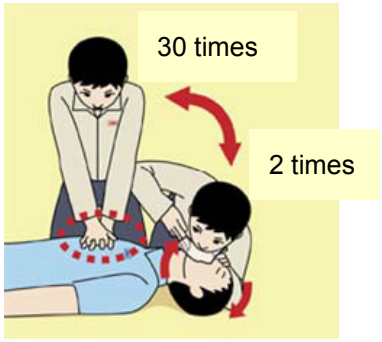
- Perform uninterrupted chest compressions of 30 at the rate of about 100 times per minute. While locking your elbows position yourself vertically above your hands.




- With each compression, depress the chest wall to a depth of approximately 4 to 5 cm.

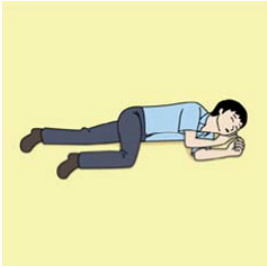
b) Combination of 30 chest compressions and 2 rescue breaths

1) After performing 30 chest compressions, give 2 rescue breaths. If rescue breathing is omitted, perform only chest compressions.
2) Continuously perform the combination of 30 chest compressions and 2 rescue breaths without interruption.
3) If there are two or more first-aiders, alternate with each other approximately every two minutes (five cycles of compressions and ventilations at a ratio of 30:2) without interruption.



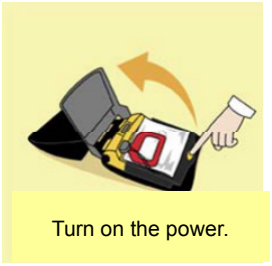

## 9. When to stop cardiopulmonary resuscitation (CPR)

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.



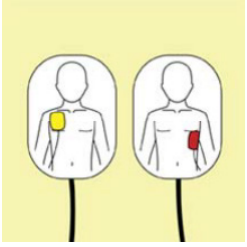
## 10. Arrival and preparation of an AED

a) Place the AED at an easy-to-use position. If there are multiple first-aiders, continue CPR until the AED becomes ready.
b) 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.
c) Follow the voice prompts of the AED.

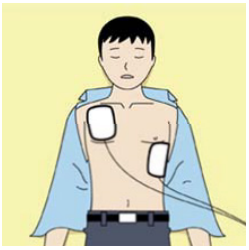



## 11. Attach the electrode pads to the injured or ill person's bare chest

a) Remove all clothing from the chest, abdomen, and arms.
b) 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 3cm 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.



c) Some AED models require to connect a connector by following voice prompts.
d) The electrode pads for small children should not be used for children over the age of 8 and for adults.

## 12. Electrocardiogram analysis

a) 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.
b) On some AED models, you may need to push a button to analyze the heart rhythm.

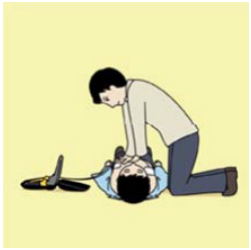
## 13. Electric shock (defibrillation)

Press the shock button.

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.

## 14. Resume cardiopulmonary resuscitation (CPR).

Resume CPR consisting of 30 chest compressions and 2 rescue breaths by following the voice prompts of the AED.



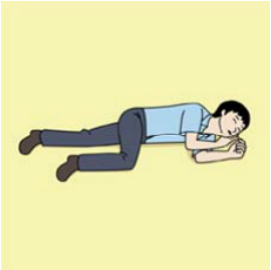
## 15. Automatic electrocardiogram analysis

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.

## 16. 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:

| | |
|---|---|
| **DANGER** | This indication is shown where incorrect equipment operation due to negligence may cause death or serious injuries. |
| **WARNING** | 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. |
| **CAUTION** | 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 △ 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 ⃠ 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 ● 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.<br>Checking or repair by an unqualified person may cause a fire or an electric shock.<br>Contact our head office, or a nearby branch or local office to request servicing. |
| | Never remove the cover of this equipment.<br>Touching the high-voltage section inside will cause an electric shock. |
| | Do not attempt to disassemble or tamper with this equipment.<br>Otherwise, a fire, an electric shock, or a malfunction may occur. |
| | When conducting maintenance, make sure to turn the main power off.<br>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.<br>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.<br>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 display screen, do not wipe it too strongly with a dry cloth. Also, do not use gasoline or thinner to clean the screen. Failure will result in damage to the screen surface. |
| | Confirm computer virus does not exist in USB flash memory beforehand when reading and writing of the file by using USB flash memory.<br>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.<br>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.<br>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.<br>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.<br>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. |

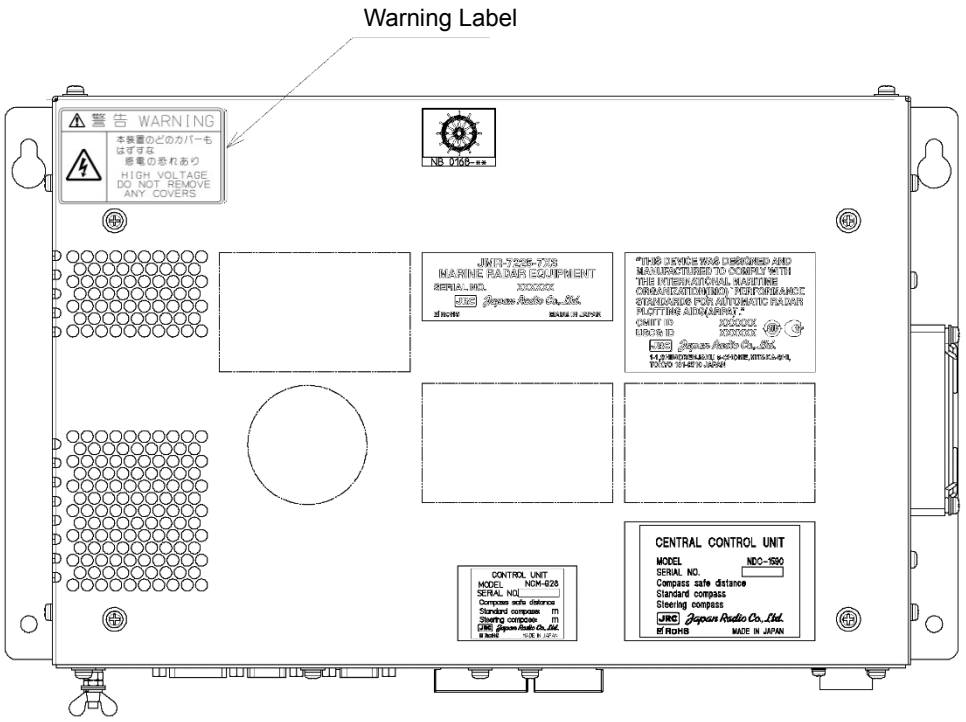
# ⚠CAUTION

| | |
|---|---|
| | 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.<br>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.<br>Otherwise, a fire or a malfunction may occur. |
| | Do not block the ventilation opening of the equipment.<br>Otherwise, heat may accumulate inside to cause a fire or a malfunction. |
| | Do not touch the equipment with hands or gloves wet with water.<br>Otherwise, an electric shock or a malfunction may occur. |
| | • Do not place any object on the operation panel.<br>In particular, if a hot object is placed on the operation panel, it can cause deformation of the surface of the operation panel.<br>• Do not apply any undue shock on the operation panel, trackball and dials.<br>Otherwise, a malfunction may result. |
| | Make sure that the main power is turned off before inspection or replacement of parts.<br>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.<br>Keeping the equipment in operation under such condition may cause a fire or a malfunction.<br>After turning off the power, contact our head office, or a nearby branch or local office to request servicing. |

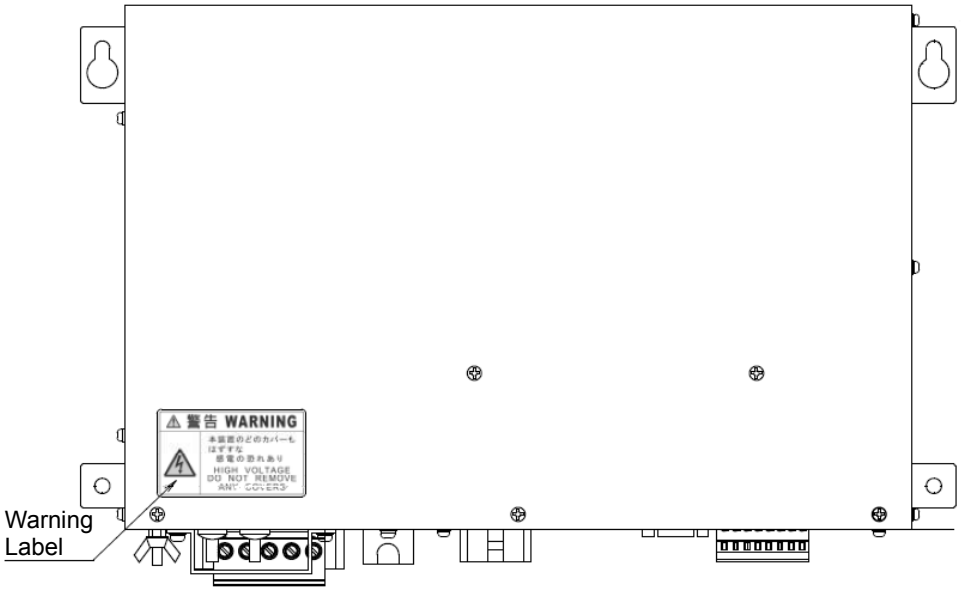
# ⚠CAUTION

| | |
|---|---|
| | Do not turn off the power during Backup/Restore.<br>Otherwise, a function may fail, and an accident may occur. |
| | Do not do the backup operation of data while sailing.<br>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.<br>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.<br>Otherwise, an operation failure may occur and an accident may occur. |

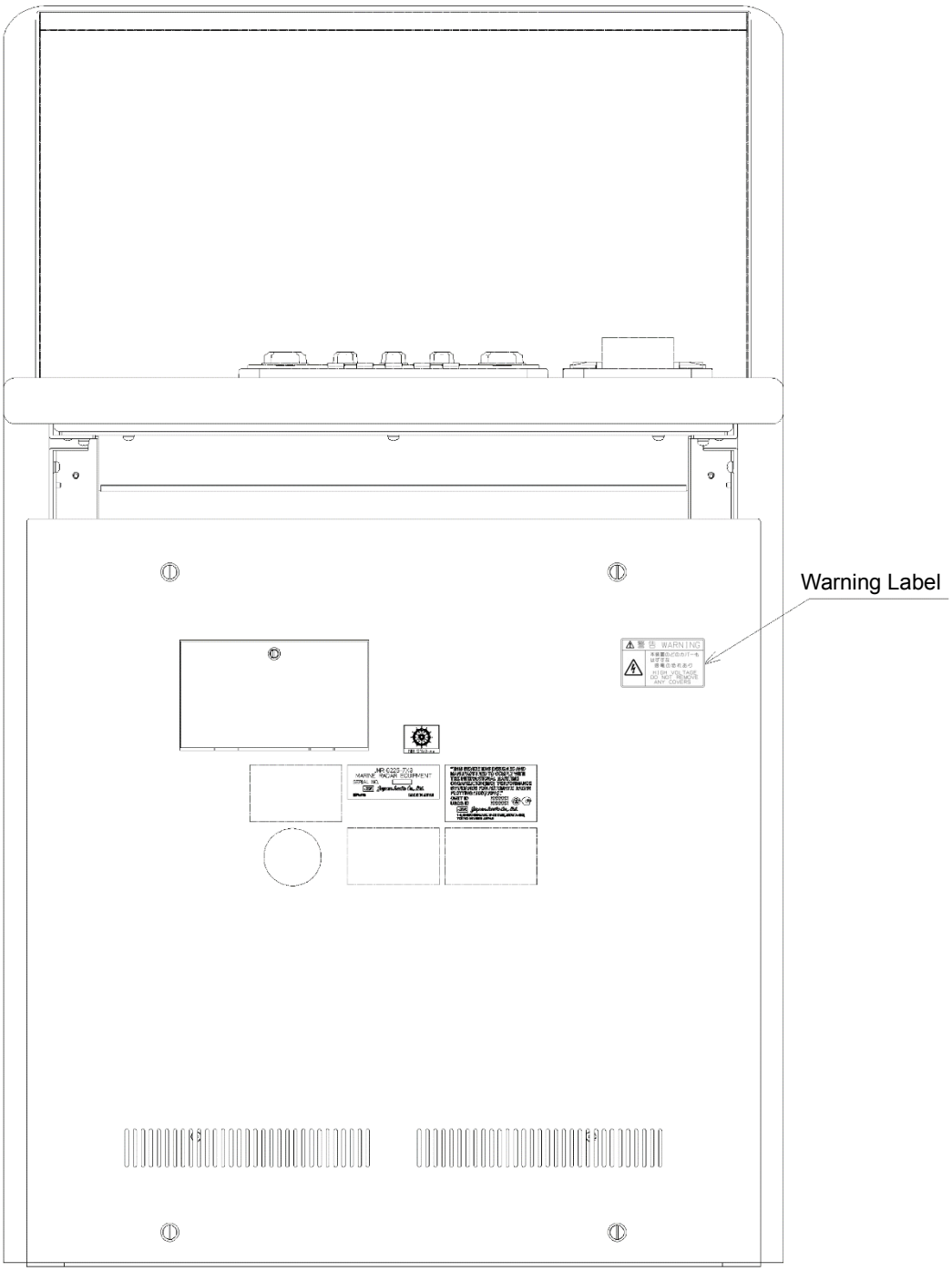
# The Mounting Point of the Warning Label



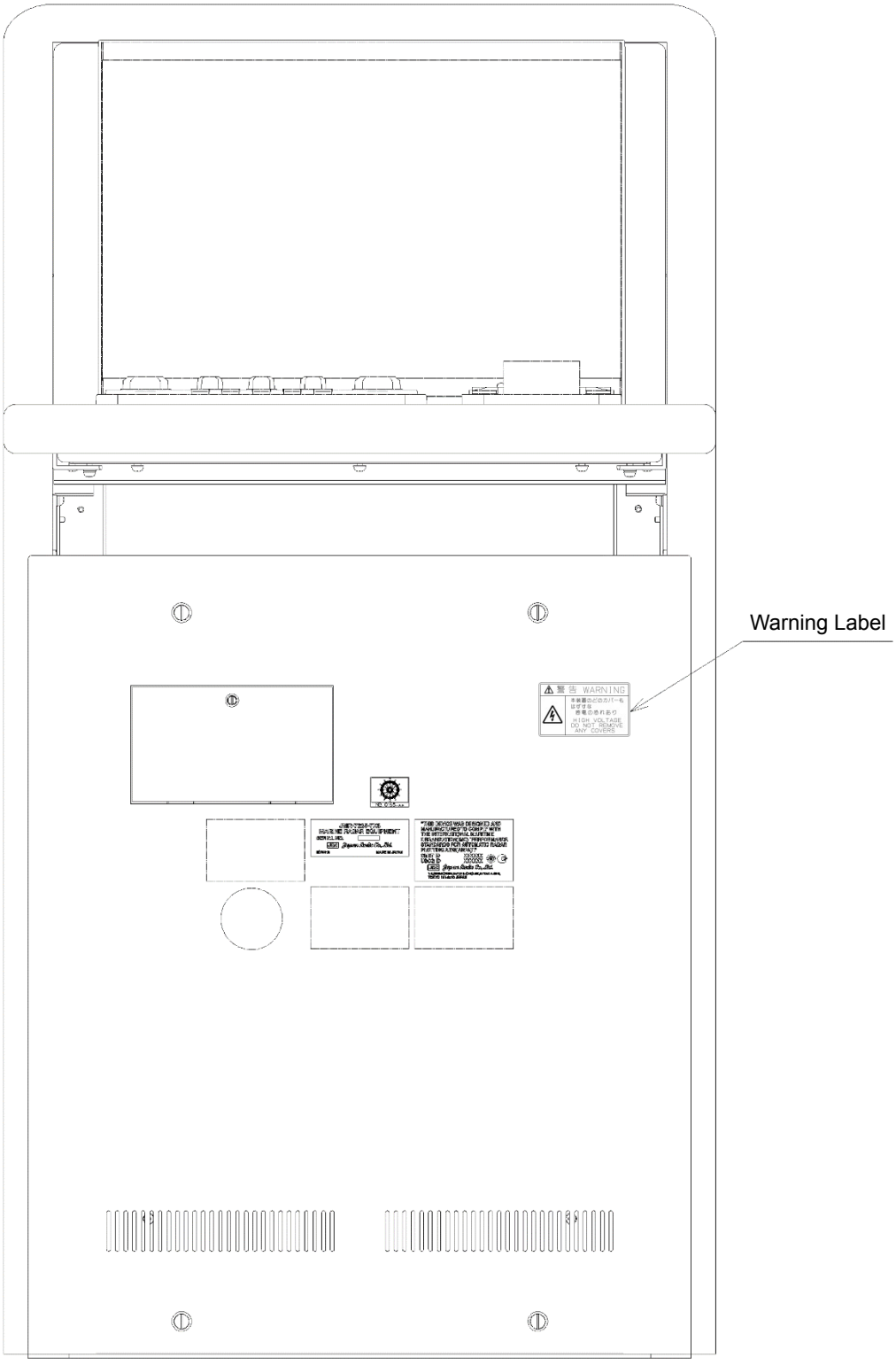

NDC-1590 Central Control Unit



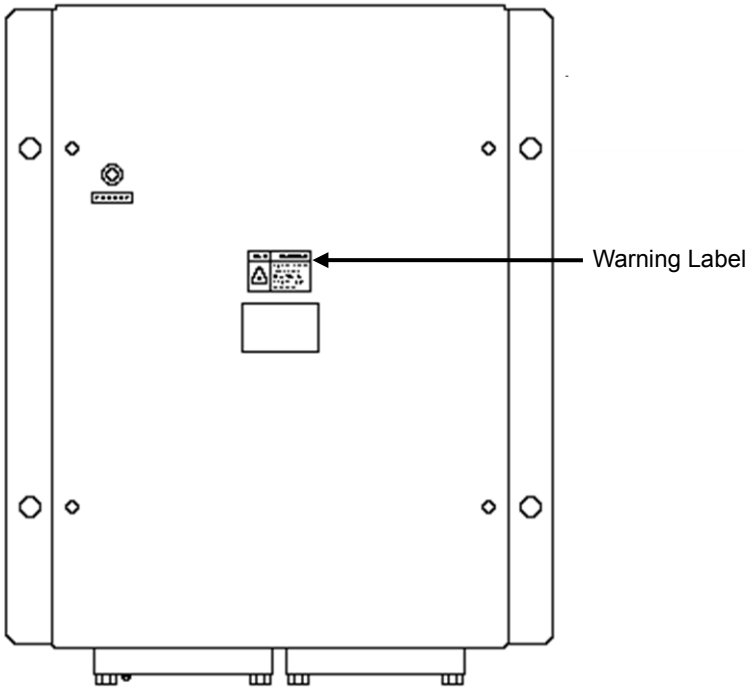

NBD-913 Power Supply Unit




CWA-246 26inch Display Unit Mount Kit



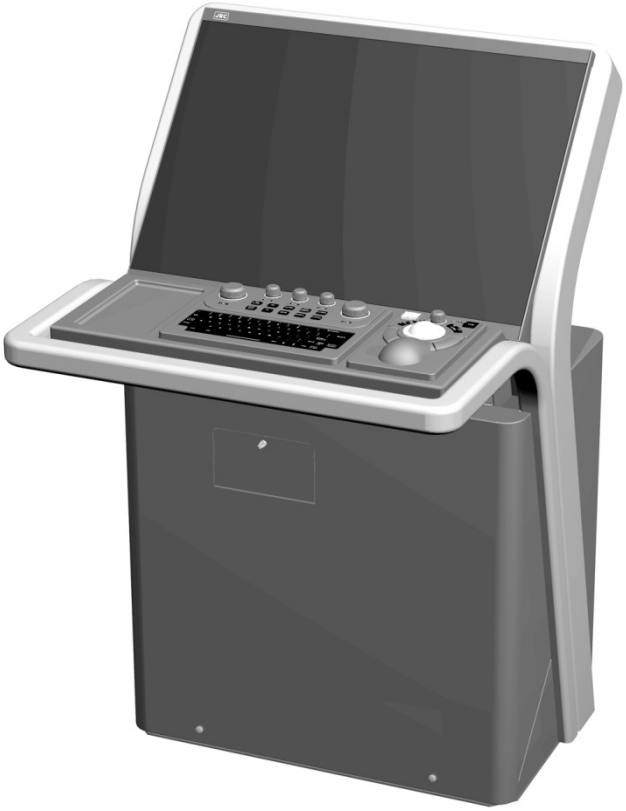

CWA-245 19inch Display Unit Mount Kit




NQE-3141-4A/8A Interswitch Unit

# EQUIPMENT APPEARANCE

CWA-245 Display Unit



CWA-246 Display Unit

NCE-5605 Trackball Operation Unit

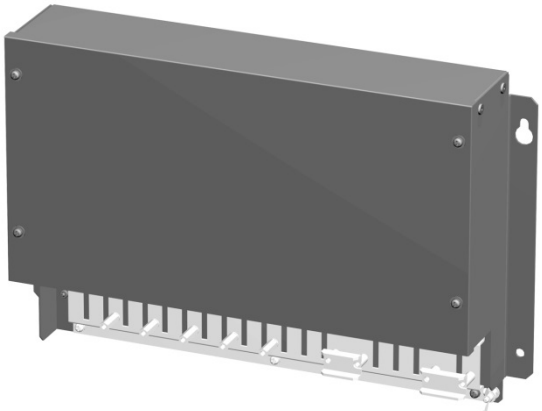
NCE-5625 Keyboard Operation Unit (Option)

NDC-1590 Central Control Unit

NBD-913 Power Supply Unit

NWZ-207 19inch Display

NWZ-208 26inch 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<br>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<br>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<br>Name and Function of Each Unit | Describes the name and function of each unit of this equipment. |
| Section 3<br>Basic Operations | Describes the basic operations of Conning Display. |
| Section 4<br>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<br>Setting Up Screen View | Describes the detail setting of screen display. |
| Section 6<br>Setting Up Alerts | Describes the alert detail setting for avoiding dangers. |
| Section 7<br>Setting Up the Operation Mode | Describes the detail setting of the operation modes of this equipment. |
| Section 8<br>Adjusting and Setting Up Equipment (for Services) | Describes the adjustment and setup of this equipment by specialized service personnel. |
| Section 9<br>Maintenance & Inspection | Describes the maintenance and inspection of this equipment. |
| Section 10<br>Failures and After-Sale Services | Describes the failure handling measures and after-sale services of this equipment. |
| Section 11<br>About Disposal | Describes the cautions on disposing of this equipment. |
| Section 12<br>Specifications | Describes the specifications of this equipment. |
| Appendix A<br>Alert List | Contains a listing of alerts. |
| Appendix B<br>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<br>Example: Click on the object. |
| Double-click the left button. | Double-click<br>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.<br>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.<br>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.<br>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.<br>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.<br>Otherwise, fire or other troubles may occur. |
| | Do not block the ventilation port of the equipment.<br>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.<br>Otherwise, electric shock or other troubles may occur. |
| | • Do not place any object on the operation panel.<br>In particular, if a hot object is placed on the operation panel, it can cause deformation of the surface of the operation panel.<br>• Do not apply any undue shock on the operation panel, trackball and dials.<br>Otherwise, a malfunction may result. |
| | • If a fan alarm or CPU temperature rise alarm has occurred, immediately turn off the power.<br>Keeping the equipment in operation under such condition may cause a fire or a malfunction.<br>After turning off the power, contact our head office, or a nearby branch or local office to request servicing. |

# 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
  Warning: Warning information/history display from the connection device
- Day/Night function
- Self-diagnosis function

# 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*1
- 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-inch color LCD

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

# 1.3 Components

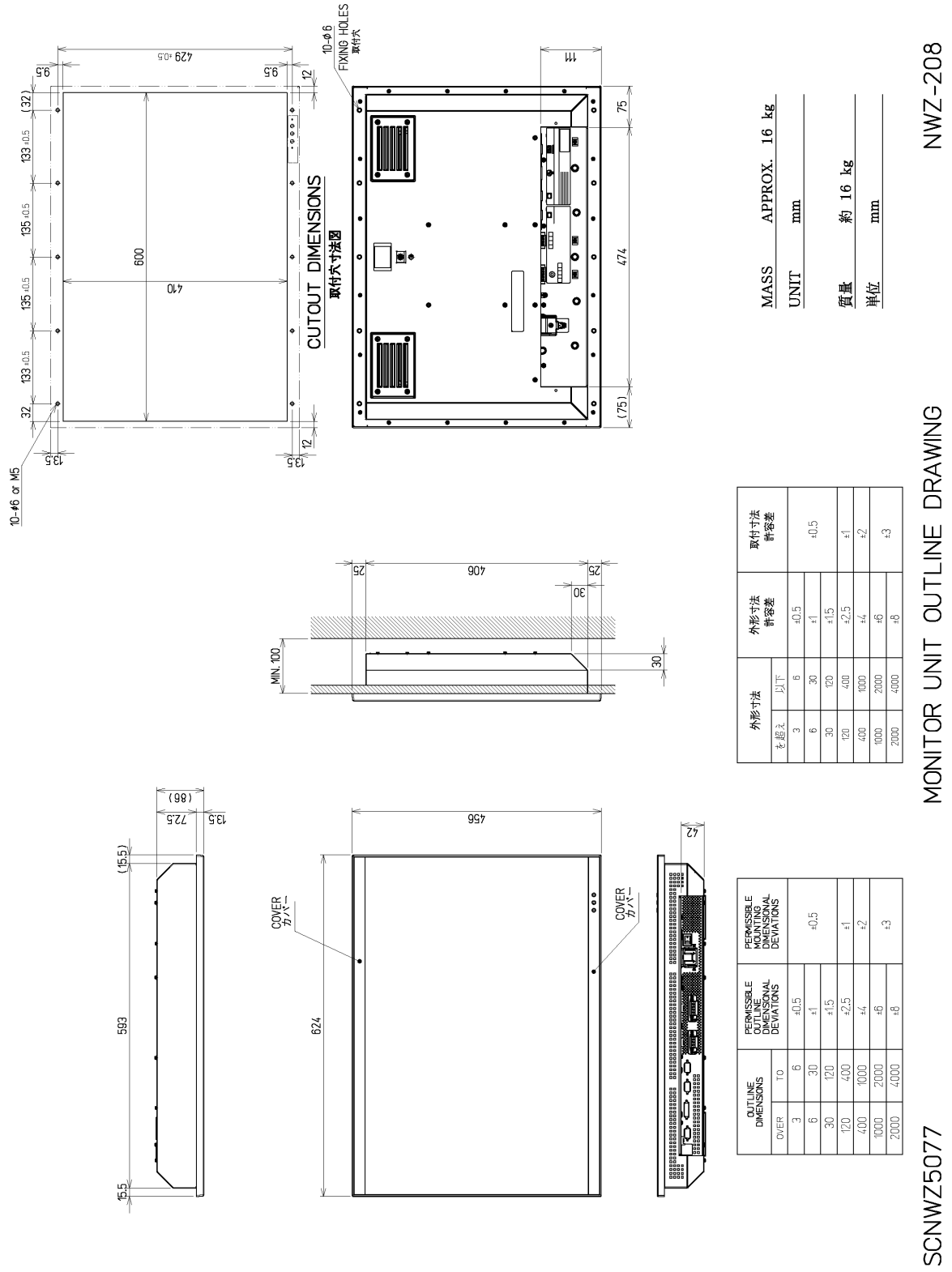
A list of components and optional accessories is shown below.

**Components of the Display Unit**

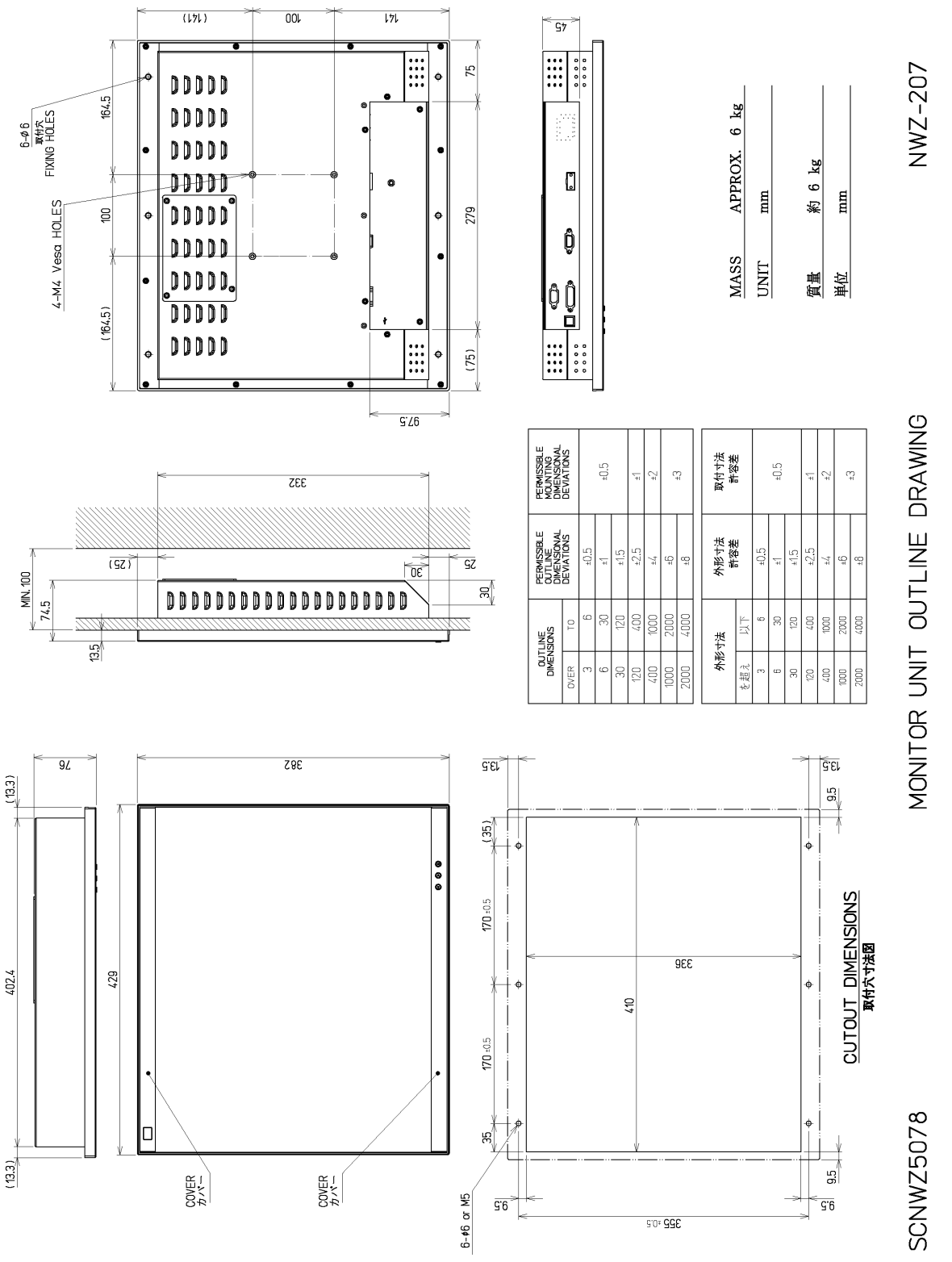
| Name | | | Model | Q'ty | Remarks |
|---|---|---|---|---|---|
| Display unit | | | | | Main unit |
| | Display | (JMR-72XX/JAN-72XX) | NWZ-207 | 1 | Included in the main unit. |
| | | (JMR-92XX/JAN-92XX) | NWZ-208 | | |
| | Trackball operation unit | | NCE-5605 | 1 | Included in the main unit. |
| | 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 | 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 | 1 | Option |
| 26inch cradle frame | | | CWA-246 | 1 | Option |
| 19inch cradle frame | | | CWA-245 | 1 | Option |
| 26inch desktop frame | | | CWB-1595 | 1 | Option |
| 19inch desktop frame | | | CWB-1594 | 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

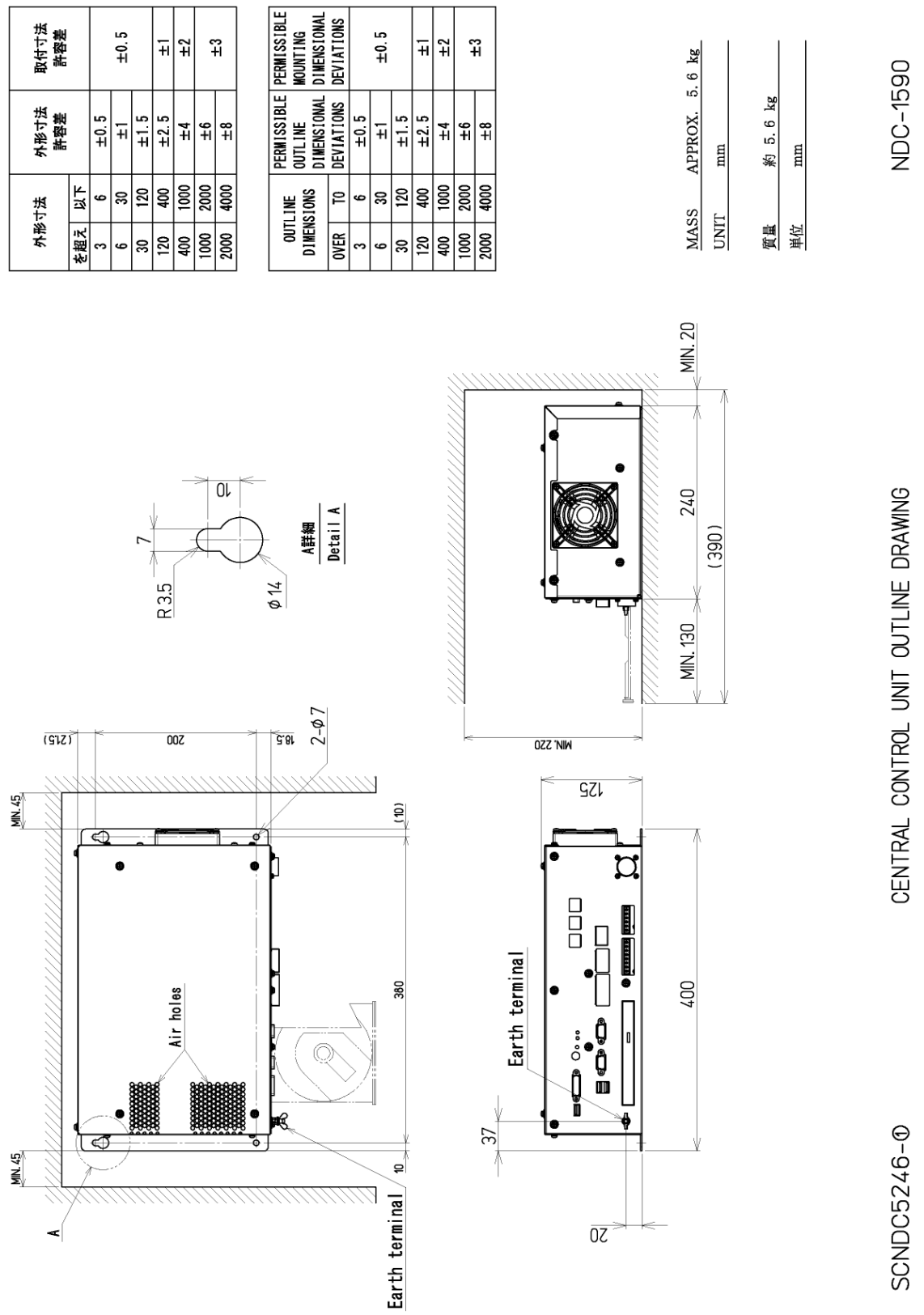
The outline of this equipment is as follows.



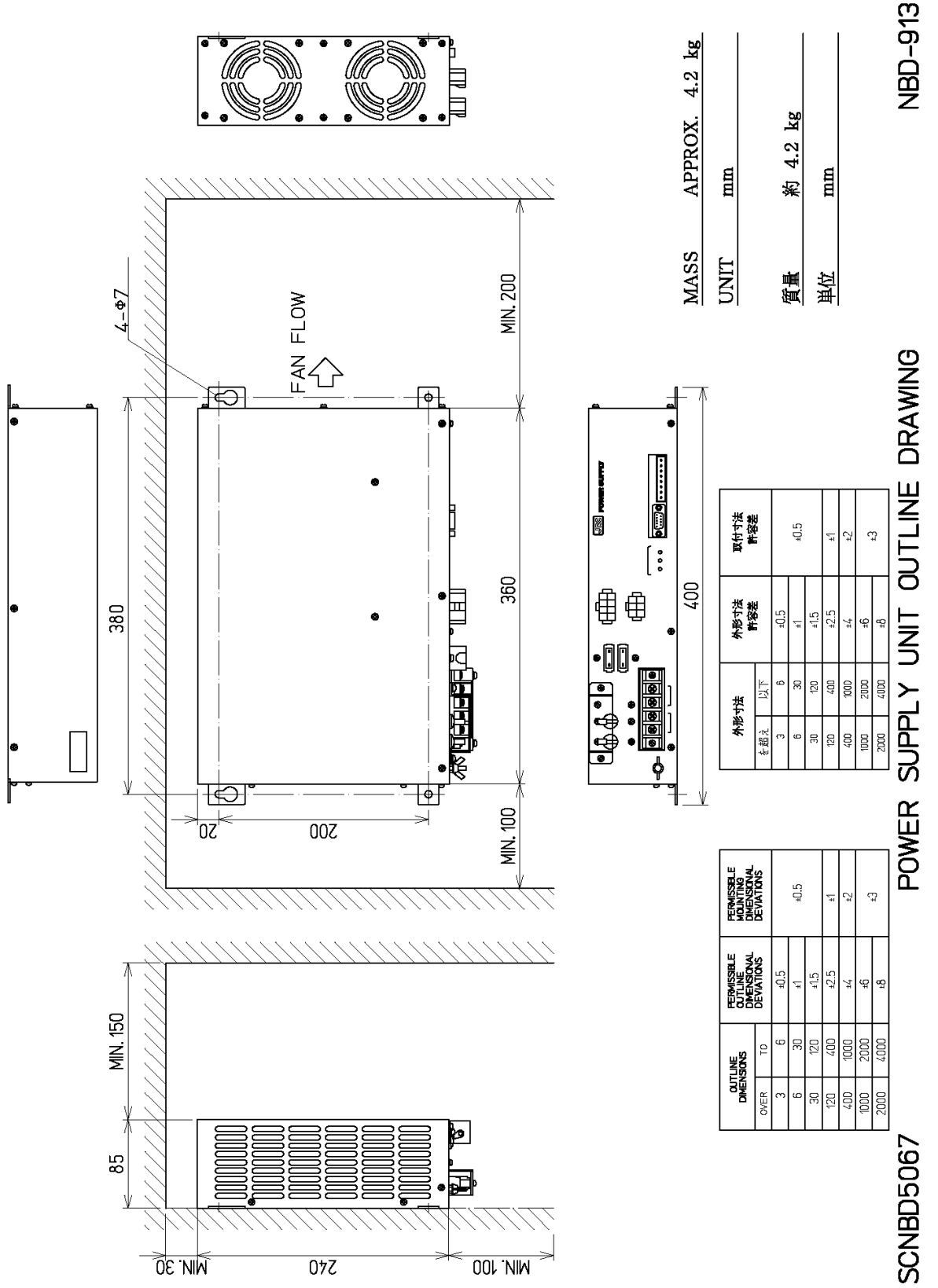

**Outline drawing of 26inch Display (NWZ-208)**



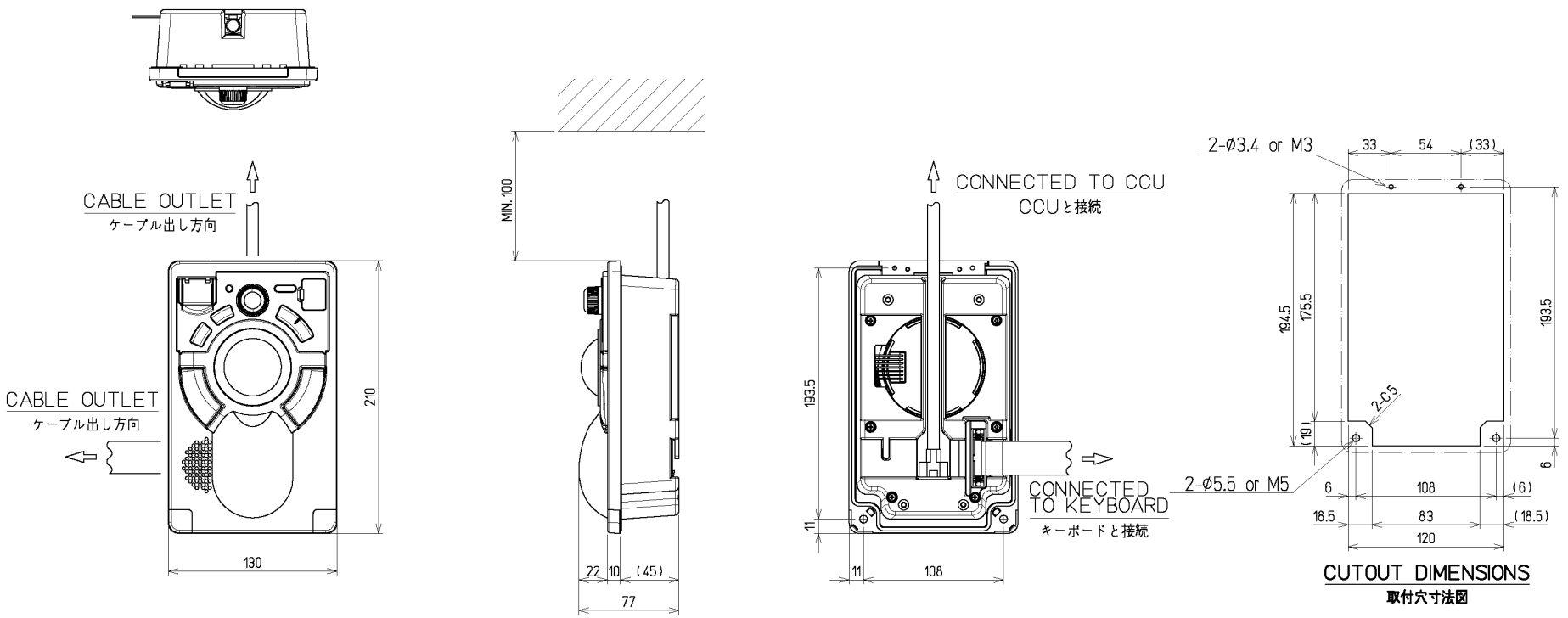

**Outline drawing of 19inch Display (NWZ-207)**




**Outline Drawing of Central Control Unit (NDC-1590)**




**Outline Drawing of Power Supply Unit (NBD-913)**

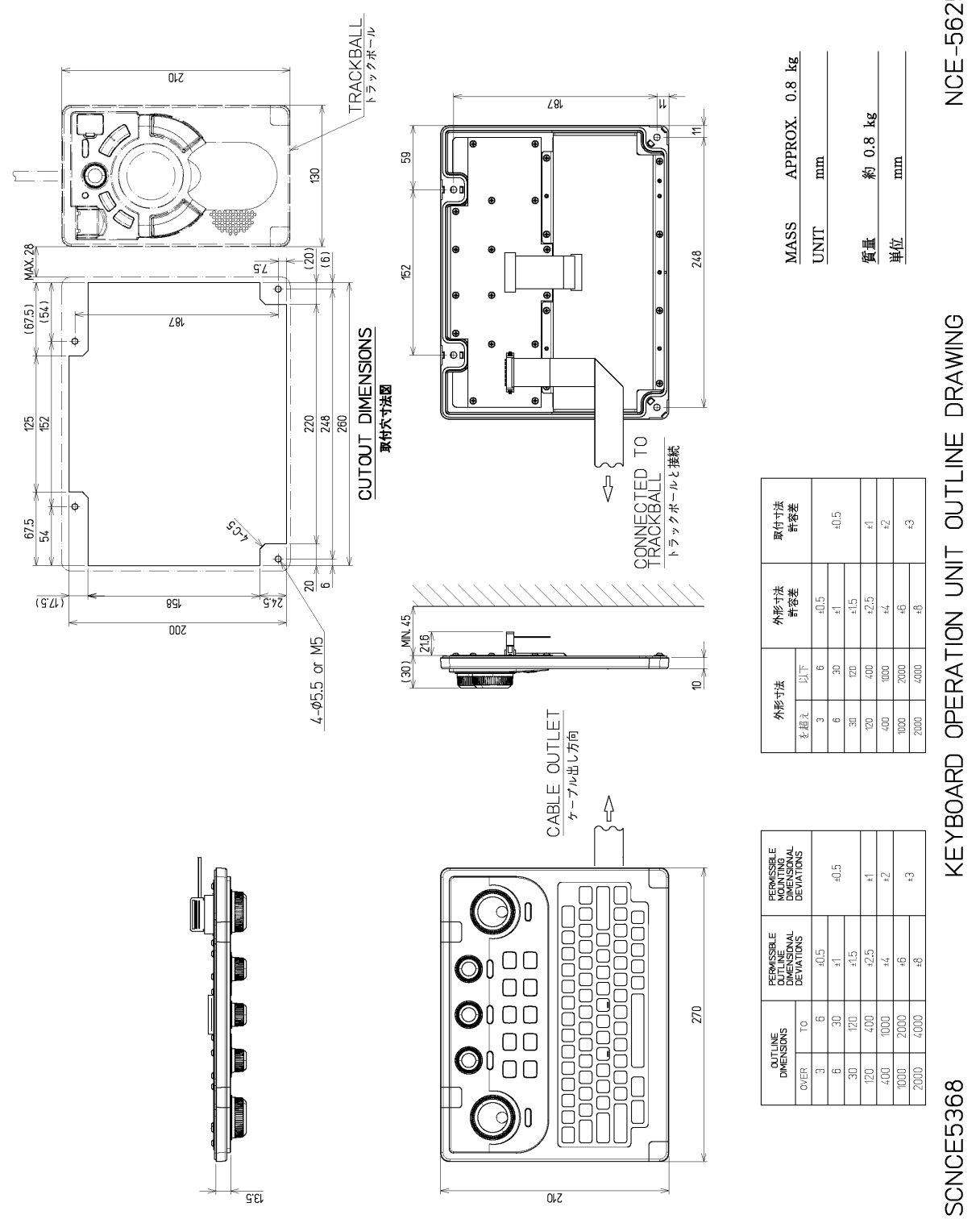



| OUTLINE DIMENSIONS | | PERMISSIBLE OUTLINE DIMENSIONAL DEVIATIONS | PERMISSIBLE MOUNTING DIMENSIONAL DEVIATIONS |
|---|---|---|---|
| OVER | TO | | |
| 3 | 6 | ±0.5 | ±0.5 |
| 6 | 30 | ±1 | |
| 30 | 120 | ±1.5 | |
| 120 | 400 | ±2.5 | ±1 |
| 400 | 1000 | ±4 | ±2 |
| 1000 | 2000 | ±6 | ±3 |
| 2000 |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

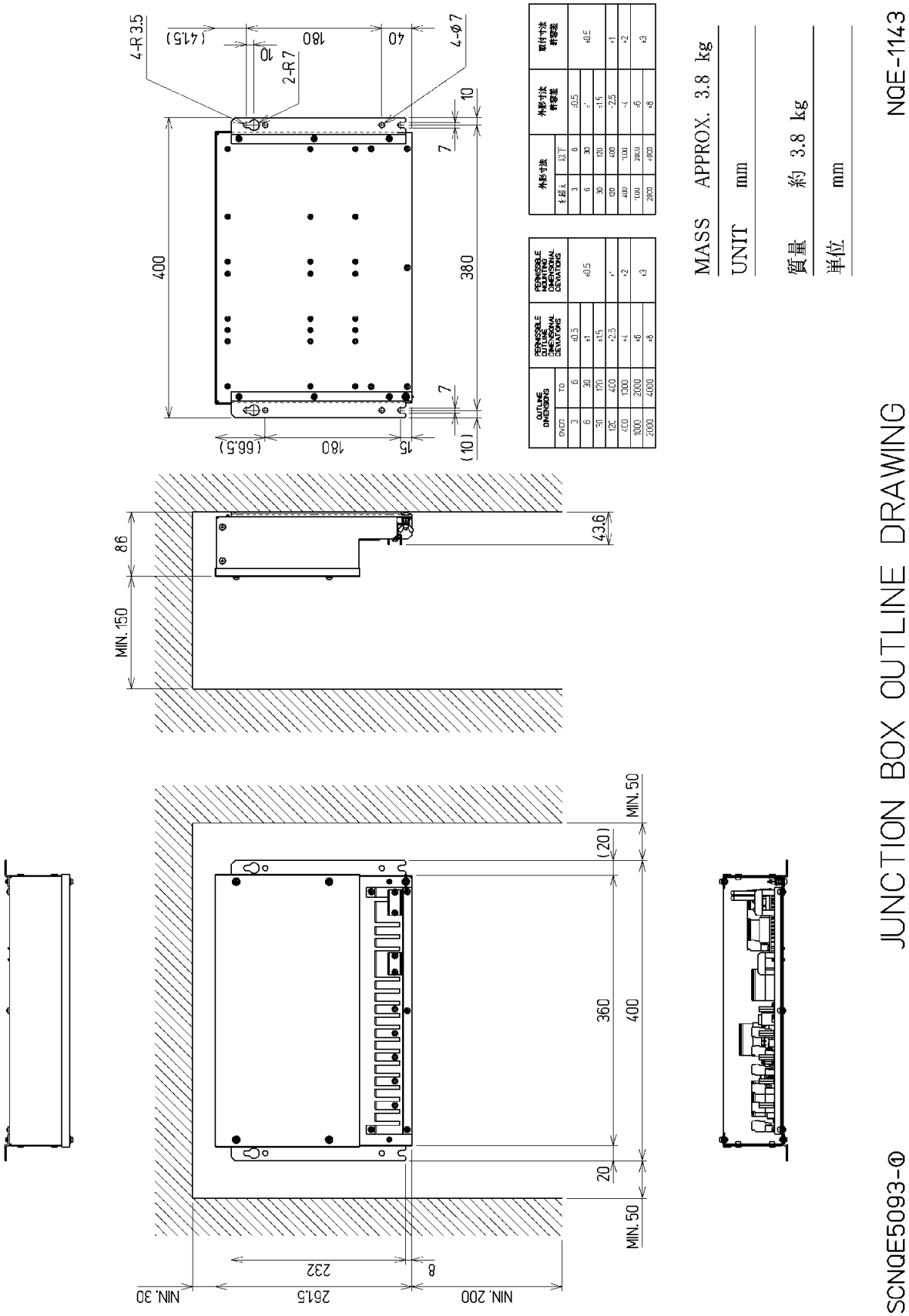
| 外形寸法 | | 外形寸法 許容差 | 取付寸法 許容差 |
|---|---|---|---|
| を超え | 以下 | | |
| 3 | 6 | ±0.5 | ±0.5 |
| 6 | 30 | ±1 | |
| 30 | 120 | ±1.5 | |
| 120 | 400 | ±2.5 | ±1 |
| 400 | 1000 | ±4 | ±2 |
| 1000 | 2000 | ±6 | ±3 |
| 2000 | 4000 | ±8 | |

| | |
|---|---|
| MASS | APPROX. 1.3 kg |
| UNIT | mm |
| 質量 | 約 1.3 kg |
| 単位 | mm |

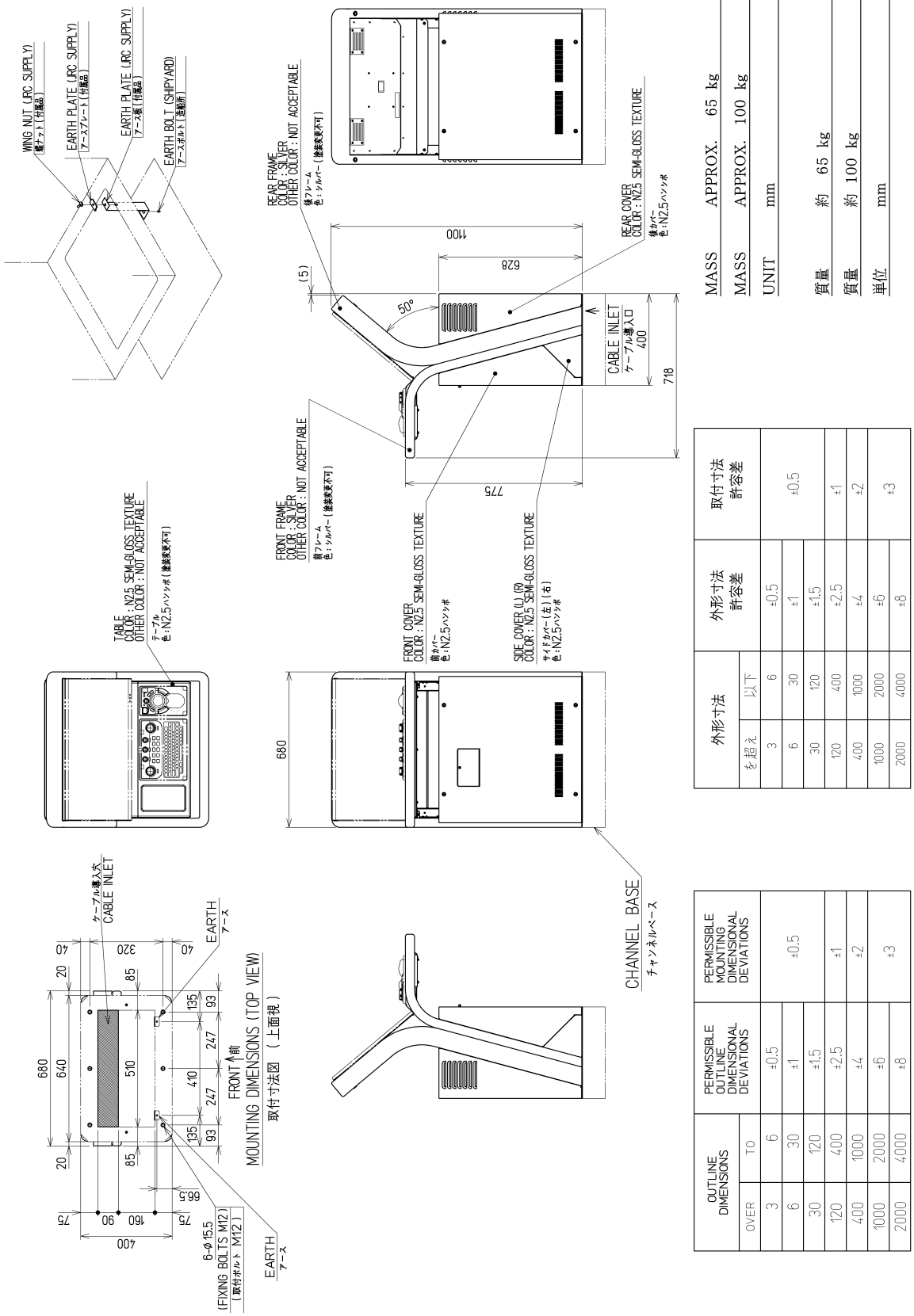
SCNCE5367 TRACKBALL OPERATION UNIT OUTLINE DRAWING NCE-5605




**Outline Drawing of Keyboard Operation Unit (NCE-5625)**



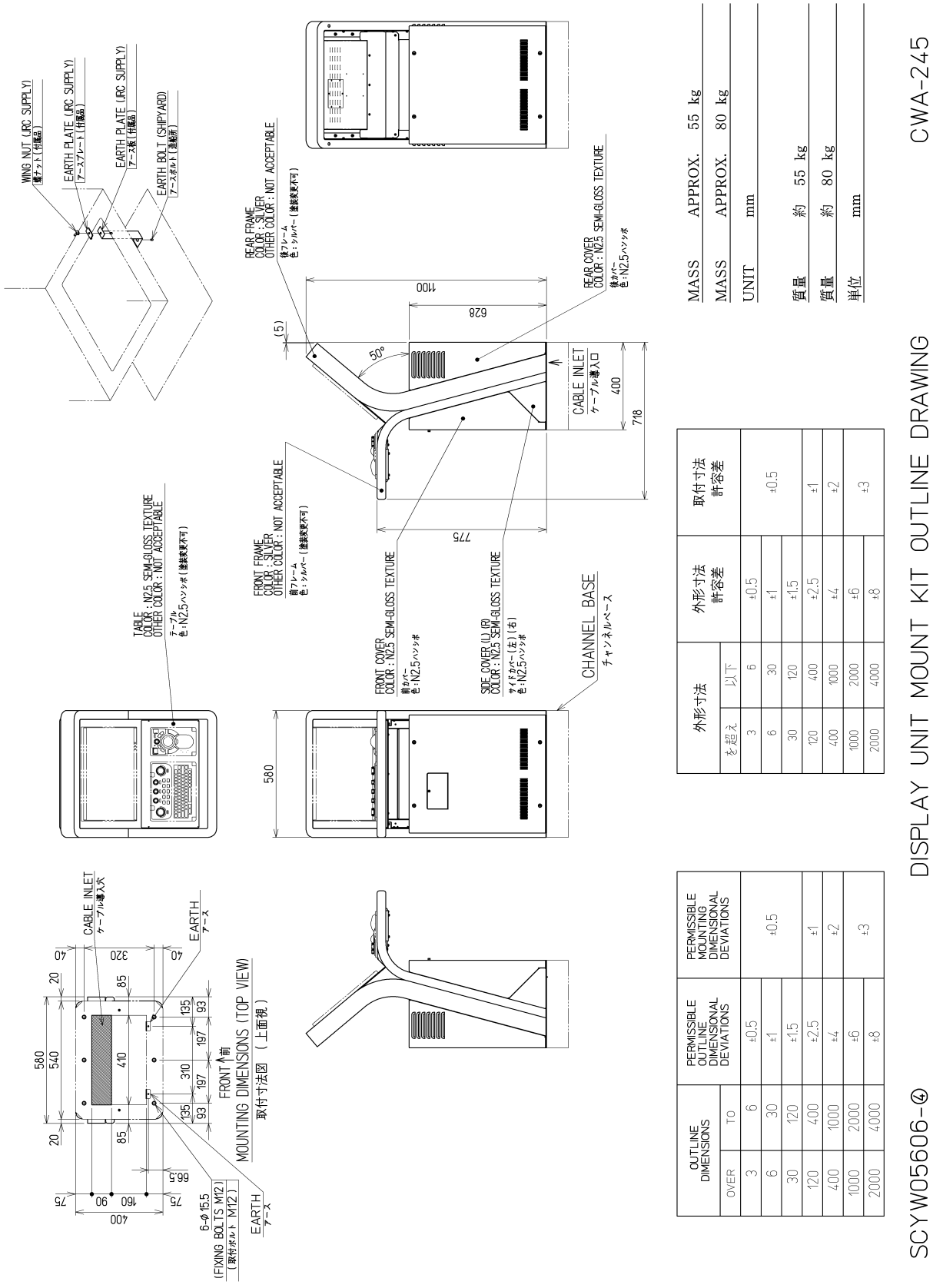

**Outline Drawing of Junction Box (NQE-1143)**



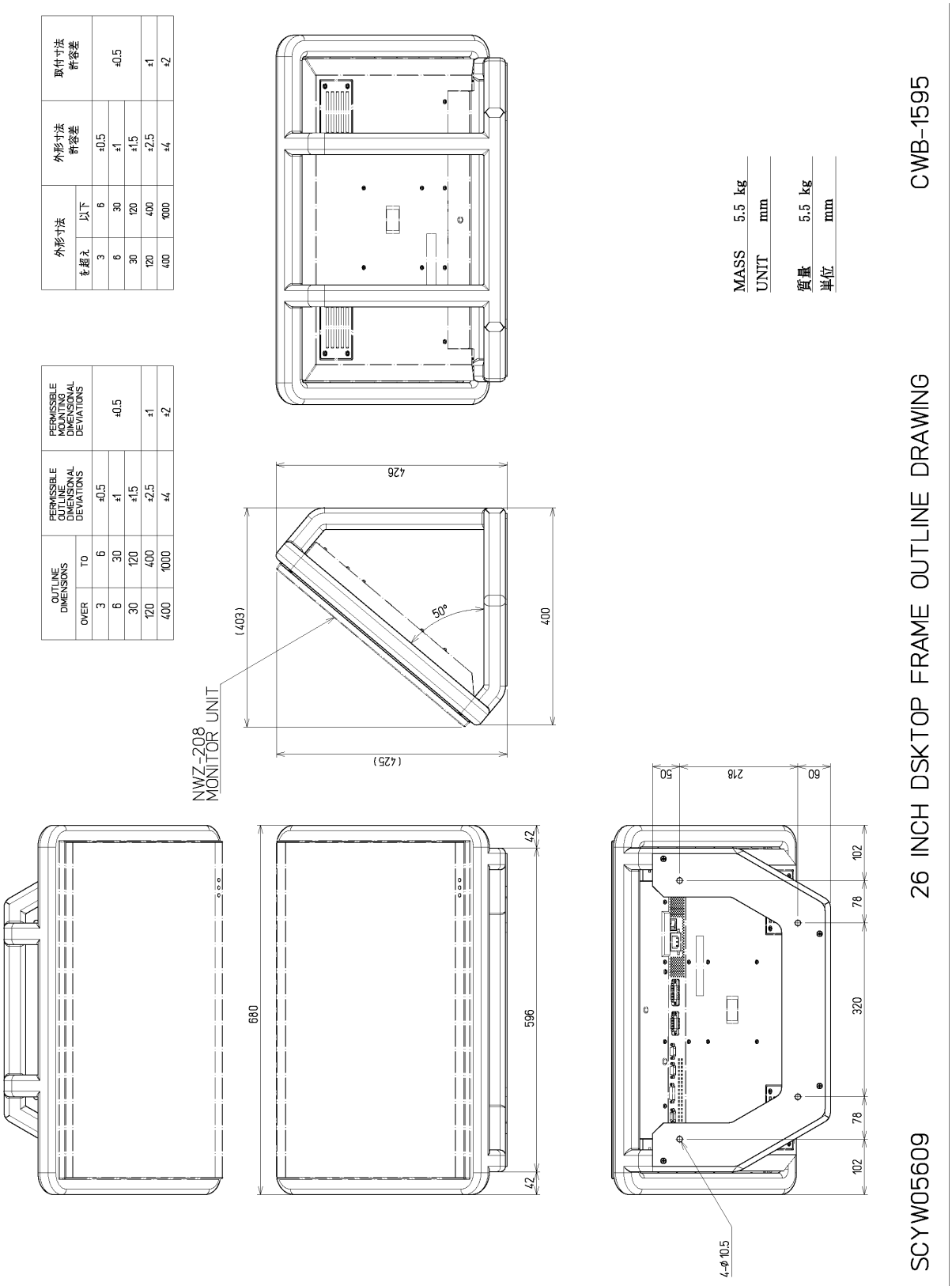

| OUTLINE DIMENSIONS | | PERMISSIBLE OUTLINE DIMENSIONAL DEVIATIONS | PERMISSIBLE MOUNTING DIMENSIONAL DEVIATIONS |
|---|---|---|---|
| OVER | TO | | |
| 3 | 6 | ±0.5 | ±0.5 |
| 6 | 30 | ±1 | |
| 30 | 120 | ±1.5 | |
| 120 | 400 | ±2.5 | ±1 |
| 400 | 1000 | ±4 | ±2 |
| 1000 | 2000 | ±6 | ±3 |
| 2000 |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

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

**Outline Drawing of 26inch Cradle Frame (CWA-246)**
**(with display, trackball operation unit and keyboard operation unit installed)**



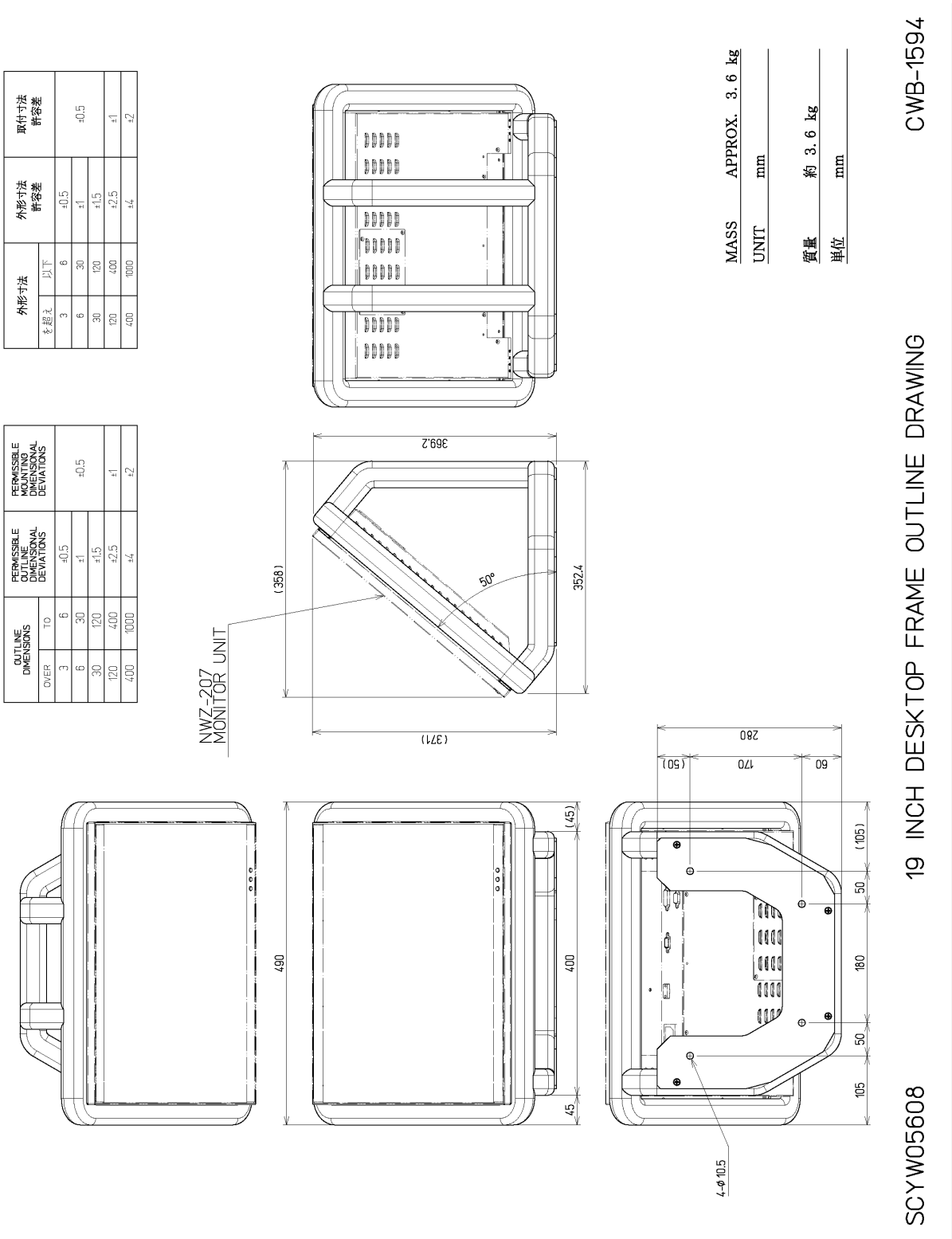

**Outline Drawing of 19inch Cradle Frame (CWA-245)**
**(with display, trackball operation unit and keyboard operation unit installed)**




| 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 | |
| 120 | 400 | ±2.5 | ±1 |
| 400 | 1000 | ±4 | ±2 |

| 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 | |
| 120 | 400 | ±2.5 | ±1 |
| 400 | 1000 | ±4 | ±2 |

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

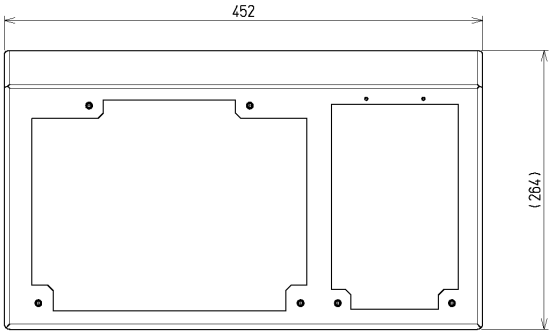


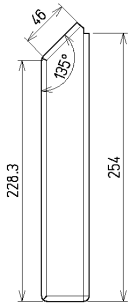

**Outline Drawing of 19inch Desktop Frame (CWB-1594)**

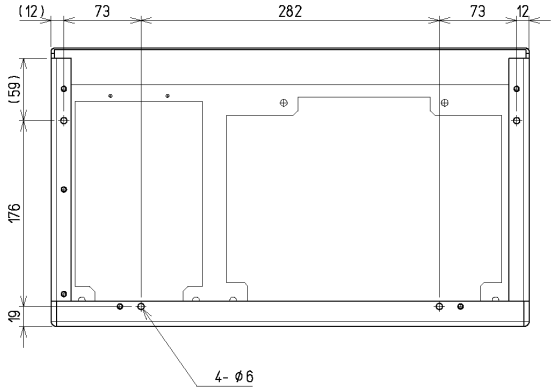
# Outline Drawing of OPU Desktop Frame (CWB-1596)

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

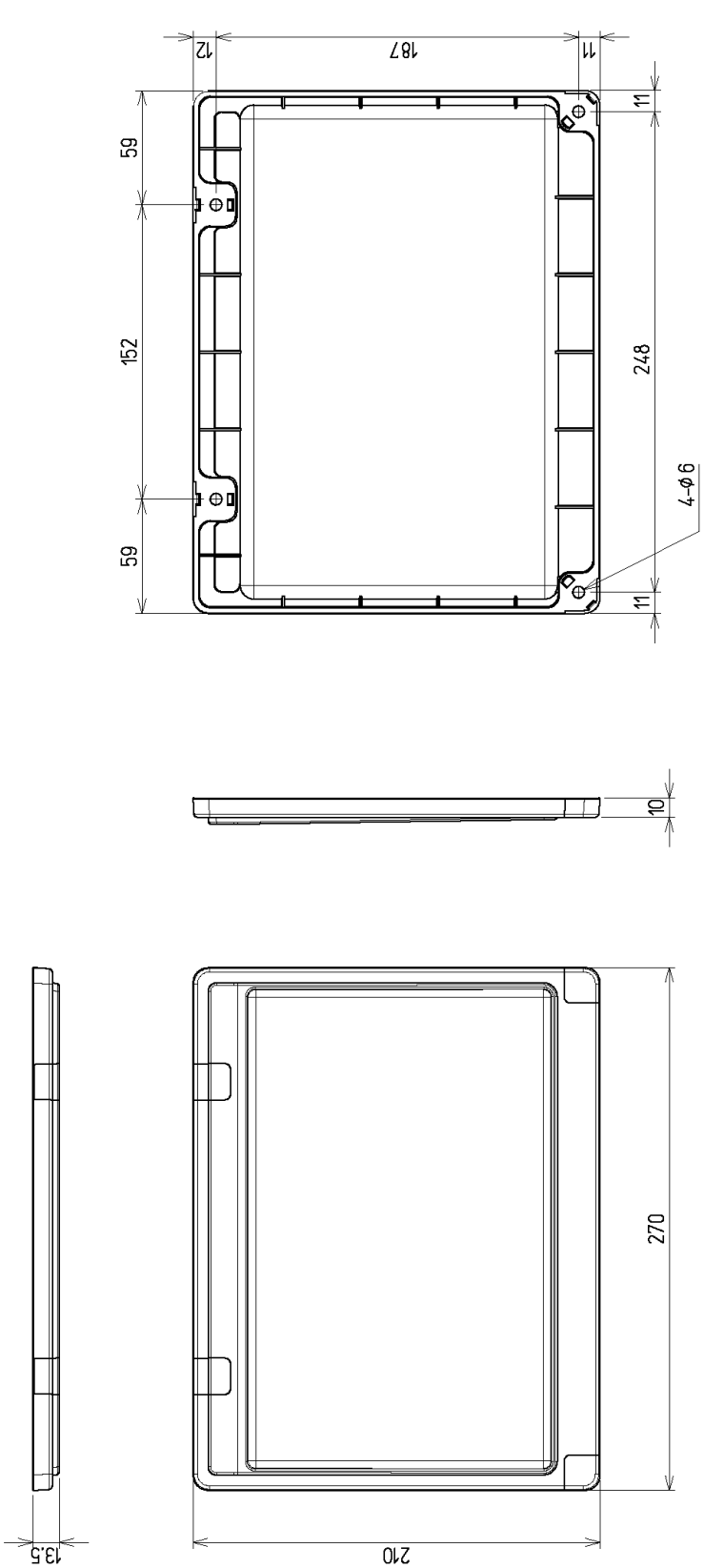



| | |
|---|---|
| MASS | APPROX. 1 kg |
| UNIT | mm |
| 質量 | 約 1 kg |
| 単位 | mm |

SCYW05610 OPU DESKTOP FRAME CWB-1596



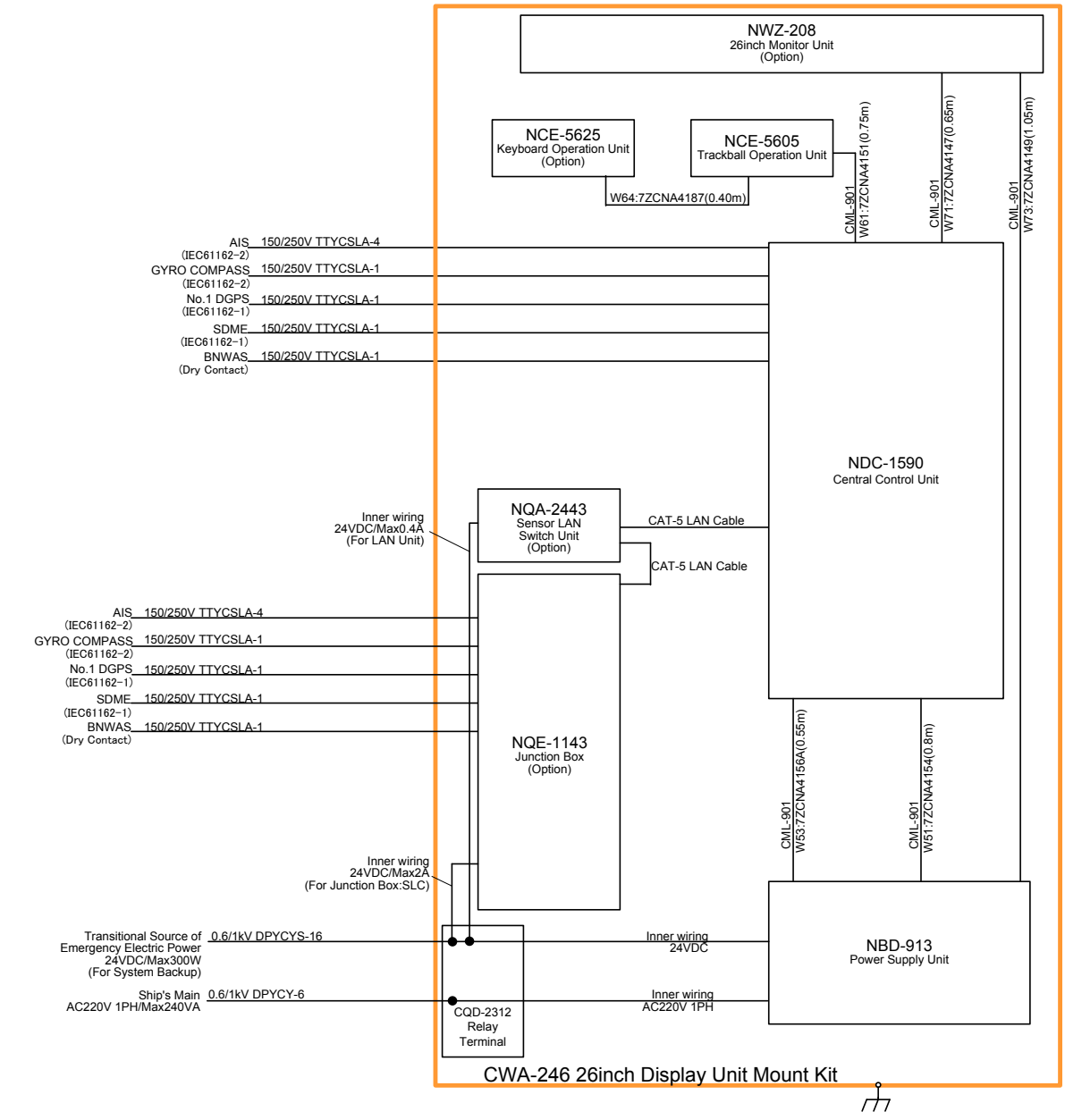

| OUTLINE DIMENSIONS | | PERMISSIBLE OUTLINE DIMENSIONAL DEVIATIONS | PERMISSIBLE MOUNTING DIMENSIONAL DEVIATIONS |
|---|---|---|---|
| OVER | TO | | |
| 3 | 6 | ±0.5 | ±0.5 |
| 6 | 30 | ±1 | ±0.5 |
| 30 | 120 | ±1.5 | ±0.5 |
| 120 | 400 | ±2.5 | ±1 |
| 400 | 1000 | ±4 | ±2 |
| 1000 | 2000 | ±6 | ±3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

| 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 Drawing of Large Tray (CWB-1593)**

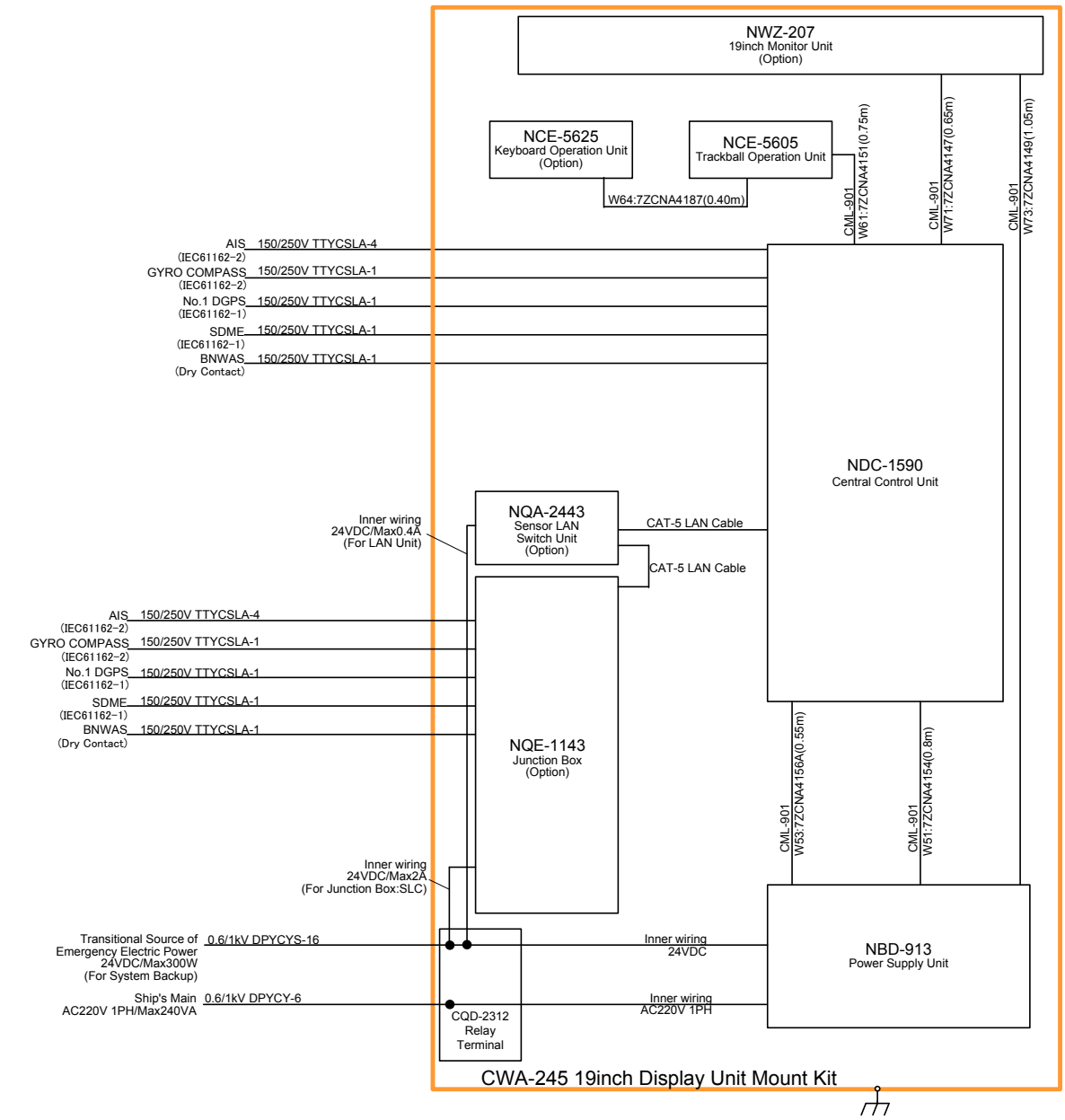
# 1.5 General System Diagrams

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**



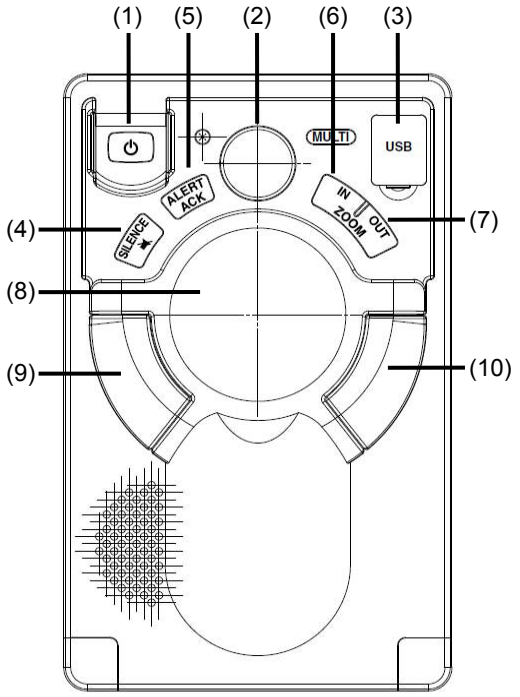

NOTE: ELIMINATING THE INTERFERENCE ON FREQUENCIES USED FOR MARINE COMMUNICATIONS AND NAVIGATION DUE TO OPERATION OF THE RADAR,
ALL CABLES OF THE RADAR ARE TO BE RUN AWAY FROM THE CABLES OF RADIO EQUIPMENT.
(ex. RADIOTELEPHONE, COMMUNICATIONS RECEIVER and DIRECTION FINDER. etc..)
ESPECIALLY INTER-WIRING 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**

# Section 2 Name and Function of Each Unit

## 2.1 Name and Main Function of the Operation Unit

### 2.1.1 Trackball operation unit

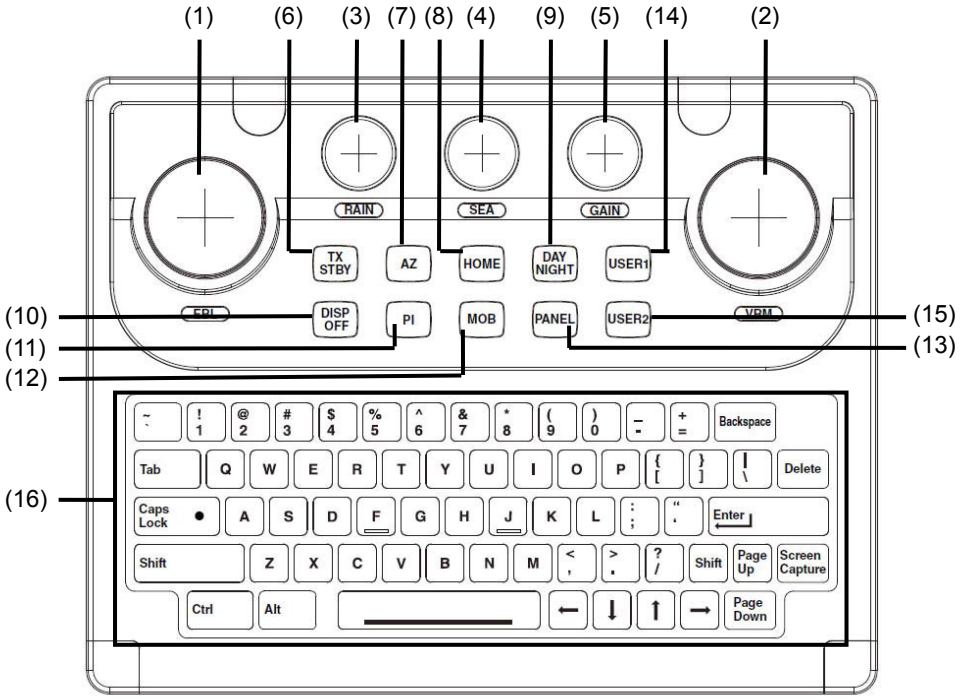



## ⚠WARNING

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.

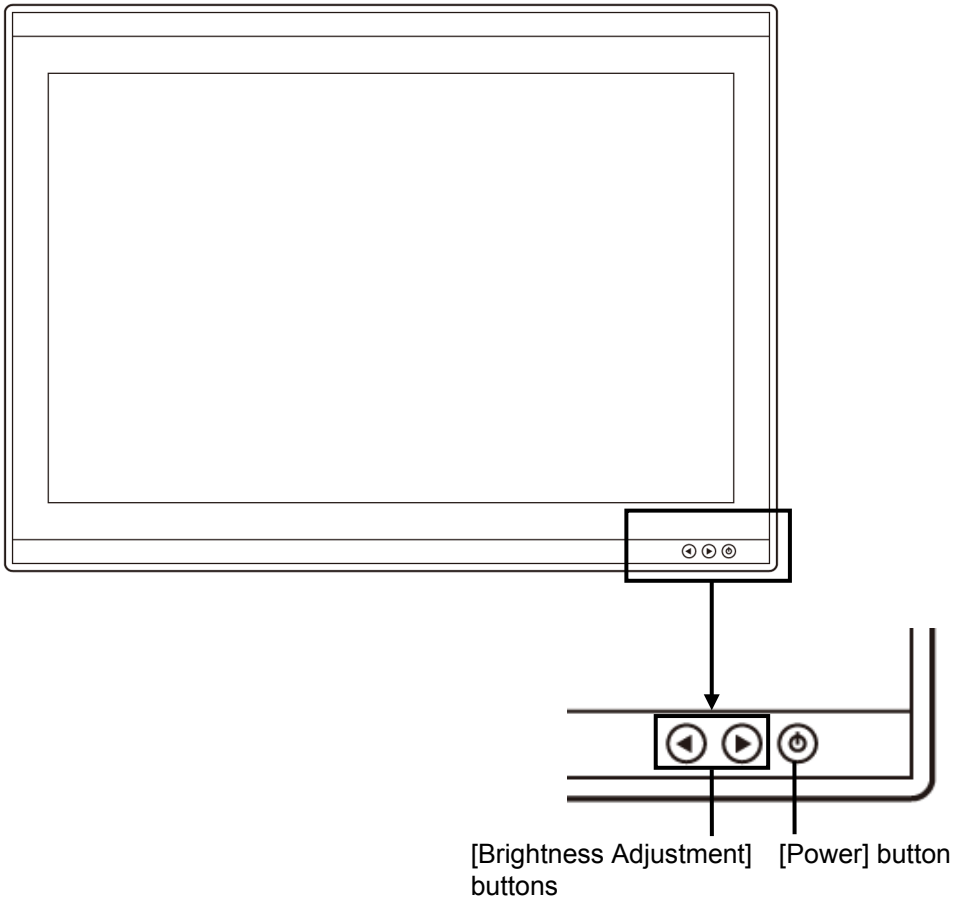
| No | Name | Function outline |
|---|---|---|
| 1 | Power button | Use this button to turn on and off this equipment. |
| 2 | [MULTI] dial | - Turn this dial to operate the function that is assigned to the [MULTI] dial, such as the Display Brightness function.<br>- If the [MULTI] dial is held down, the Display Brightness function is assigned to the [MULTI] dial forcibly. |
| 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 | - Use this button to select a function or determine the operation that is set.<br>- Clicking the left button once is referred to as "click" in this manual.<br>- Clicking the left button twice consecutively is referred to as "double click" in this manual. |
| 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 | - 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.<br>- Holding down this key closes the [Marker] dialog box. |
| 13 | [PANEL] key | Whenever this key is pressed, the brightness of the panel on the operation unit is switched. |
| 14 | [USER1] key | - Executes the function that is assigned to the key.<br>- Holding down this key displays the setting dialog box for assigning a function to the [USER1] key. |
| 15 | [USER2] key | - Executes the function that is assigned to the key.<br>- Holding down this key displays the setting dialog box for assigning a function to the [USER2] key. |
| 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**

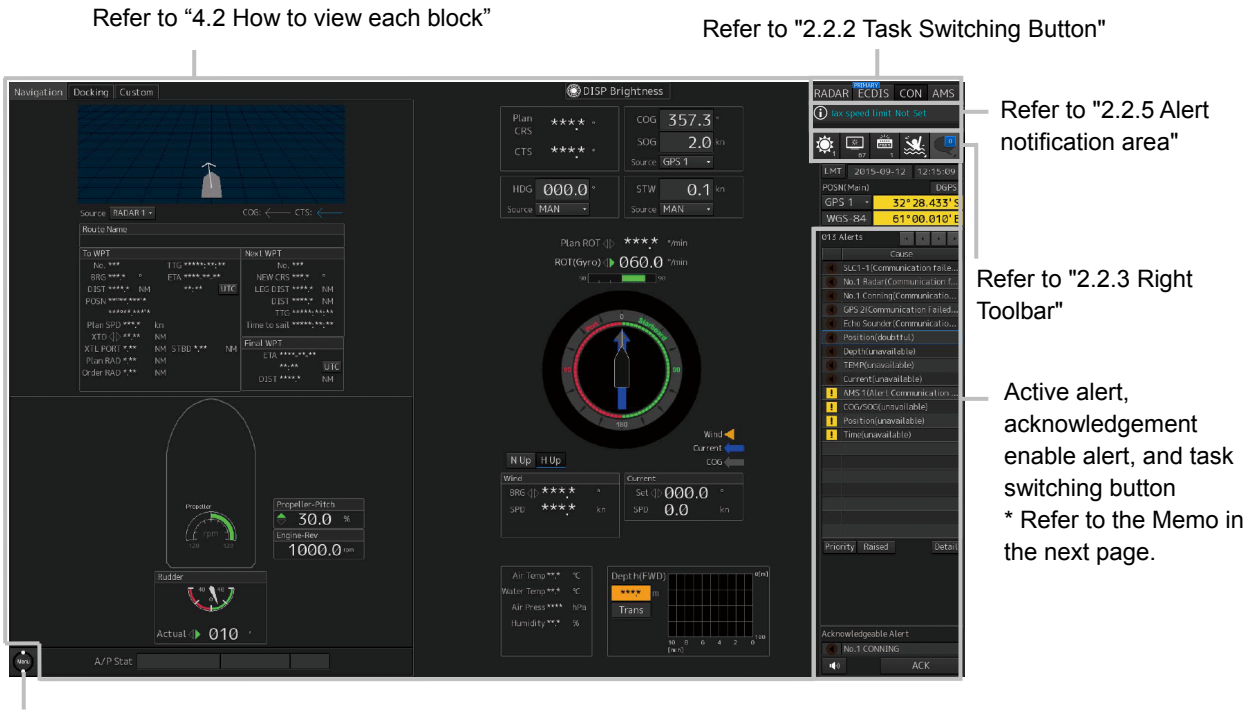
Adjust the brightness of the screen to the extent it is not dazzling, taking into account the brightness of the surroundings and to the brightness which you can be easily observed the screens.

# 2.2 Names and Main Functions of the Top Screen

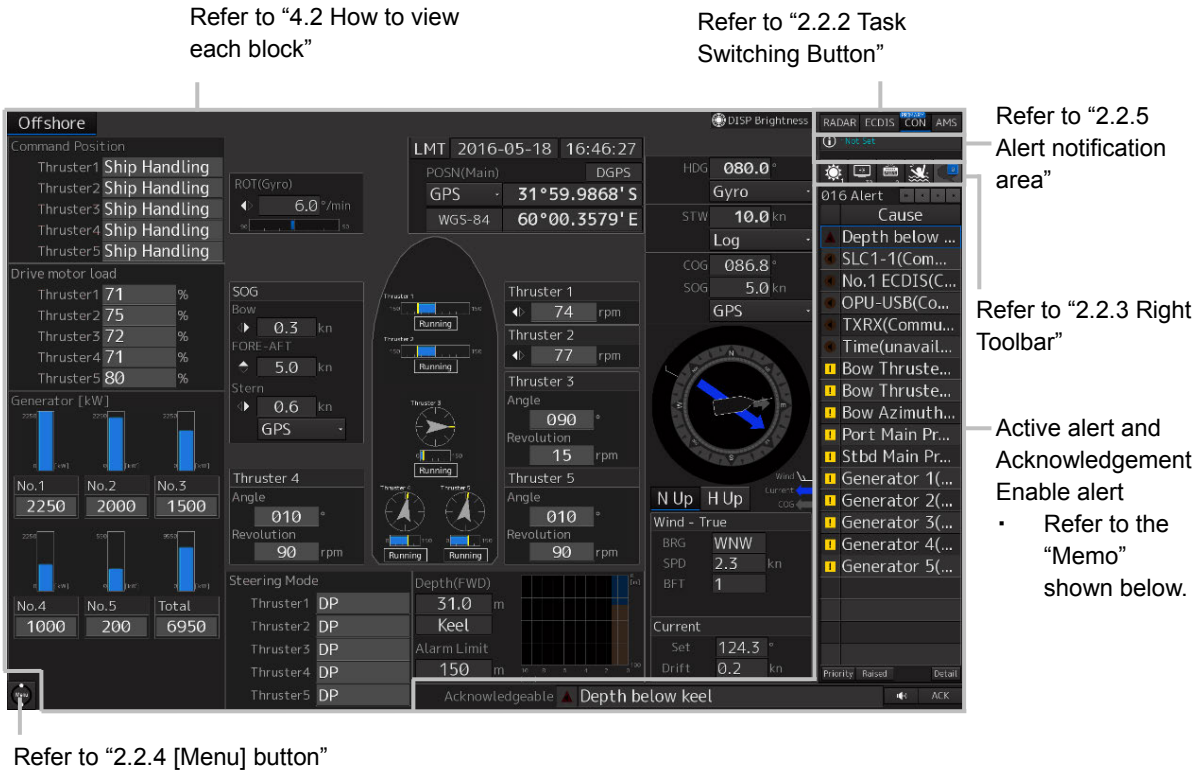
This section describes the names and main functions of the top screen.

## 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.



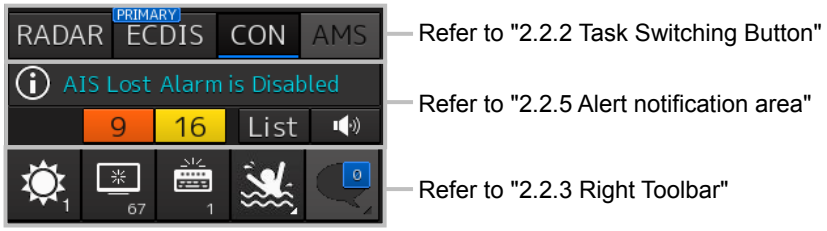

Top screen (1) (with AMS license)




Top screen (2) (with AMS license)

The top screen (1) and top screen (2) are displayed when the AMS license is available.

When there is no AMS license, the top right of the screen is as shown below.

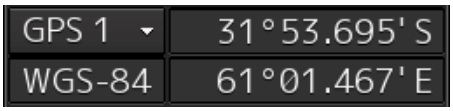
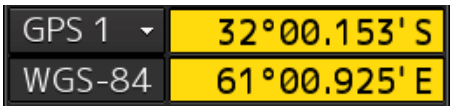



**Memo**

The active alert and acknowledgement enable alert are displayed when the AMS 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.<br>  |
| 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.<br>  |
| Orange | When the numeric value is abnormal, "****" is displayed in orange.<br> |

### 2.2.1.2 Color coding of bar graphs

Bar graphs are color-coded at display as follows.

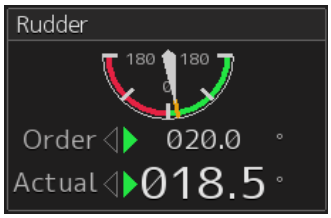
Red: Port side/backward direction

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]/[CON] (Conning Display) /[AMS].

**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 to100.

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".

## 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".

# Section 3 Basic Operations



## 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.

# 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

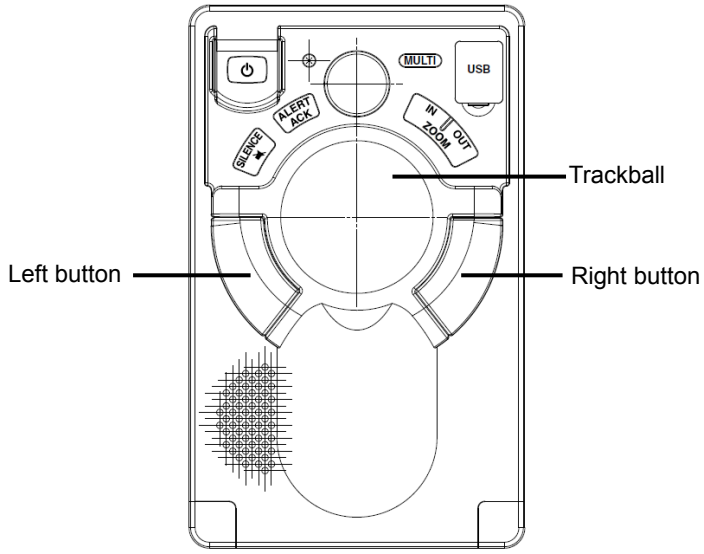
To display the top screen of Conning Display, click on the [Navigation Data Monitoring (Conning Display)] button in the task menu.

# 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.

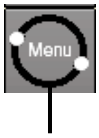
# 3.4 Basic Menu Operations



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.**

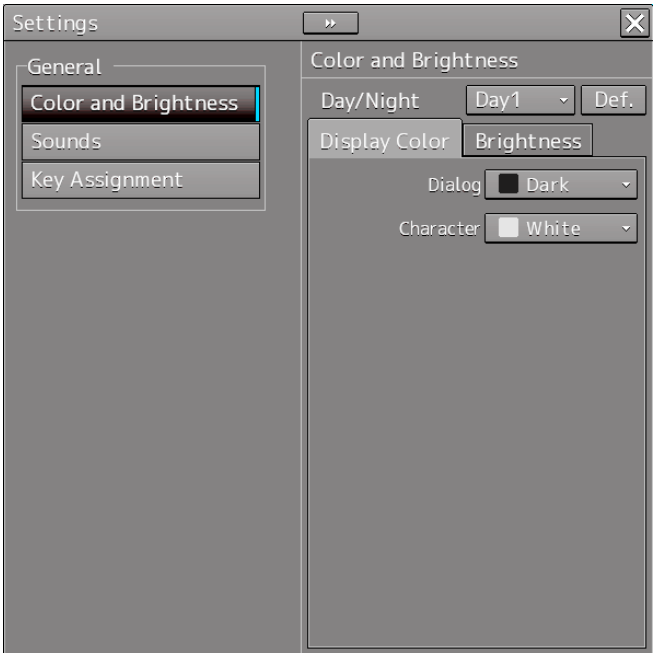



[Menu] button

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.



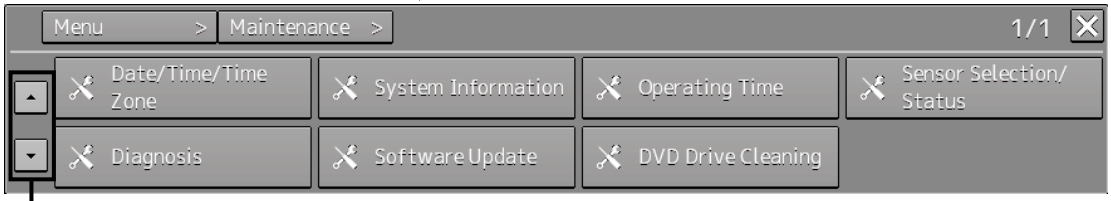

Display Example

**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.

It is not possible to use the page change buttons in Conning Display.

## 3.4.2 Menu list

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

| Menu | Related section |
|---|---|
| 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).

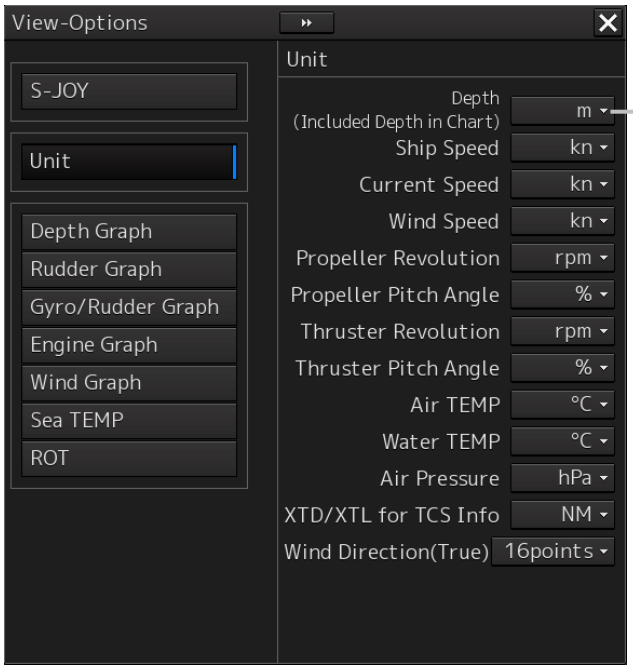
# 3.5 Basic Dialog Box Operations

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.



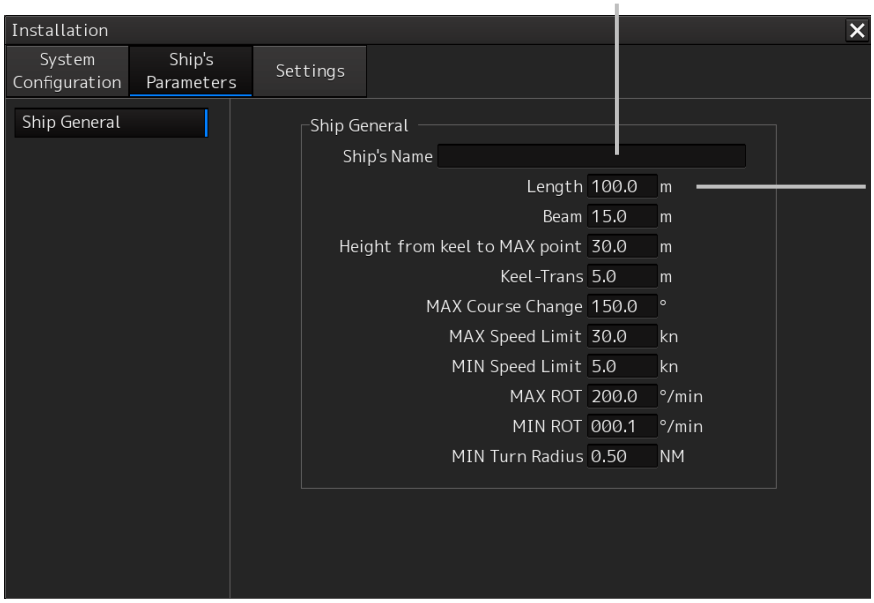

**[Depth (Included Depth in Chart)] list**
Select [m], [ft], or [fm] from the list. (Perform the same operation for the lists from [Ship Speed].)

[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)

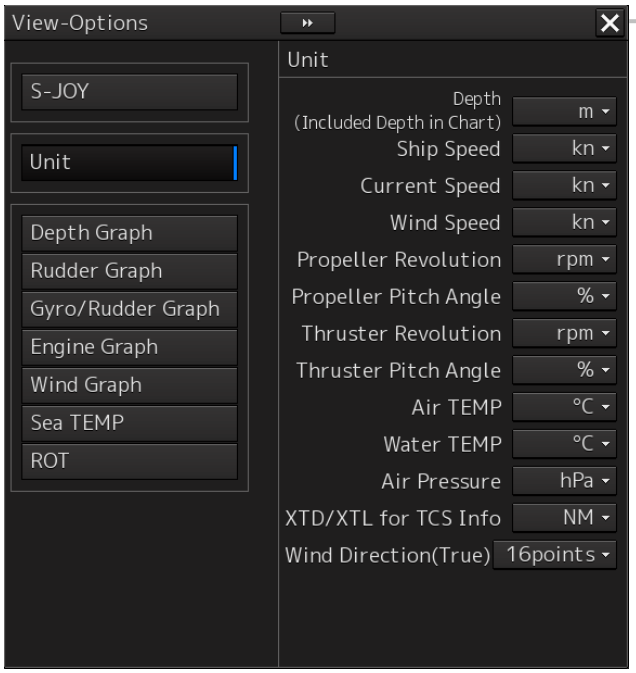



**[Length] box**
Enter the ship's length (numeric). (Perform the same operation for the [Beam] and subsequent boxes.)

[Ship's Parameters] dialog

## 3.5.2 Closing the dialog

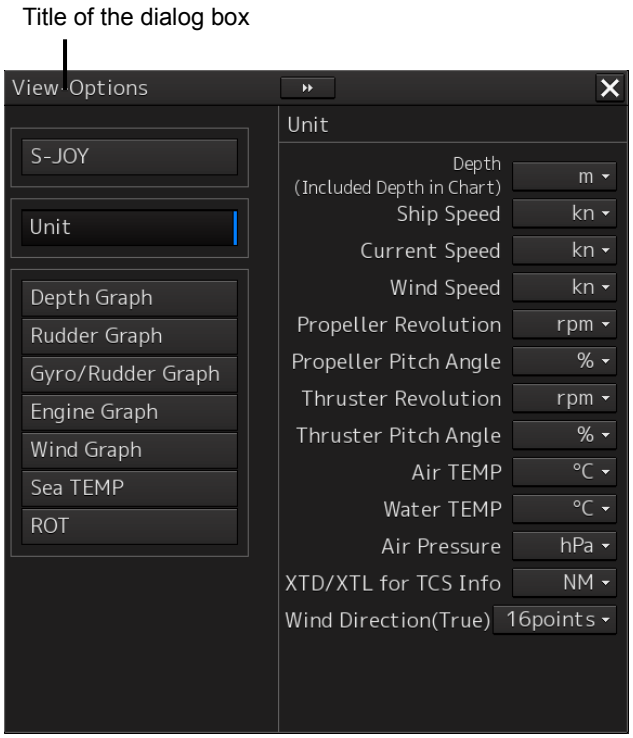
Close the dialog by clicking on the [X] button of the dialog.



# 3.5.3 Title Bar

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





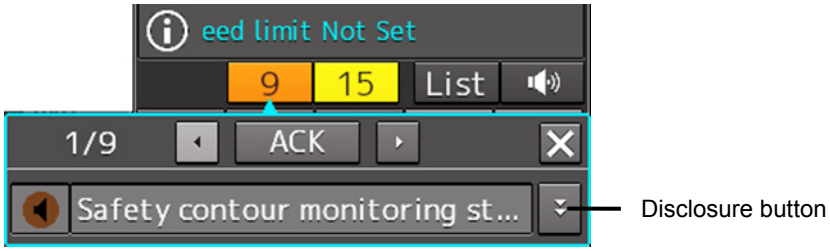

The dialog can be moved by dragging the title bar.

# 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.

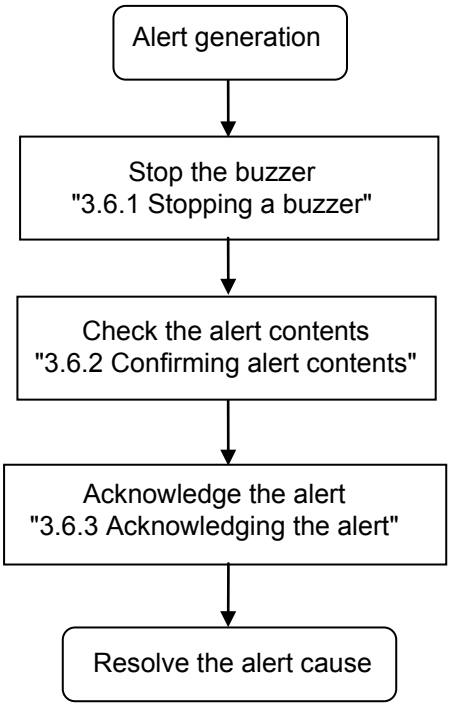
When an alert is generated, a buzzer sound is emitted and an alert balloon is displayed in the alert notification area.




Example of Balloon Alert

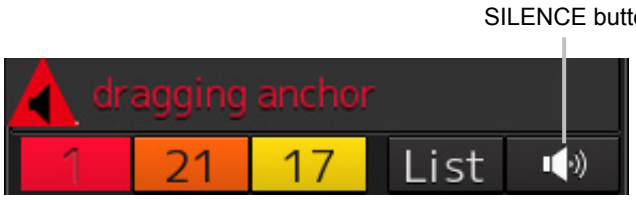
To acknowledge the alert detailed information, click on the Disclosure button.
For the details of the subsequent operations, refer to "3.6.2 Confirming alert contents".

The general procedure for handling an alert is shown below.

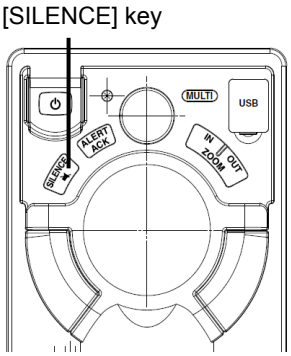


## 3.6.1 Stopping a buzzer

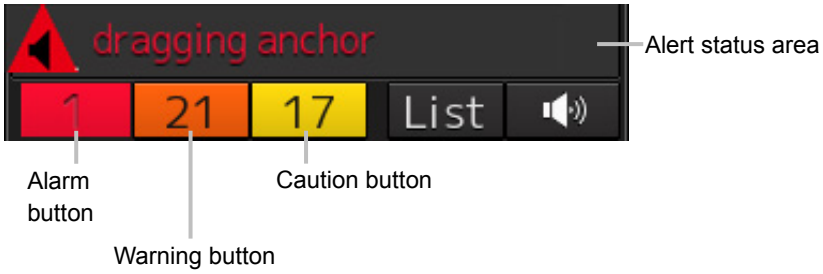
To stop a buzzer (silencing), click the silence button in the alert notification area or press the [SILENCE] key in the trackball operation unit.




Alert notification area



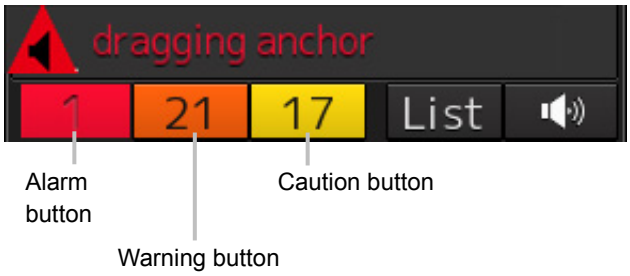

## 3.6.2 Confirming alert contents




Display Example when an Alert is generated

Display Example when No Alert is generated

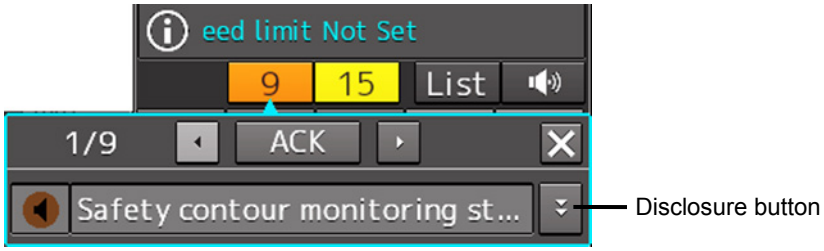
When an alert is generated, the alert message is displayed in the "Alert status area".
The alert type and the number of alerts are displayed by the button.



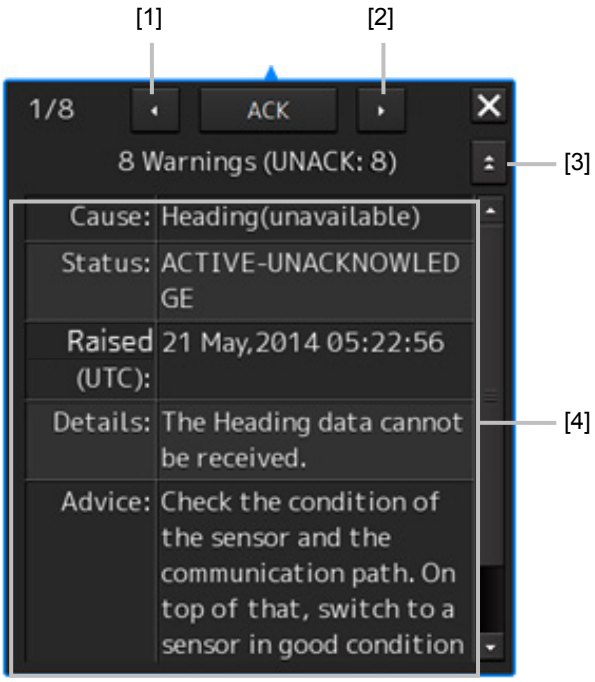

- Alarm button: Displayed when an alarm is generated. The button is displayed in red. The number of alarms is indicated on the button
- Warning button: Displayed when a warning is generated. The button is displayed in orange. The number of warnings is indicated on the button.
- Caution button: Displayed 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 time (Raised), details (Details) and action (Advice) to be taken are displayed.

**Memo**

**About Information:**

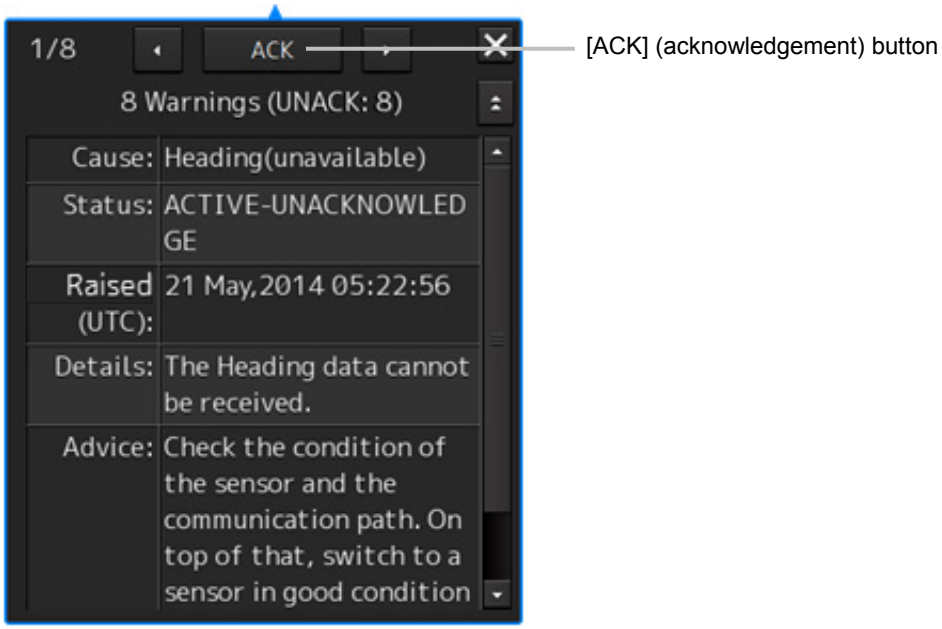
Information is displayed in addition to a warning or a caution in the alert status area.

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

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

## 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.




**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 and alert history



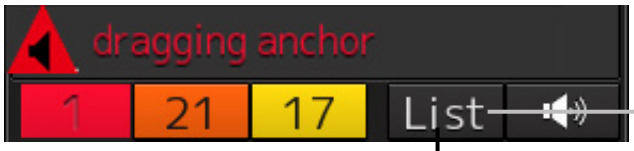
An active alert and alert history can be displayed in list format by clicking on the Alert List button.
In the [Active Alert] tab, a list of the current alerts is displayed. In the [Alert History] tab, a list of past alerts that have been resolved is displayed.

**Memo**

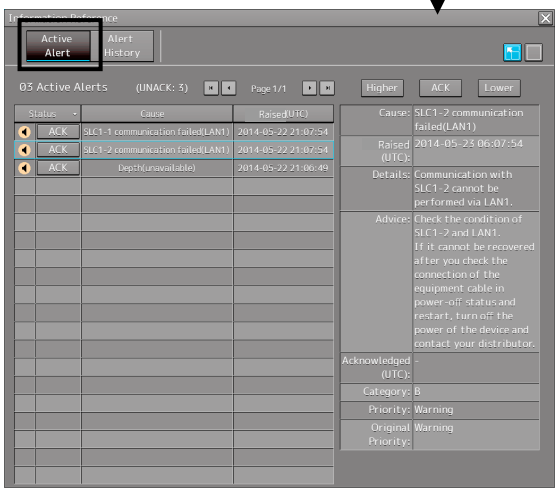
The window of the [Active Alert] tab can be switched to standard window display or extended window display.

In this example, extended window display is used.

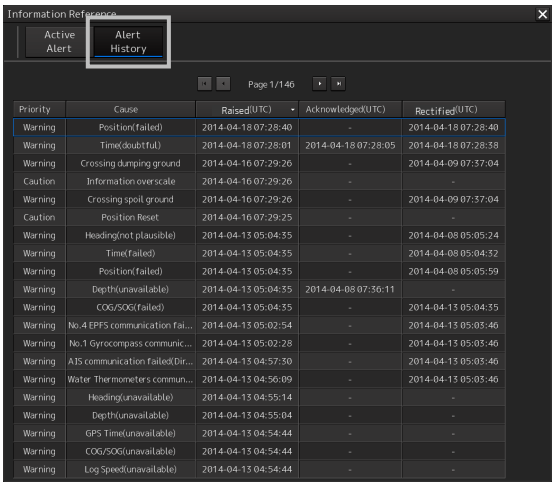
For the details of switching between standard window and extended window, refer to "3.6.4.1 Switching between a standard window and an extended window".




Alert list button




[Active Alert] Tab of the [Alert List] Dialog Box

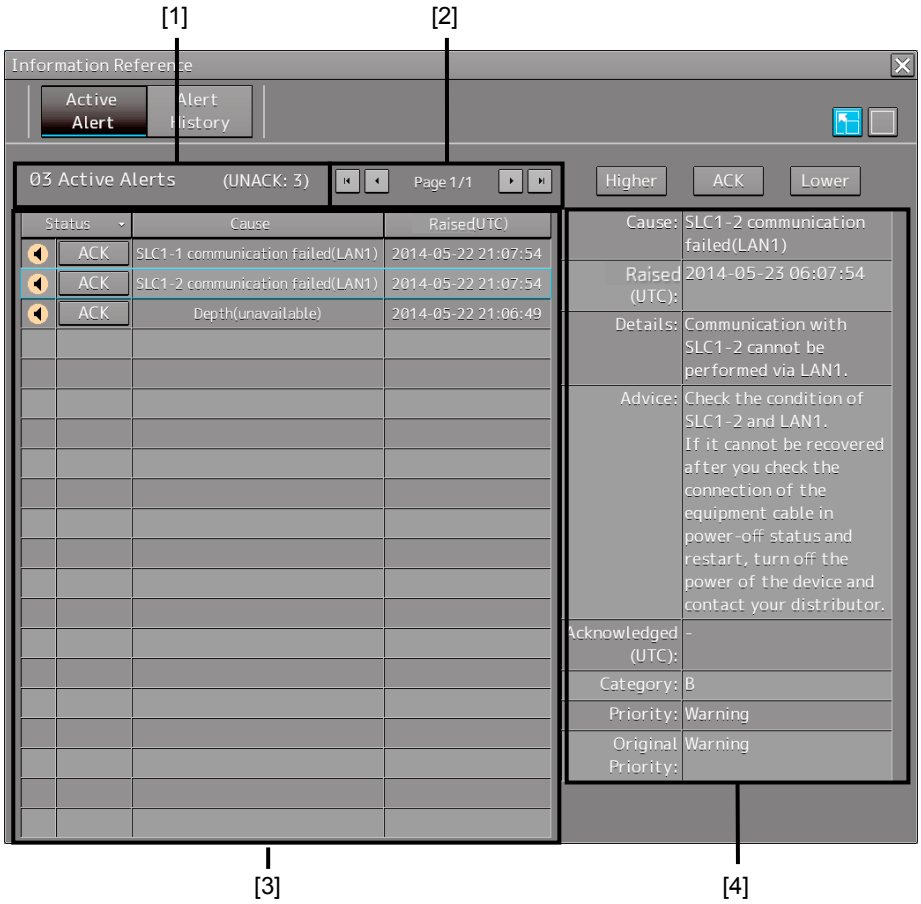



[Alert History] Tab of the [Alert List] Dialog Box

**Memo**

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

## [Active Alert] tab

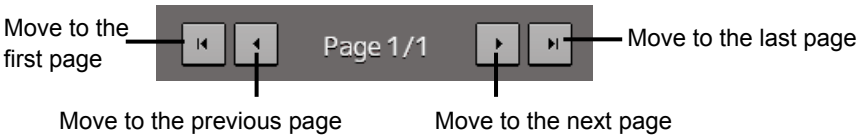



### [1] Active alert information

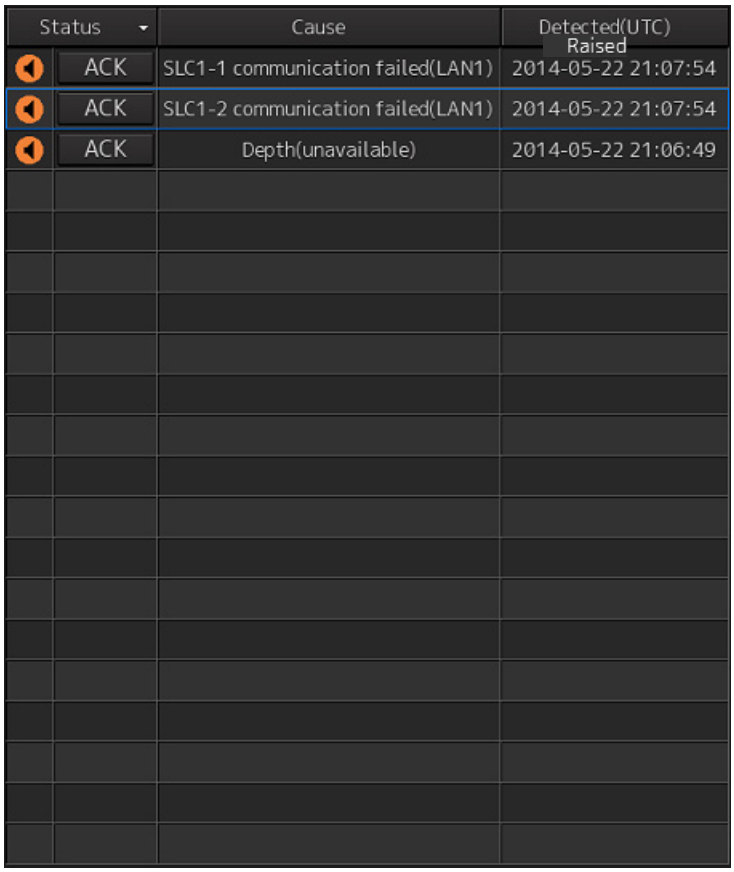
The number of current alerts is displayed.

### [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.

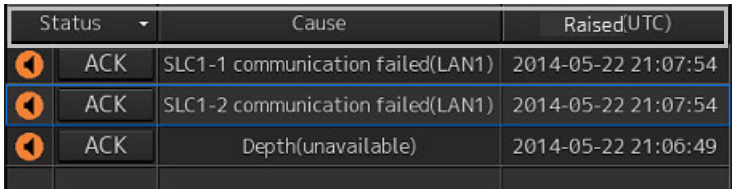


### [3] Active alert list

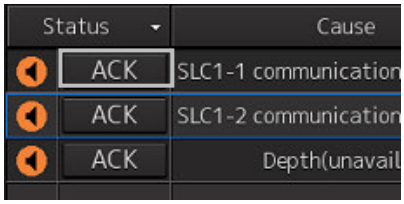



- The alerts that are being generated are displayed. When any of the alerts is clicked on, the alert can be set to a selected state.

- 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.




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

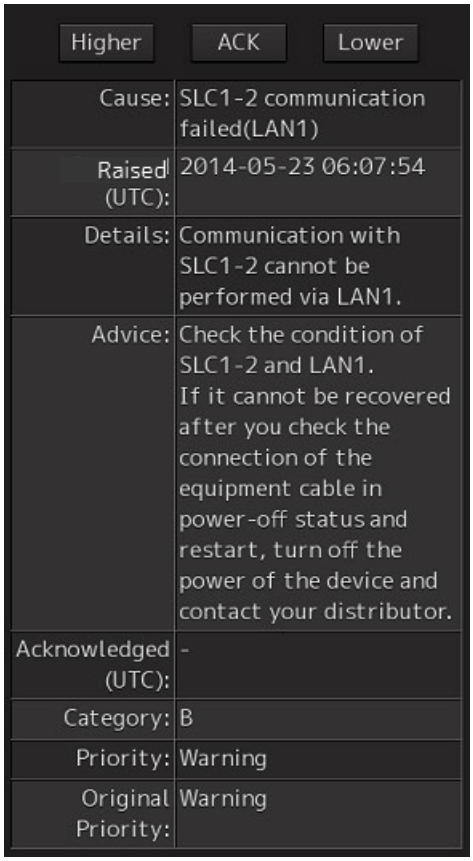



**Memo**

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.




| Alert | Detailed information |
|---|---|
| Cause | Displays the cause of the alert. |
| Raised | Displays the alert generation time. |
| Details | Displays the details of the cause of the alert. |
| Advice | Displays advice on the alert (action to be taken by the user). |
| Acknowledged | Displays the time when the alert was acknowledged. |
| Category | Displays the alert category. |
| Priority | Displays the current alert priority (identification of Alarm/Warning/Caution). |
| Original Priority | Displays the priority (identification of Alarm/Warning/Caution) at the generation 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**

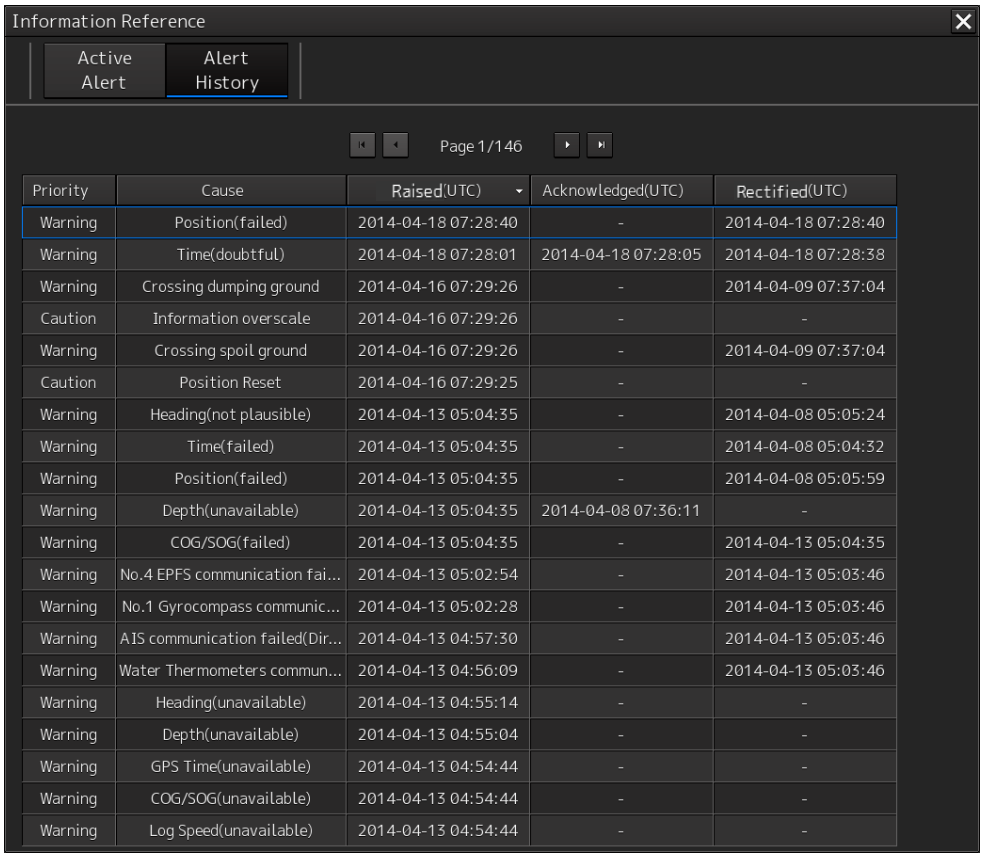
When this button is clicked on, the details of the alert of the lower priority than the alert that is currently displayed appear.

**[ACK] button**

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

**[Alert History] tab**

Alerts that have been generated in the past are displayed.



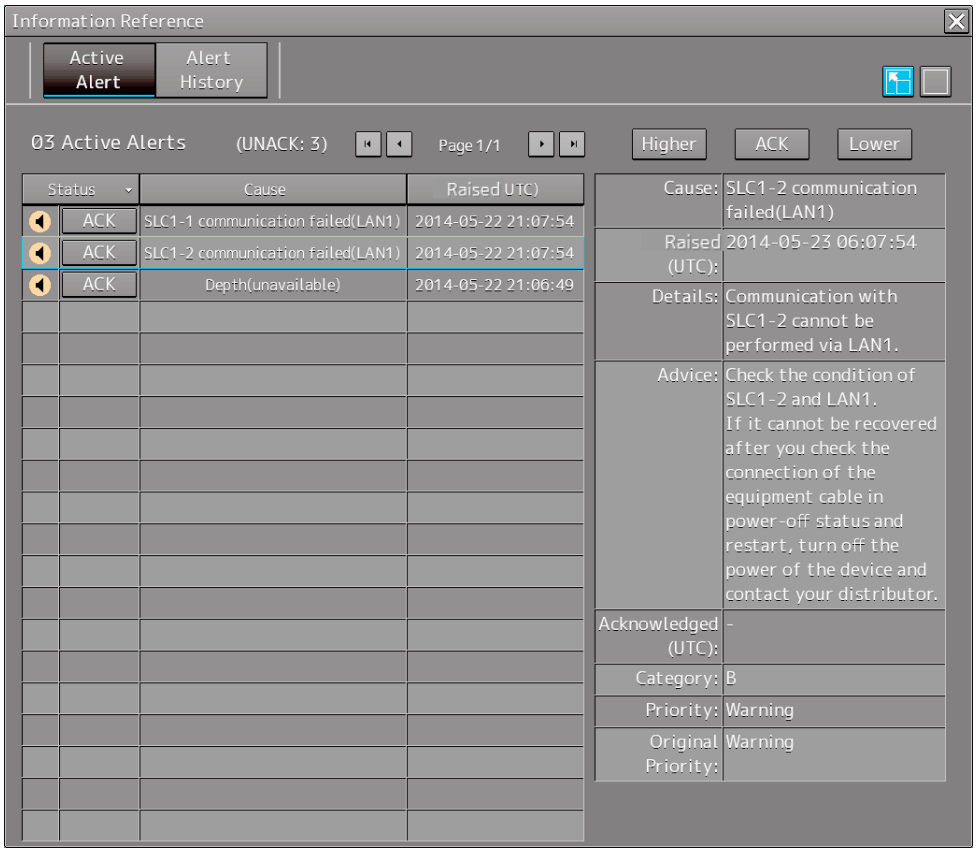

| Priority | Cause | Raised(UTC) | Acknowledged(UTC) | Rectified(UTC) |
|---|---|---|---|---|
| Warning | Position(failed) | 2014-04-18 07:28:40 | - | 2014-04-18 07:28:40 |
| Warning | Time(doubtful) | 2014-04-18 07:28:01 | 2014-04-18 07:28:05 | 2014-04-18 07:28:38 |
| Warning | Crossing dumping ground | 2014-04-16 07:29:26 | - | 2014-04-09 07:37:04 |
| Caution | Information overscale | 2014-04-16 07:29:26 | - | - |
| Warning | Crossing spoil ground | 2014-04-16 07:29:26 | - | 2014-04-09 07:37:04 |
| Caution | Position Reset | 2014-04-16 07:29:25 | - | - |
| Warning | Heading(not plausible) | 2014-04-13 05:04:35 | - | 2014-04-08 05:05:24 |
| Warning | Time(failed) | 2014-04-13 05:04:35 | - | 2014-04-08 05:04:32 |
| Warning | Position(failed) | 2014-04-13 05:04:35 | - | 2014-04-08 05:05:59 |
| Warning | Depth(unavailable) | 2014-04-13 05:04:35 | 2014-04-08 07:36:11 | - |
| Warning | COG/SOG(failed) | 2014-04-13 05:04:35 | - | 2014-04-13 05:04:35 |
| Warning | No.4 EPFS communication fai... | 2014-04-13 05:02:54 | - | 2014-04-13 05:03:46 |
| Warning | No.1 Gyrocompass communic... | 2014-04-13 05:02:28 | - | 2014-04-13 05:03:46 |
| Warning | AIS communication failed(Dir... | 2014-04-13 04:57:30 | - | 2014-04-13 05:03:46 |
| Warning | Water Thermometers commun... | 2014-04-13 04:56:09 | - | 2014-04-13 05:03:46 |
| Warning | Heading(unavailable) | 2014-04-13 04:55:14 | - | - |
| Warning | Depth(unavailable) | 2014-04-13 04:55:04 | - | - |
| Warning | GPS Time(unavailable) | 2014-04-13 04:54:44 | - | - |
| Warning | COG/SOG(unavailable) | 2014-04-13 04:54:44 | - | - |
| Warning | Log Speed(unavailable) | 2014-04-13 04:54:44 | - | - |

- Up to 20 alerts are displayed per page.
- When a newly acknowledged alert is generated during the screen display, the acknowledged alert is added to 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.

### 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]



[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.

: Day 1

: Day 2

: Day 3

: Dusk

: Night

# ⚠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 | 19-inch monitor |
|---|---|---|
| Screen brightness | Day1, Day2, Day3: 67/100<br>Dusk: 60/100<br>Night: 11/100 | Day1, Day2, Day3: 42/100<br>Dusk: 20/100<br>Night: 4/100 |
| Operation unit brightness | Day1: Level4<br>Day2: Level3<br>Day3: Level2<br>Dusk, Night: Level1 | |

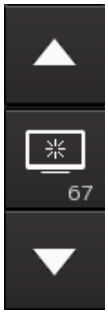
# 3.8 Adjusting the Brightness of the Screen and Operation Unit

## 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).



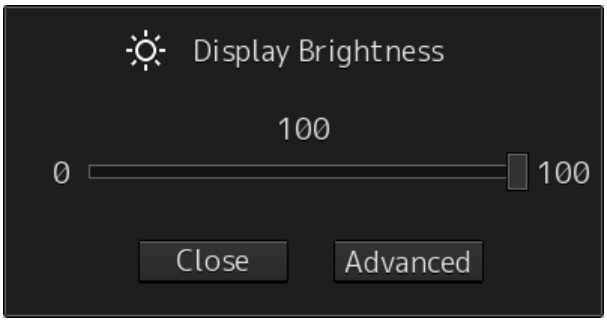
**1 Click on the [Panel Brightness] (Brightness of the operation unit) on the Right Tool Bar.**

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.

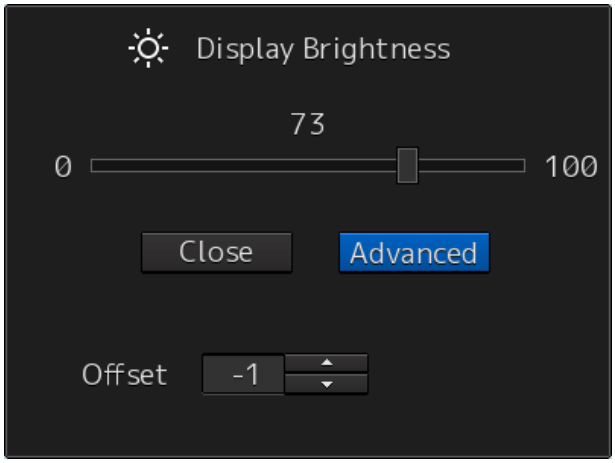
## 3.8.3 [Display Brightness] dialog box

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)

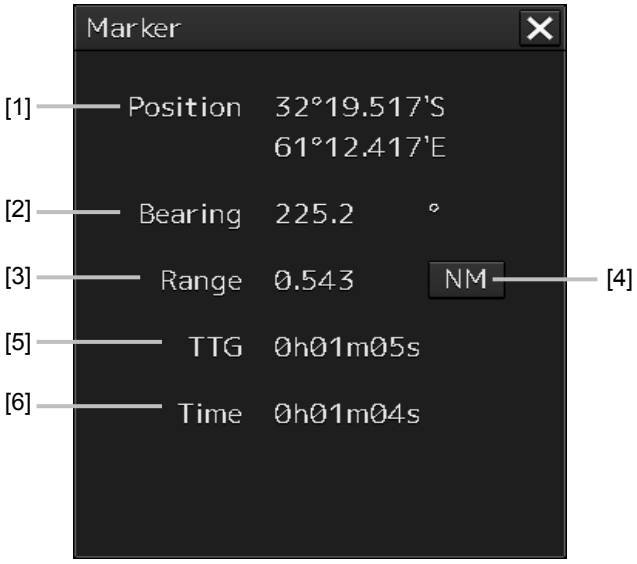


When a person falls overboard, this monitoring function prevents loss of sight of the position of the person overboard.
The MOB use procedure is as follows.

**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.

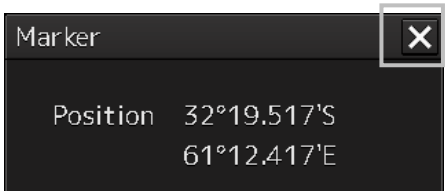
**Memo**
NM denotes nautical mile, sm denotes statute mile, and km denotes kilometer.

**[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.**

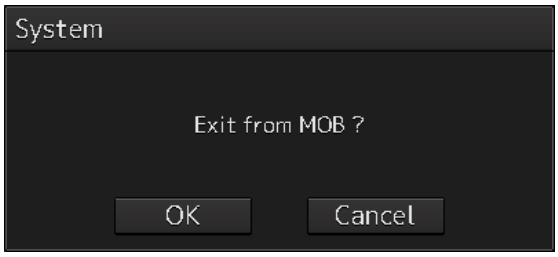



A confirmation dialog box appears.

**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 [MULTI] Dial



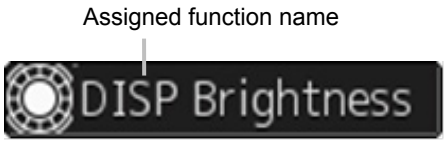
## 3.10.1 Functions of [MULTI] dial

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.

## 3.10.2 Functions assigned to [MULTI] dial

### 3.10.2.1 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.




### 3.10.2.2 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.**

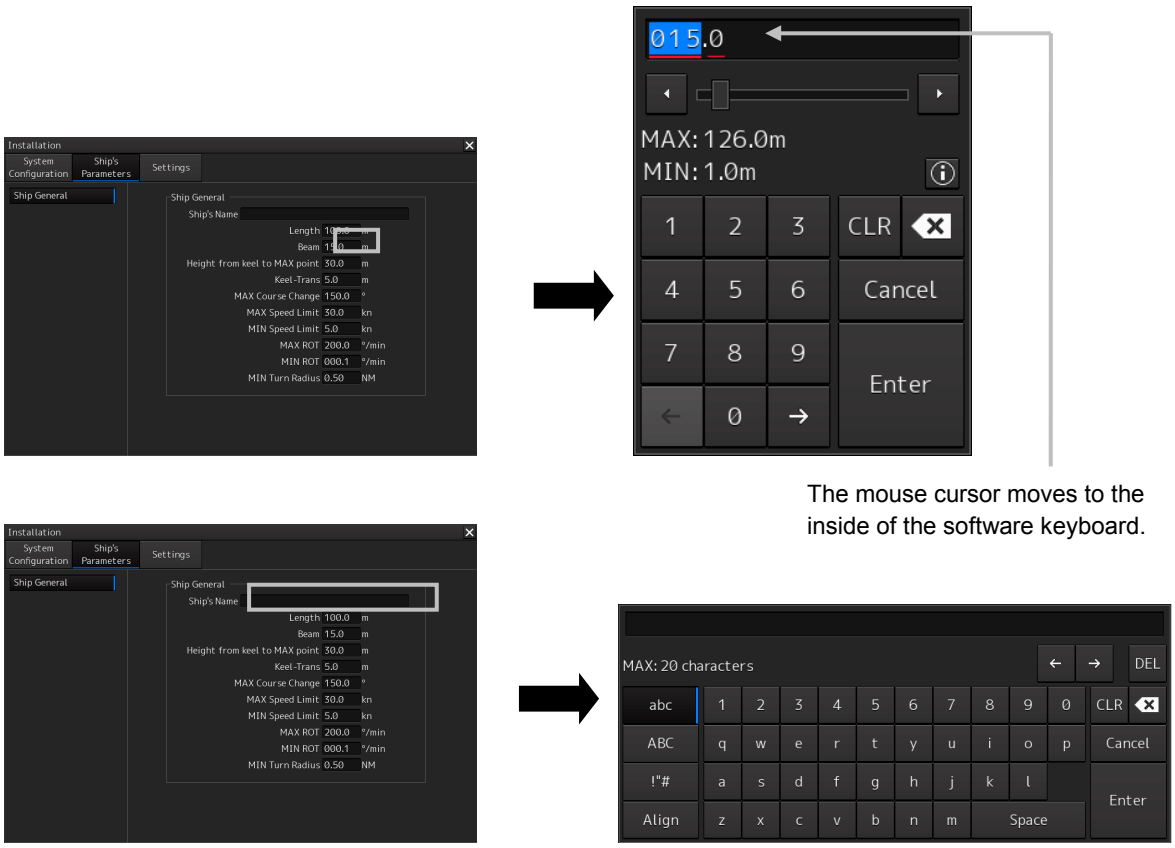
The selected function is set to the assigned function.

# 3.11 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.

## 3.11.1 Starting a software keyboard

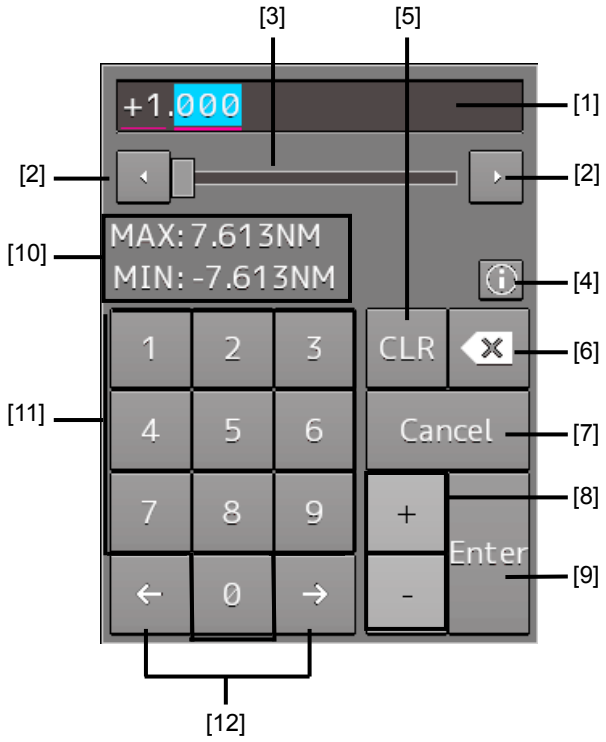
When the mouse button is clicked on a numeric input text box on such as a dialog box, a numeric input software keyboard is displayed.
When the mouse button is clicked on a character input text box, a character input full keyboard is displayed.



# 3.11.2 Name and function of each section of the keyboard

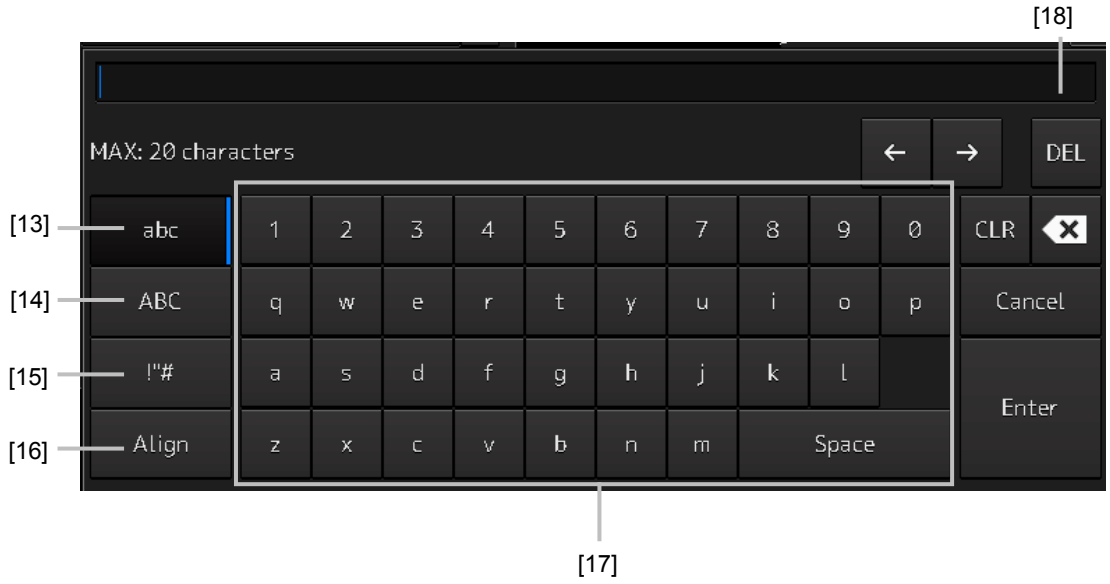


**Numeric value input software keyboard**




**Sowtware full keyboard for character input**

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

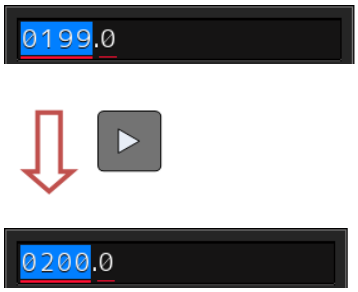


**[1] Input value display section**

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

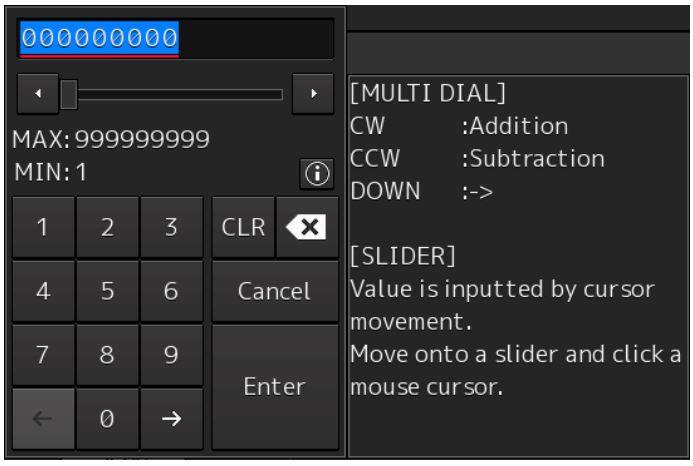
- When the mouse button is held down on the right spin button, the value is added consecutively. When the mouse button is held down on the left spin button, the value is subtracted consecutively.
- When the value set by the right spin button operation exceeds the maximum value, the minimum value is set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

## 3.11.3 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".**

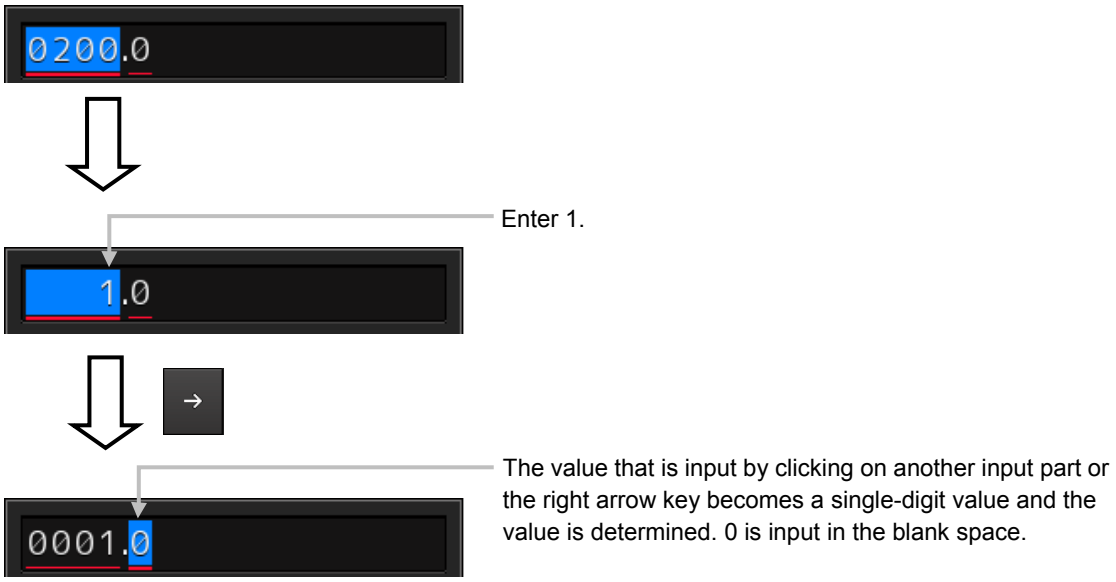
**5** **Click on the [Enter] key.**

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.

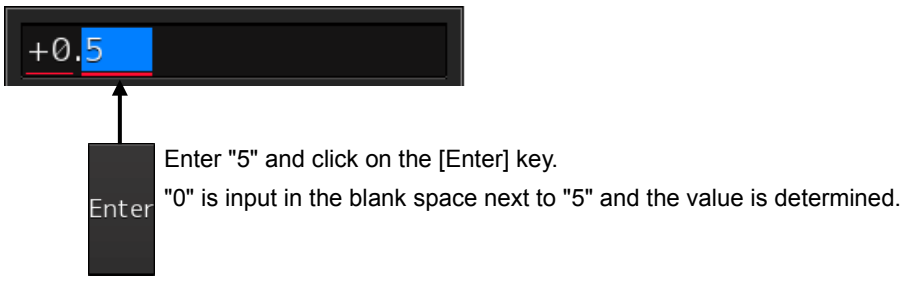
Example:




## 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:



# 3.11.4 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.**

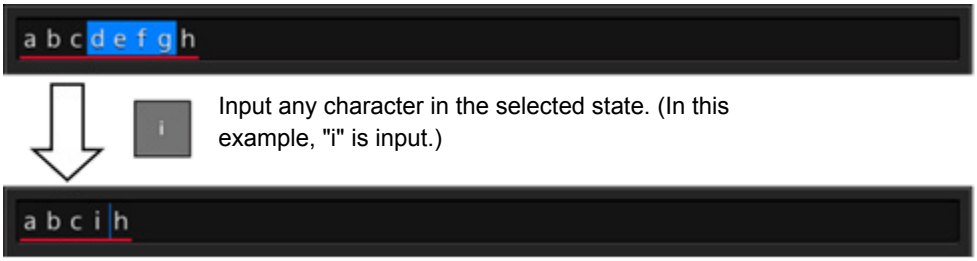
*When the character string is selected, the input caret is cleared.

**3** **Perform the following operation in the selected state.**

[Deleting a selected section]

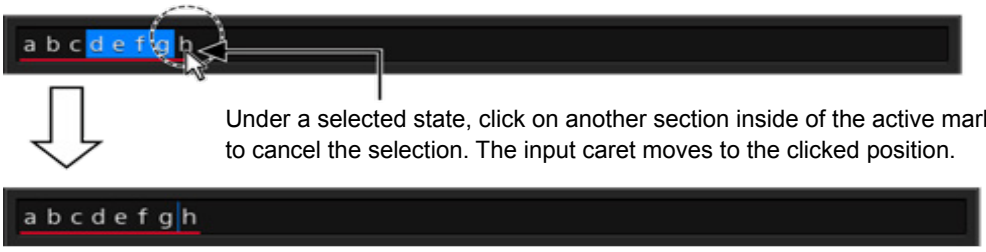
When the Back Space key is clicked on, the selected section is deleted.

[Replacing a selected section]




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

[Canceling a selected state]

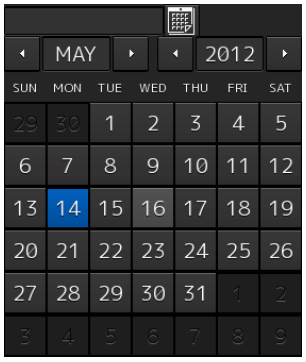



Under a selected state, click on another section inside of the active mark to cancel the selection. The input caret moves to the clicked position.

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

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

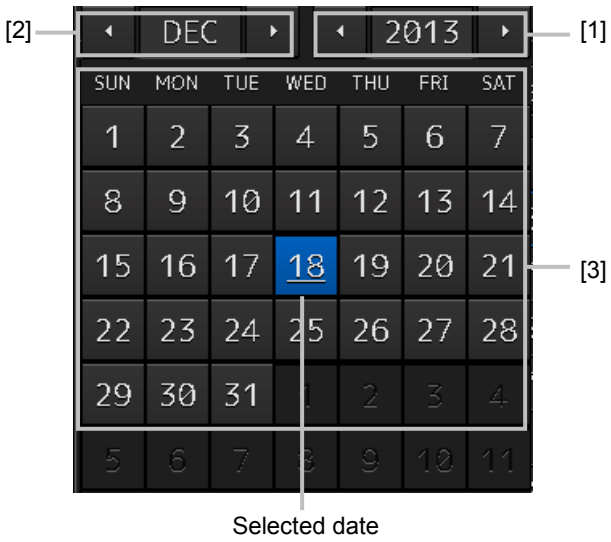
Set a date and a time on the calendar input screen.
Use the following calendar for Conning Display.




Calendar picker

## 3.12.1 Details and usage of a calendar picker

### 3.12.1.1 Details of a calendar




**[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**

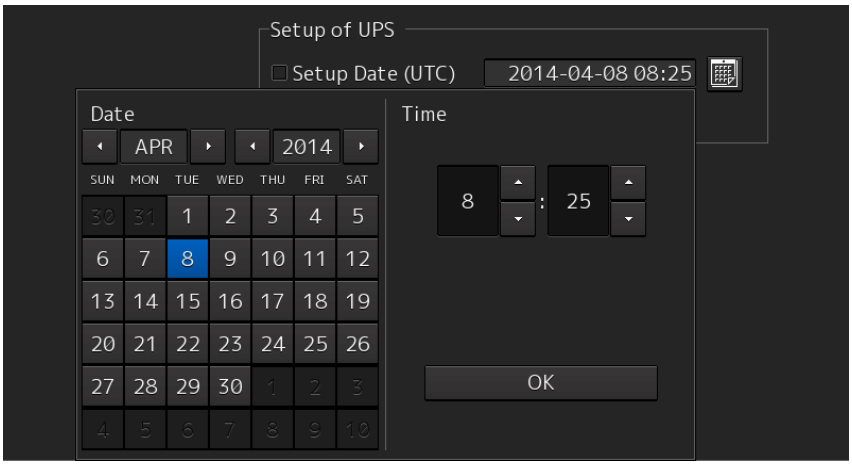
Selects a day.



## 3.12.1.2 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.

# 3.13 Help

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

**Memo**

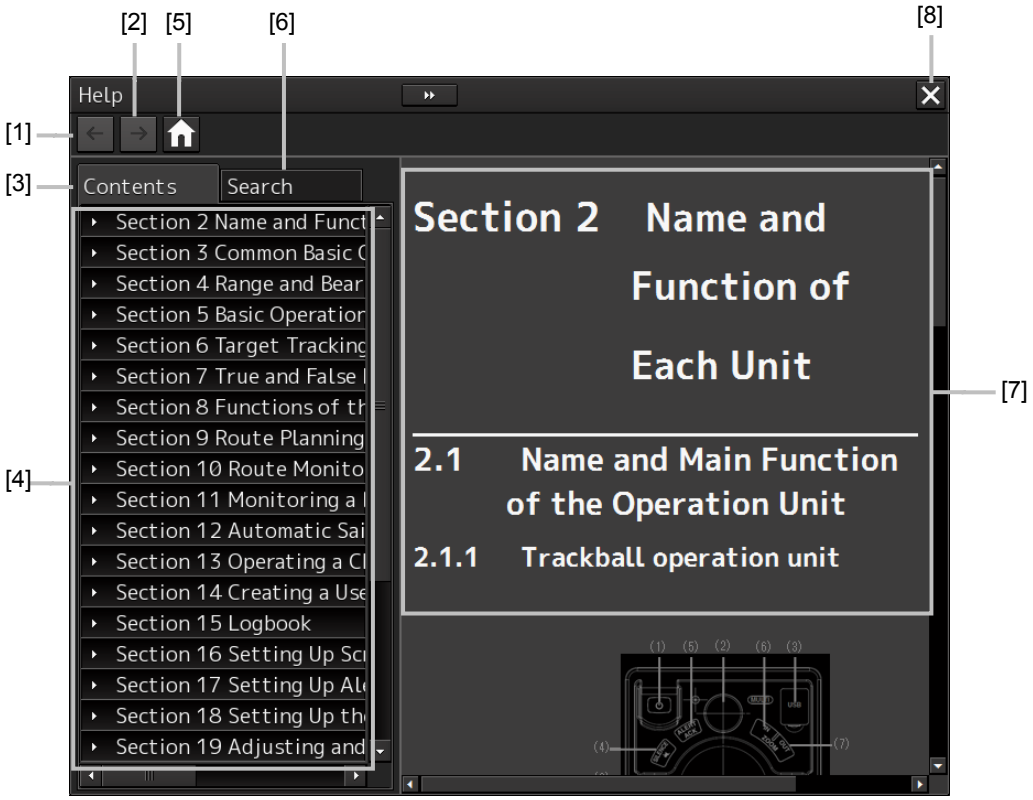
The Preface, Section 1 and Appendix A are not displayed in the Help.

**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.

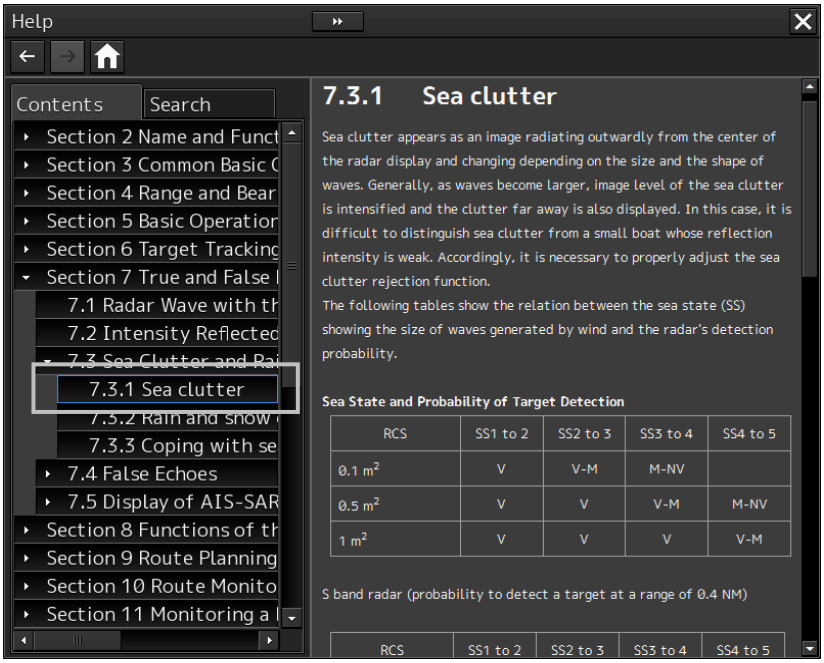
### Searching the required information from the contents

**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.**

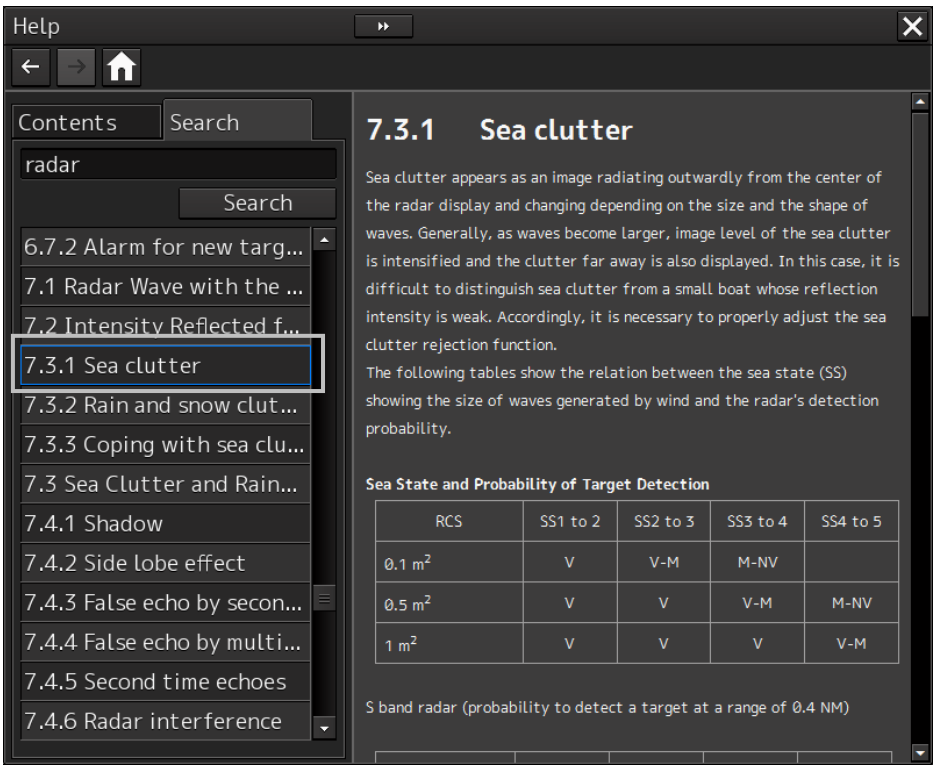
A search character input box is displayed.

**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.

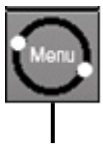


# 3.14 Password Input



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.**



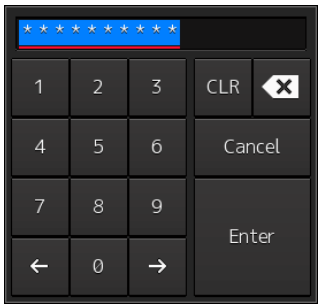

[Menu] button

The menu is displayed.

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

The password input dialog box appears.

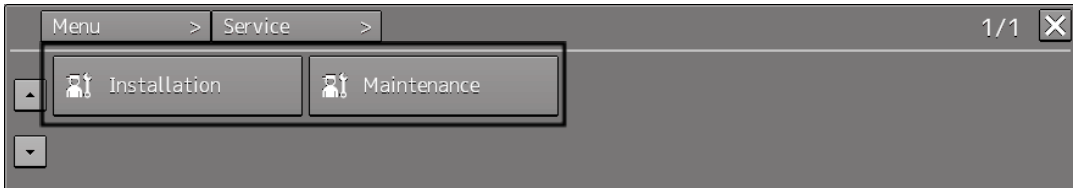
**3 Enter "0" (zero) and click on the [Enter] key.**




**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.

# 3.15 Managing Files with File Manager

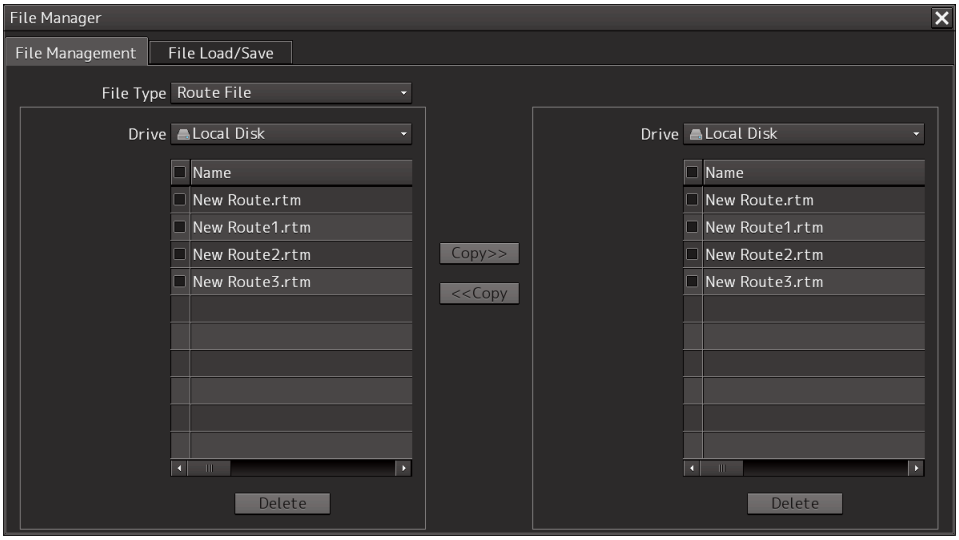
The file manager function enables the copying of route files and user map from the hard disk of this equipment to external storage media such as DVD or from external storage media to the hard disk of this equipment.



## 3.15.1 Displaying the [File Manager] dialog box

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

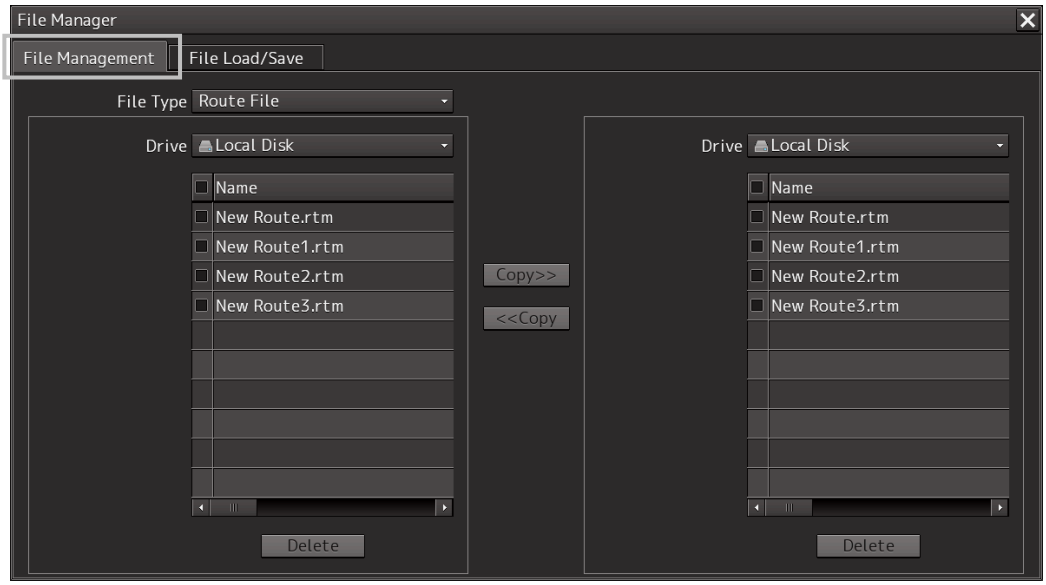
**2** **Click on the [Tools] - [File Manager] button on the menu.**
The [File Manager] dialog box appears.



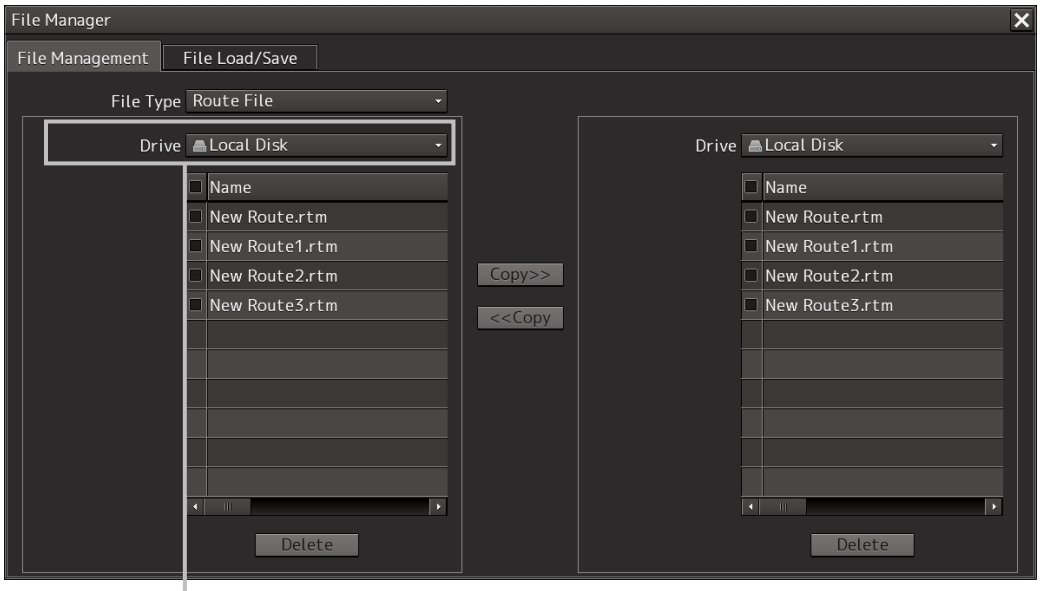
# 3.15.2 File management

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.



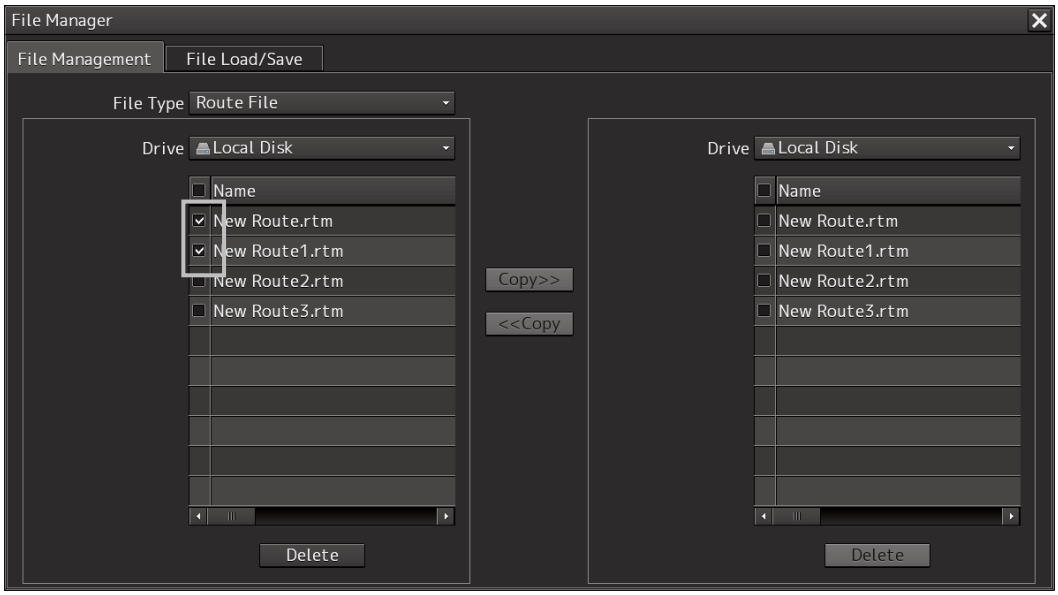

[Drive] combo box

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

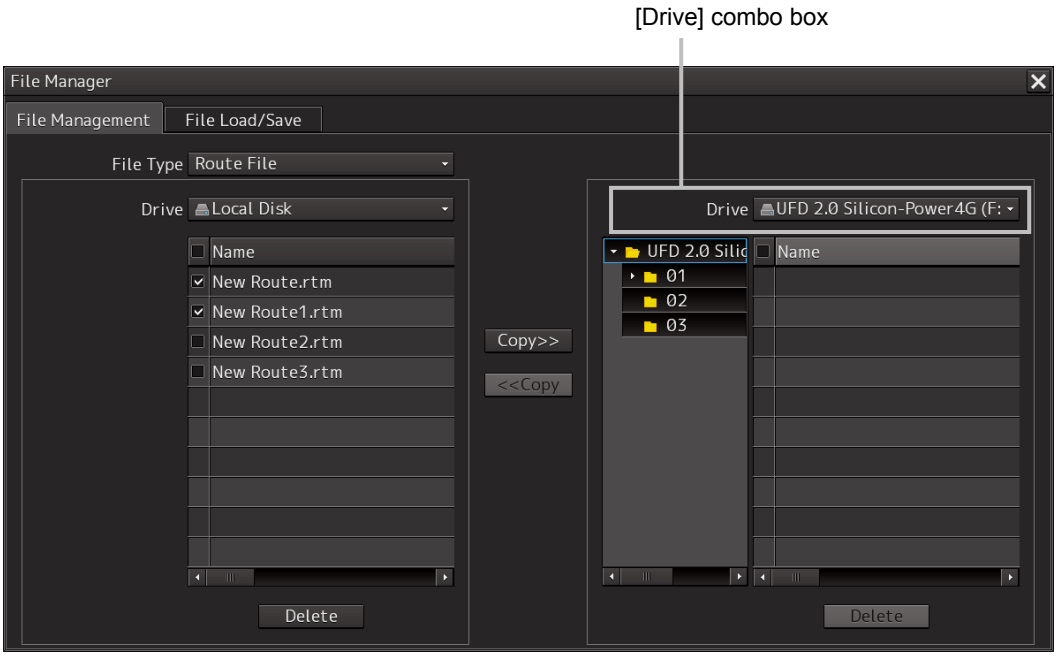
| No. | File type | File extension | Contents |
|---|---|---|---|
| 1 | Route File | rtm | Route |
| 2 | Screen Shot (AUTO) | png | Automatically generated screen shot |
| 3 | Screen Shot (User) | png | Manually generated screen shot |



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

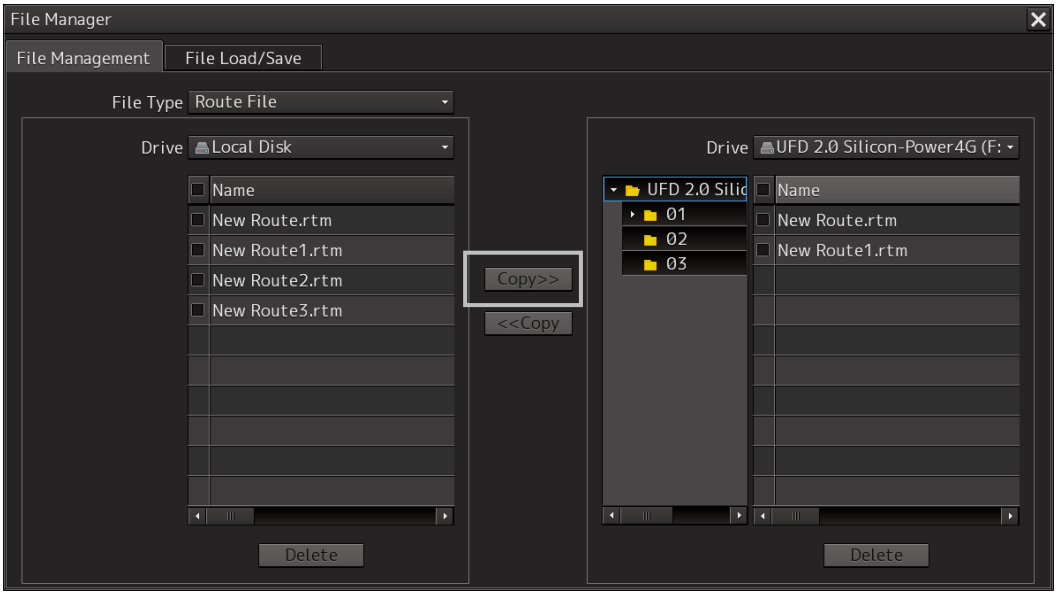


**4** **Select a drive of the storage destination from the [Drive] combo box and select a copy location from the folder tree that is displayed.**




**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.

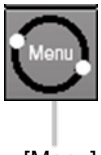
**2** **To delete the file, click on the [OK] button.**

# 3.16 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.

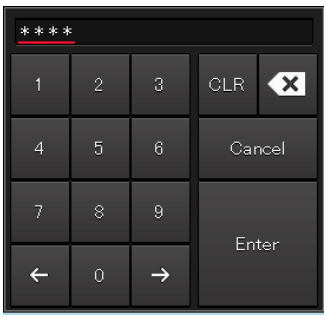



[Menu] button

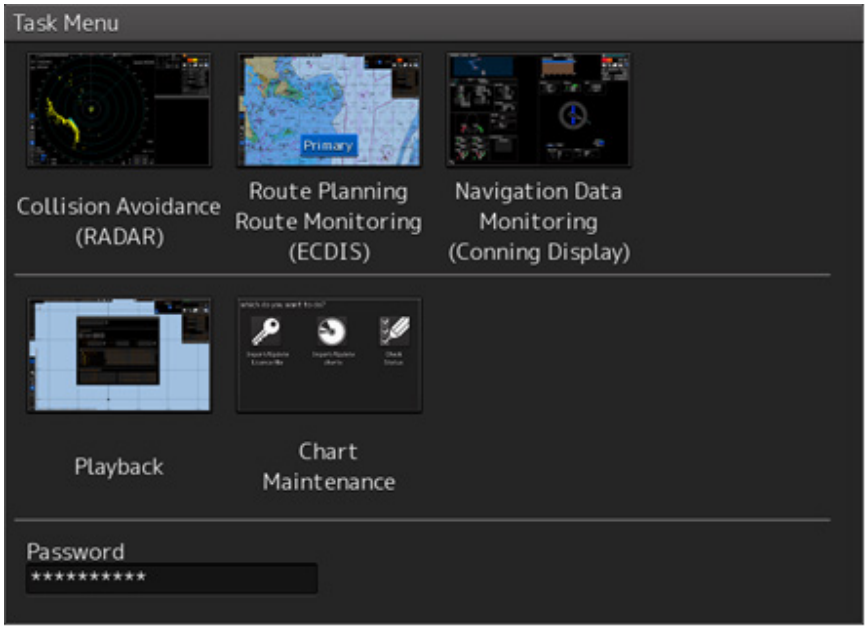
**2 Click on the [Code Input] button on the menu.**

The password input dialog box appears.

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




Returns to the task menu.



# 3.17 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

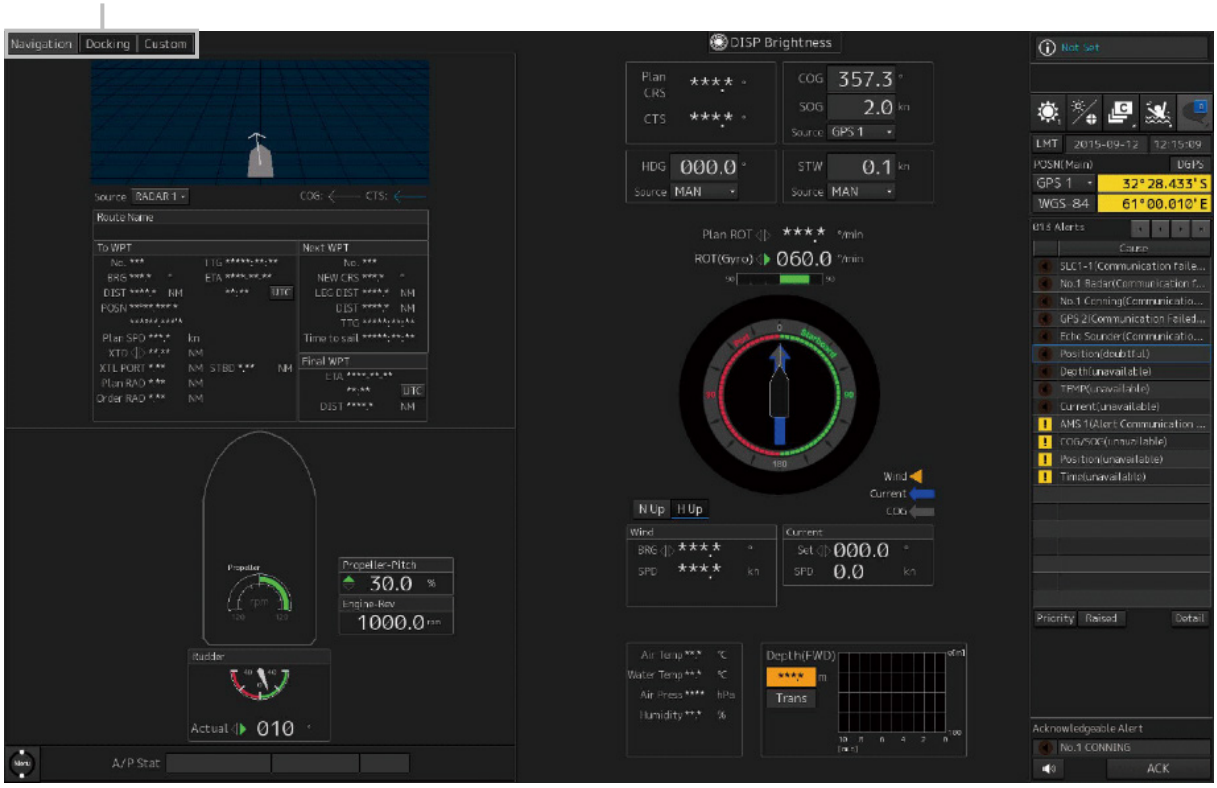
This equipment displays information from various equipment units and sensors that are installed on-board in the most suitable forms.

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.

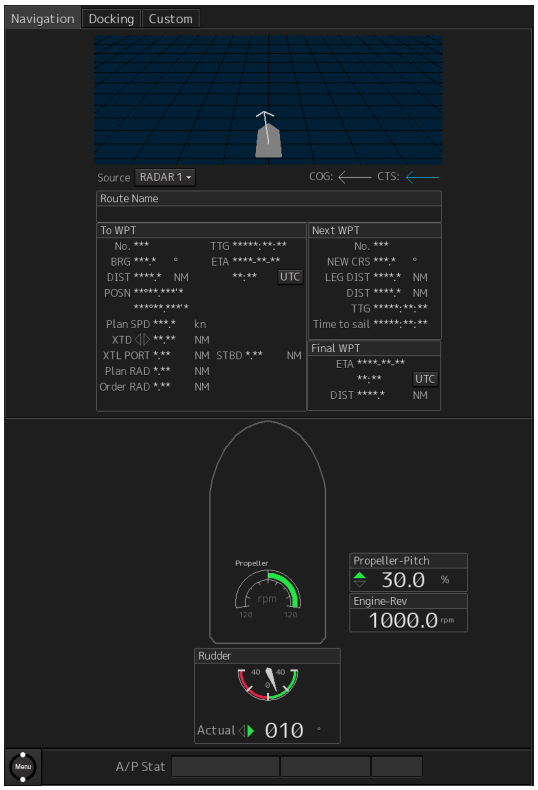
| Display mode | Information that is displayed |
|---|---|
| Navigation mode | Information on the status of the ship that is navigating |
| Docking mode | Information on the status of the ship that is docking |
| Custom mode | Information that is arbitrarily selected to be displayed on the Custom screen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

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

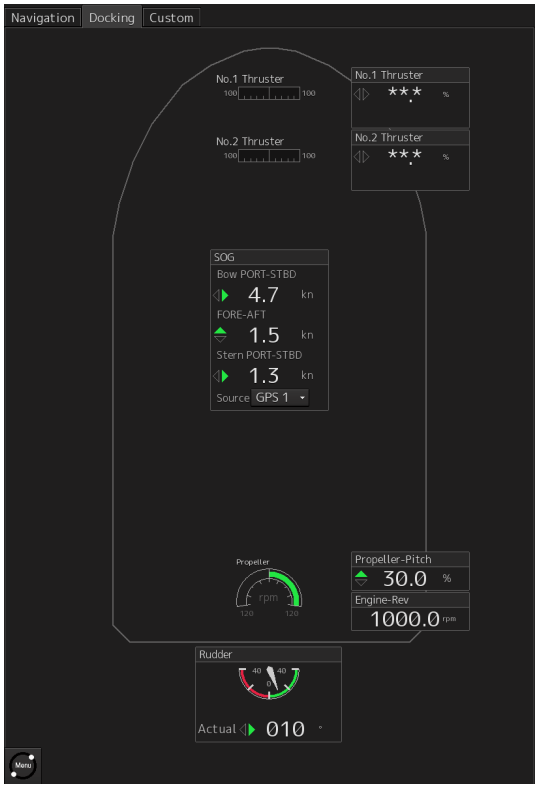
By using any of the display mode switching tabs at the top left side of the top screen, switching to any of the three display modes is enabled.
The selected mode is highlighted.

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

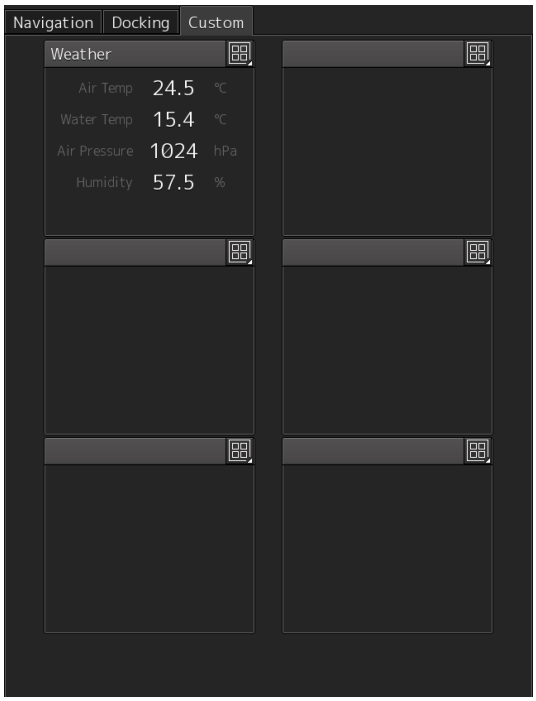
Examples of screens for each mode are shown below.




Navigation mode




Docking mode

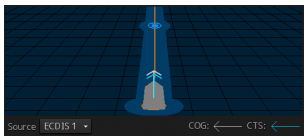
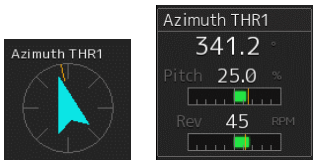
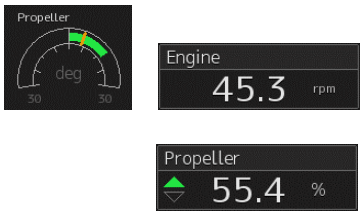
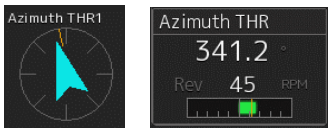
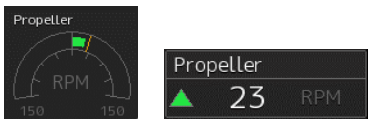


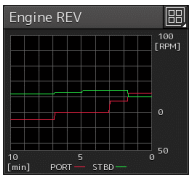
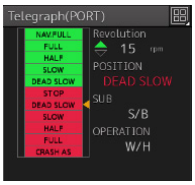
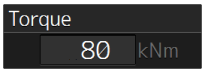
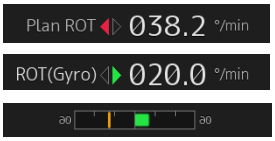
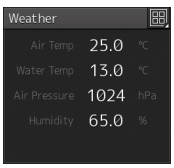
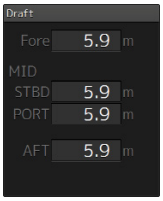

Custom mode

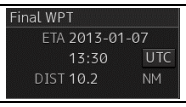
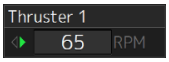
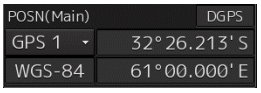
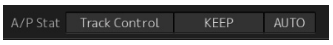
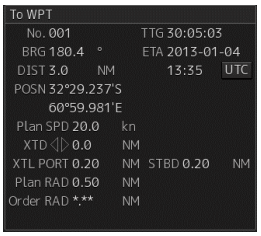
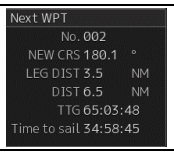
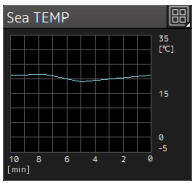
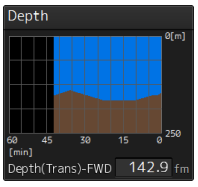
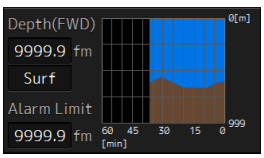
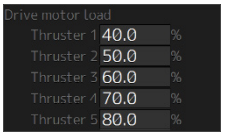
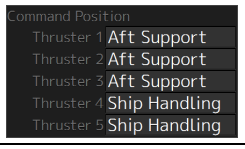
# 4.2 How to view each block

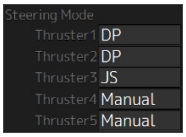
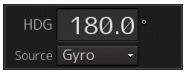
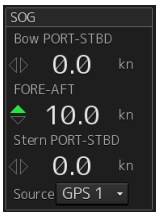
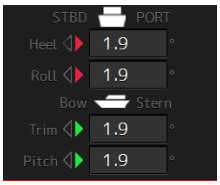
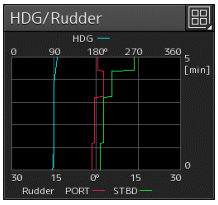
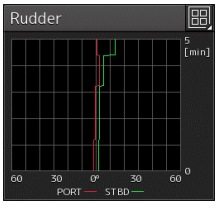
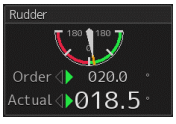
This section describes the information that is indicated in each block displayed on the Conning Display screen. The information is described on a per-block basis.
All the blocks that can be displayed by Conning Display are summarized in “4.2.1 Block list”.
Search the block whose meaning of the displayed 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”.

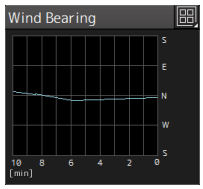
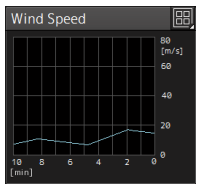
## 4.2.1 Block list

| 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 |
| Draft information |  | 4.2.3.17 |

| Block name | Example of the shape of the block | Reference section |
|---|---|---|
| Route information source | | 4.2.3.18 |
| Route name information | | 4.2.3.19 |
| Final waypoint information |  | 4.2.3.20 |
| Side thruster information (with status) | <br>  | 4.2.3.21 |
| Time/position information | <br>  | 4.2.3.22 |
| Automatic sailing information |  | 4.2.3.23 |
| Next waypoint information |  | 4.2.3.24 |
| One after next waypoint information |  | 4.2.3.25 |
| Water temperature graph |  | 4.2.3.26 |
| Water depth graph |  | 4.2.3.27 |
| Water depth information |  | 4.2.3.28 |
| Thruster drive motor load information |  | 4.2.3.29 |
| Thruster operation position information |  | 4.2.3.30 |

| Block name | Example of the shape of the block | Reference section |
|---|---|---|
| Thruster steering mode information |  | 4.2.3.31 |
| Heading information |  | 4.2.3.32 |
| Graphic display of ship's heading, course over the ground, wind bearing/wind speed, and current information | | 4.2.3.33 |
| Ship speed information |  | 4.2.3.34 |
| Hull motion information |  | 4.2.3.35 |
| Steering position information | | 4.2.3.36 |
| Ship speed through water information | | 4.2.3.37 |
| Course/speed over the ground information | | 4.2.3.38 |
| Rudder angle/ship's heading graph |  | 4.2.3.39 |
| Rudder angle graph |  | 4.2.3.40 |
| Rudder angle information |  | 4.2.3.41 |

| Block name | Example of the shape of the block | Reference section |
|---|---|---|
| Current information | | 4.2.3.42 |
| Generator information | | 4.2.3.44 |
| Wind bearing graph |  | 4.2.3.45 |
| Wind bearing/wind speed information | | 4.2.3.46 |
| Wind speed graph |  | 4.2.3.47 |
| Course To Steer information | | 4.2.3.48 |

## 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.

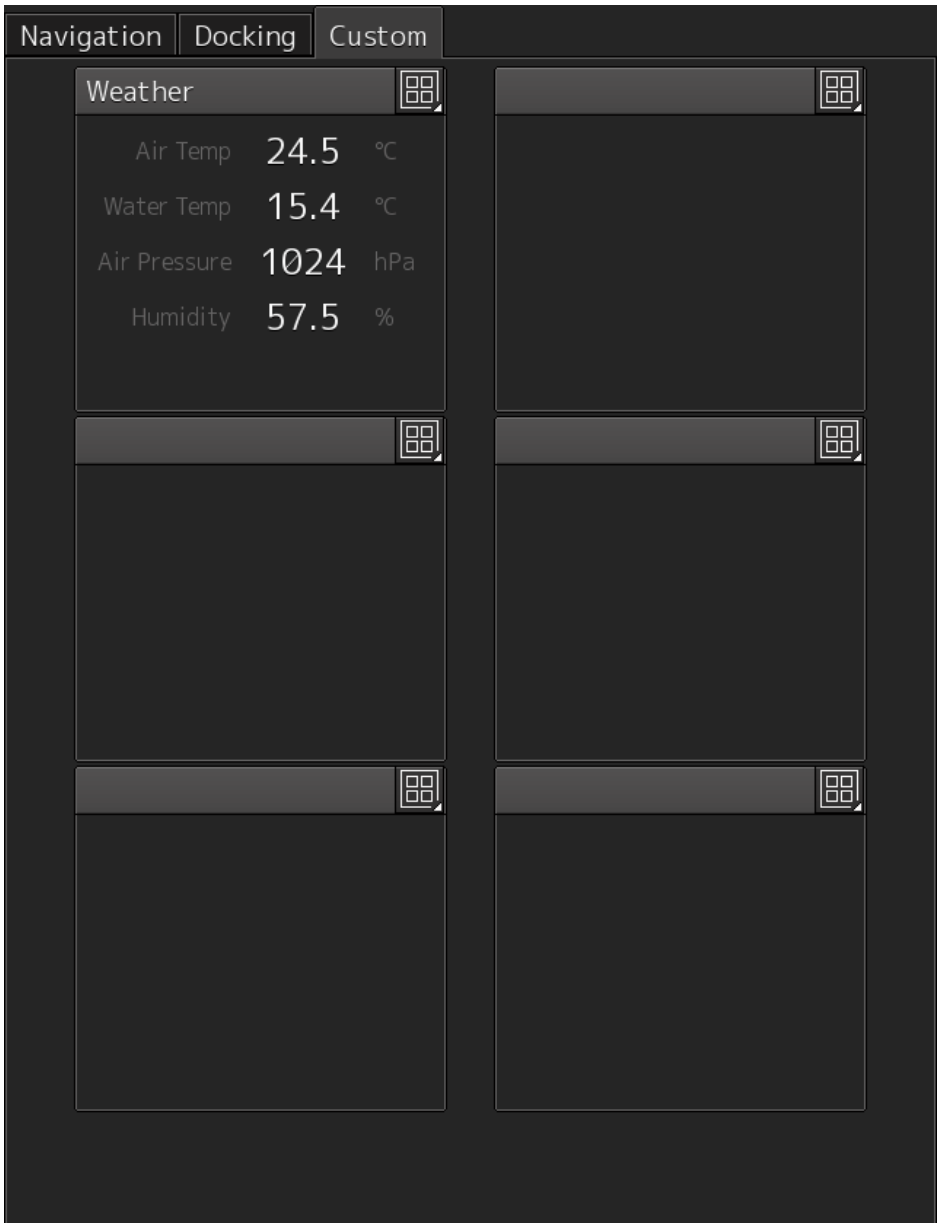
The following blocks can be assigned to the screen in Custom mode.

- 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

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

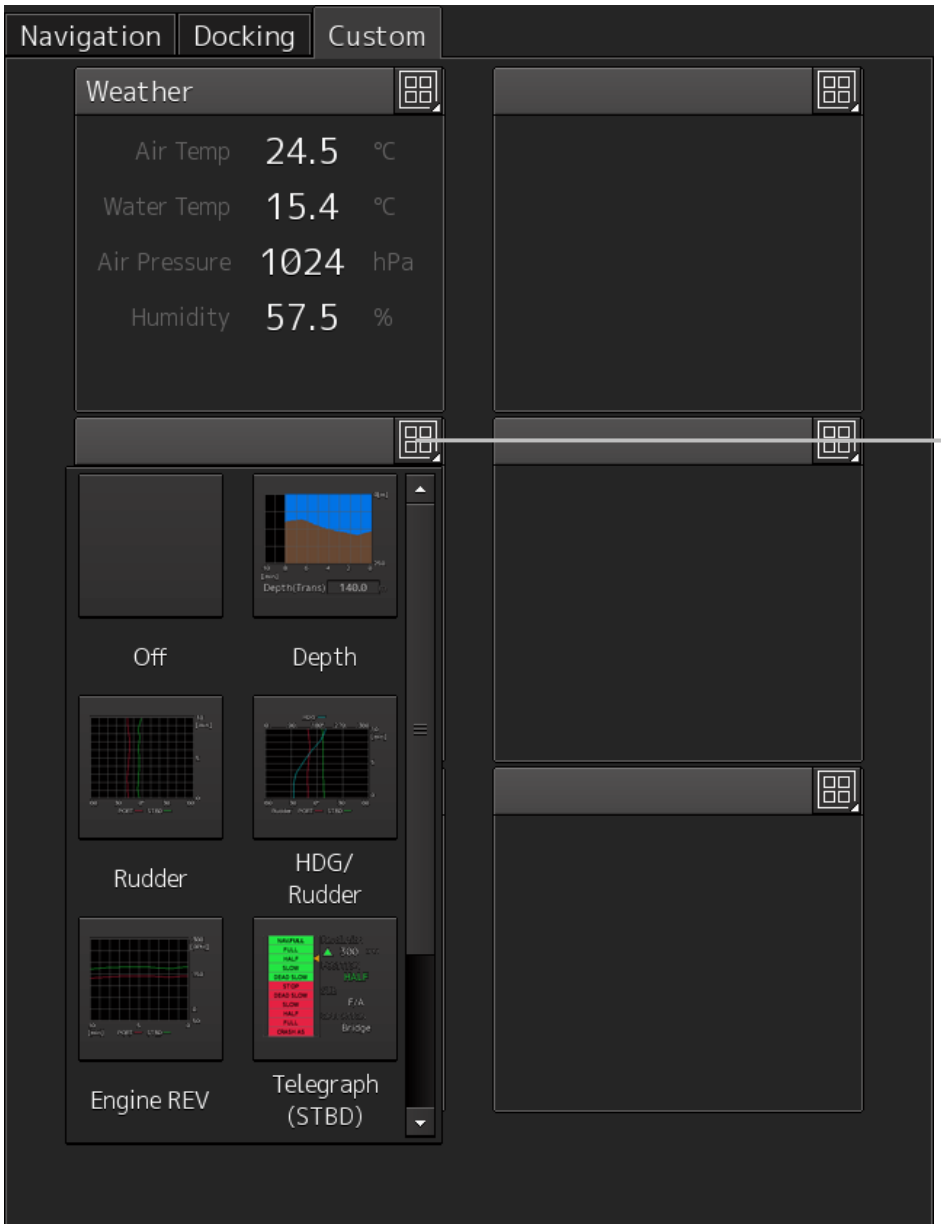
**1 Click on the Custom tab.**

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



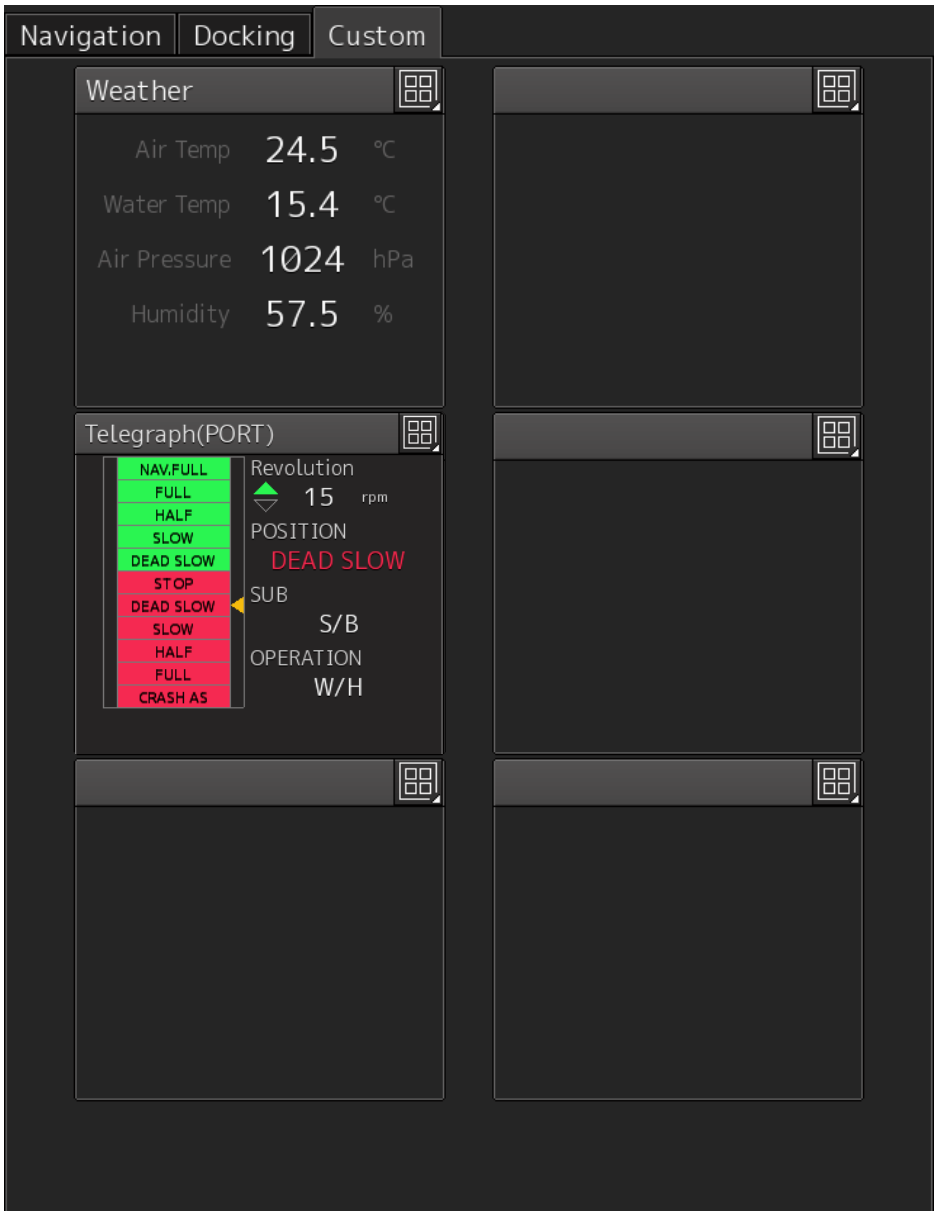
**2 Click on the item selection button on the window for displaying items.**

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**

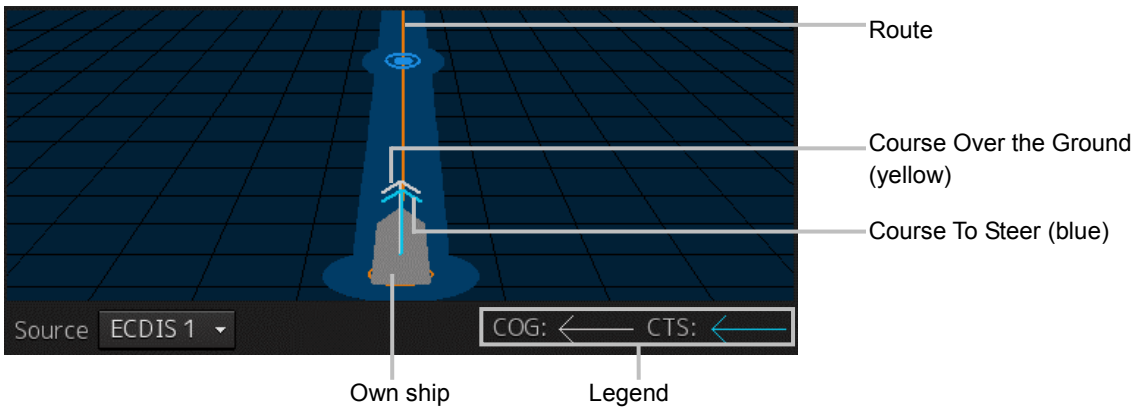
Normally, the item that is already displayed on another window cannot be selected.

**Setting the window to blank**

Click on [Off] in step 3 above.

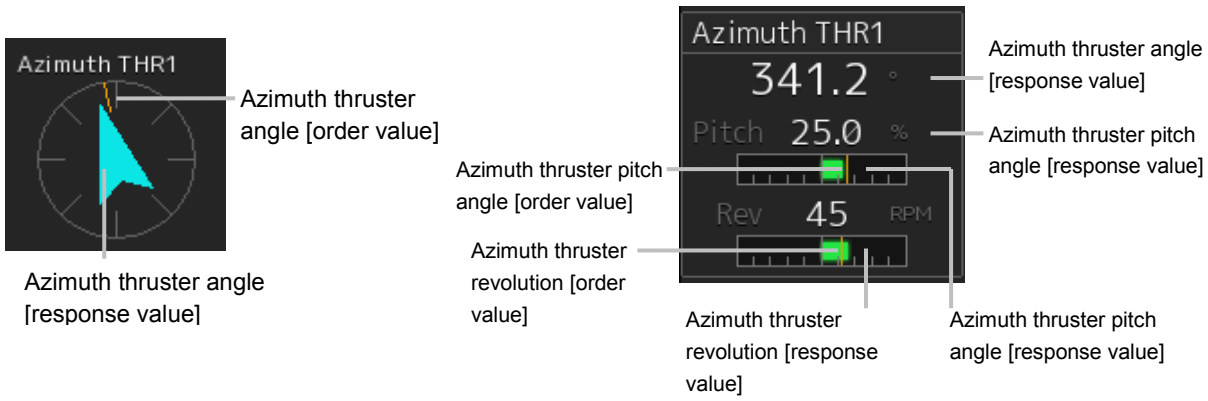
# 4.2.3 Description of each block

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




| Item | Display contents |
|---|---|
| Own ship | Indicates the position of own ship.<br>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.<br>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).<br>*The course to steer is displayed in autopilot mode. In other modes, the information is not displayed. |

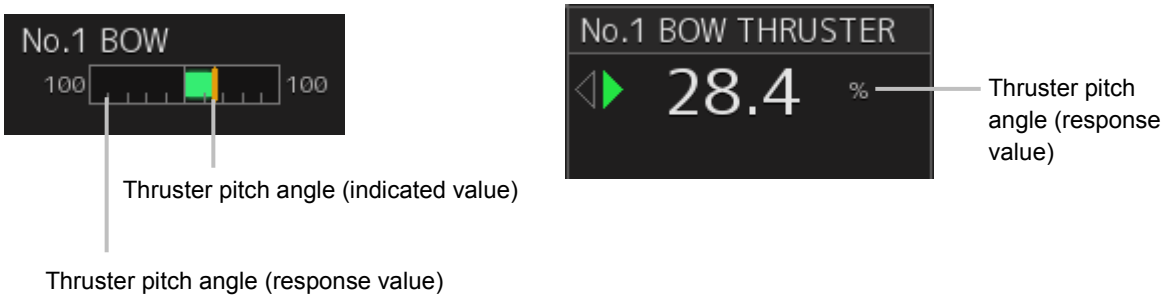
## 4.2.3.2 Information about azimuth thruster of CPP (controllable pitch propeller) type



| 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).<br>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.<br>The unit can be changed on the View menu.<br>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).<br>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.<br>The unit can be changed on the View menu.<br>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).<br>On the meter display, the revolution is displayed as a yellow line. |

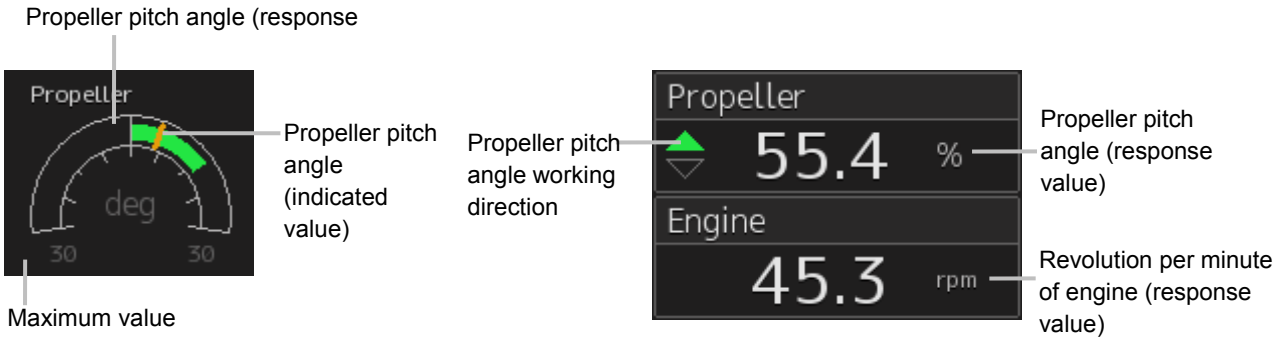


### 4.2.3.3 Information about side thruster of CCP (controllable pitch propeller) type



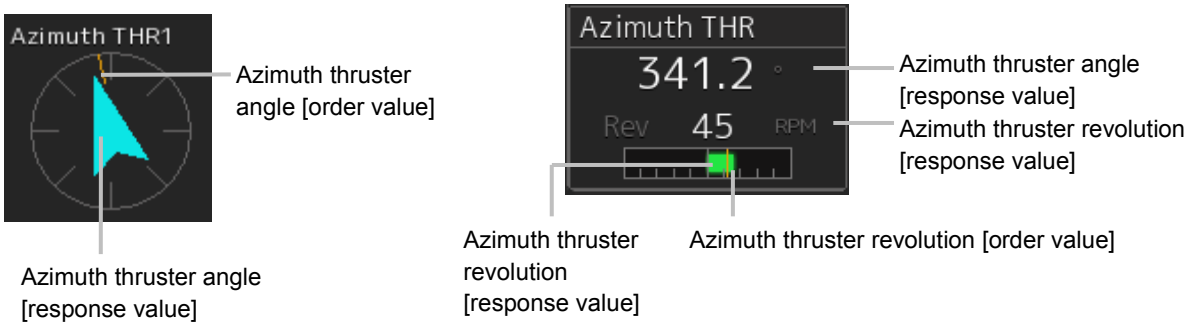

| Item | Display contents |
|---|---|
| Thruster pitch angle (response value) | Displays the pitch angle (response value) of the side thruster.<br>On the meter display, the angle is displayed as a red (Port direction) or green (Starboard direction) bar. The maximum value is displayed at both ends of the meter.<br>In numerical display, a value with the port (red)/starboard (green) mark is displayed.<br>The unit can be changed on the View menu.<br>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).<br>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



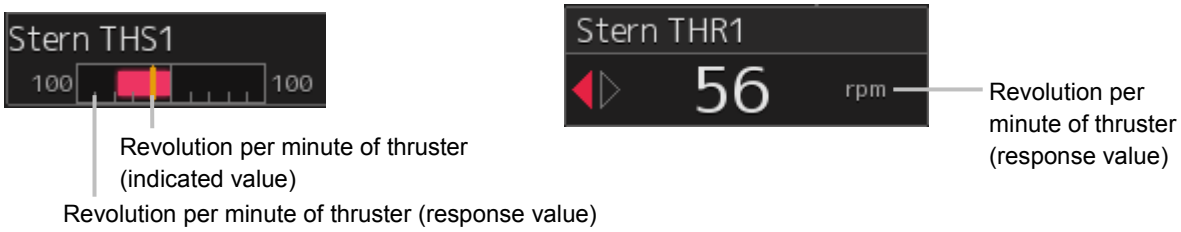

| Item | Display contents |
|---|---|
| Propeller pitch angle (response value) | Displays the propeller pitch angle (response value).<br>On the meter display, the angle is displayed as green (forward direction) or red (backward direction) bar.<br>In numerical display, a value with propeller pitch angle operation direction is displayed.<br>The unit can be changed on the View menu.<br>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).<br>On the meter display, the angle is displayed as a yellow line. |
| Engine revolution (response value) | Displays the engine revolution in numerical format.<br>The unit can be changed on the View menu.<br>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



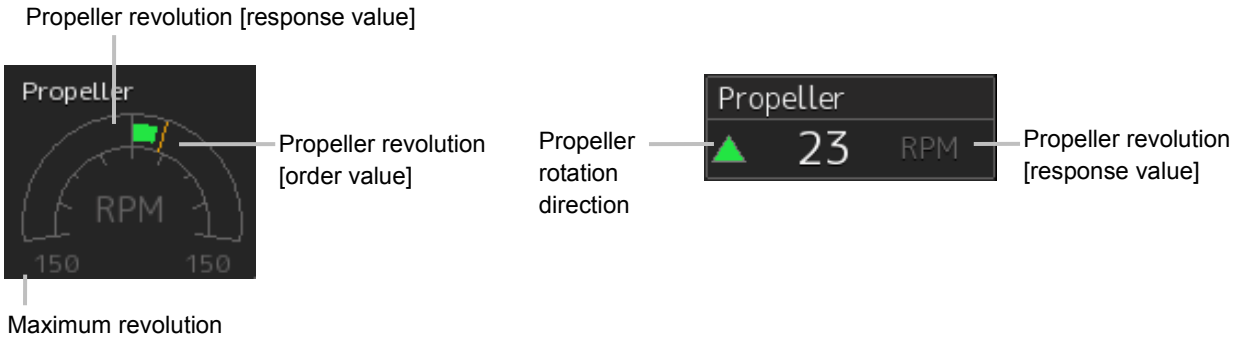

| Item | Display contents |
|---|---|
| Azimuth thruster angle (response value) | Displays the azimuth thruster angle (response value) with a meter display and a numerical display. |
| Azimuth thruster angle (order value) | Displays the azimuth thruster angle (order value).<br>On the meter display, the 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.<br>The unit can be changed on the View menu.<br>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).<br>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.<br>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.<br>In numerical display, a value with the port (red)/starboard (green) mark is displayed.<br>The unit can be changed on the View menu.<br>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).<br>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.<br>On the meter display, the speed is displayed as a green (forward direction) or red (backward direction) bar.<br>In numerical display, a value with engine/propeller operation direction is displayed.<br>The unit can be changed on the View menu.<br>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.<br>On the meter display, the speed is displayed as a yellow line. |

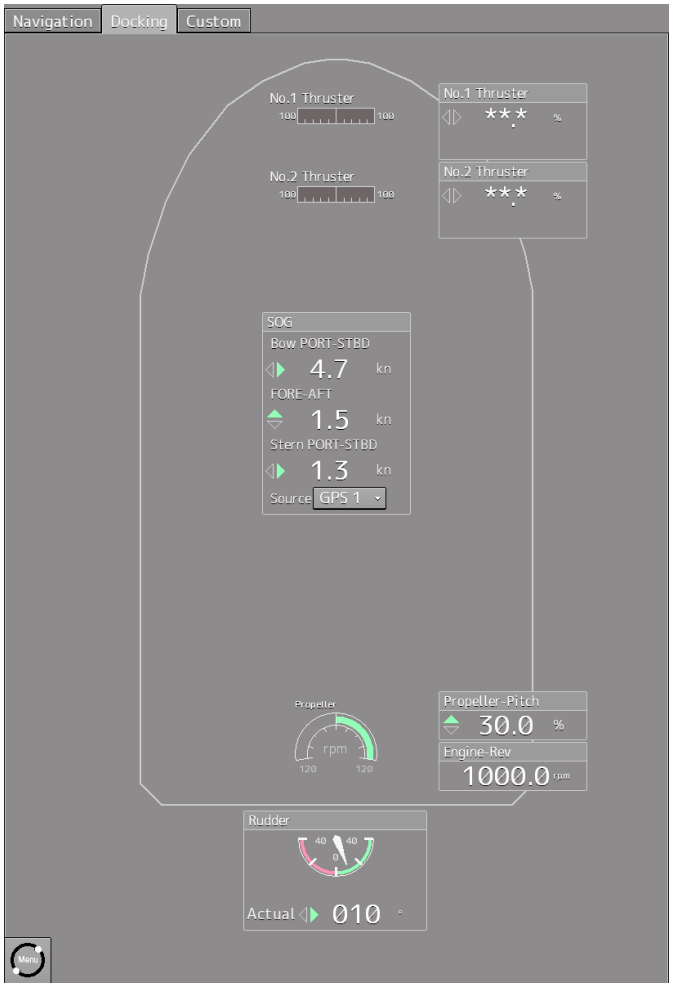
## 4.2.3.8 N-UP/H-UP switching buttons

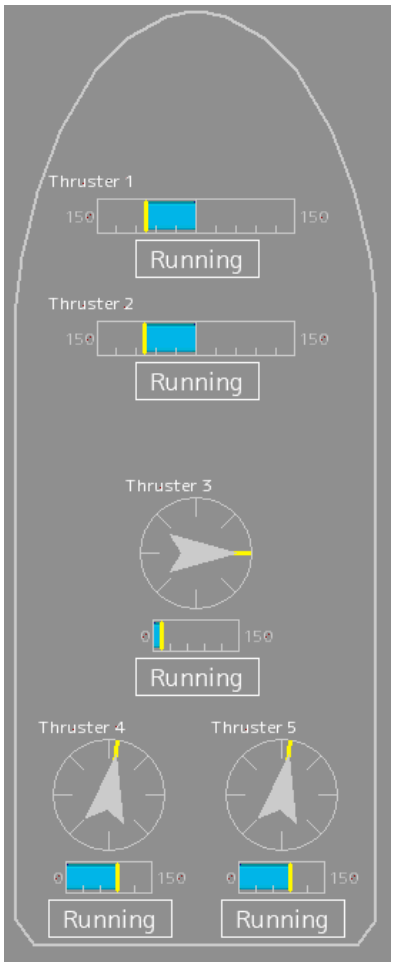
The N-UP/H-UP switching buttons enable switching between N-UP display and H-UP display.
The scale display in the illustration display such as course switches according to the N-UP/H-UP display switching.
For the illustration display, refer to "4.2.3.33 Graphic display of ship's heading, course over the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

## 4.2.3.9 Ship block

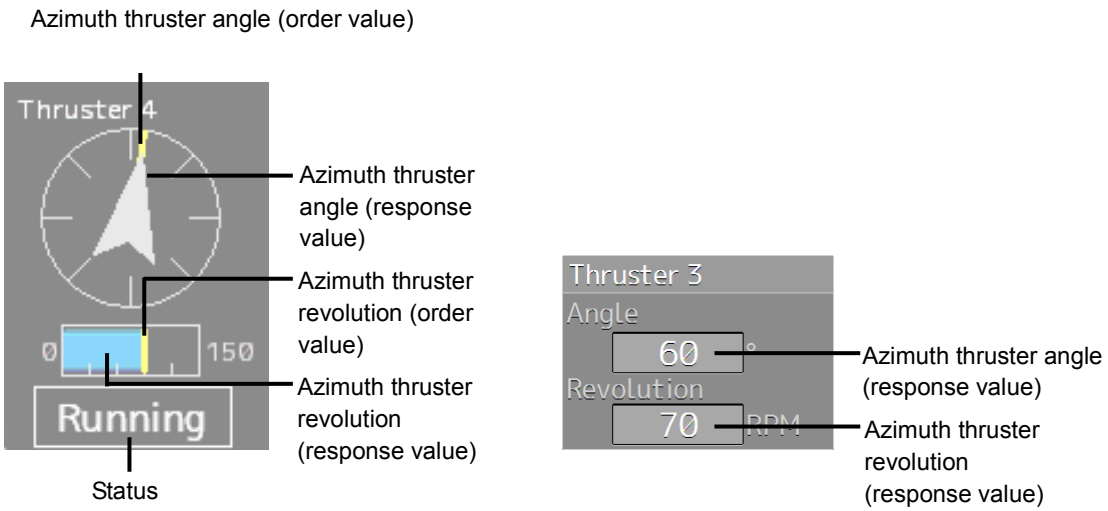
In the Ship block, operation statues such as the rudder angle, engine/propeller, and thruster are displayed within and surrounding the line drawing of a shape of a ship.

Ship block display examples are shown below.



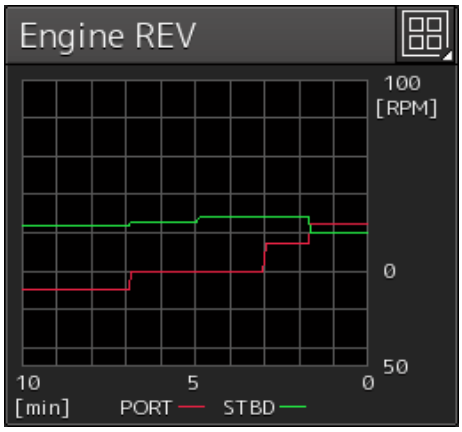



## 4.2.3.10 Azimuth thruster information (with status)




| 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).<br>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.<br>The unit can be changed in the View menu.<br>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).<br>Displayed on the meter with a yellow line. |
| Status | Displays a status of the azimuth thruster.<br>Running: Running<br>Stop: Stopped |

## 4.2.3.11 Engine/propeller revolution graph



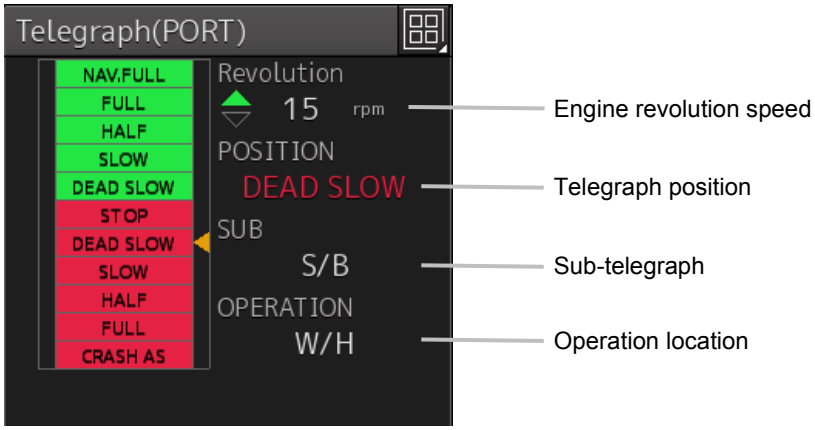

| Item | Display contents |
|---|---|
| Engine/shaft/ propeller revolution speed graph display | Displays the engine/propeller revolution speed graph.<br>The graph range can be changed on the View menu.<br>For the details, refer to "5.1.6 Setting an engine/propeller revolution graph ". |

## 4.2.3.12 Engine output information

| Item | Display contents |
|---|---|
| Engine output | Displays the engine output. |

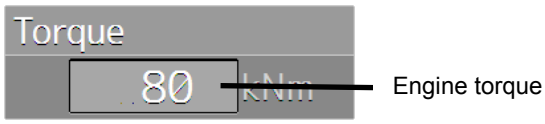
## 4.2.3.13 Engine telegraph information

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



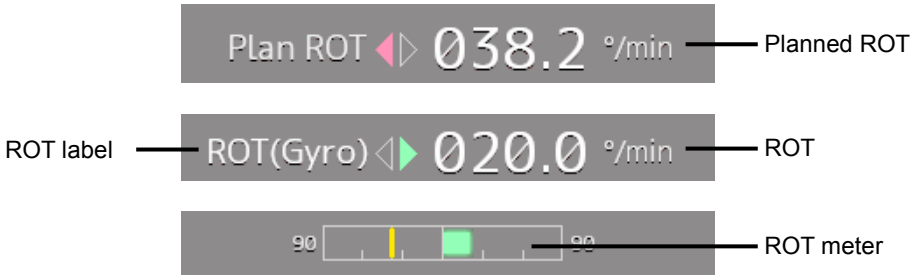

| Item | Display contents |
|---|---|
| Engine revolution speed | Displays the engine revolution speed. |
| Telegraph position | Displays the telegraph position. |
| Sub-telegraph | Displays the sub-telegraph. |
| Operation location | Displays the engine telegraph operation location. |

## 4.2.3.14 Engine torque information



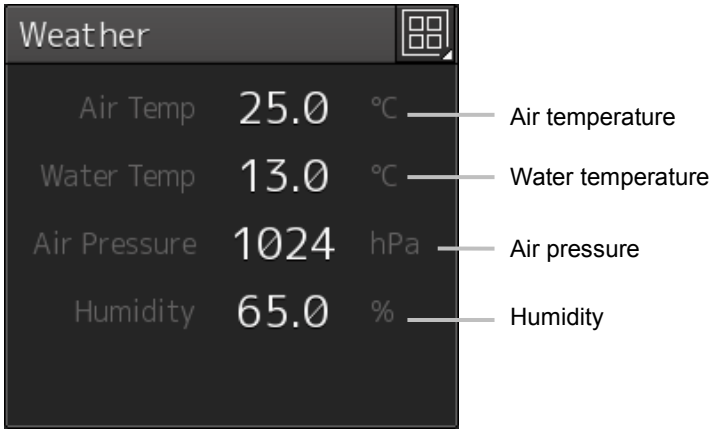

| Item | Display contents |
|---|---|
| Engine torque | Displays an engine torque.<br>The unit is kNm (kilo newton meter). |

## 4.2.3.15 Rate Of Turn (ROT) information



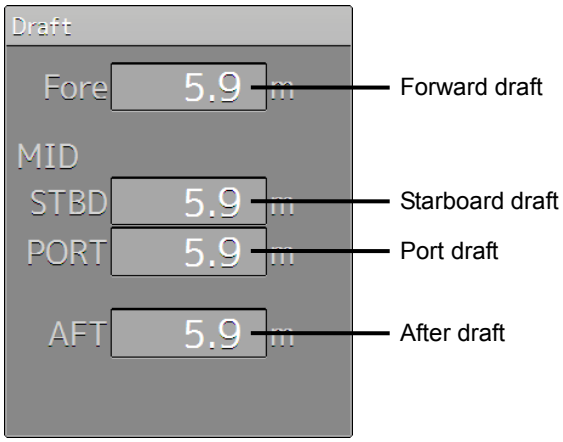

| Item | Display contents |
|---|---|
| Rate of turn label | Displays the rate of turn sensor name.<br>ROT[TRI]:<br>Displays the rate of turn from TRI (Turn Rate Indicator).<br>ROT[Gyro]:<br>Displays the rate of turn from Gyro.<br>* When two Gyro units are installed, Gyro1 or Gyro2 is displayed according to the sensor that is currently used for receiving information. |
| Planned rate of turn | Displays the planned rate of turn.<br>The value is displayed following the port/starboard mark.<br>* 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.<br>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.<br>(In top screen (2), a white color is used in the display instead of red and green colors.)<br>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.<br>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.<br>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.<br>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 Draft information




| Item | Display contents |
|---|---|
| Forward draft | Displays a forward draft. |
| Starboard draft | Displays a starboard draft. |
| Port draft | Displays a port draft. |
| After draft | Displays an after draft. |

## 4.2.3.18 Route information source

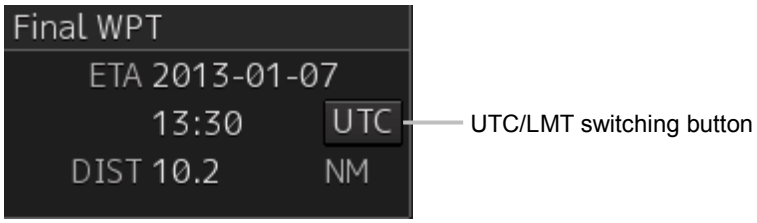
This combo box is displayed to display and change the sensor source for acquiring route monitoring information.
Select a sensor source in the combo box.
When [Menu] is selected, the [Sensor Selection/Status] dialog is displayed. Any of the following sensor sources can be selected.

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

## 4.2.3.19 Route name information

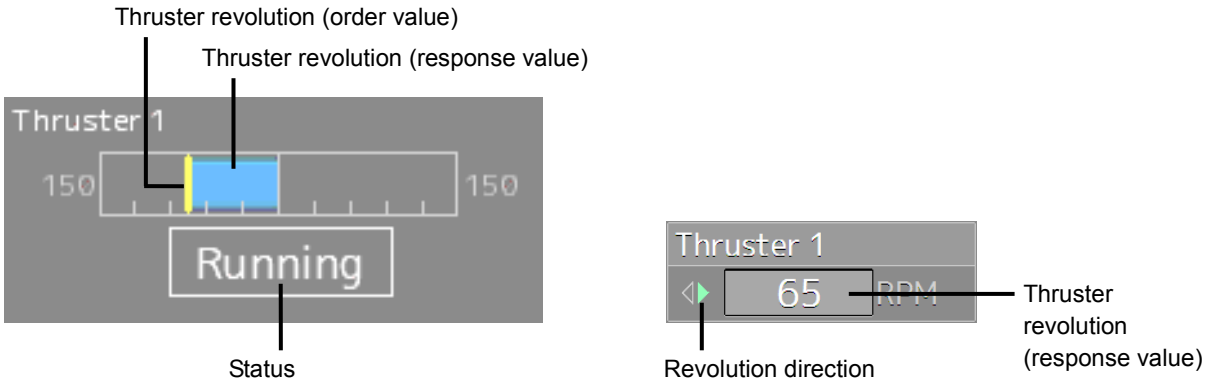
The route name is displayed based on the route information that is received from ECDIS. The information is displayed only when the route is being monitored.

## 4.2.3.20 Final waypoint information



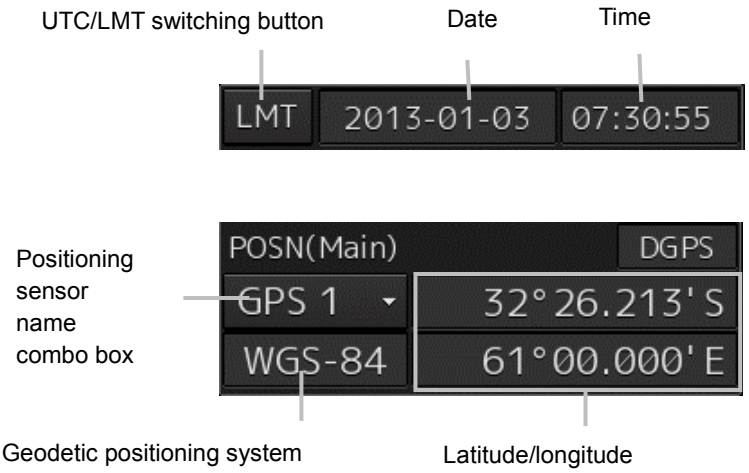

| Item | Display contents |
|---|---|
| ETA | Displays the expected time of arrival at the final waypoint.<br>The time display method can be changed by using the maintenance function.<br>For the details, refer to "9.1.2 Setting Date/Time/Time Zone". |
| UTC/LMT switching button | Displays and switches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

## 4.2.3.21 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.<br>The unit can be changed in the View menu.<br>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).<br>Displayed on the meter with a yellow line. |
| Status | Displays a status of the thruster.<br>Running: Running<br>Stop: Stopped |

## 4.2.3.22 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.<br>The following sensor sources can be selected.<br>When [Menu] is selected, the [Sensor Selection/Status] dialog is displayed.<br>GPSx[*1]<br>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.

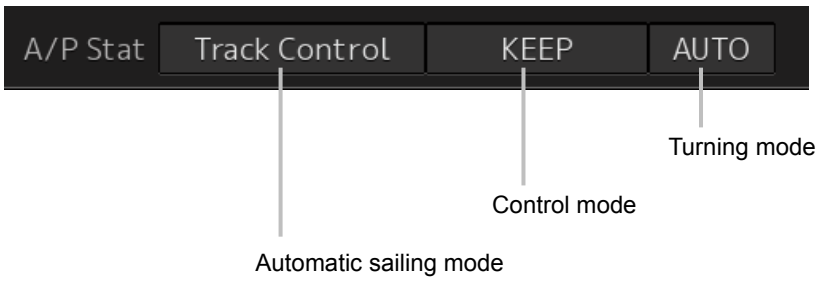
## 4.2.3.23 Automatic sailing information

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

**Note**

Displayed when the automatic sailing option is attached.



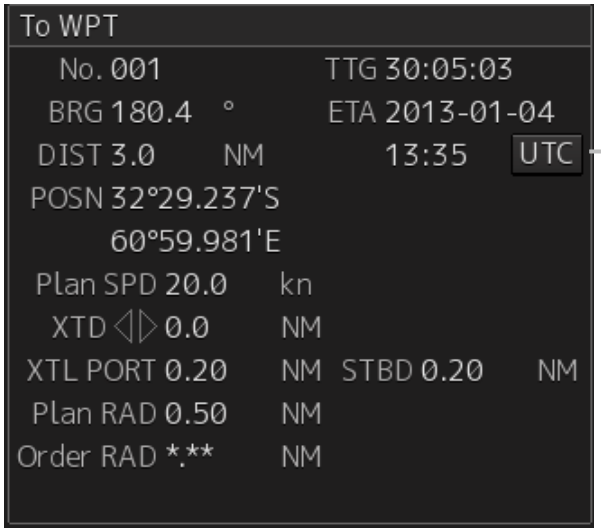



| Item | Display contents |
|---|---|
| Autopilot mode | Displays the automatic sailing mode.<br>No display: The [Navigational Data] combo box is blank space and the Switch to equipment for Autosailing check box in the [Sensor Selection/Status] dialog is not checked.<br>Track Control: The A/P (Autopilot)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

**Notes**

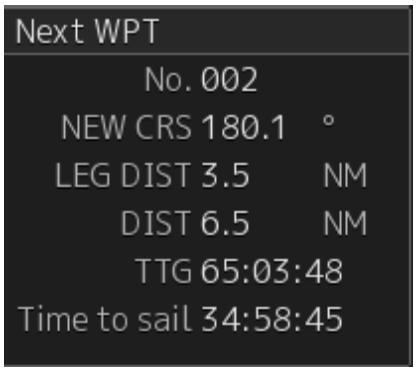
- When the mode is switched to Override steering on the Autopilot side in Track Control mode, Track Control is released and the mode is set to Override Steering.
- Refer to the following information for the override steering method.
  - Autopilot manufactured by TOKYO KEIKI:
    “4.5 Override Steering 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)"

## 4.2.3.24 Next waypoint information



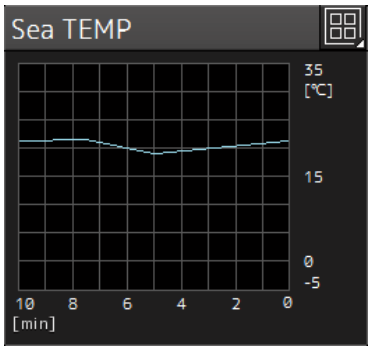

| Item | Display contents |
|---|---|
| No. | Displays the next waypoint number. |
| BRG | Displays the bearing up to the next waypoint. |
| DIST | Displays the distance up to the next waypoint. |
| POSN | Displays the latitude and longitude of To Waypoint. |
| Plan SPD | Displays the planned ship speed. |
| XTD | Displays the cross track distance of own ship.<br>Indicates the port (red)/starboard (green) with the color of the triangle mark.<br>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.<br>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.<br>For the details, refer to "9.1.2 Setting Date/Time/Time Zone". |
| UTC/LMT switching button | Displays and switches UTC/LMT of ETA. |

## 4.2.3.25 One after next waypoint information



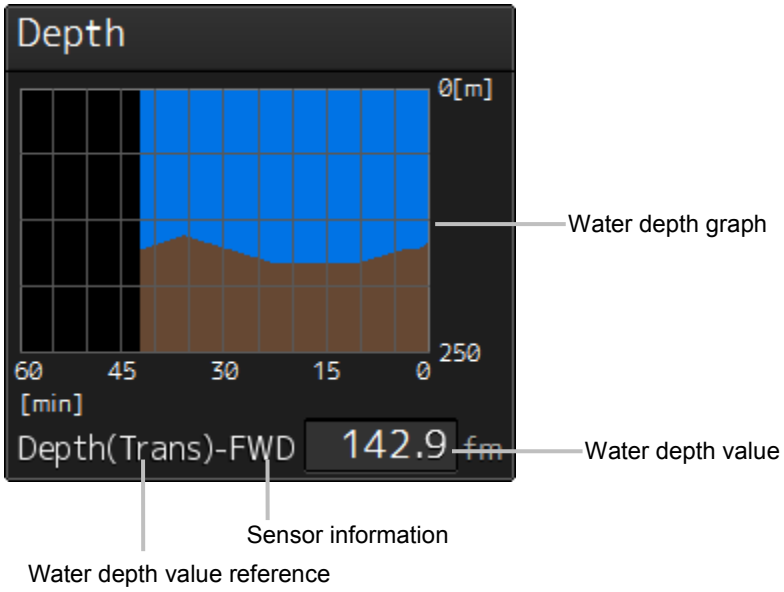

| Item | Display contents |
|---|---|
| No. | Displays the number of one after the next waypoint. |
| New CRS | Displays the leg bearing of one after the next waypoint. |
| LEG DIST | Displays the distance from the next waypoint to one after the next waypoint. |
| DIST | Displays the distance from own 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. |

## 4.2.3.26 Water temperature graph




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

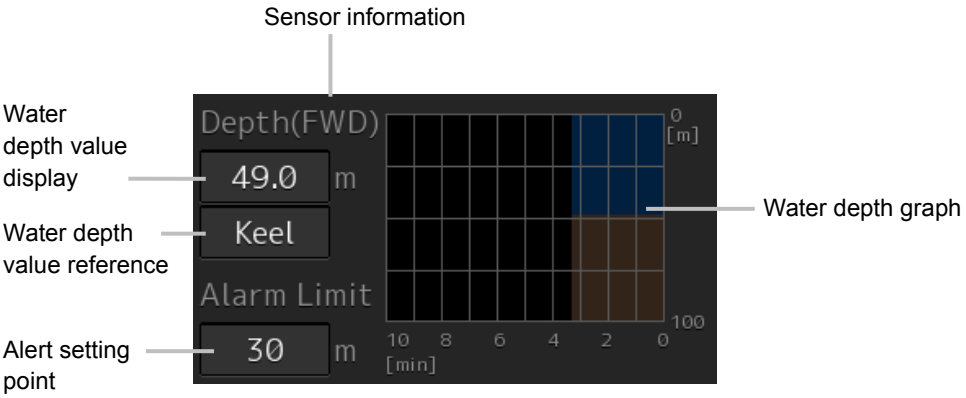
## 4.2.3.27 Water depth graph

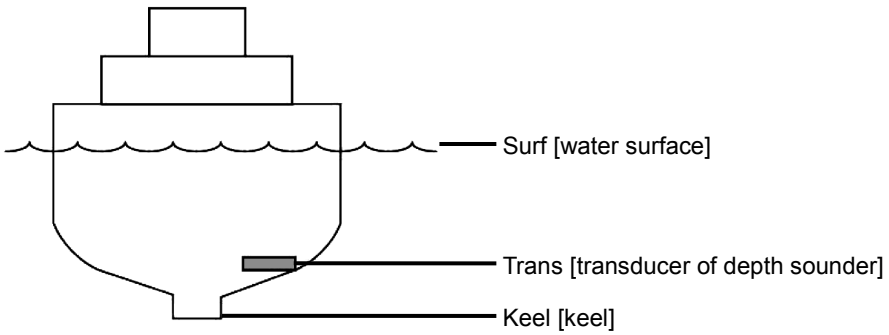


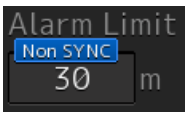

| Item | Display contents |
|---|---|
| Water depth graph | Displays the water depth information. Water is indicated by light blue and ocean bed is indicated by brown.<br>Therefore, the boundary between light blue and brown indicates the water depth.<br>The graph range can be changed on the View menu.<br>For the details, refer to "5.1.3 Setting up Water Depth display". |
| Water depth value | Displays the water depth value.<br>The unit can be selected on the View menu.<br>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.<br>FWD: Depth sounder installed at the front of the ship<br>MID: Depth sounder installed at the center of the ship<br>AFT: Depth sounder installed at the rear of the ship |

## 4.2.3.28 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.<br>Therefore, the boundary between blue and brown indicates the water depth.<br>The graph setting range can be changed from the View menu.<br>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].<br>The depth measurement point is one of Surf, Trans, and Keel and the water depth value at each point is as follows.<br>Surf: Water depth value from the water surface<br>Trans: Water depth value from the transducer of the depth sounder<br>Keel: Water depth value from the point below the keel<br>  |

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

**Sentence from the water depth sounder**

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

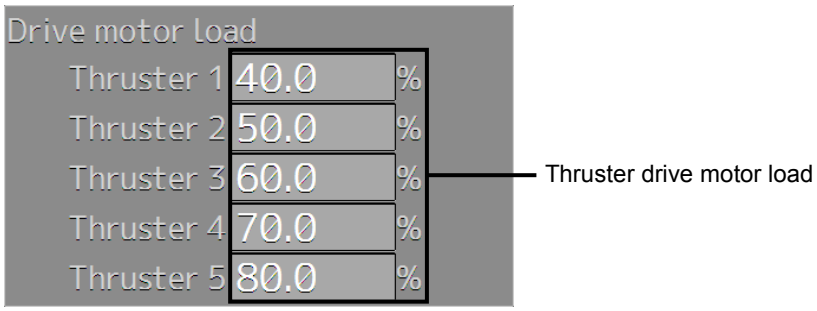
A sentence is output at every 4 hours from 0 hour of UTC after the power supply of the depth sounder is turned on.

The contents of sentences are listed below.



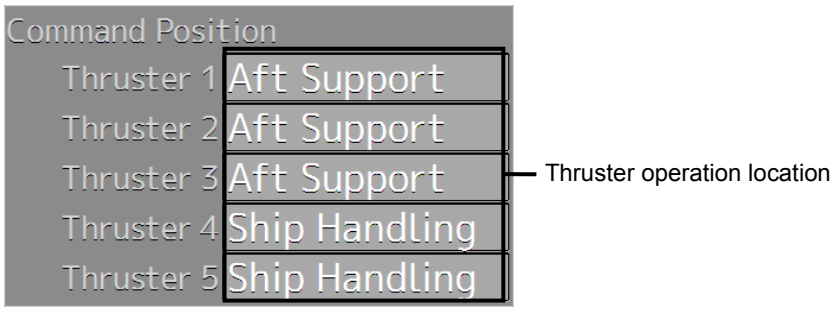
| Field | Code | Data | Specification |
|---|---|---|---|
| 1 | $ | Header | Fixed |
| 2 | PJRCM | Sentence ID | |
| 3 | SD | Equipment ID | |
| 4 | 88 | System information command | |
| 5 | VXX.XX | Software version | |
| 6 | X | Image transmission | |
| 7 | X | Crack | |
| 8 | X | Interference prevention | |
| 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 | |

## 4.2.3.29 Thruster drive motor load information



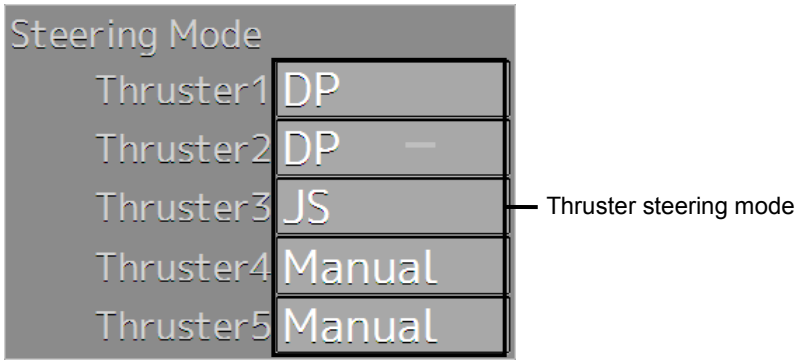

| Item | Display contents |
|---|---|
| Thruster drive motor load | Displays a drive motor load of each thruster with a value between 0% and 100%. |

## 4.2.3.30 Thruster operation location information



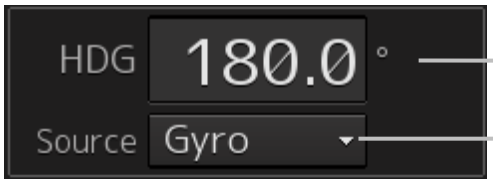

| Item | Display contents |
|---|---|
| Thruster operation location | Displays an operation location of each thruster.<br>Ship Handling: After bridge (ship operation)<br>Aft Support: After bridge (support)<br>FWD Bridge: Forward bridge<br>When there are multiple operation locations for the same thruster,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

### 4.2.3.31 Thruster steering mode information




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

## 4.2.3.32 Heading information

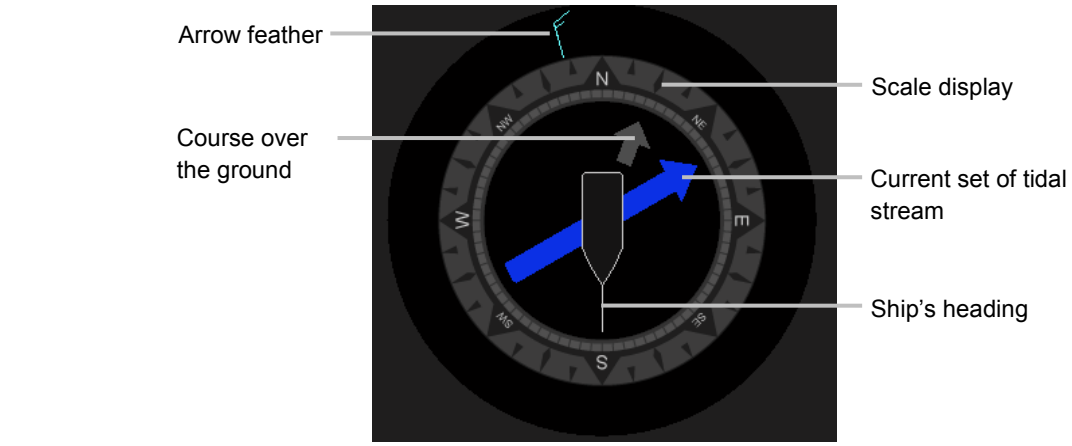



| Item | Display contents |
|---|---|
| Ship’s heading | Displays the ship’s heading.<br>The reliabilities of the values are color coded into three colors.<br>• Normal character color: Normal sensor value<br>• Yellow: Deterioration of sensor value reliability<br>• Orange: Abnormal sensor value |
| Ship’s heading sensor name combo box | Displays and changes the ship's heading sensor name.<br>The following sensor sources can be selected.<br>When [Menu] is selected, the [Sensor Selection/Status] dialog is displayed.<br>Gyro, Gyro1*1 *2, Gyro2*1 *2, MAG, G/C<br><br>For the details of the sensor source setting, refer to "9.1.5 Setting and confirming the sensor source". |

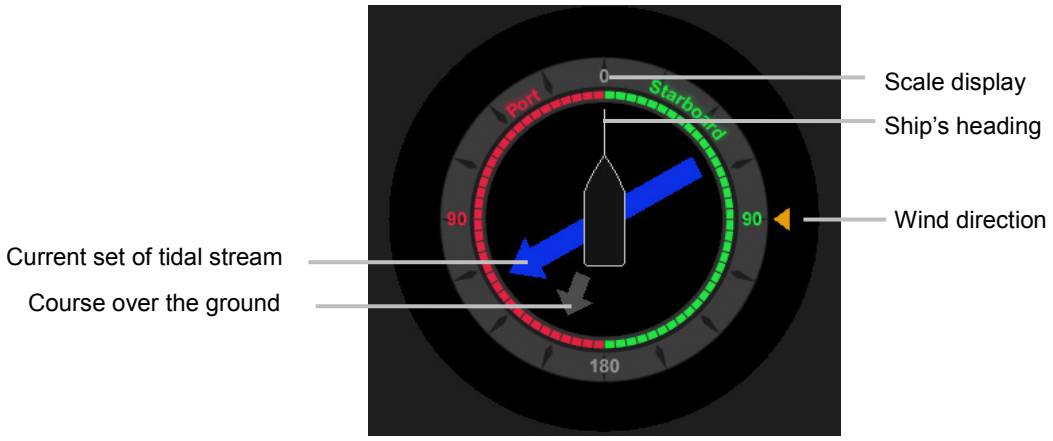
*1: Only for the case where two Gyro units are available.

*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.

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



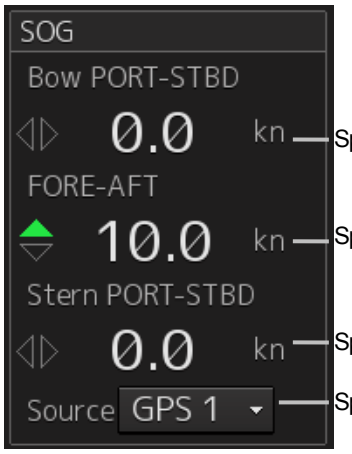

N-UP




H-UP

| 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.<br>• N-UP:<br>Indicates the scale of 32 points using North as the reference.<br>• H-UP:<br>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.) |
| 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. |

## 4.2.3.34 Ship speed information




Speed over the ground [Bow port-starboard direction]

Speed over the ground [Forward-Afterward direction]

Speed over the ground [Stern port-starboard direction]

Speed over the ground [Docking] sensor name combo box

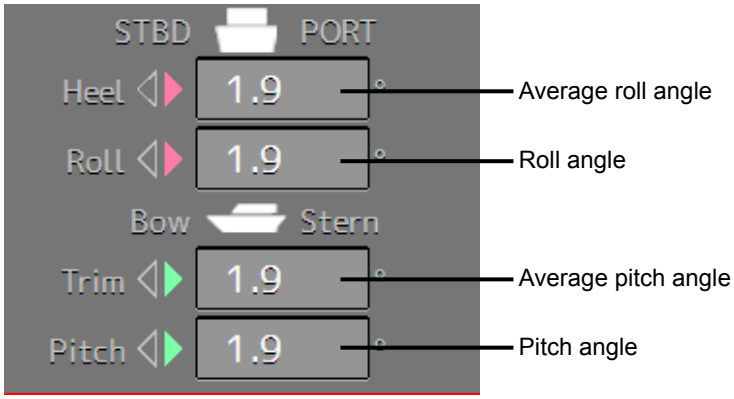
| Item | Display contents |
|---|---|
| Speed over the ground (Bow port-starboard direction) | Displays the ship speed over the ground (Bow port-starboard direction). When the ship is moving forward in the port direction, a red arrow is displayed. When the ship is moving forward in the starboard direction,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

*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.

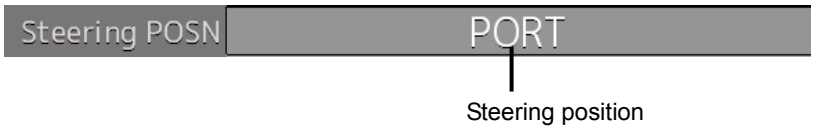
## 4.2.3.35 Hull motion information




| Item | Display contents |
|---|---|
| Average roll angle | Displays the average roll angle (Heel) of the hull for 10 minutes.<br>A triangle that indicates the tilting direction is displayed in front of the value.<br>When the hull is tilted towards the port side, a left-facing triangle is displayed and when the hull is tilted towards the starboard side, a right-facing triangle is displayed. |
| Roll angle | Displays the roll angle (Roll) of the hull.<br>A triangle that indicates the tilting direction is displayed in front of the value.<br>When the hull is tilted towards the port side, a left-facing triangle is displayed and when the hull is tilted towards the starboard side, a right-facing triangle is displayed. |
| Average pitch angle | Displays the average pitch angle (Trim) of the hull for 10 minutes.<br>A triangle that indicates the tilting direction is displayed in front of the value.<br>When the hull is tilted towards the port side, a left-facing triangle is displayed and when the hull is tilted towards the starboard side, a right-facing triangle is displayed. |
| Pitch angle | Displays the pitch angle (Pitch) of the hull.<br>A triangle that indicates the tilting direction is displayed in front of the value.<br>When the hull is tilted towards the port side, a left-facing triangle is displayed and when the hull is tilted towards the starboard side, a right-facing triangle is displayed. |

## 4.2.3.36 Steering position information

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

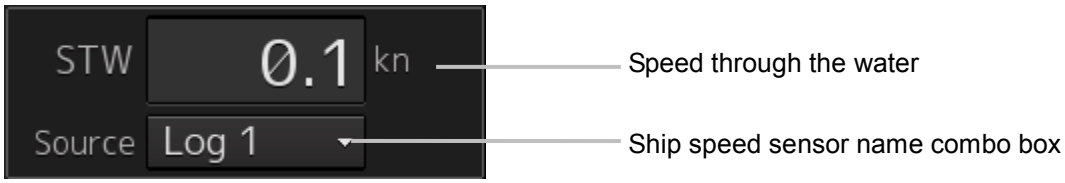



| Item | Display contents |
|---|---|
| Steering position | Displays the steering position when override steering is set during Track Control.<br>Bridge: Bridge<br>PORT Wing: Port wing<br>STBD Wing: Starboard wing<br>Engine Room: Engine room<br>Engine Side: Near the engine<br>Wing: Wing (port or starboard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

**Memo**

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

## 4.2.3.37 Ship speed through water information

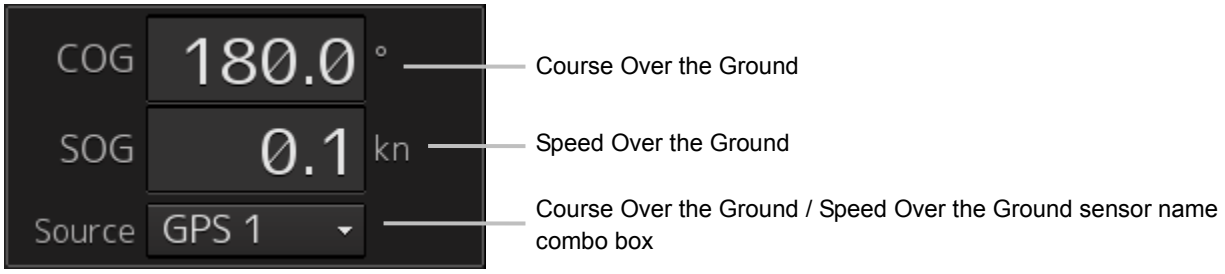



| Item | Display contents |
|---|---|
| Speed through the water | Displays the speed through the water.<br>The reliabilities of the values are color coded into three colors:<br>・Normal character color: Normal sensor value<br>・Yellow: Deterioration of sensor value reliability<br>・Orange: Abnormal sensor value<br>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". |
| Ship speed sensor name combo box | Displays/changes a ship speed sensor name.<br>The following sensor sources can be selected.<br>When [Menu] is selected, the [Sensor Selection/Status] dialog is displayed.<br>Log[*1], Log1[*1 *2], Log2[*1 *2]<br><br>For the details of sensor source setting, refer to "9.1.5 Setting and confirming sensor sources". |

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

*2: Only when there are two Logs

## 4.2.3.38 Course/speed over the ground information




| Item | Display contents |
|---|---|
| Course Over the Ground | Indicates the course over the ground.<br>The reliabilities of the values are color coded into three colors:<br>• Normal character color: Normal sensor value<br>• Yellow: Deterioration of sensor value reliability<br>• Orange: Abnormal sensor value |

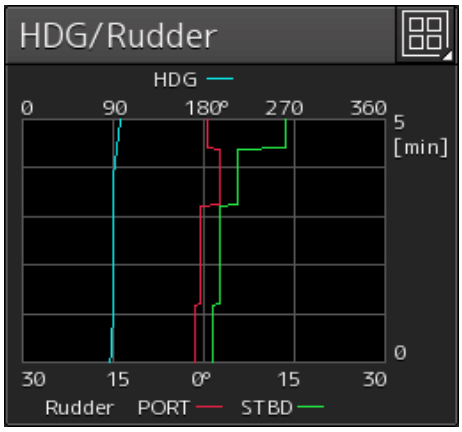
| Item | Display contents |
|---|---|
| Speed Over the Ground | Displays the speed over the ground.<br>The reliabilities of the values are color coded into three colors:<br>• Normal character color: Normal sensor value<br>• Yellow: Deterioration of sensor value reliability<br>• Orange: Abnormal sensor value<br>The unit can be changed on the View menu.<br>For the details, refer to "5.1.2 Setting up the display of unit of setting value". |
| Course Over the Ground/Speed Over the Ground sensor name combo box | Displays and changes the course over the ground/ speed over the ground sensor name.<br>The following sensor sources can be selected.<br>When [Menu] is selected, the [Sensor Selection/Status] dialog is displayed.<br>Log*1, Log1*1 *2, Log2*1 *2, and GPSx*3<br>For the details of the sensor source setting, refer to "9.1.5 Setting and confirming the sensor source". |

*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.

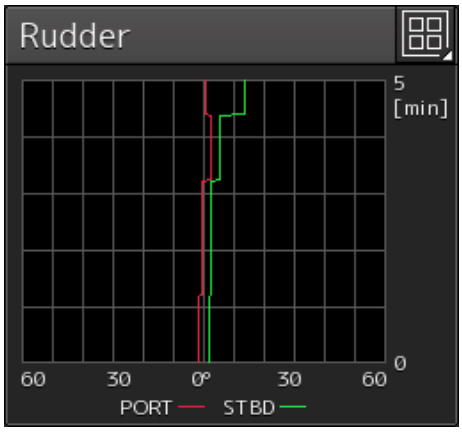
*3: When two or more GPS units are present, "x" indicates the unit number.

## 4.2.3.39 Rudder angle/ship's heading graph



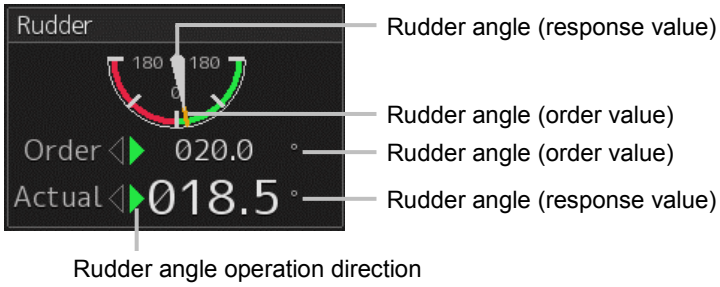

| Item | Display contents |
|---|---|
| Ship's heading + Rudder angle graph display | Displays the graph of the ship's heading and rudder angle.<br>The graph range can be changed on the View menu.<br>For the details, refer to "5.1.5 Setting a rudder angle/ship's heading graph". |

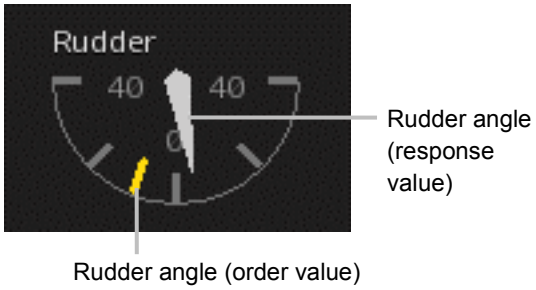
## 4.2.3.40 Rudder angle graph

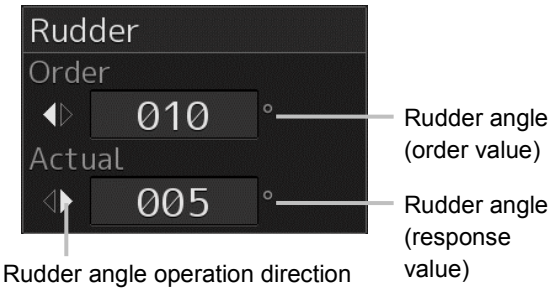



| Item | Display contents |
|---|---|
| Rudder angle graph display | Displays the rudder angle graph.<br>The graph range can be changed on the View menu.<br>For the details, refer to "5.1.4 Setting a rudder angle graph". |

## 4.2.3.41 Rudder angle information




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

## 4.2.3.42 Current information

Current (N-UP)

Current (H-UP)

| Item | Display contents |
|---|---|
| Current set | Indicates the current set.<br>N-UP:<br>Displays in 360 degrees.<br>H-UP:<br>Displays the port/starboard mark and the degree within the range from 0 to 180°. |
| Current speed | Displays the current speed.<br>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.

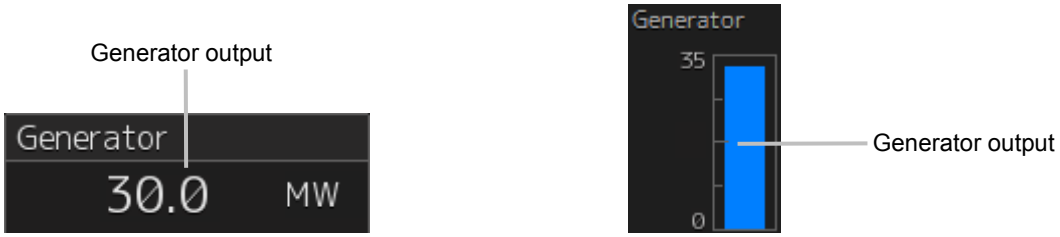
: The downstream is on the S (starboard) side.

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

**Memo**

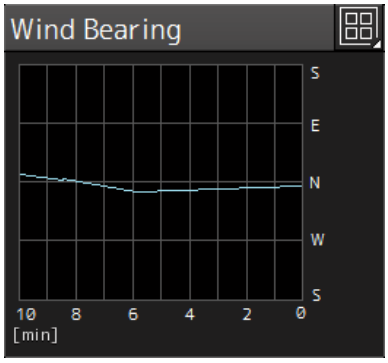
When the current set is 0° or 180°, no symbol is displayed.

## 4.2.3.43 Generator information



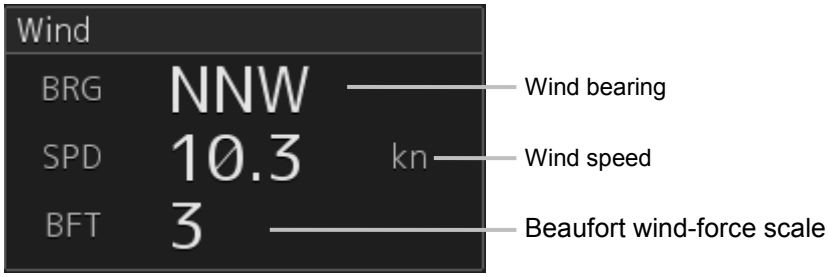

| Item | Display contents |
|---|---|
| Generator output | Displays the output from the generator in meter display and numeric value display.<br>“Total”, when displayed, indicates the total value of the multiple generator outputs. |

## 4.2.3.44 Wind bearing graph




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

## 4.2.3.45 Wind bearing/wind speed information




Wind bearing/wind speed·True (H-UP)

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

| Item | Display contents |
|---|---|
| Wind bearing | Indicates the wind bearing.<br>• N-UP:<br>Displays the true wind bearing in 16 bearings or 360 degrees.<br>• H-UP:<br>Displays the relative wind bearing with the port/starboard mark and the degree within the range from 0 to 180°.<br><br>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". |
| Wind speed | Displays the wind speed.<br>• N-UP:<br>Displays the true wind speed.<br>• H-UP:<br>Displays the relative wind speed.<br><br>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". |
| Beaufort wind-force scale | Displays the Beaufort wind-force scale within the range of 13 scales for N-UP only according to the Beaufort wind-force scale table.<br>For the details, refer to "Beaufort wind-force scale table". |

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**

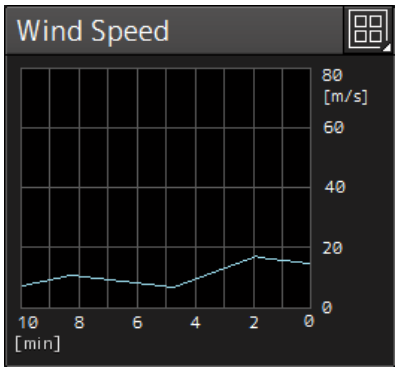


| Wind-force scale | Name | Equivalent wind force | Condition on the land | Condition on the sea | Shape of arrow feathers[*1] |
|---|---|---|---|---|---|
| 0 | Calm | 0 to 0.2m/s | Smoke rises straight upwards. | The water surface is calm like a mirror. | No arrow feathers |
| 1 | Light air | 0.3 to 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”).

## 4.2.3.46 Wind speed graph




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

### 4.2.3.47 Course To Steer information

Leg bearing of the route in progress

Course to steer

| 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). |

# Section 5 Setting Up Screen View

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.



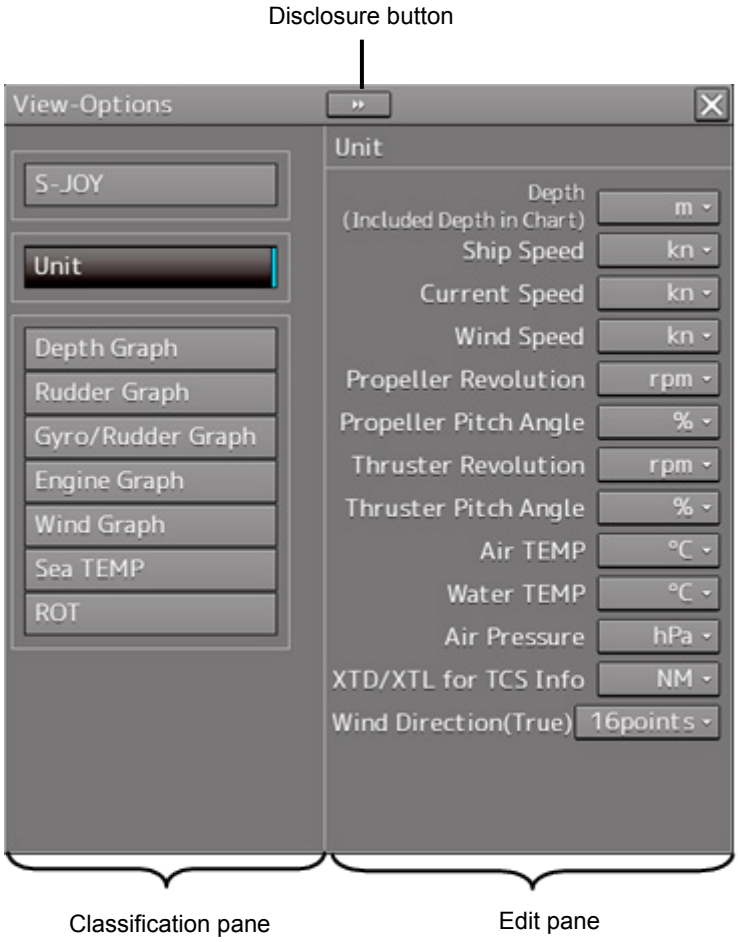
**1** **Click on the [Menu] button at the bottom left corner of the screen.**
The menu is displayed.

**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 |

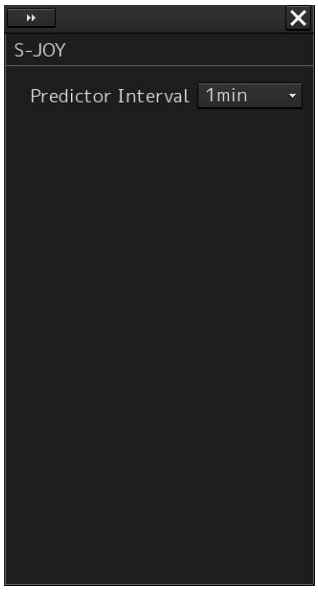
| Classification pane | Reference section |
|---|---|
| Rudder Graph | 5.1.4 Setting a rudder angle graph |
| Gyro/Rudder Graph | 5.1.5 Setting a rudder angle/ship's heading graph |
| Engine Graph | 5.1.6 Setting an engine/propeller revolution graph |
| Wind Graph | 5.1.7 Setting a wind direction graph/wind 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) | Switch the reference of the water depth value.<br>AUTO: Switch the reference of the water depth value according to the received value.<br>Keel: Set the reference of the water depth to keel. | AUTO, Keel |

## 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:

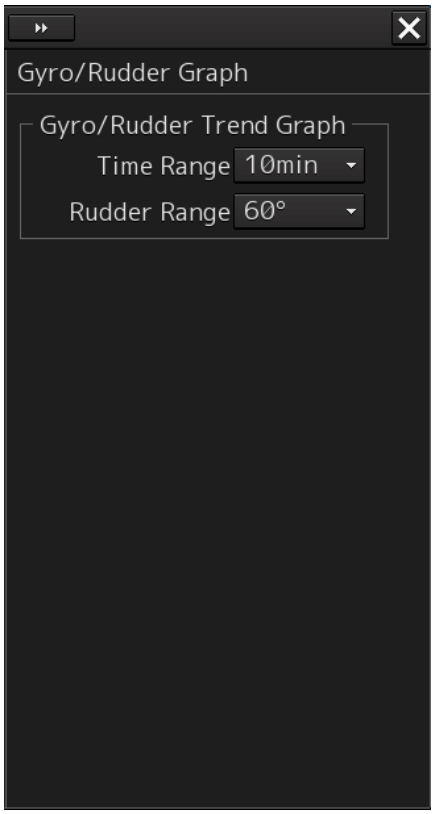
| Setting Item | Description of Setting | Setting Value |
|---|---|---|
| Time Range | Select a time range for the rudder angle graph from the combo box. | 5 min, 10 min, 15 min, 30 min |
| Rudder Range | Select a rudder angle for the rudder angle graph from the combo box. | 30°, 40°, 50°, 60°, 70°,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

## 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° |

## 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.

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 |

# 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 |

# 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.

The following table shows the setting details:

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

# 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 |

# Section 6 Setting Up Alerts

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.



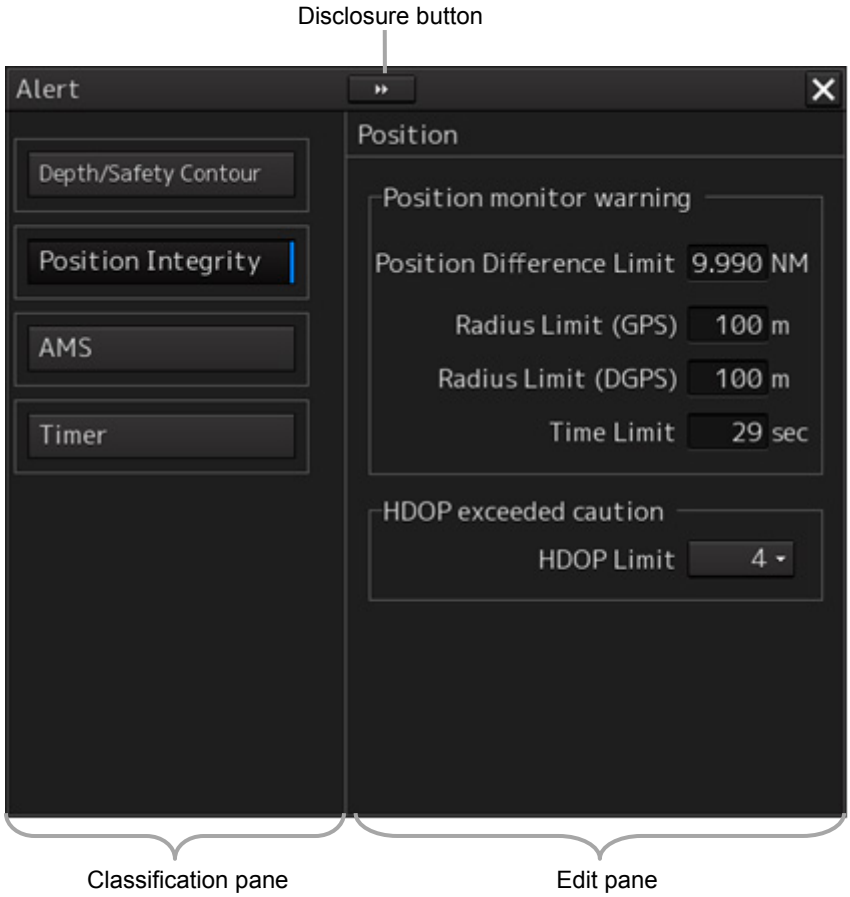
## 6.1 Selecting Setting Items

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 | |
|---|---|---|
| Depth/Safety Contour | Set a condition for generating a Depth Below Keel alarm for avoiding grounding.<br>Refer to "6.2 Depth/Safety Contour Alert Generation Conditions". | Only "Depth Below Keel alarm" can be set. |
| Position Integrity (Position sensor integrity) | Set the conditions for generating a position monitor warning and a HDOP limit caution.<br>Refer to "6.3 Position Integrity Alert Generation Conditions". | |
| AMS (Alert Management System) | Set the actions to be taken at the next stage for an unacknowledged alert.<br>Refer to "6.4 Setting Up Alert Processing". | |
| Timer | Set a time for generating the alert.<br>Refer to "6.5 Setting Up the Alert Timer". | |

# 6.2 Depth/Safety Contour Alert Generation Conditions

When [Depth/Safety Contour] is selected in the classification pane, the [Depth/Safety Contour] dialog is displayed in the edit pane.
In this dialog, the threshold values for generating "Depth below keel alarm" can be set up.

The threshold values can be set in a range between 0 and 200 m.

# 6.3 Position Integrity Alert Generation 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 monitor warning and the HDOP limit can be set up.

## 6.3.1 Setting up the generation condition of the position monitor warning

Enter the following threshold values for generating the position monitor warning.

**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.

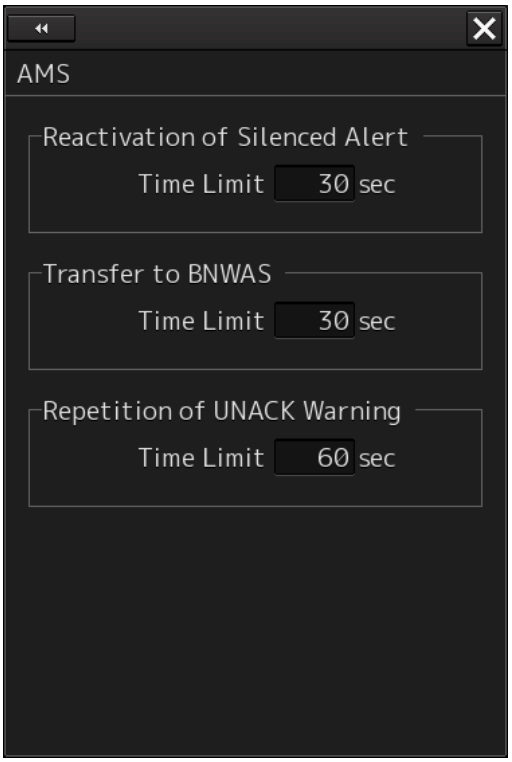


## 6.3.2 Setting up the HDOP exceeded caution generation condition

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

# 6.4 Setting Up Alert Processing

When [AMS] is selected in the Classification pane, the [AMS] 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].

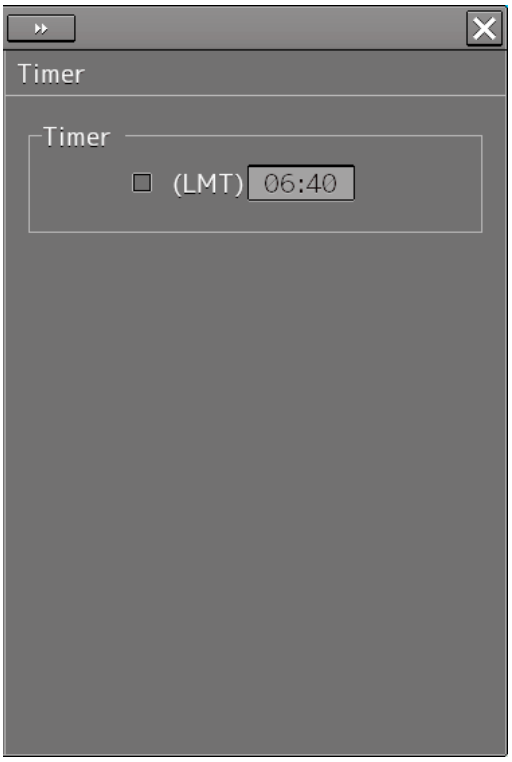
**Reactivation of Silenced Alert:**
Set, in the range between 0 and 60s, the time required to reactivate the alert sound that was silenced temporarily.

**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 60s.

**Repetition of UNACK Warning:**
Specify the time to regenerate an unacknowledged alert as an audible warning in the range between 0 and 300s. A warning will be generated repeatedly until it is acknowledged.

# 6.5 Setting Up the Alert Timer

When [Timer] is selected in the Classification pane, the [Timer] dialog is displayed in the Edit pane.
In this dialog, the time to generate an alarm can be set up.




## 6.5.1 Setting up the timer

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

## 6.5.2 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 the range between 00:00 and 23:59.
For the use of the numeric value input keyboard, refer to "3.11.2 Name and function of each section of the keyboard".

# Section 7 Setting Up the Operation Mode

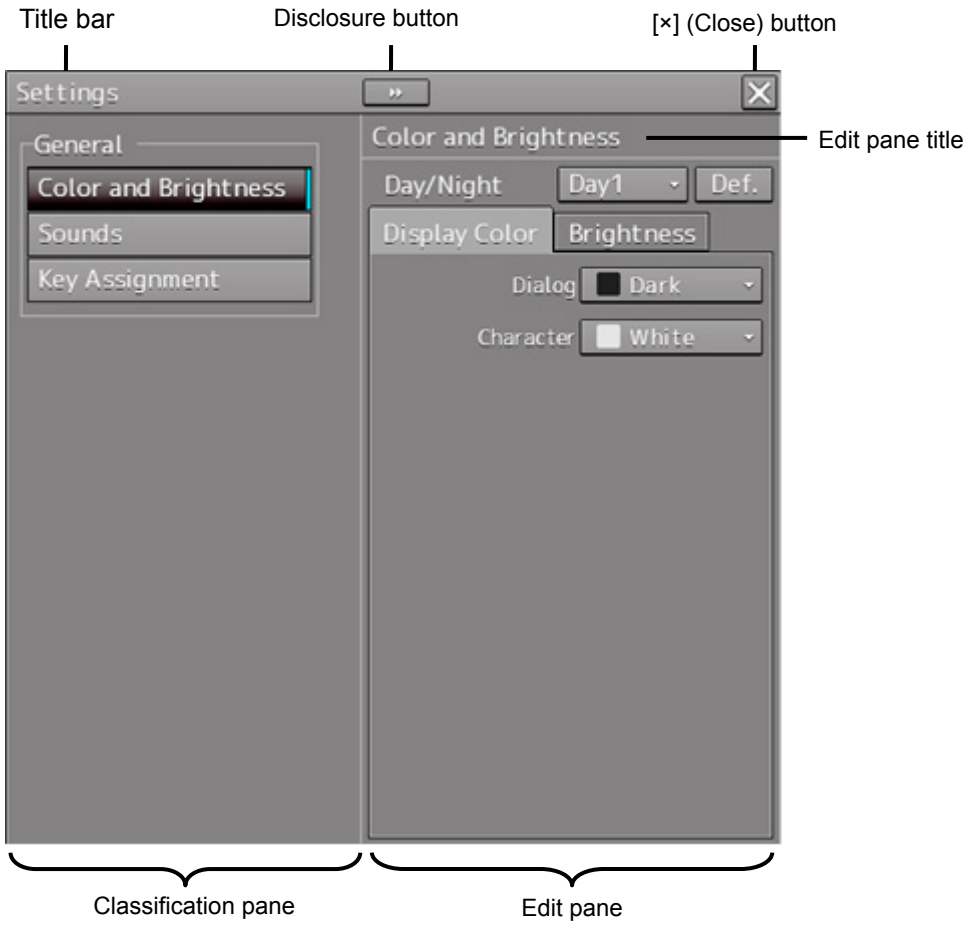
## 7.1 Basic Operation of the [Settings] Dialog Box

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.**

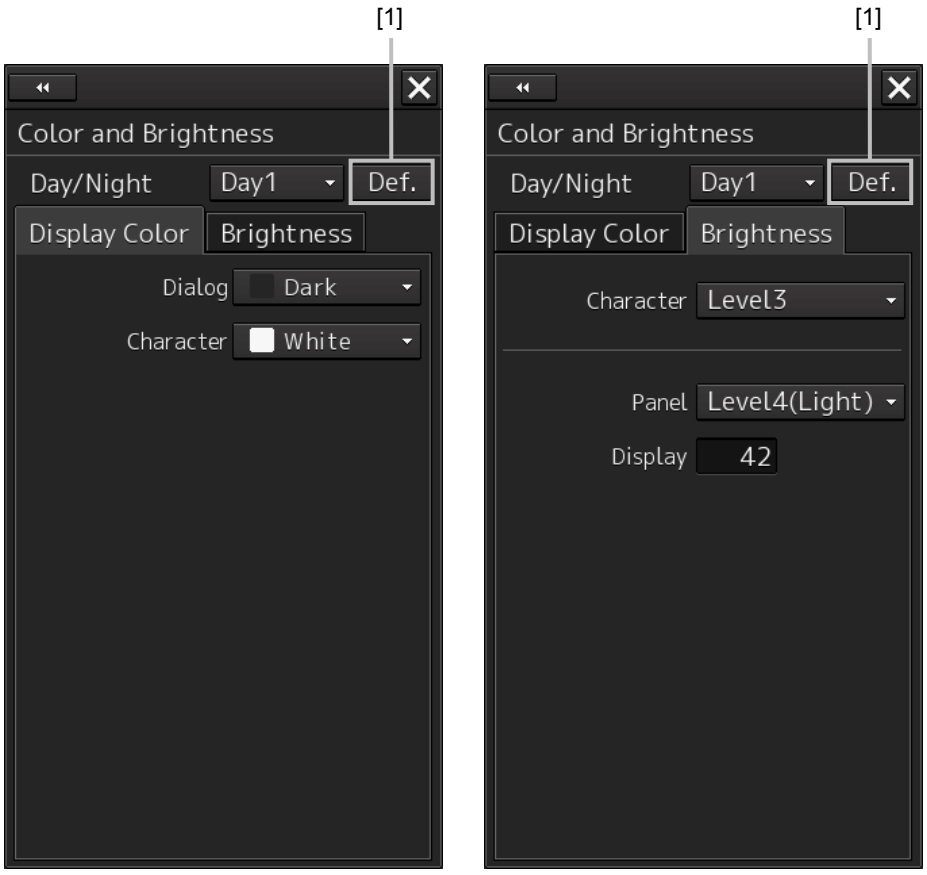
**Classification pane display targets**

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 |

# 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.

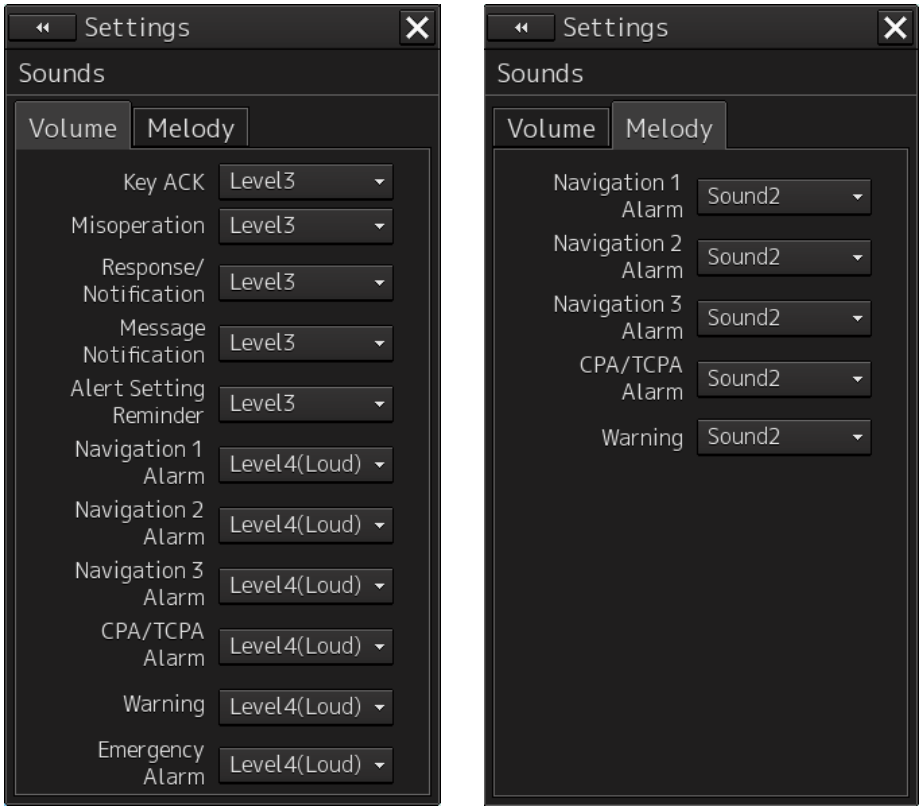
| Setting Item | Description of Setting | Setting Value |
|---|---|---|
| Day/Night | Set up the color of the dialog box itself.<br>Select the chart display colors from the three types of Day1, Day3 and Night when the ARCS is used. | Day1 [default]<br>Day2<br>Day3<br>Dusk<br>Night |
| **[Display Color]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

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

| 26inch Display | 19inch Display |
|---|---|
| Day1/Day2/Day3:67<br>Dusk:60<br>Night:11 | Day1/Day2/Day3:42<br>Dusk:20<br>Night:4 |

# 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 |
|---|---|---|
| **[Volume] tab** | | |
| Key ACK | Set the volume of the sound emitted when the key is pressed. | Off<br>Level1(Soft)<br>Level2<br>Level3 [Default]<br>Level4(Loud) |
| Misoperation | Set the volume of the operation error sound. | Off<br>Level1(Soft)<br>Level2<br>Level3 [Default]<br>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<br>Level1(Soft)<br>Level2<br>Level3 [Default]<br>Level4(Loud) |

| Setting Item | Description of Setting | Setting Value |
|---|---|---|
| Message Notification | Set the volume of the message notification sound. | Off<br>Level1(Soft)<br>Level2<br>Level3 [Default]<br>Level4(Loud) |
| Alert Setting Reminder | Set the volume of the sound notifying that the alarm condition has not been set. | Off<br>Level1(Soft)<br>Level2<br>Level3 [Default]<br>Level4(Loud) |
| Navigation 1 Alarm | Set the volume of the navigation alarm sound. *2 | Level1(Soft)<br>Level2<br>Level3 [Default]<br>Level4(Loud) |
| Navigation 2 Alarm*1 | | |
| Navigation 3 Alarm*1 | | |
| CPA/TCPA Alarm | Set the volume of the CPA/TCPA alarm sound. *2 | Level1(Soft)<br>Level2<br>Level3<br>Level4(Loud) [Default] |
| Warning | Set the volume of the system alarm sound. *2 | Off<br>Level1(Soft)<br>Level2<br>Level3<br>Level4(Loud) [Default] |
| Emergency Alarm | Set the volume of the Emergency Alarm sound.*2 | Level1(Soft)<br>Level2<br>Level3<br>Level4(Loud) [Default] |
| **[Melody] tab** | | |
| Navigation 1 Alarm | Set the melody of the Navigation 1 alarm. | Sound1<br>Sound2[Default]<br>Sound3<br>Sound4 |
| Navigation 2 Alarm*1 | Set the melody of the Navigation 2 alarm. | Sound1<br>Sound2[Default]<br>Sound3<br>Sound4 |
| Navigation 3 Alarm*1 | Set the melody of the Navigation 3 alarm. | Sound1<br>Sound2[Default]<br>Sound3<br>Sound4 |
| CPA/TCPA Alarm | Set the melody of the CPA/TCPA alarm. | Sound1<br>Sound2[Default]<br>Sound3<br>Sound4 |
| Warning | Set up the melody of Warning. | Sound1<br>Sound2[Default]<br>Sound3<br>Sound4 |

*1 Navigation 2 Alarm and Navigation 3 Alarm are not practically used.

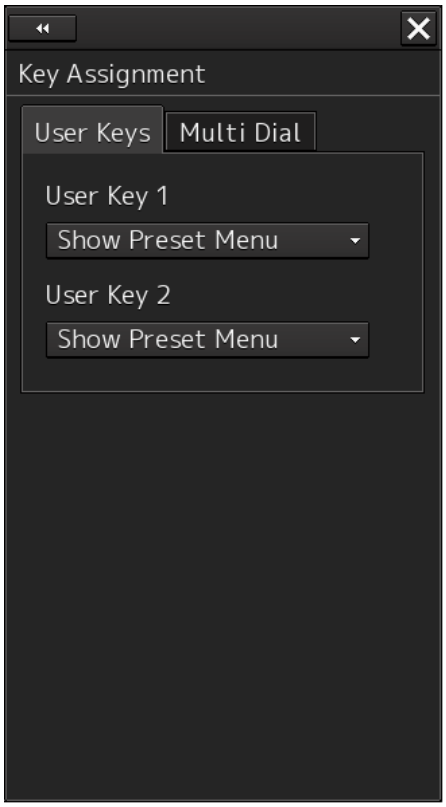
*2 For these volumes, only Level 4 (Loud) may be able to be selected depending on the setting.

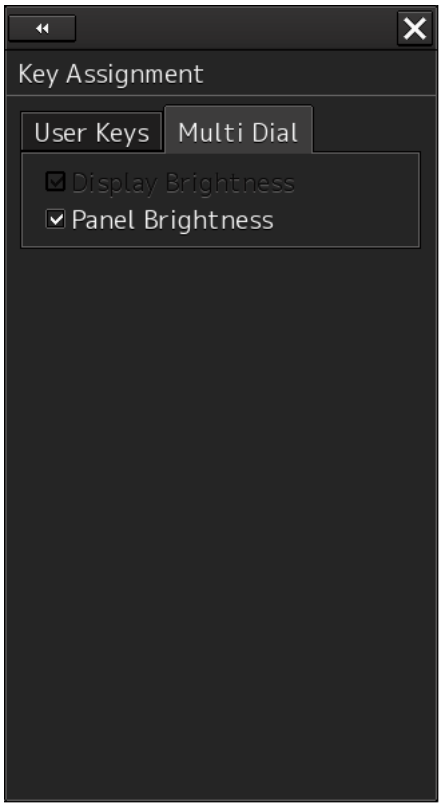
# 7.4 Setting Key Assignment

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 ítems whose funtions 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 |
|---|---|---|
| **[User Keys] tab** | | |
| User Key 1 | Select a function to assign to the USER1 key on the operation unit.<br>[User Key 1] is displayed only when the optional operation unit is installed. | Show Preset Menu<br>Capture Screen |
| User Key 2 | Select a function to assign to the USER2 key on the operation unit.<br>[User Key 2] is displayed only when the optional operation unit is installed. | Show Preset Menu<br>Capture Screen |
| **[Multi Dial] tab** | | |
| Display Brightness | When this is selected, the display brightness adjustment function will be manipulated with the [MULTI] control.<br>It cannot be changed since power is always on. | To enable: Select.<br>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.<br>To disable: Clear. |

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

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. |



## 8.1 Service Menu

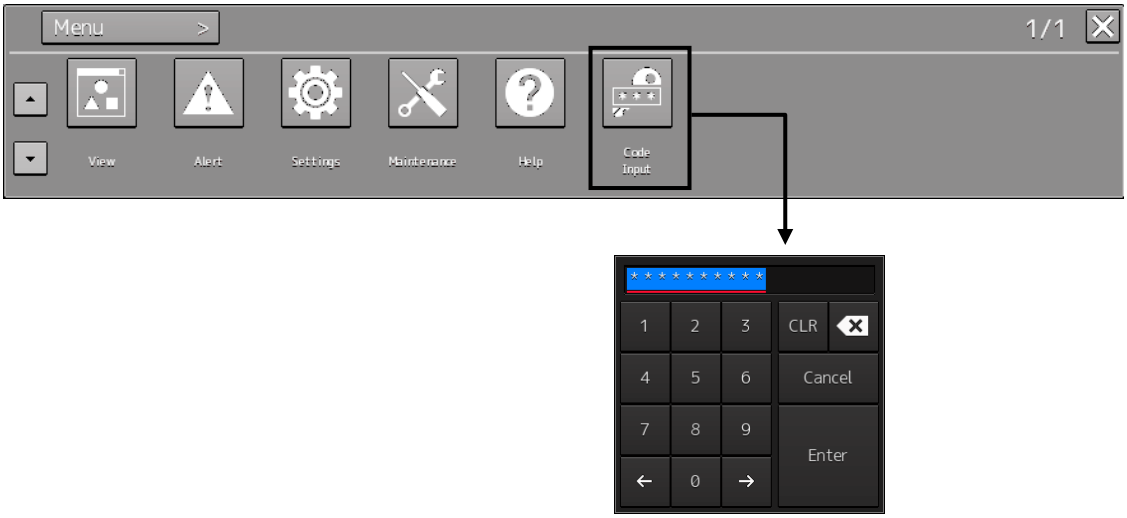
The Service menu consists of two submenus of Installation and Maintenance. To display the Service menu, a password is required.

### 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.



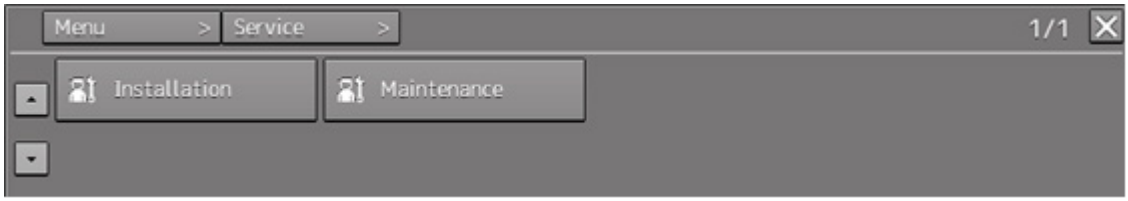

**3** **Enter 0 in Password.**

**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.**

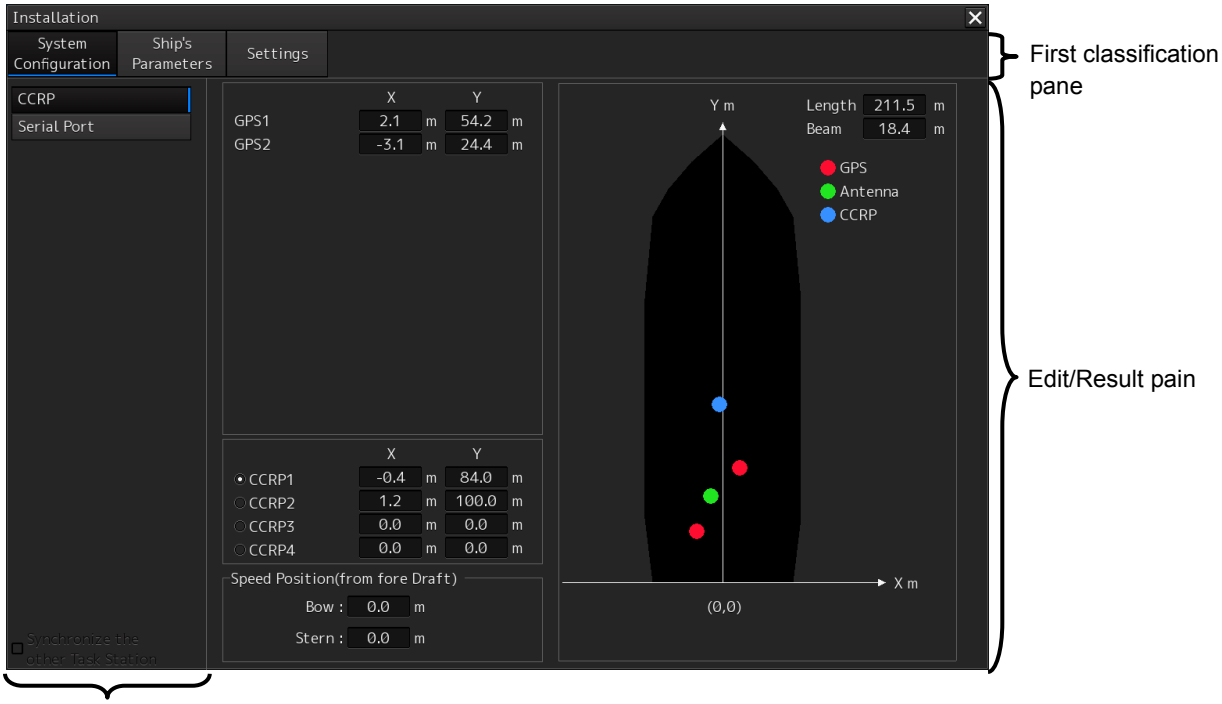
# 8.2 Verifying Installation and Initial Setting

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.

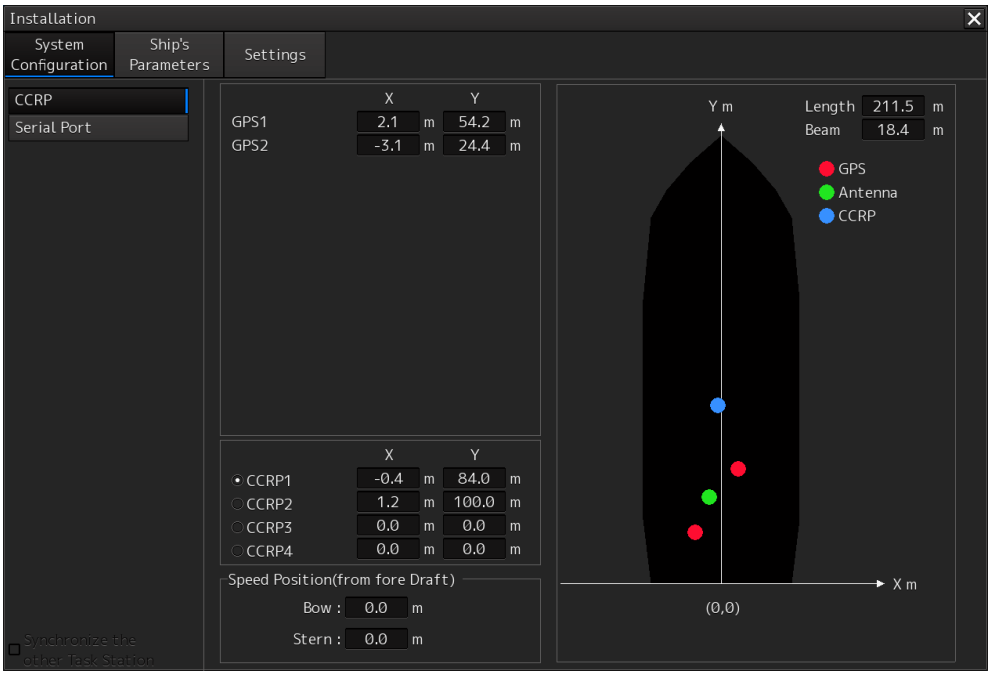
**2** **Set up in the edit/result pane or check the setup result.**

## 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 1022.0 m |
| Beam (ship's width) | Enter the ship's width in the box. | 1.0 to 126.0 m |
| GPS1/2 | Enter the equipment positions of GPS1 to GPS2 in the boxes.<br>X: Horizontal axis position on the ship of the applicable GPS (Center: 0)<br>Y: Front-back axis position on the ship of the applicable GPS (Stern: 0)<br><br>**Note**<br>• This item may not be displayed depending on the equipment setting.<br>• When the input range is changed by modifying [Length] and [Beam], if a value exceeding the input range after modifying has already been entered, the value will be corrected to the maximum or minimum value. | Changes depending on the value of [Length] and [Beam].<br>If Length=a and Beam=b:<br>X -b/2 to b/2<br>Y 0.0 to a<br>For example,<br>• if Length=1.0 and Beam=1.0:<br>X -0.5 to 0.5<br>Y 0.0 to 1.0<br>• if Length=700.0 and Beam=70.0:<br>X -35.0 to 35.0<br>Y 0.0 to 700.0 |
| CCRP1/2/3/4 | Enter the positions of CCRP1 to CCRP4 of the ship in the boxes.<br>X: Horizontal axis position of radar antennas 1 to 8 on the ship (Center: 0)<br>Y: Front-back axis position of radar antennas 1 to 8 on the ship (Stern: 0)<br><br>**Note**<br>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. | |
| CCRP | Select the position to be used as the ship's CCRP by clicking the button. | CCRP1<br>CCRP2<br>CCRP3<br>CCRP4 |
| Speed Position Bow | Enter the distance of the bow starboard/port speed display point. | 0.0 to Ship’s length m |
| Speed Position Stern | Enter the distance of 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

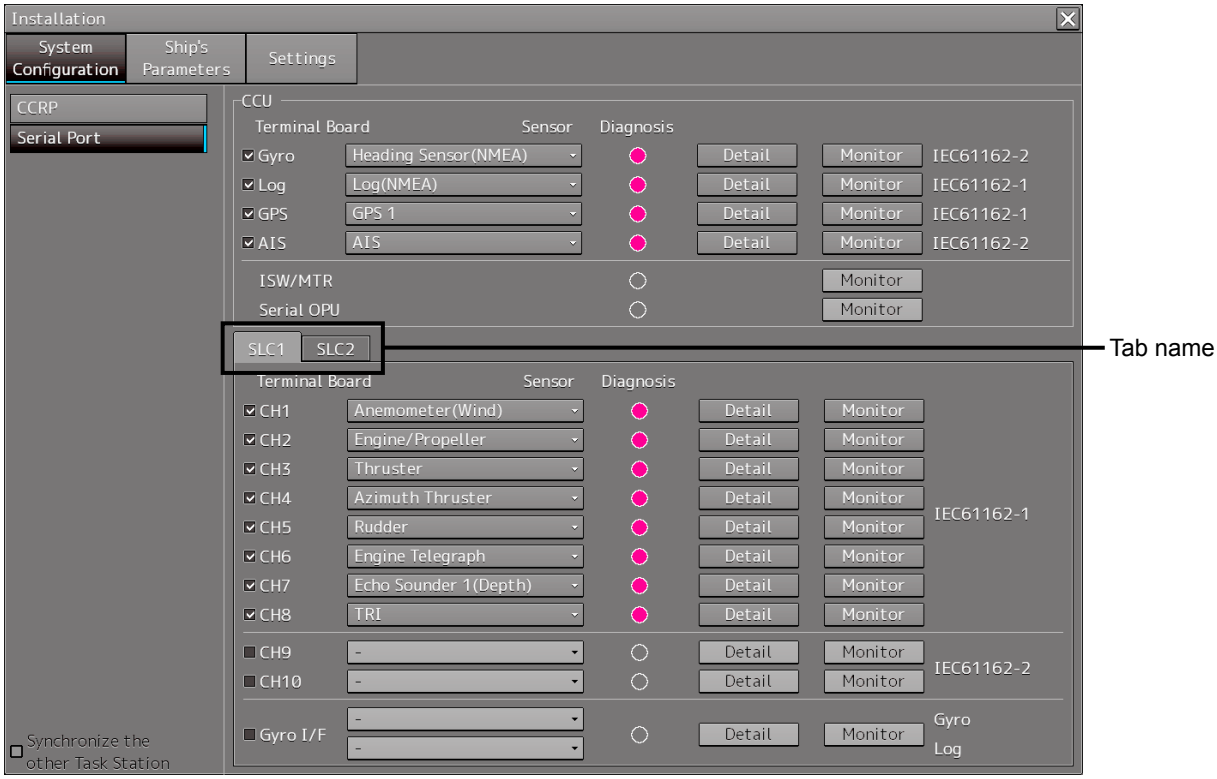
Verify the setting of the serial port of this equipment and perform initial setting by using the [Serial Port] dialog.

### 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.

## 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 | 1. Select the check box and enable the serial port for the Gyro.<br>2. Select a sensor to be connected to the serial port for Gyro from the [Sensor] combo box. When not selecting a sensor, set [ - ]. | To enable: Select.<br>To disable: Clear. |
| LOG | 1. Select the check box and enable the serial port for the LOG.<br>2. Select a sensor to be connected to the serial port for LOG from the [Sensor] combo box. When not selecting a sensor, set [ - ]. | To enable: Select.<br>To disable: Clear. |
| GPS | 1. Select the check box and enable the serial port for the GPS.<br>2. Select a sensor to be connected to the serial port for the GPS from the [Sensor] combo box. When not selecting a sensor, set [ - ]. | To enable: Select.<br>To disable: Clear. |
| AIS | 1. Select the check box and enable the serial port for the AIS.<br>2. Select a sensor to be connected to the serial port for the AIS from the [Sensor] combo box. When not selecting a sensor, set [ - ]. | To enable: Select.<br>To disable: Clear. |

Table A: Sensors that can be selected on CCU

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

*1: Only when 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<br>(RS-422) | 1. Click on any of the tabs, SLC1(M) to SLC4(M)/SLC1(S) to SLC4(S)/ALC1 to ALC4.<br>2. Enable the serial port of the corresponding channel by selecting the check box.<br>3. Select a sensor*1 to be connected to the corresponding channel on the [Sensor] combo box. When not selecting a sensor, select [ - ]. | Enable: Select.<br>Disable: Clear. |
| CH9/CH10<br>(RS-422/RS485) | 1. Click on any of the tabs, SLC1(M) to SLC4(M)/SLC1(S) to SLC4(S)/ALC1 to ALC4.<br>2. Enable the serial port of the corresponding channel by selecting the check box.<br>3. Select a sensor*1 to be connected to the corresponding channel on the [Sensor] combo box. When not selecting a sensor, select [ - ]. | Enable: Select.<br>Disable: Clear. |

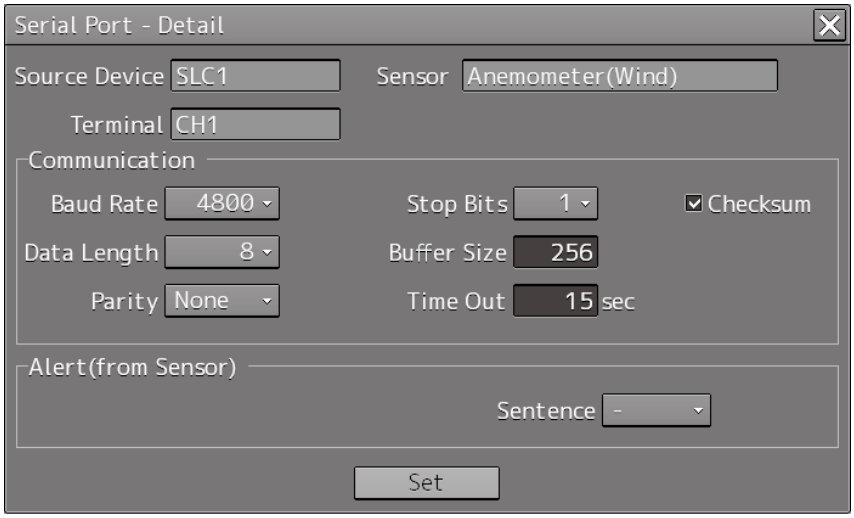
*1: The sensors that can be selected on SLC/ALC are indicated below.

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

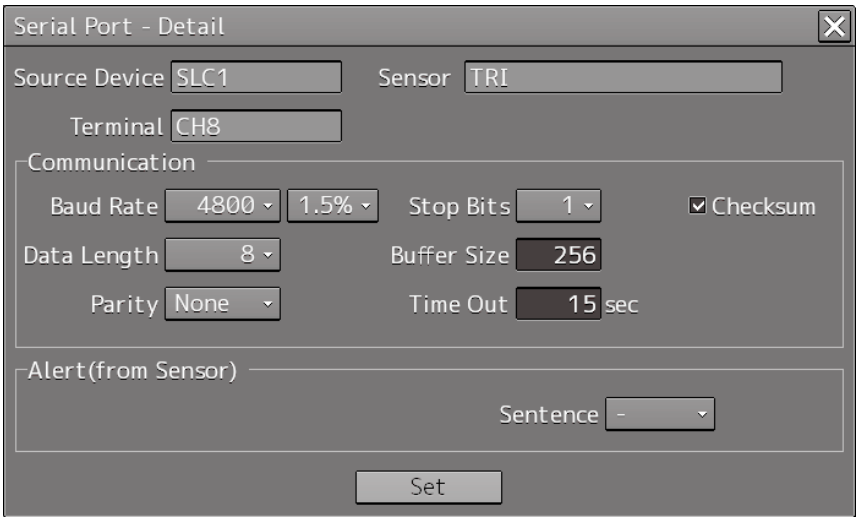
Heading Sensor 1, Heading Sensor 2, Log 1, Log 2, GPS 1, GPS 2, GPS 3, GPS 4, Ship's Clock, Echo Sounder(Depth), Echo Sounder 2(Depth), AIS, NAVTEX, Anemometer(Wind), Water Temperature Meter, Current Meter, Climate Meter, TRI, Autopilot, Rudder, Engine/Propeller, Engine Telegraph, Thruster, Azimuth Thruster,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

## 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.




When selecting CH1 to CH7




When selecting CH8 to CH10

The setting target can be checked with [Source Device] display, [Terminal] display and [Sensor] display.
Perform the settings shown in the following table and then click on the [Set] button.

| Setting Item | Description of Setting | Setting Value |
|---|---|---|
| Baud Rate | Select the baud rate of the corresponding serial port from the combo box.<br>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.<br>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.<br>Example) 4800 × (1 + 1.5 / 100) = 4872<br>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.<br>To disable: Clear. |
| Subsystem | Set the equipment to be connected for Alert Handling.<br>Displayed only when the sensor is "Alert (from Subsystem)" or "Alert (to CAM)".<br>The selection is also allowed for the subsystem that has already been used in the channel of some other serial port. | "Alert (from Subsystem)":<br>Equipment that is set as -/installed (Task Station and sensor)<br>"Alert(to CAM)":<br>Equipment that is set as -/installed (Task Station) |
| Primary/Secondary | Select Primary or Secondary for IAS(MODBUS) input.<br>Displayed only when the sensor is "IAS(MODBUS)". | Primary: Primary system<br>Secondary: Secondary system |
| Sentence | Select the sentence of Alert Handling.<br>Displayed when the sensor is other than "Alert (BNWAS), "IAS(MODBUS)", "DSC" or "NAV/Alert". | Normal sensor such as GPS and Log:<br>-/ALR/ALF<br>"Alert (from Subsystem/to CAM)":<br>ALR/ALF |

## Baud rates that can be selected

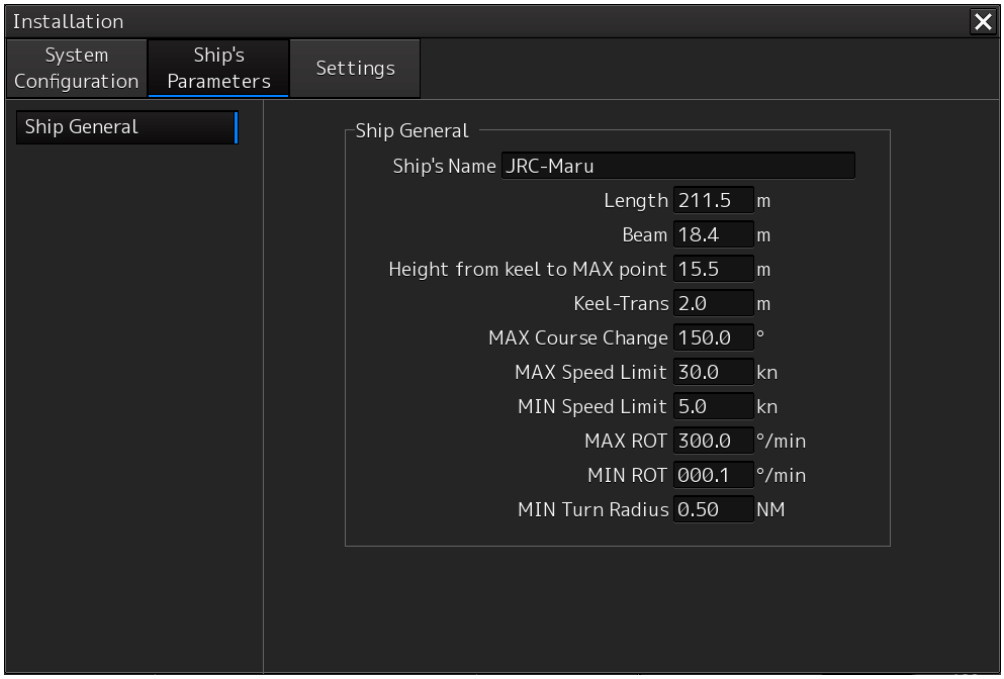
| Serial port | Baud rate |
|---|---|
| Serial port on CCU | |
| Gyro (at selection Heading Sensor(NMEA)) | 4800/38400 |
| Gyro (at selection Heading Sensor(Gyro I/F)) | Fixed to 38400 |
| Log (at selection Log(NMEA)) | Fixed to 4800 |
| Log (at selection Log(Gyro I/F)) | Fixed to 38400 |
| GPS | Fixed 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 ship's parameters

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

## 8.2.4.1 Displaying the [Ship’s Parameters] dialog

When you select [Ship's Parameters] in the classification pane, the [Ship’s Parameters] dialog is displayed in the edit/result pane.



## 8.2.4.2 Setting own ship's parameters

Set the following items in the [Ship's Parameters] dialog.

| Setting Item | Description of Setting | Setting Value |
|---|---|---|
| Ship's Name | Enter own ship's name in the box. | Max. 20 characters |
| Length (of ship) | Enter own ship's length in the box. | 1.0 to 1022.0 m |
| Beam (ship's width) | Enter own ship's beam in the box. | 1.0 to 126.0 m |
| Height from keel to MAX point | Enter the height of the ship from the keel to the maximum point in the box. | 1.0 to 126.0 m |
| Keel-Trans<br>(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<br>(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

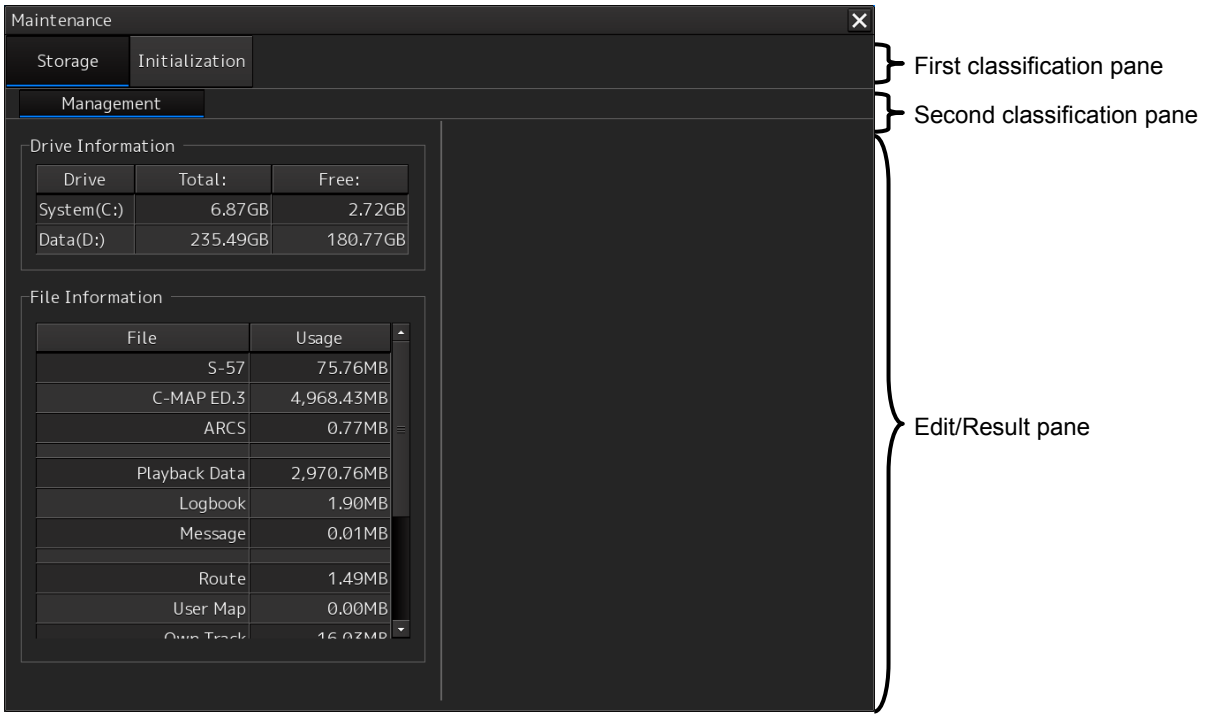
The [Ship's Parameters] dialog enables common setting items and individual setting items for RADAR, ECDIS, and Conning (called a task station individually). Once common items are set in any of the task stations, RADAR, ECDIS, and Conning, the settings are reflected (synchronized) in other task stations.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

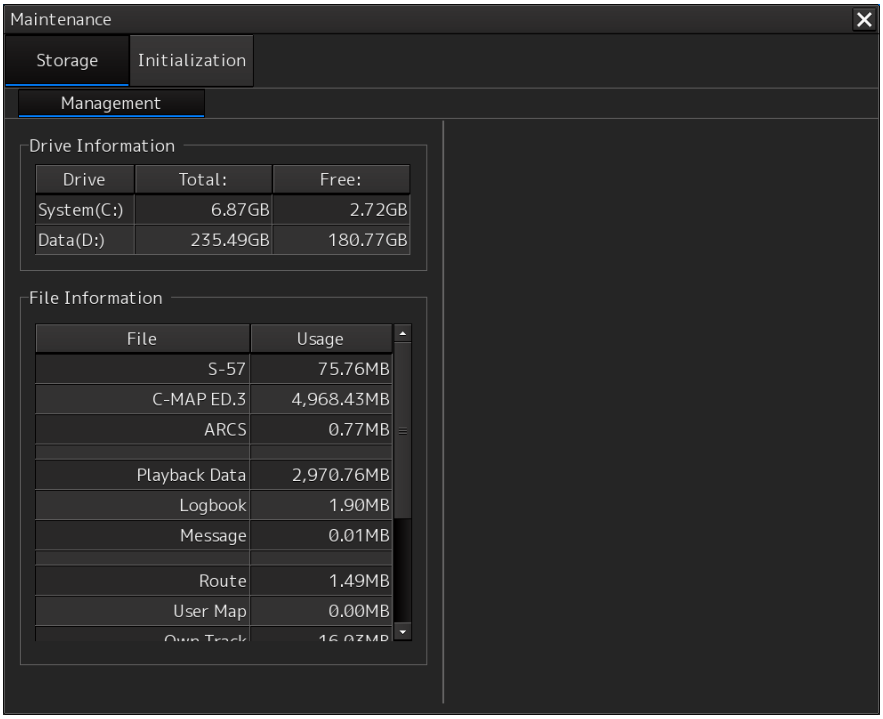
## 8.3.1 Displaying the [Maintenance] dialog box

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.



## 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.

# Section 9 Maintenance & Inspection

## 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.

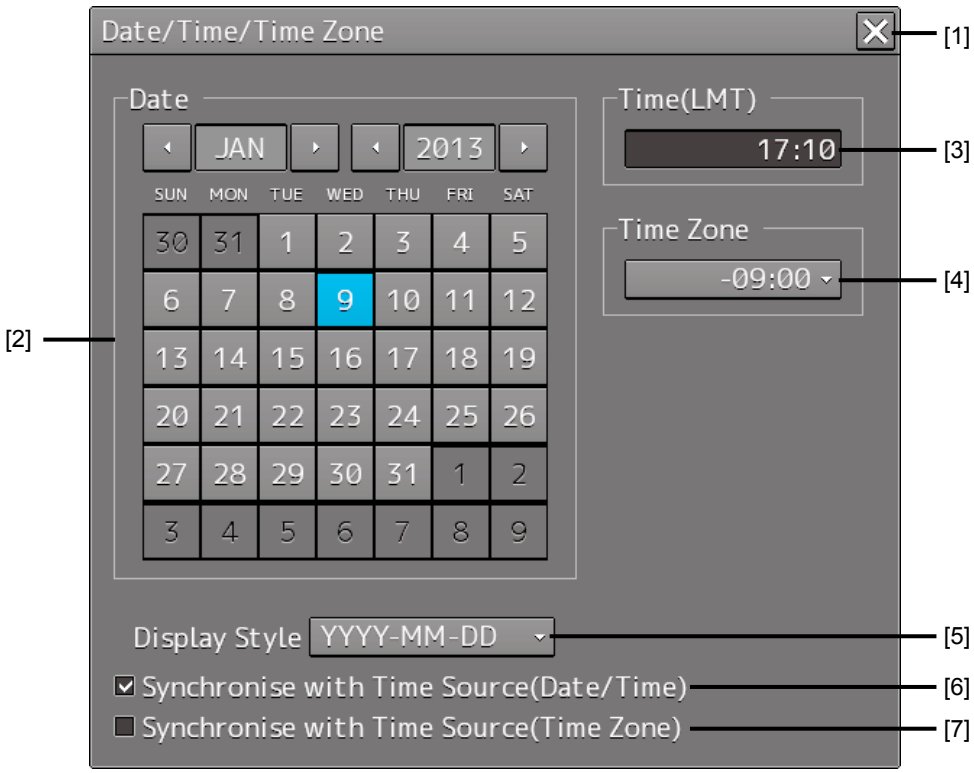
**2** **Click on the [Maintenance] button on the menu.**
The submenu is displayed.

**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.



**[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**

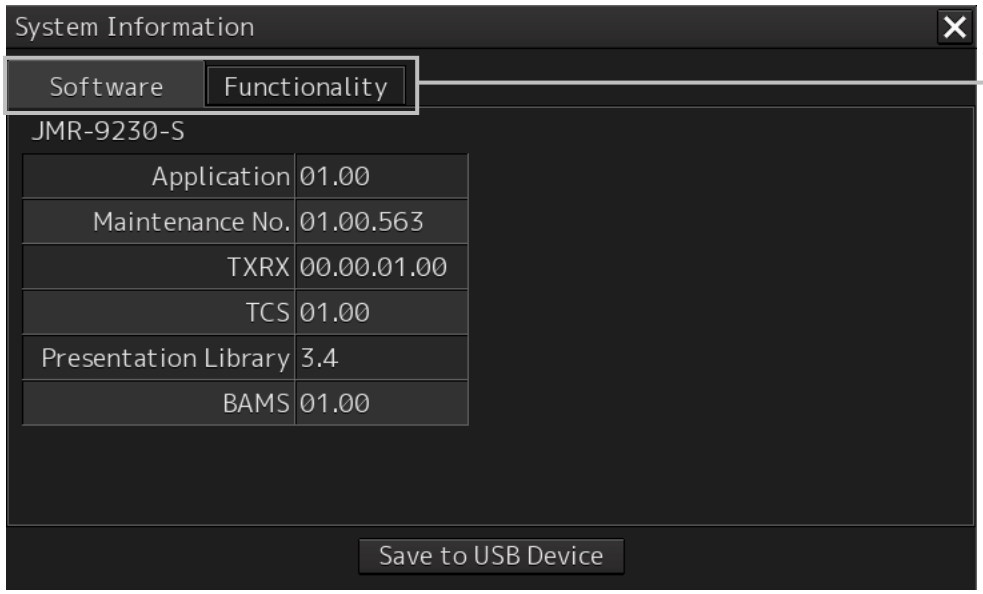
When [Synchronize with Time Source(Date/Time)] is not checked, the time is reset to the initial value at the start of power supply. Therefore, set a correct time manually.

## 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.<br>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.

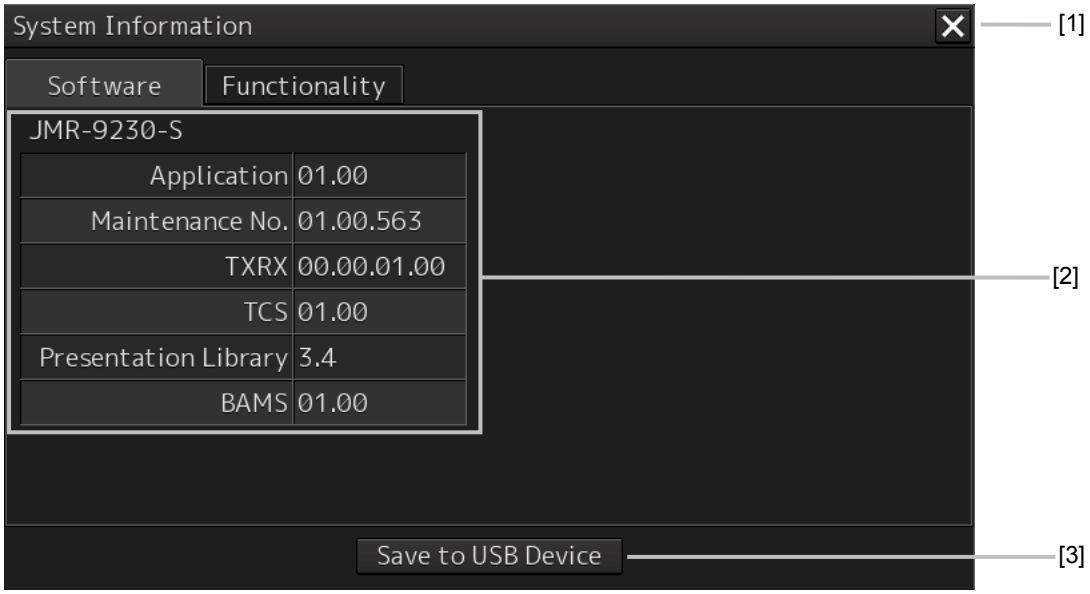
**1** **Click on the [Menu] button at the bottom left corner of the screen.**
The menu is displayed.

**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<br>* This information is displayed when the system is equipped with the RADAR function. |
| TCS | Version of the software used for TCS<br>* This information is displayed when the system is equipped with the TCS function. |
| Presentation Library | Edition of S52 Presentation Library<br>Displayed in case of ECDIS or RADAR (with ENC chart display licence) |
| BAMS | Software version of the BAM system<br>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.<br>If you remove or insert the USB flash memory when it is accessed, data may be destroyed and a trouble may occur. |

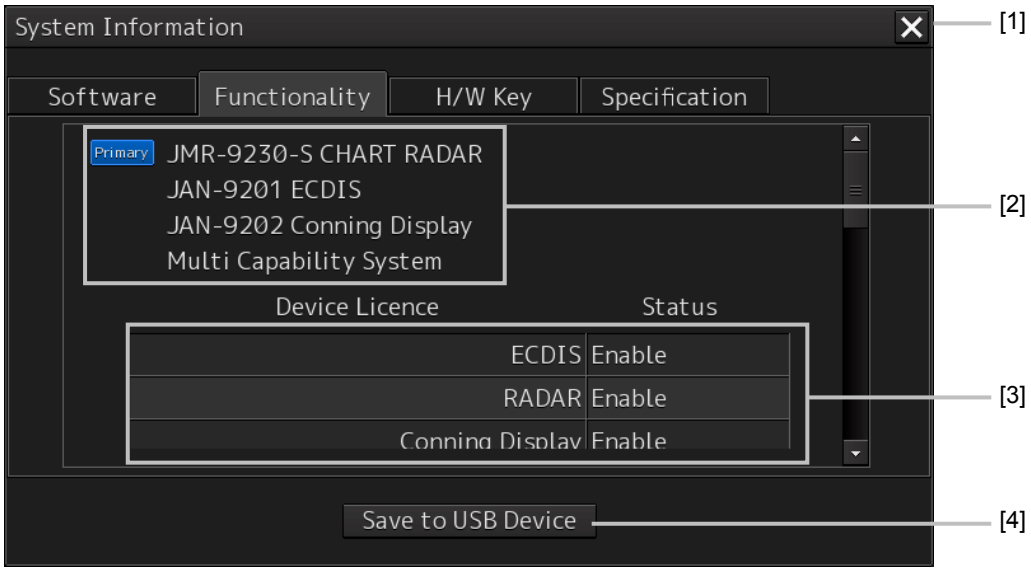


**1** **Click on the [Menu] button at the bottom left corner of the screen.**
The menu is displayed.

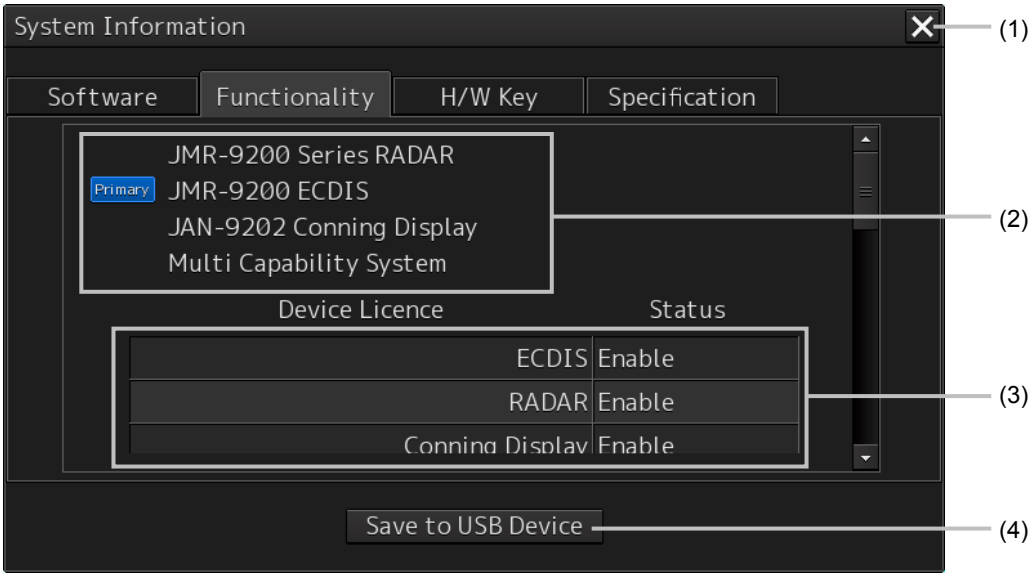
**2** **Click on the [Maintenance] - [System Information] button on the menu.**
The [System Information] dialog box appears.

**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).

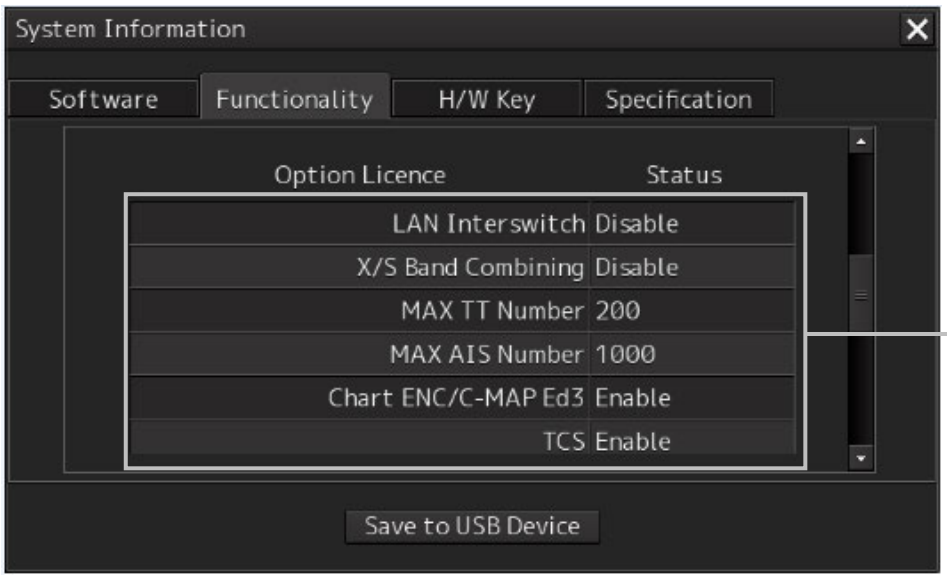
**[The system has multiple operation modes and RADAR is the primary task]**

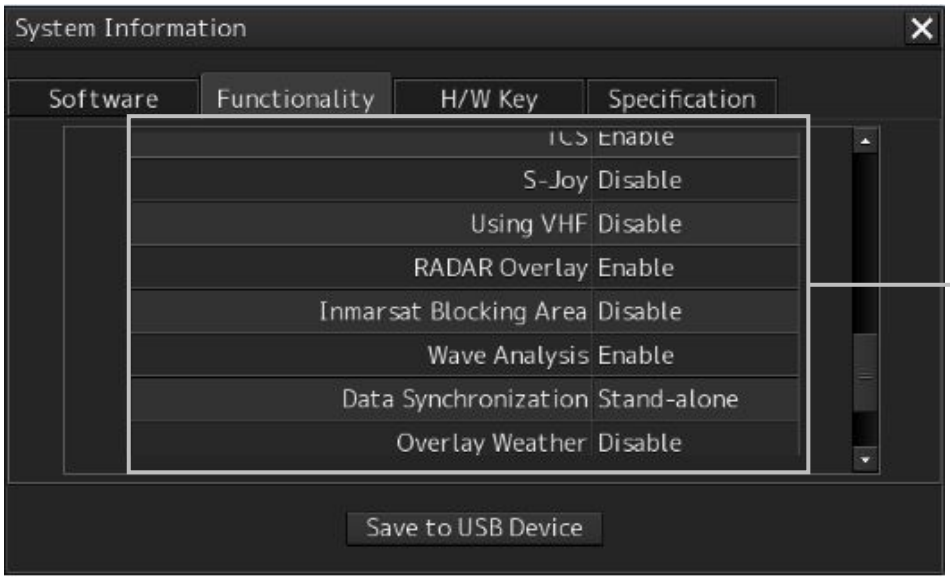


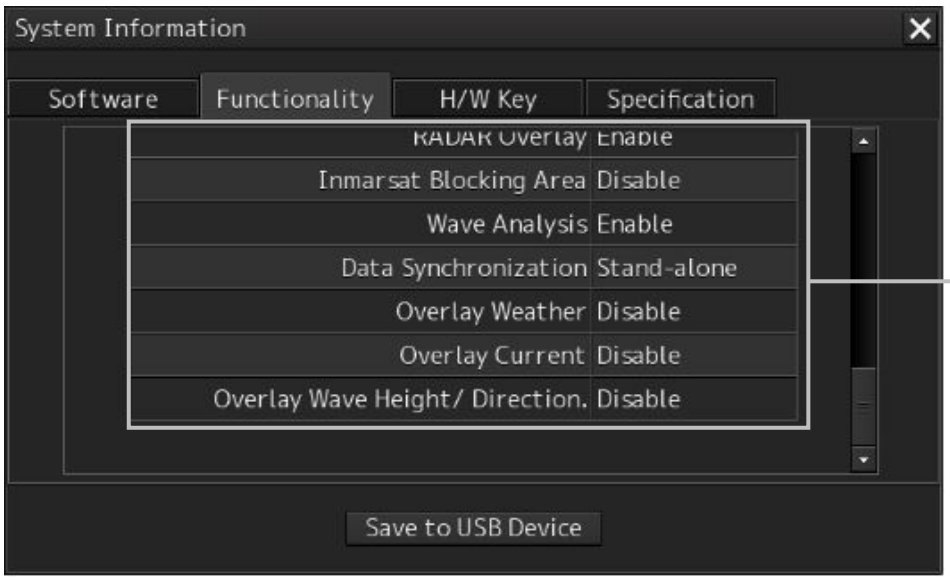

**[The system has multiple operation modes and RADAR is not the primary task]**



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



**[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**

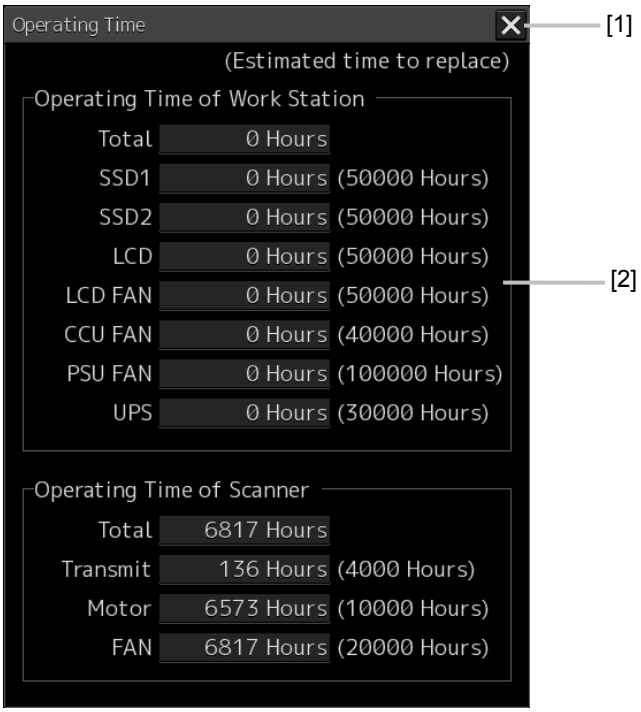
Click on this button to save the displayed information in a USB flash memory in the text format.

# 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. The estimated replacement time is indicated in ( ).

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

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

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

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

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

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

**Memo**

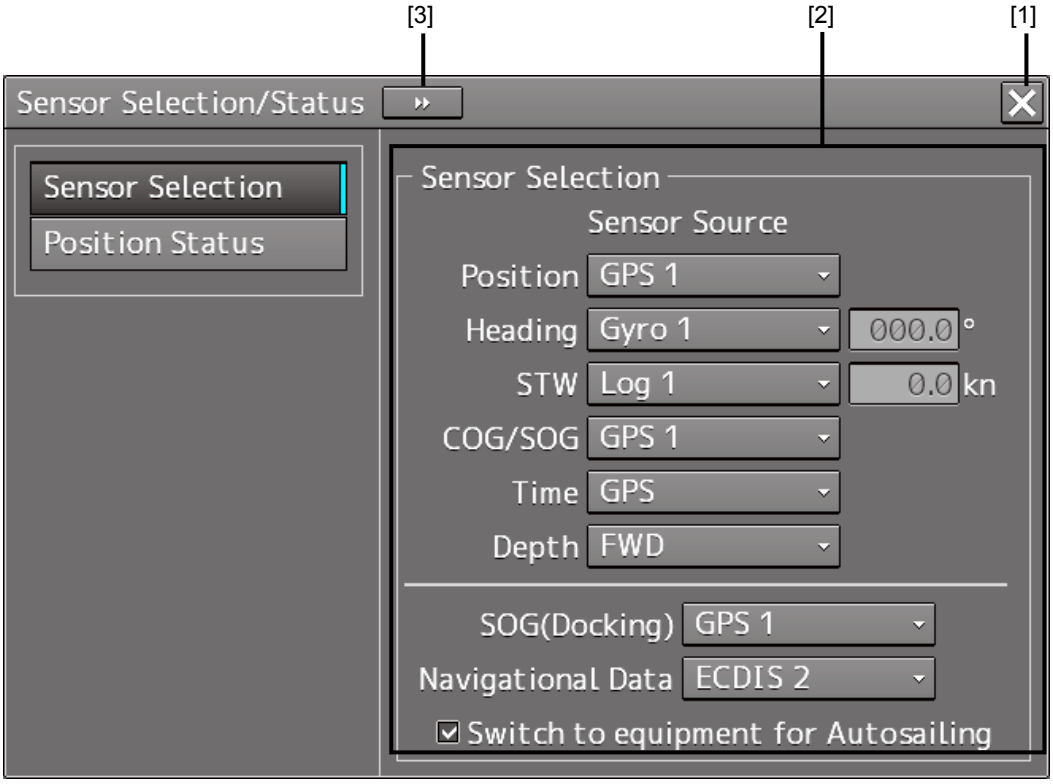
[UPS] is displayed only when UPS is installed as an option.

# 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<br>("x" indicates the unit number) |
| Heading | Select a heading sensor source from the combo box.<br>*The source that can be selected varies depending on the installation.<br>*When GyroSW is enabled, only Gyro and MAN can be selected.<br>When the sensor source is set to [Manual], the heading value can also be input in the input box.<br>Heading value input range: 0.0-359.9° | MAN, Gyro x<br>("x" indicates the unit number) |
| STW (Speed Through Water) | Select a Speed Through Water sensor source from the combo box.<br>*The sources that can be selected vary according to the installation.<br>* When 1AX is installed for Log, Log cannot be selected from the sensor source.<br>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.<br>When the sensor source is set to [MAN], the ship's heading value can also be input in the input box.<br>Ship's heading value input range: -99.9-99.9kn | MAN, Gyro X, MAG, G/C<br>("x" indicates the unit number) |
| COG/SOG<br>(Course Over the Ground/Speed Over the Ground) | Select Course Over the Ground/Speed Over the Ground sensor source from the combo box.<br>*The source that can be selected varies depending on the installation.<br>When GPS is selected for Position, the same GPS is selected automatically. | Log x, GPS<br>("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.<br>*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.<br>*The selectable sources vary depending on the installation. | FWD, AFT, MID, AUTO[*1] |
| SOG(Docking) | Select a sensor source of the Speed Over the Ground (Docking) from the combo box.<br>*The source that can be selected varies depending on the installation. | Log x, GPS<br>("x" indicates the unit number) |
| Navigational Data | Select a source (sensor) from which route monitoring information is acquired.<br>*The source that can be selected varies depending on the installation.<br>* 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<br>("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.<br>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 |

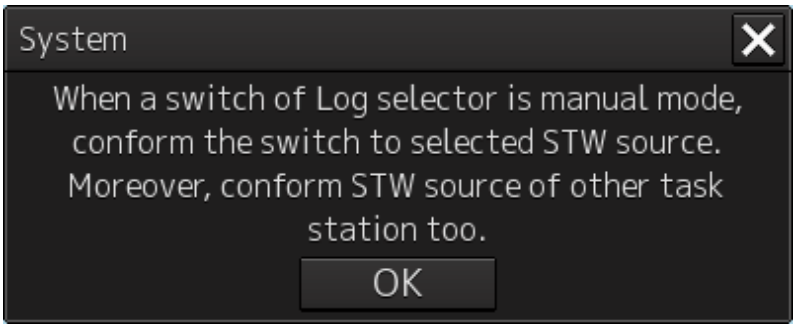
*1 In this case, one Echo Sounder is installed. When two Echo Sounders are installed, E/S1(AUTO) and E/S2(AUTO) can be selected, not AUTO.

**[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.

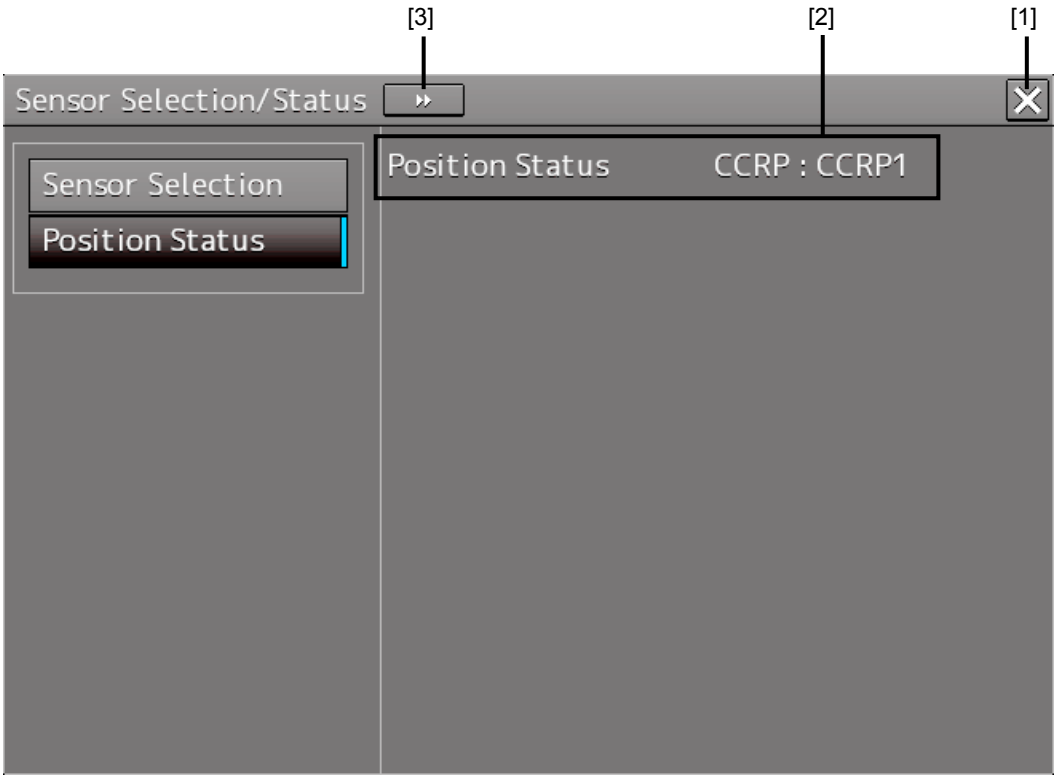


## 9.1.5.2 Displaying CCRP which is selected

**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.

# 9.2 General Maintenance

| ⚠ DANGER | |
|---|---|
| | Never attempt to check or repair the inside of the equipment.<br>Checking or repair by an unqualified person may cause a fire or an electric shock.<br>Contact our head office, or a nearby branch or local office to request servicing. |
| | Never remove the cover of this equipment.<br>Touching the high-voltage section inside will cause an electric shock. |
| | Do not attempt to disassemble or tamper with this equipment.<br>Otherwise, a fire, an electric shock, or a malfunction may occur. |
| | When conducting maintenance, make sure to turn the main power off.<br>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. |

| ⚠WARNING | |
|---|---|
| | When conducting maintenance work, make sure to turn off the power so that the power supply to the equipment is completely cut off.<br>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, do not wipe it too strongly with a dry cloth. Also, do not use gasoline or thinner to clean the screen. Otherwise the screen surface may be damaged. |



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

# 9.4 Performance Check

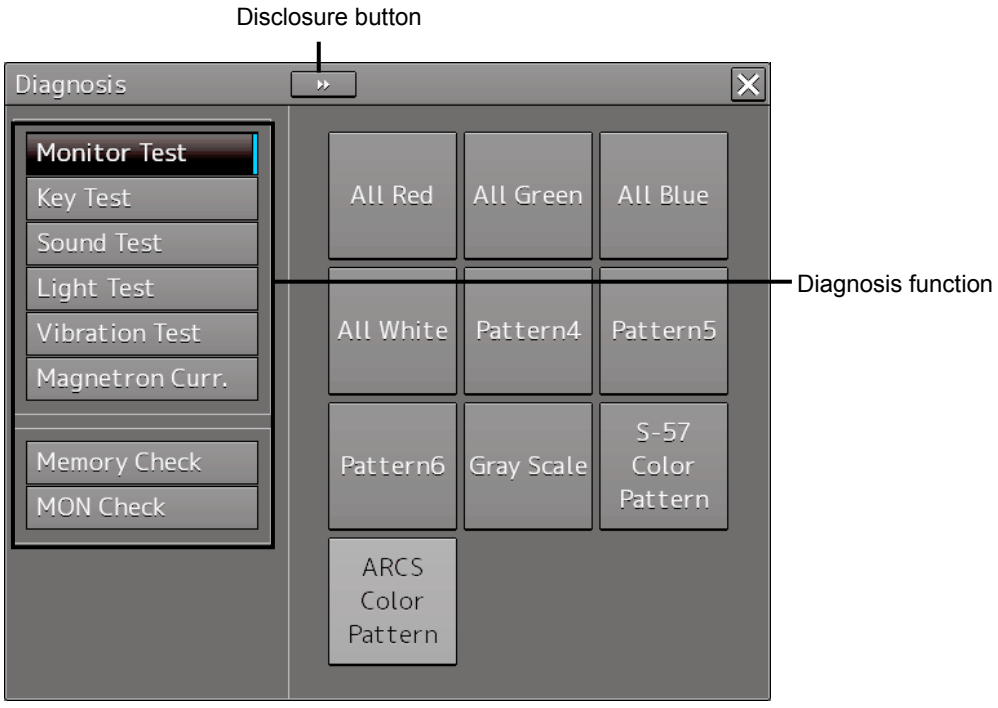
Make performance check on the radar equipment regularly and if any problem is found, investigate it immediately. Pay special attention to the high voltage sections in inspection and take full care that no trouble is caused by any error or carelessness in measurement. Take note of the results of inspection, 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<br>Screen operation | Can be correctly controlled |

## 9.4.1 Starting Diagnosis functions

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

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




The Diagnosis functions are displayed in the left pane.
Click on the disclosure button to hide the left pain.

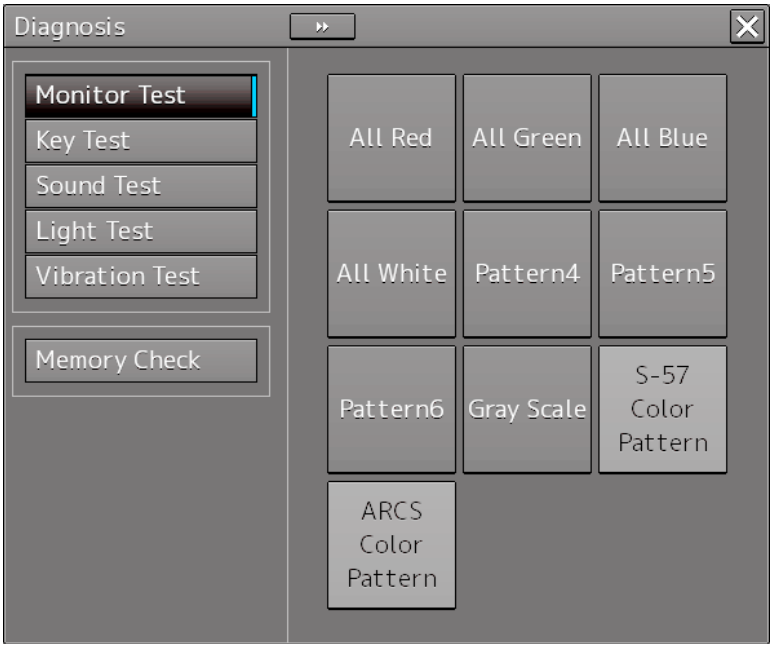
**3** **Click on a Diagnosis function to be executed.**
The execution dialog of the selected diagnosis function is displayed.

## 9.4.2 Confirming the screen status [Monitor Test]

Confirm the screen status.

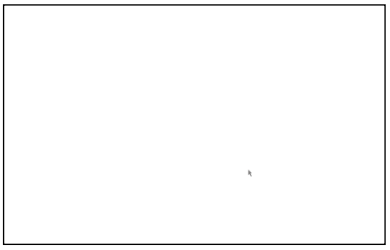
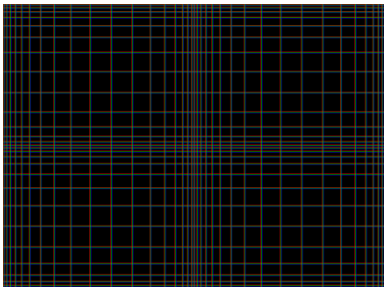
**1** **Click on the [Menu] button at the bottom left corner of the screen.**
The menu is displayed.

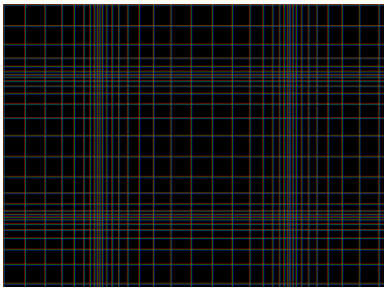
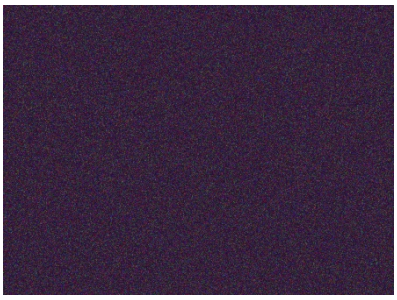
**2** **Click on the [Maintenance] - [Diagnosis] - [Monitor Test] button on the menu.**
When the color or pattern of the dialog is clicked on, the color or pattern is displayed on the screen.
Check the screen status with the display status.

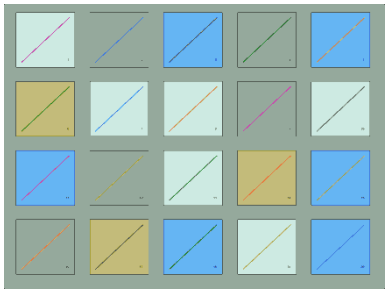
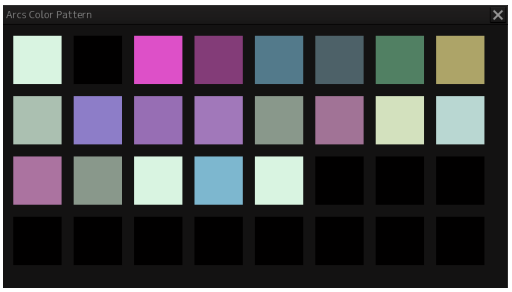



To reset the display, click the right mouse button on the button that was clicked.

Pattern list

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

| Pattern button name | Display |
|---|---|
| Pattern5 |  <br>Displays the pattern for checking the communication quality for VDR. |
| Pattern6 |  <br>Displays the pattern for checking the communication quality for VDR. |
| Gray Scale | <br>Displays the grey scale pattern for checking the monitor brightness adjustment.<br>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.<br>Use the Day/Night button on the right Tool Bar for switching between the day and night mode.<br>For the details of the Day/Night button, refer to "2.2.2 Right Toolbar". |

| Pattern button name | Display |
|---|---|
| S-57 Color Pattern |  <br>A color test pattern of the S-57 chart is displayed.<br>Cannot be selected under Conning Display. |
| ARCS Color Pattern | The [ARCS Color Pattern] dialog is displayed.<br>  <br>A color test pattern of the ARCS chart is displayed.<br>Cannot be selected under Conning Display. |

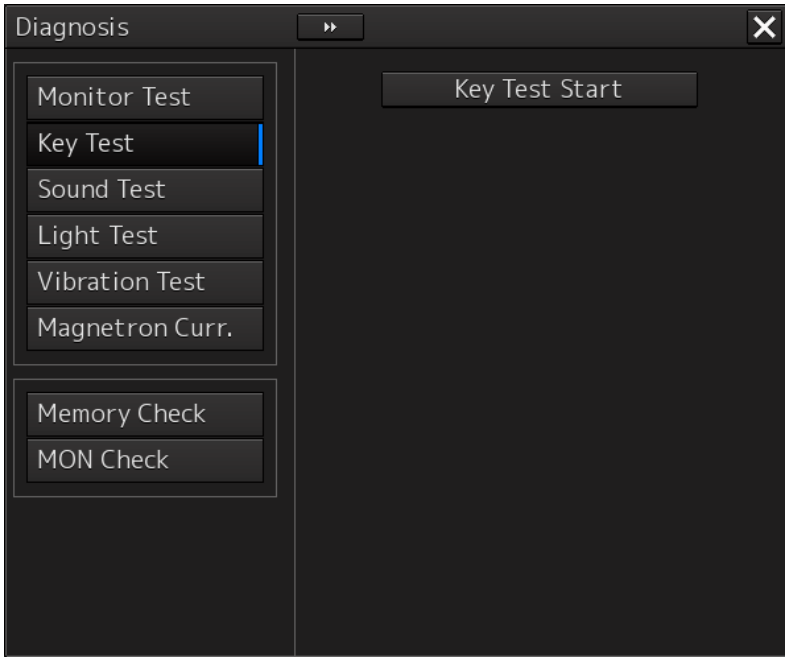
# 9.4.3 Confirming the operation of the operation unit [Key Test]

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

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




Key Test window is displayed.

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

**5** **Click on the [Key Test Stop] button after the operation check.**
Returns to the [Diagnosis] dialog box.

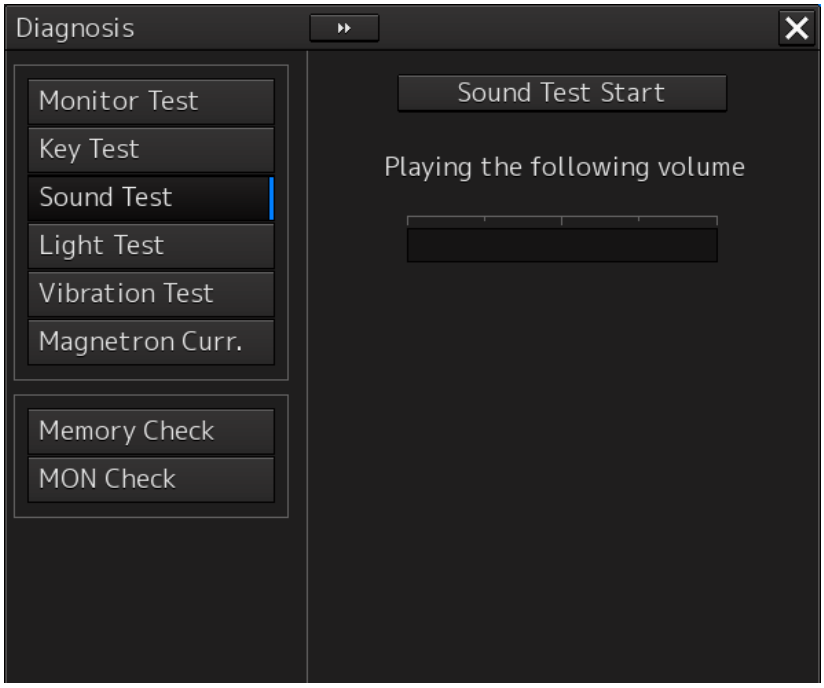
## 9.4.4 Confirming the alert sound [Sound Test]

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] - [Diagnosis] - [Sound Test] button on the menu.**

**3** **Click on the [Sound Test Start] button.**
A sound test starts. All the available beep sound volumes can be tested by increasing the level from 0.



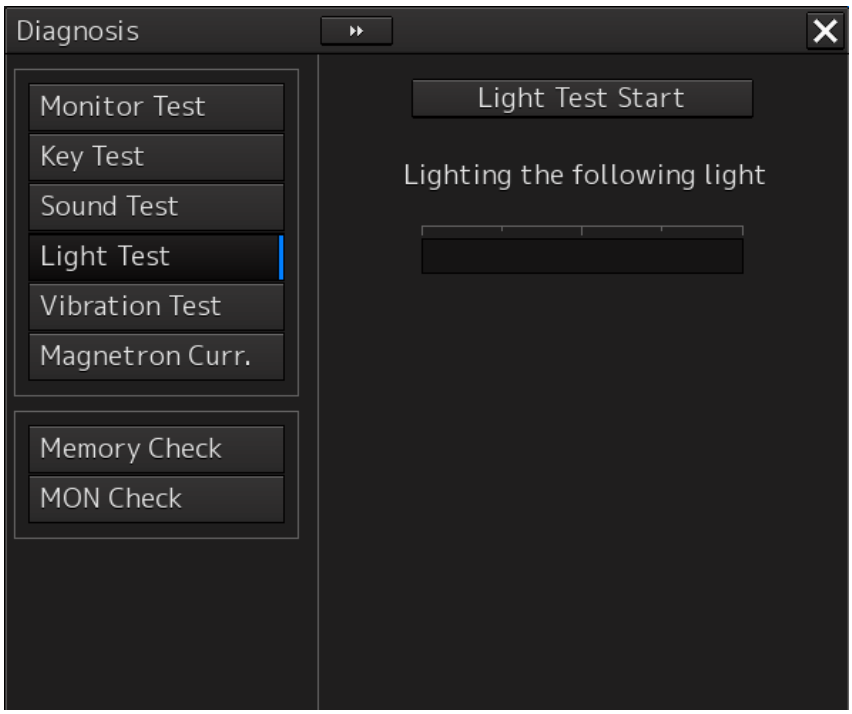
# 9.4.5 Testing the brightness of LED [Light Test]

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] - [Diagnosis] - [Light Test] button on the menu.**

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



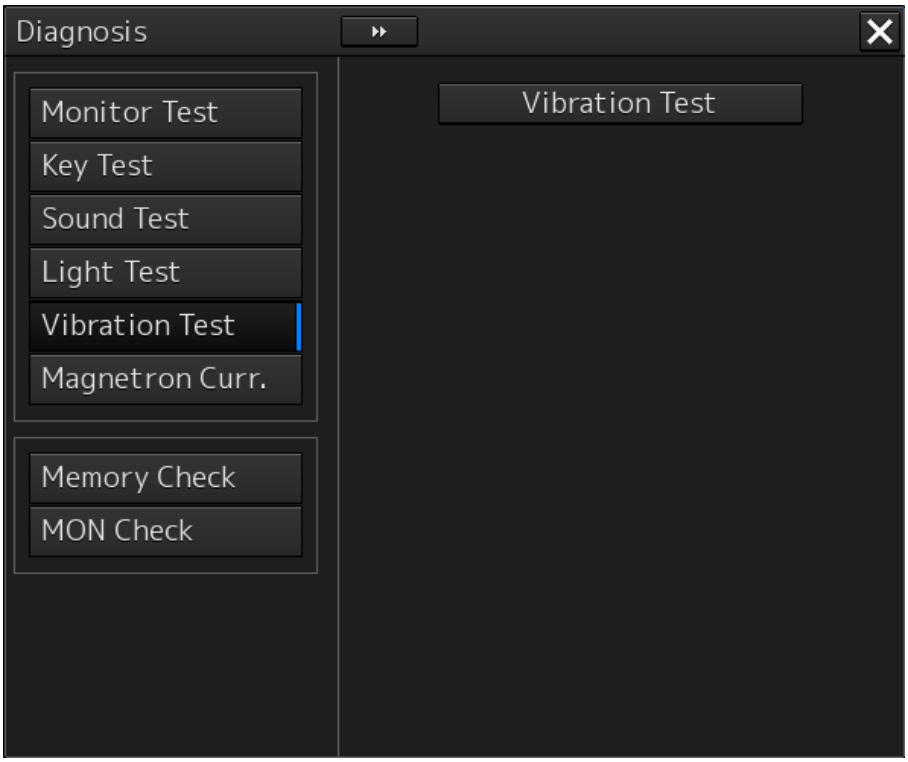
# 9.4.6 Testing the motor [Vibration Test]

Test a motor.

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

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

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



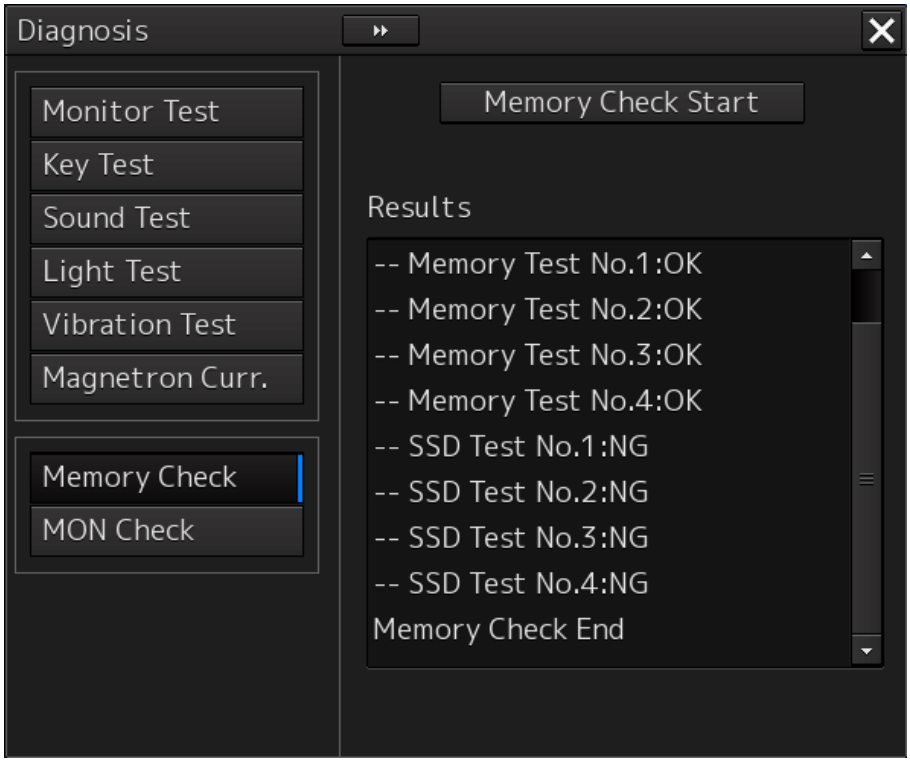
## 9.4.7 Checking the memory [Memory Check]

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

**3** **Click on the [Memory Check Start] button.**
Memory checking starts and the checking result is displayed on the [Result] list.



# 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.

| ⚠CAUTION | |
|---|---|
| | 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 required for periodic replacement

Here are parts required for periodic replacement.

| Part type | Name | Part name | Interval | Replacement kit type |
|---|---|---|---|---|
| NWZ-207 | 19inch monitor | FAN | 40,000 hours | 7ZYNA4004 |
| NWZ-208 | 26inch monitor | FAN | 40,000 hours | 7ZYNA4005 |
| NBD-913 | Power supply unit | FAN | 100,000 hours | 7ZYNA4007 |
| QUINT-BAT/24DC/3.4AH | DC UPS | Battery | 30,000 hours | QUINT-BAT/24DC/3.4AH |
| NDC-1590 | Central control unit | FAN | 40,000 hours | 7ZYNA4006 |

# 9.6 Software Update

This section describes software update of this equipment.

**Note**

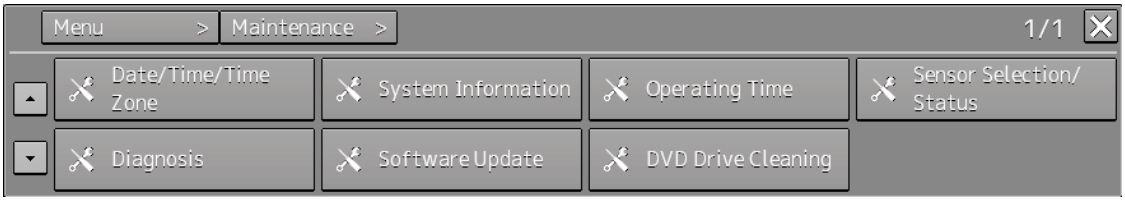
When software update starts, the tasks that are active are automatically terminated. Complete the necessary operation such as saving of settings prior to the start of update.

**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.**

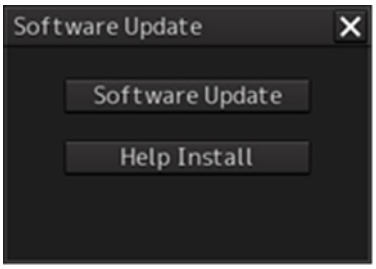
The menu is displayed.

**3 Click [Maintenance] - [Software Update] on the menu.**

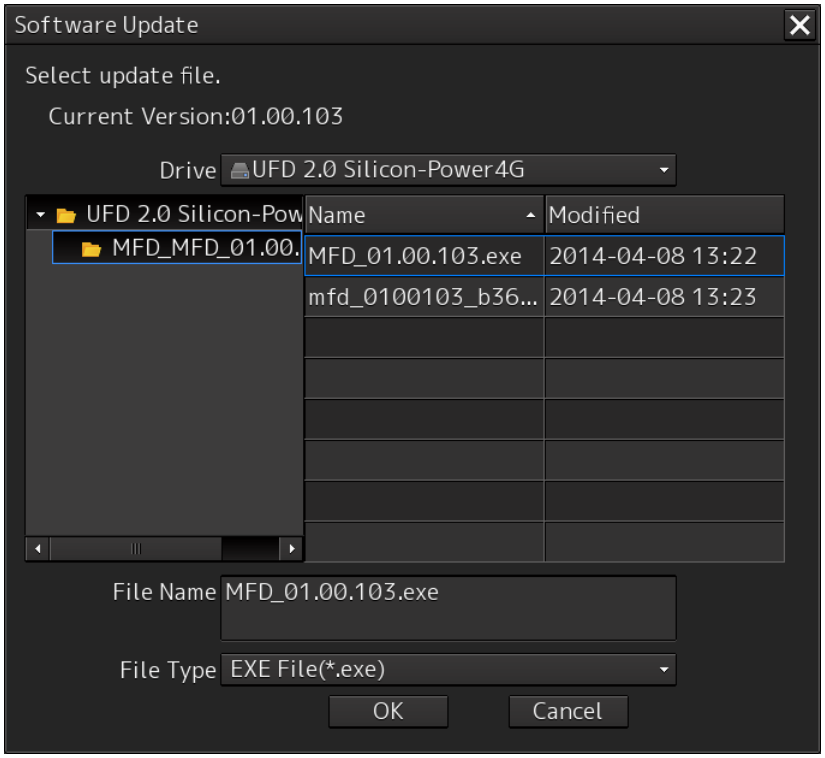



The [Software Update] dialog box appears.

**4 Click on the [Software Update] button.**



A file selection dialog box appears.



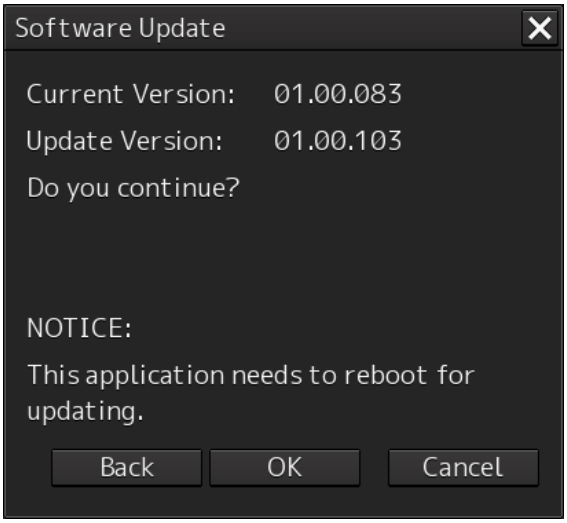

**5** **From the [Drive] combo box, select the drive where the updating data is stored.**

**6** **From the file list, select the file MFD_xx.xx.xxx.exe.**

MFD_xx.xx.xxx.exe is displayed in [File name].

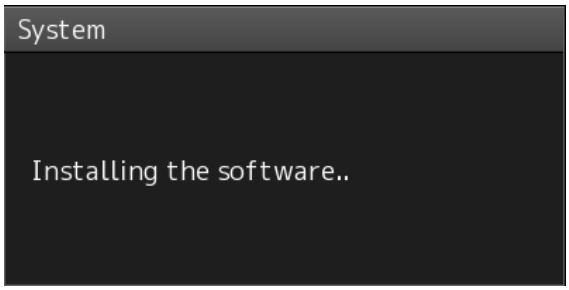
**7** **Click the [OK] button.**

The update content confirmation dialog box appears.



**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].**

# 9.7 Updating Help Data

This section describes updating of help data of this product.

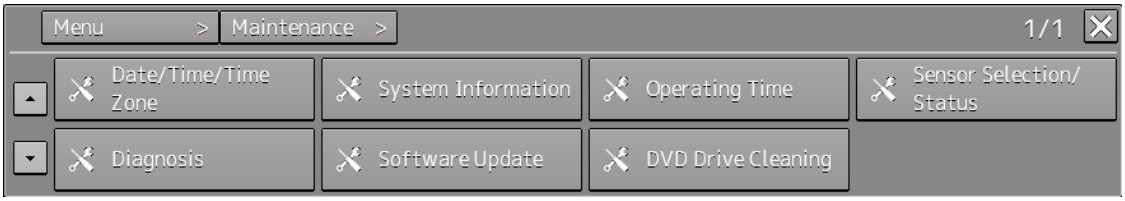
**Note**

- 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.**

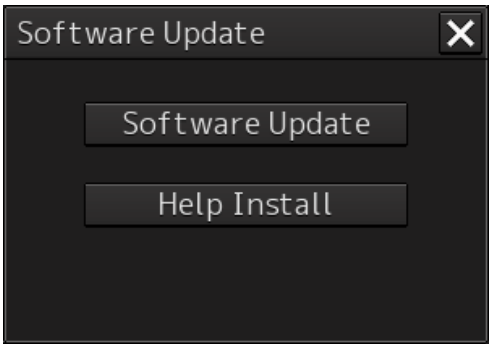
**2 Click the [Menu] button on the Left Tool Bar.**
A menu is displayed.

**3 Click [Maintenance] - [Software Update].**

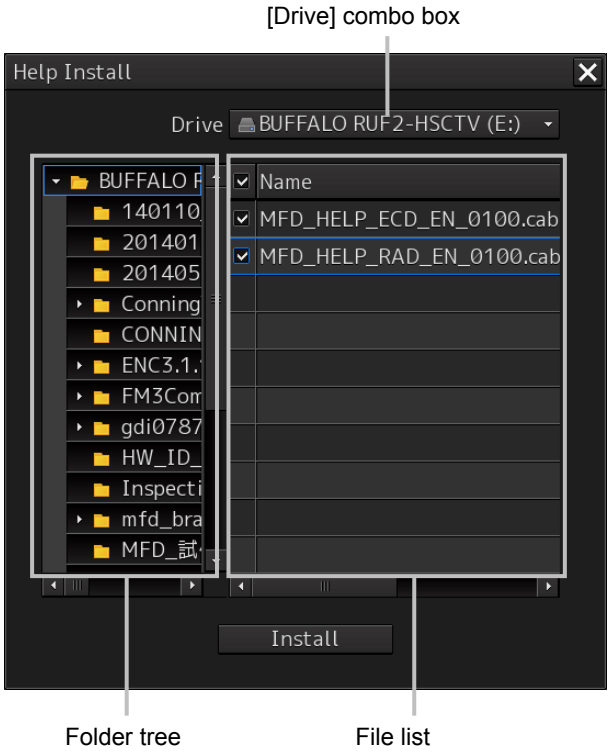



The [Software Update] dialog is displayed.

**4 Click the [Help Install] button.**



A file selection dialog is displayed.

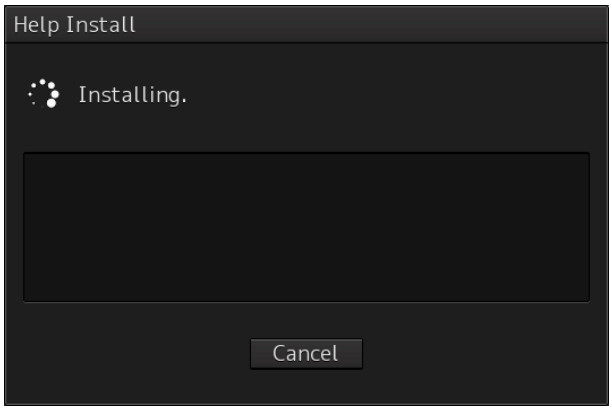



**5** **Select the drive containing update data from the [Drive] combo box.**

**6** **Select the folder containing update data from the folder tree and check the file to be updated from the file list.**

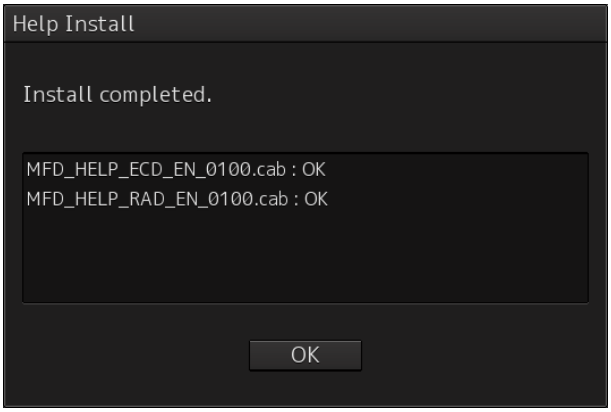
**7** **Click the [Install] button.**

Installation starts and the following screen is displayed.




Wait until installation is completed.

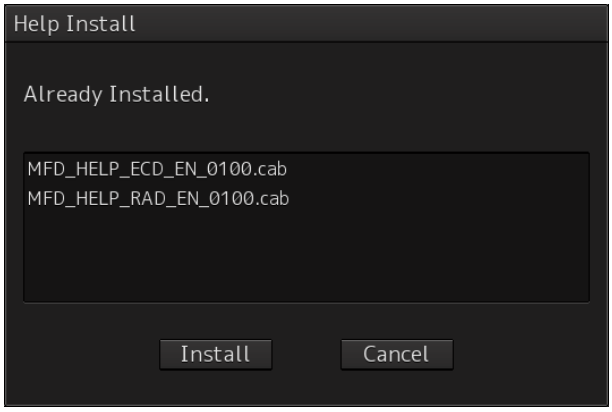
When installation is completed, the following screen is displayed.




**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.

# 9.8 Data Backup/Restore

| ⚠CAUTION | |
|---|---|
| ⃠ | Do not turn off the power supply during backup/restore.<br>Otherwise, a function fault occurs, leading to the possibility of an accident. |
| ⃠ | Do not back up data during sailing.<br>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. |

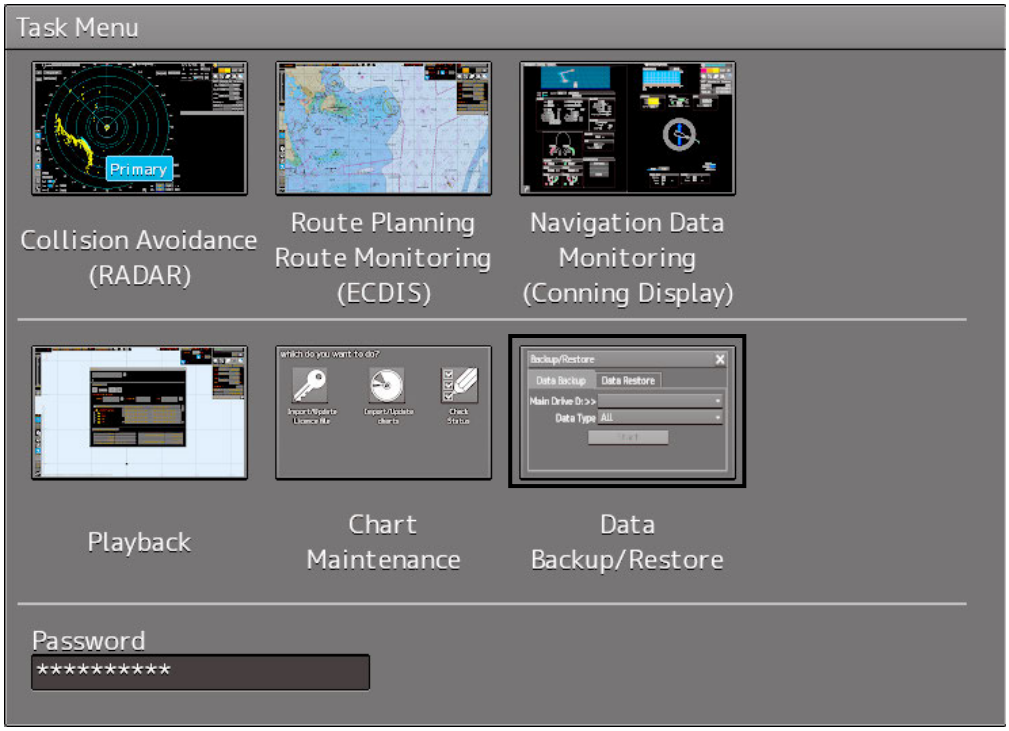
9

## 9.8.1 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.

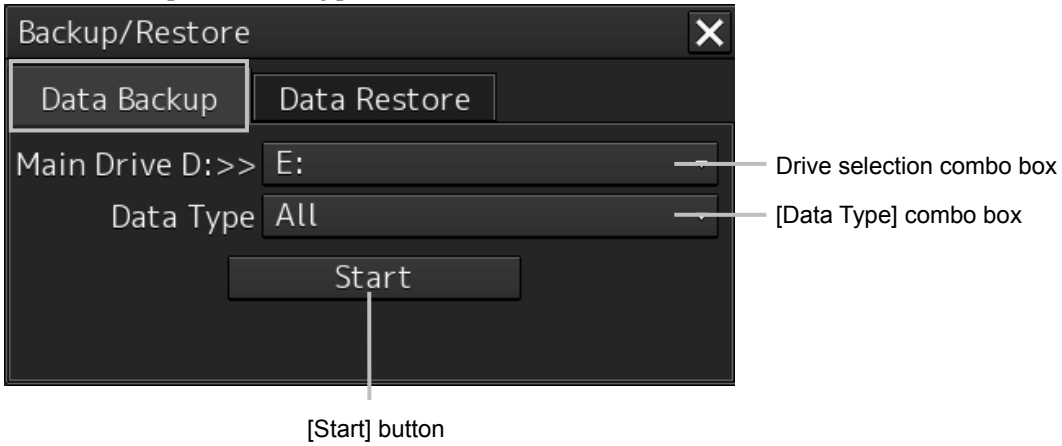
**1** **Press the Power supply button of the operation unit.**
The power supply button is lit. Then, the task menu is displayed.

**2** **Click on the [Data Backup/Restore] button in the task menu.**




The [Backup/Restore] dialog is displayed.

**3** **Click on the [Data Backup] tab.**




**4** **Select a drive of the data backup destination from the drive selection combo box.**

**5** **Select the type of the data to be backed up in the [Data Type] combo box.**

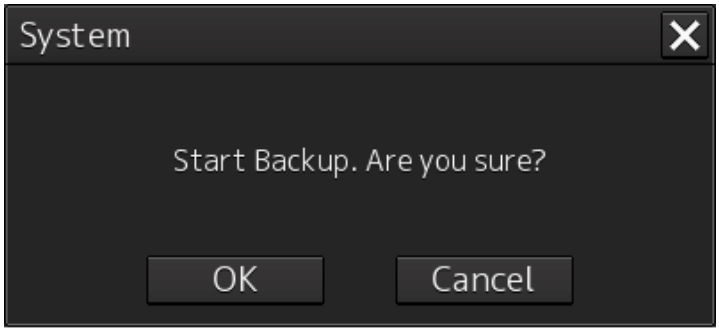
All: The entire user data is backed up.

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.

**6** **Click on the [Start] button.**

A confirmation dialog is displayed.




**7** **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.

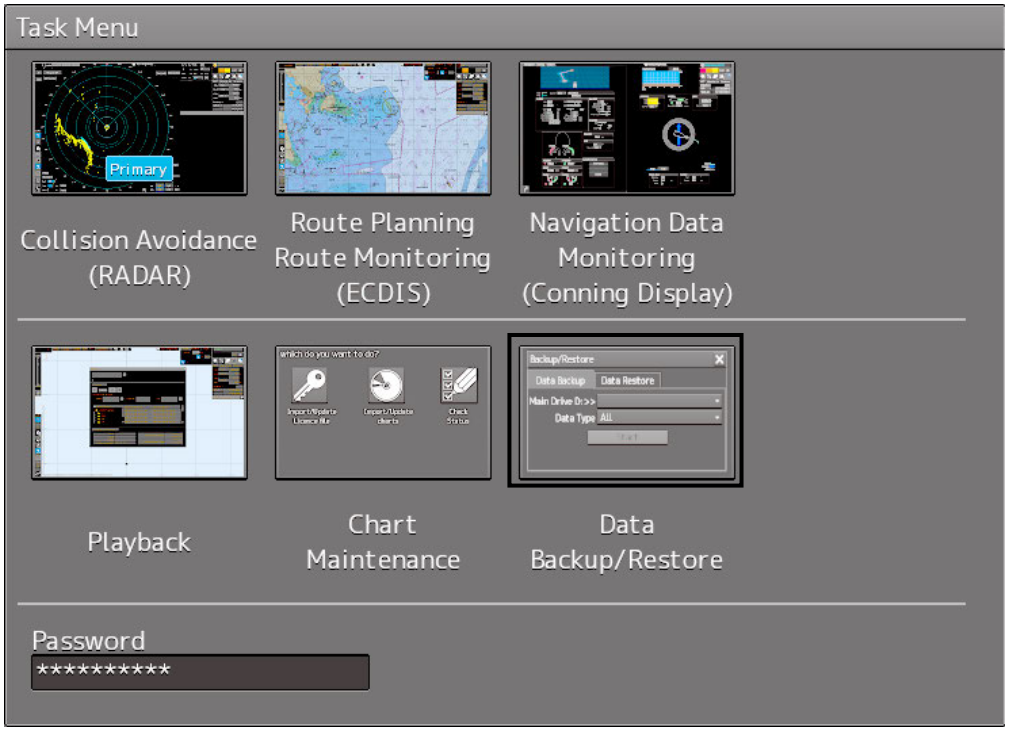
# 9.8.2 Restoring backed up data

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.**

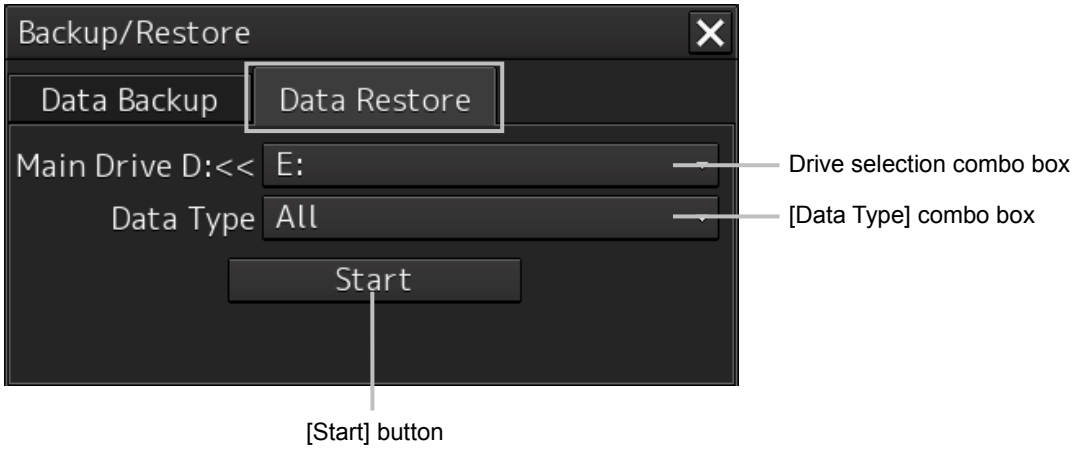
The power supply button is lit. Then the task menu is displayed.

**2 Click on the [Data Backup/Restore] button in the task menu.**




The [Backup/Restore] dialog is displayed.

**3 Click on the [Data Restore] tab.**




**4 Select the drive in which backup data has been saved from the drive selection combo box.**

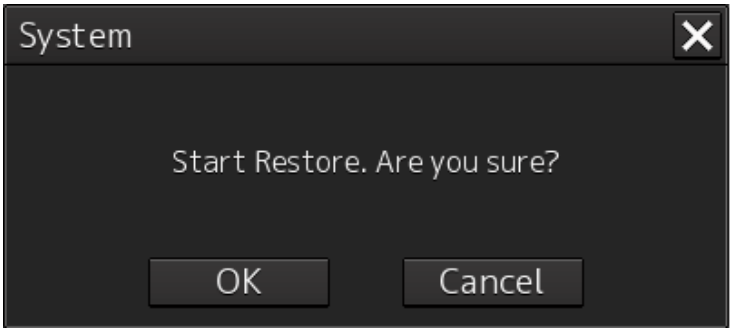
**5 Select the type of the data to be restored in the [Data Type] combo box.**

All: The entire user data is restored.

Except Charts: The user data excluding chart data is restored.

**6** **Click on the [Start] button.**

A confirmation dialog is displayed.




**7** **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.

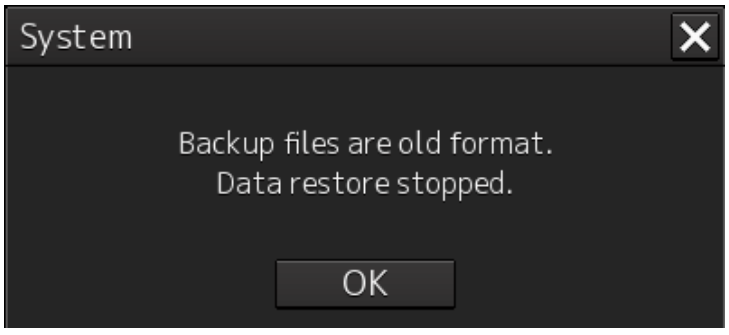
Click on the [OK] button to start the restoration.

**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.

# 9.9 Recovery of the Images in the C Drive

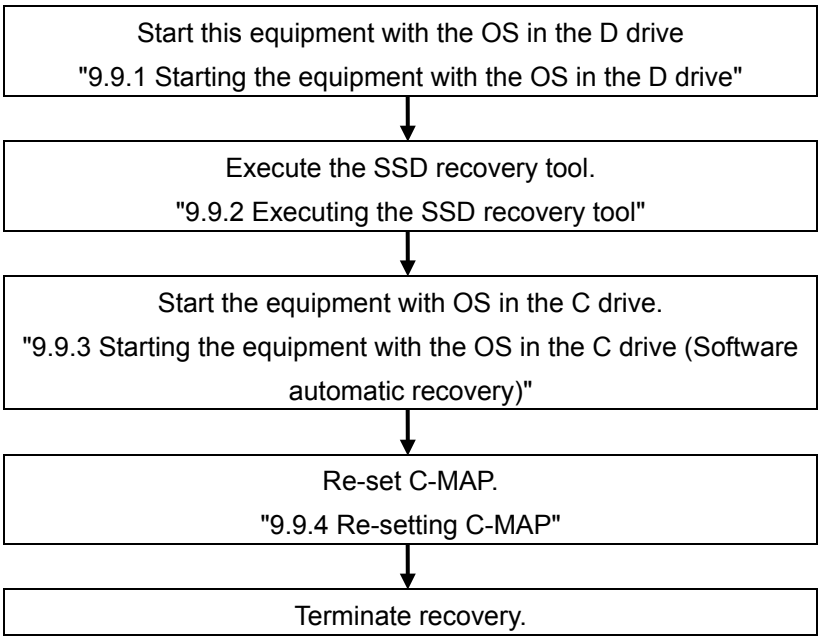
| ⚠CAUTION |
|---|
| The backup power supply (DC power supply, etc.) of the equipment must be connected when recovery of the C drive image is performed. If the power supply stops during recovery, an equipment activation fault occurs, causing an accident. |
| Do not turn off the power supply during recovery 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.)

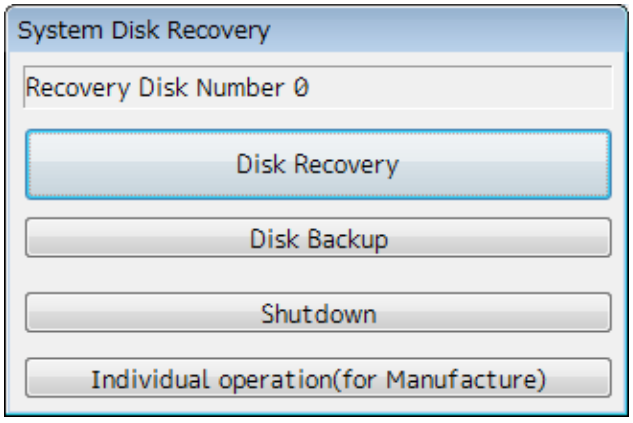
The flow of writing back of images in the C drive is as follows.



## 9.9.1 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.

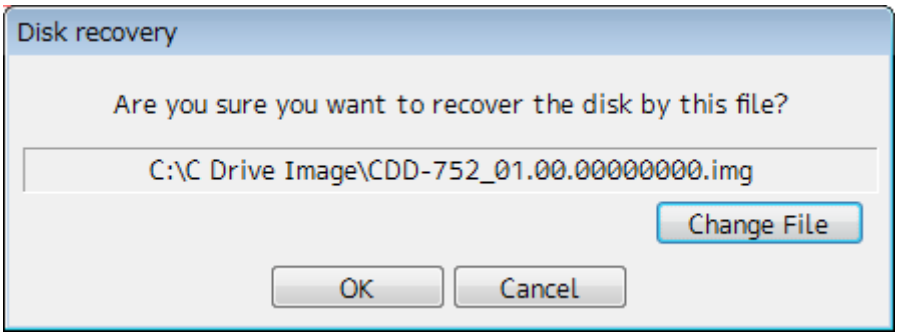



The SSD recovery tool can be executed in this state.

## 9.9.2 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.

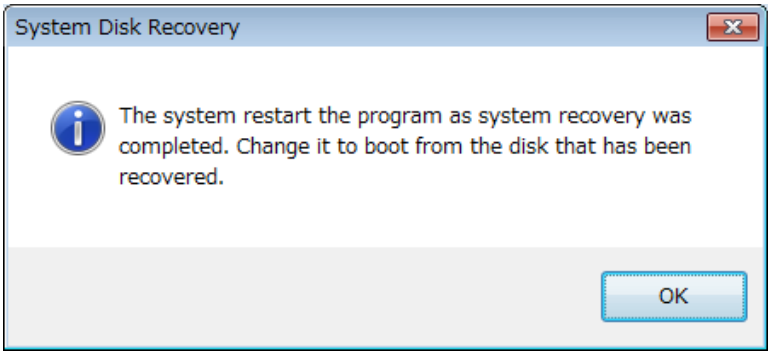
**3** **Click on the [OK] button.**

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.



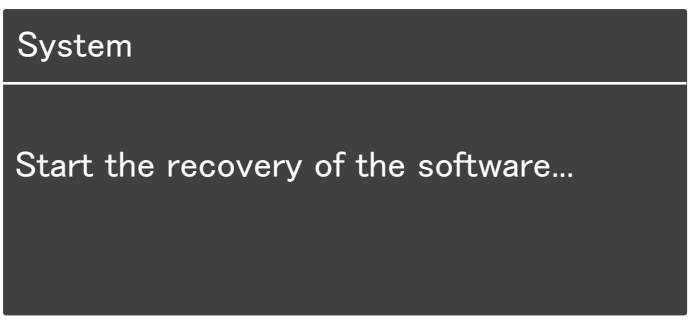

## 9.9.3 Starting the equipment with the OS in the C drive (Software automatic recovery)

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.

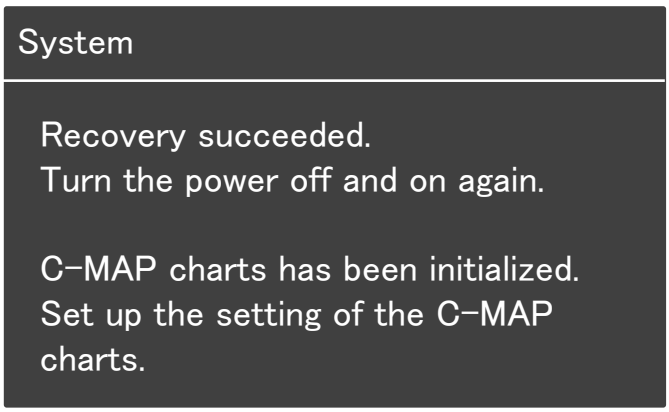


**Note**

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.**

## 9.9.4 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.

# Section 10 Failures and After-Sale Services

## 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) |

# 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 | |
| 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 | |
| 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 26inch MNU | 7ZYNA4004 | |
| 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 | |
| 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) 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-207) 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-207) is faulty. | Make a request to the distributor for repair. |
| The brightness of the monitor cannot be adjusted. | The display unit (NWZ-208/NWZ-207) 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 cannot be moved 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) 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) is faulty. | Make a request to the distributor for repair. |
| Characters/symbols are not displayed correctly. | The central control unit (NDC-1590) 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.<br>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 central control unit (NDC-1590) 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) 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) 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.<br>Alternatively, the values are not displayed correctly. | The serial-LAN interface circuit (CMH-2370) is faulty.<br>(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.<br>(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.<br>(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) 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.<br>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) 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.<br>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) 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.<br>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) is faulty. | Make a request to the distributor for repair. |
| Contact signals are not output. | The power supply for the serial-LAN interface circuit (CMH-2370) is not turned on.<br>(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.<br>(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) 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) 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.<br><br>**[Note]**<br>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.<br>System has detected an error.<br>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. |

# 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.) | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

# 10.4.4 Extending the functions

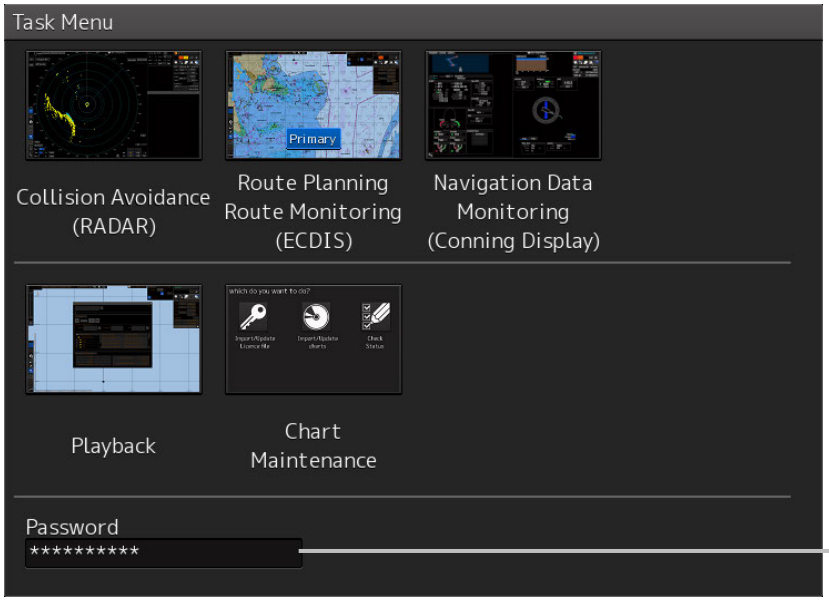
The functions that are available for this equipment can be extended as an optional extra.
To extend a function, new license information (file) must be obtained and imported to this equipment. For function extension, please request to our Sales Department or our branch office, sales office, or agent near 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.

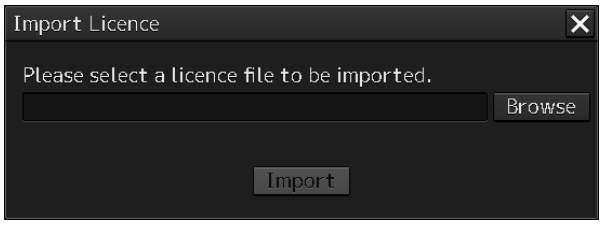



**2 Click on the password input section.**

A password input dialog is displayed.

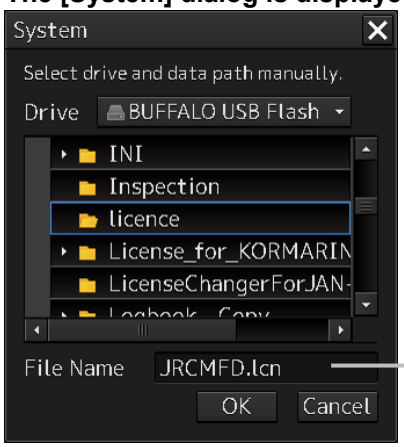
**3 Enter the password, 9380.**

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)<br>・显示装置 (Display Unit)<br>・键盘装置 (OperationUnit)<br>・信号处理装置 (Central Control Unit) | × | × | ○ | × | ○ | ○ |
| 外部设备 (Peripherals)<br>・选择 (Options)<br>・电线类 (Cables)<br>・手册 (Documennts) | × | × | ○ | × | ○ | ○ |

○：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 | 26inch Wide LCD |
| Operation | Cursor and keys |
| External media | General purpose USB port × 1 |
| Ambient Condition<br>- Operating Temperature | -15°C to 55°C |
| Ambient Condition<br>- Relative Humidity | +40°C, 93% |
| Ambient Condition<br>- Vibration | 2 to 13.2Hz: Amplitude ±1mm ±10%<br>13.2 to 100Hz: Acceleration 7m/s$^2$ |
| Power Supply Input | 100 to 115VAC, 50/60Hz 1φ<br>220 to 240VAC, 50/60Hz 1φ<br>24VDC |
| Power Consumption | Approx. 240VA typical<br>(DC:72W at AC power outage) |
| Power Supply Voltage Fluctuation | AC input ±10%<br>DC input +30%, -10% |
| **Central Control Unit** | |
| Central Control Unit | NDC-1590 |
| Power Supply Unit | NBD-913 |
| Trackball Operation Unit | NCE-5605 |
| **Display** | |
| Display | NWZ-208 |
| **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 |
| 26inch DESKTOP FRAME RACK | CWB-1595 |
| 26inch DISPLAY UNIT MOUNT KIT | CWA-246 |
| **SAFE DISTANCE FOR STANDARD COMPASS** | |
| Display unit | 2.4m |

# 12.2 JAN-7202

| GENERAL SPECIFICATION | JAN-7202 |
|---|---|
| Display | 19inch LCD |
| Operation | Cursor and keys |
| External media | General purpose USB port × 1 |
| Ambient Condition<br>- Operating Temperature | -15°C to 55°C |
| Ambient Condition<br>- Relative Humidity | +40°C, 93% |
| Ambient Condition<br>- Vibration | 2 to 13.2Hz: Amplitude ±1mm ±10%<br>13.2 to 100Hz: Acceleration 7m/s$^2$ |
| Power Supply Input | 100 to 115VAC, 50/60Hz 1φ<br>220 to 240VAC, 50/60Hz 1φ<br>24VDC |
| Power Consumption | Approx. 200VA typical<br>(DC:72W at AC power outage) |
| Power Supply Voltage Fluctuation | AC input ±10%<br>DC input +30%, -10% |
| **Central Control Unit** | |
| Central Control Unit | NDC-1590 |
| Power Supply Unit | NBD-913 |
| Trackball Operation Unit | NCE-5605 |
| **Display** | |
| Display | NWZ-207 |
| **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 |
| 26inch DESKTOP FRAME RACK | CWB-1594 |
| 26inch DISPLAY UNIT MOUNT KIT | CWA-245 |
| **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)<br>Analog: XDR |
| Engine telegraph | ETL |
| Rudder angle | Serial: RSA(Response), ROR(Order)<br>Analog: XDR |
| Side thruster | Serial: TRD(Response), TRC(Order)<br>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 |
| Transmittable signals | |
| Watch Timer Reset | EVE |
| Remote maintenance data | JRC format |
| Alert | ACK, ALR |
| Visual range | |
| Visual range | 1.05m from the center of display |

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: Central Control Unit |
|---|---|
| CPU | Intel Core i5 2515E 2.5GHz |
| Main Memory | 2GB (DDR3) |
| JRC ASIC | Yes |
| Mechanical | |
| Dimension | Width 400 x Depth 240 x Height 125 (mm) |
| Mass | 5.6kg |
| FAN | 1 |
| 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$^2$ and for 2h on each resonance, otherwise 2h at 30Hz in all three axes |
| EMC | IEC60945-Ed4.0 |
| Ingress Protection Rating | IP20 |
| Interfaces | |
| DVI-D | 1 |
| VGA | 1 (Slave output 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 |
|---|---|
| AC Input | |
| Voltage | 100 to 115VAC, 50/60Hz 1φ<br>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 |
| DC Input | |
| Voltage | 24VDC |
| Voltage Range | 21.6 to 31.2VDC |
| Overvoltage Protection | 42V |
| Input Current | Max 16A |
| Over current Protection | YES |
| Rated Output | |
| 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 |
| Mechanical | |
| Dimension | Width 400 x Depth 240 x Height 85 (mm) |
| Mass | 4.2kg |
| FAN | 2 |
| 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/s2 and for 2h on each resonance, otherwise 2h at 30Hz in all three axes |
| EMC | IEC60945-Ed4.0 |
| Ingress Protection Rating | IP20 |

# 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 |
| Vibration | 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.) |
| Mechanical | |
| Dimension | Width 130 x Depth 210 x Height 77 (mm) |
| Mass | 1.3kg |
| 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$^2$ 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

| 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<br>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 |
| Mechanical | |
| Dimension | Width 429 x Depth 76 x Height 382 (mm) |
| Mass | 6.0kg |
| Fan | 1 |
| Glass | Tempered Glass + AR Coating |
| 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/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 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,<br>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/$m^2$ Type |
| Digital Scanning Frequency (H / V) | Horizon 30kHz to 75kHz<br>Vertical 56Hz to 75Hz |
| DVI-D input | 1 |
| VGA input | 1 |
| VGA output | 1 |
| USB I/F | 1 |
| Power | 21.6 to 31.2VDC<br>85 to 265VAC 50/60Hz |
| Overvoltage Protection | N/A |
| DC Reverse Connection Protection | Self-Return Type |
| Cables | Up to 5m |
| Glass Bonding | Optional |
| Mechanical | |
| Dimension | Width 624 x Depth 85 x Height 456 (mm) |
| Mass | 16kg |
| Fan | 2 |
| Glass | Tempered Glass + AR Coating |
| 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/$s^2$ 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 |

# 12.9 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/s2 and for 2h on each resonance, otherwise 2h at 30Hz in all three axes |
| EMC | IEC60945-Ed4.0 |
| Ingress Protection Rating | Front : IP22 |

# 12.10 26inch 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$^2$ and for 2h on each resonance, otherwise 2h at 30Hz in all three axes |
| EMC | IEC60945-Ed4.0 |
| Ingress Protection Rating | Front : IP22 |

# 12.11 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/s2 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 Sensor LAN switch unit

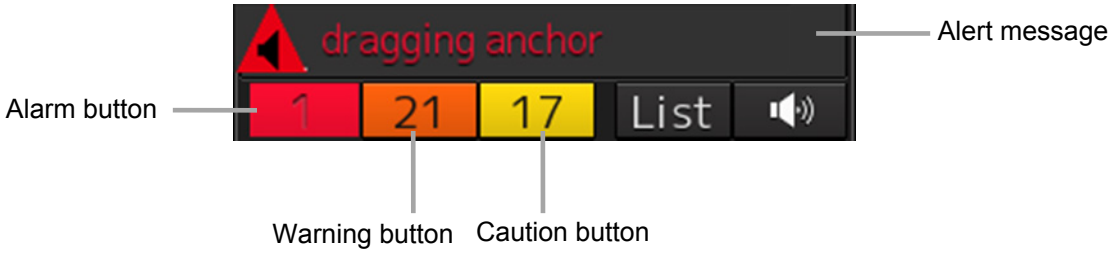
| GENERAL SPECIFICATION | NQA-2443: Sensor LAN switch unit |
|---|---|
| Technology | |
| Standards | IEEE802.3, 802.3u, 802.3x |
| Processing type | Store and Forward, with IEEE802.3 full duplex,<br>back pressure flow control |
| Forward and Filtering Rate | 148810 pps |
| Latency | Less than 5us |
| Interface | |
| 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 |
| Power | |
| Input Voltage | 12 to 48 VDC |
| Input Current | 0.34A max |
| Over Current Protection | 1.6A |
| Reverse Polarity Protection | Yes |
| Mechanical | |
| Dimension | Width 53.6 x Depth 135 x Height 105 (mm) |
| Mass | 1.5kg |
| 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$^2$<br>and for 2h on each resonance, otherwise 2h at 30Hz in all three axes |
| EMC | IEC60945-Ed4.0 |

# 12.13 Junction Box

| GENERAL SPECIFICATION | NQE-1143: Junction Box |
|---|---|
| Mechanical | |
| Dimension | Width 400 x Depth 86 x Height 261.5 (mm) |
| Mass | 3.8kg |
| 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$^2$ and for 2h on each resonance, otherwise 2h at 30Hz in all three axes |
| EMC | IEC60945-Ed4.0 |
| Ingress Protection Rating | Front : IP20 |
| Power | |
| Power | 21.6 to 31.2 VDC |
| Input Voltage | 48W MAX |
| Power Consumption | 3A × 2, 15A × 1 Mini Blade Fuse |
| Over Current Protection | Yes |
| **FUNCTIONAL SPECIFICATION** | **CMH-2370: Serial LAN Interface Circuit** |
| Interface | |
| 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 |
| **FUNCTIONAL SPECIFICATION** | **CMJ-554: Gyro Interface Circuit** |
| GYRO | |
| STEP | 22 to 70 VDC |
| SYNC | 24 to 115VAC, 50/60/400Hz |
| RATIO | 36×/90×/180×/360× |
| OUTPUT | THS (50Hz) |
| LOG | |
| PULSE | Dry contact: 30V(max), 50mA(max)<br>Voltage signal: 0-50V (threshold level is 2V) |
| RATIO | 100/200/400/800 [P/NM] |
| OUTPUT | VBW (1Hz), VLW (0.1Hz) |
| **FUNCTIONAL SPECIFICATION** | **CMJ-556: Analog Option Circuit** |
| Interface | |
| Isolated Input | 4 |
| Input Signal Range | -10 to 10 VDC or 4 to 20 mA |

# Appendix A Alert List

When an alert occurs, alert information is displayed in the alert notification area.

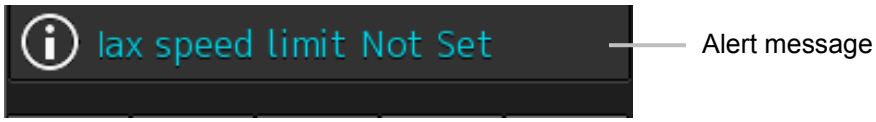



Alert notification area when there is no AMS license

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.




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<br>(An alert indicating a state asking sailors to pay immediate attention and take immediate action.) | Alarms | Red | Before alarm acknowledgement: Blinking<br>After alarm acknowledgement: Lighting | Present (repetitive) |
| Warnings<br>(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 alarm acknowledgement: Blinking<br>After alarm acknowledgement: Lighting | Present (once) |
| Cautions<br>(Although these are neither alarms nor warnings, these alerts indicate that it is necessary to pay more than | Cautions | Yellow | Lighting | No sound |

| | | | | |
|---|---|---|---|---|
| normal attention to cautions, statuses, or to the supplied information.) | | | | |
| No Alarm | - | Green | - | - |

The list of alert messages by alert type is shown below.

Each item in the "Subject" column indicates the following.
INS: Alert relating to the INS function
RADAR/AIS: Alert relating to the RADAR/AIS function
Control unit: Alert relating to the control unit
Antenna: Alert relating to the antenna
Display unit: Alert relating to the display unit
Operation unit: Alert relating to the operation unit
Power supply: Alert relating to power supply
Maintenance: Alert relating to maintenance
Others: Other alert

# A.1 Alarms

| Message | Subject | Explanation |
|---|---|---|
| Depth below keel | INS | Alarm on the depth below the keel |

# A.2 Warnings

| Message | Subject | Explanation |
|---|---|---|
| AIS(Communication failed, Direct) | INS | AIS communication failure on the CCU serial port |
| AIS(Communication failed, Main LAN) | INS | AIS communication failure on LAN1 (main network) |
| AIS(Communication failed, Sub LAN) | INS | AIS communication failure on LAN2 (sub network) |
| AIS(invalid) | INS | AIS data validity error |
| AIS(unavailable) | INS | AIS data not received |
| ALC #n(Communication failed, Main LAN) | INS | ALC#n communication failure on LAN1 (Main network) |
| Anemometer (communication failed, Main LAN) | INS | Anemometer communication failure (wind direction/wind speed) on LAN1(Main network) |
| Autopilot(Communication failed, Main LAN) | INS | Autopilot communication failure on LAN1 (main network) |
| Autopilot(Communication failed, Sub LAN) | INS | Autopilot communication failure on LAN2 (sub line) |
| Blizzard#n-DSP#m (Communication error) | Control section | Communication error with the DSP (Bizzard#n - DSP#m) |
| Blizzard#n DSP#m (Load Failed) | Control section | The transfer of the DSP program did not succeed. (ASIC#n - DSP#m) |
| Blizzard#n High TEMP | Control section | Blizzard#n high temperature |
| Blizzard(Process Error) | Antenna | Signal processing error in Blizzard |
| Blizzard(SYNC Signal Lost) | Antenna | Interrupt signal (interrupt due to absence of external synchronous signal) |
| BNWAS(Communication failed, Main LAN) | INS | BNWAS communication failure in LAN1 (Main network) |
| CCU Fan | Control section | Drop in CCU fan revolution per minute |
| CIF(Communication error) | Control section | Communication error between the CPU and the Companion MPU |
| CMP RelaySoftware(Communication error) | Control section | Communication error between the Companion MPU relay software and the MFD |
| COG/SOG(invalid) | INS | COG/SOG data validity error |
| COG/SOG(not plausible) | INS | COG/SOG data plausibility error |
| COG/SOG(unavailable) | INS | COG/SOG data not received yet |
| CPU Core#n Clock down | Control section | CPU Core#n clock down |
| CPU Core#n High TEMP | Control section | CPU Core#n temperature rise |

| Message | Subject | Explanation |
|---|---|---|
| DATUM(invalid) | INS | DTM sentence validity error |
| DATUM(unavailable) | INS | DTM sentence not received yet |
| Depth(invalid) | INS | Depth data validity error |
| Depth(unavailable) | INS | Depth data not received yet |
| DSC(Communication failed, Main LAN) | INS | DSC (Digital Selective Calling) communication failure on LAN1 (Main network) |
| DSP(Heading Data) | RADAR/AIS | Heading data error (heading error that is received by companion MPU) |
| Echo Sounder(Communication failed, Main LAN) | INS | Echo sounder communication failure on LAN1 (Main network) |
| Echo Sounder(Communication failed, Sub LAN) | INS | Echo sounder communication failure on LAN2 (Sub network) |
| e-Token(Communication error) | Control section | Communication error between the CPU and e-Token |
| External TT#n(invalid) | INS | TT#n data validity error |
| External TT#n(unavailable) | INS | TT#n data not received |
| GIF(Communication error) | Control section | Communication error between the Companion MPU and the Gyro IF (USB connection) |
| GIF-RIF(Open) | Control section | The open state was detected between the GIF and the RIF |
| GIF-SLC(Open) | Control section | The open state was detected between the GIF and the SLC |
| GPS #n(Communication failed, Direct) | INS | GPS#n communication failure on serial port of CCU |
| GPS #n(Communication failed, Main LAN) | INS | GPS#n communication failure on LAN1 (Main network) |
| GPS #n(Communication failed, Sub LAN) | INS | GPS#n communication failure on LAN2 (Sub network) |
| Gyro #n(Communication failed, Direct) | INS | Gyro communication failure on CCU serial port |
| Gyro #n(Communication failed, GIF-Direct) | INS | Gyro IF communication failure on CCU serial port |
| Gyro #n(Communication failed, GIF-Main LAN) | INS | Gyro IF communication failure on LAN1 (main network) |
| Gyro #n(Communication failed, GIF-Sub LAN) | INS | Gyro IF communication failure on LAN2 (sub network) |
| Gyro #n(Communication failed, Main LAN) | INS | Gyro communication failure on LAN1 (main network) |
| Gyro #n(Communication failed, Sub LAN) | INS | Gyro communication failure on LAN2 (sub network) |
| HASP(Communication error) | Control section | Communication error between the CPU and the HASP |
| Heading(invalid) | INS | Heading data validity error |

| Message | Subject | Explanation |
|---|---|---|
| Heading(not plausible) | INS | Heading data plausibility error |
| Heading(unavailable) | INS | Heading data not received yet |
| IAS(Communication failed, Main LAN) | INS | IAS communication failure in LAN1 (Main network) |
| LAT(Out of Bounds) | ECDIS | Exceeded system operation latitude range |
| LCD Fan#n(LCD) | Display Unit | The LCD fan#n stopped |
| LCD High TEMP | Display Unit | LCD temperature rise |
| Log #n(Communication failed, Direct) | INS | Log communication failure on CCU serial port |
| Log #n (Communication failed, GIF-Direct) | INS | Failure in log communication via Gyro IF on CCU serial port |
| Log #n (Communication failed, GIF-Main LAN) | INS | Failure in log communication via Gyro IF on LAN1 (main network) |
| Log #n (Communication failed, GIF-Sub LAN) | INS | Failure in log communication via Gyro IF on LAN2 (sub network) |
| Log #n (Communication failed, Main LAN) | INS | Log communication failure on LAN1 (main network) |
| Log #n (Communication failed, Sub LAN) | INS | Log communication failure on LAN2 (sub network) |
| NAVTEX(Communication failed, Main LAN) | INS | NAVTEX communication failure on LAN1 (main network) |
| No.#n Conning(Communication failed, Main LAN) | INS | No.#n Conning communication failure on LAN1 (main network) |
| No.#n ECDIS(Communication failed, Main LAN) | INS | No.#n ECDIS communication failure on LAN1 (main network) |
| No.#n Radar(Communication failed, Main LAN) | INS | No.#n Radar communication failure on LAN1 (main network) |
| No.#n Remote-Conning(Communication failed, Main LAN) | INS | No.#n Remote-Conning communication failure on LAN1 (main network) |
| No.#n RPS(Communication failed, Main LAN) | INS | No.#n RPS communication failure on LAN1 (main network) |
| No. #n Wing-Conning(Communication failed, Main LAN) | INS | No.#n Wing-Conning communication failure on LAN1 (main network) |
| OPA-OPB(Communication error) | Operation section | OPA-OPB open detection |
| OPU-Serial(Communication error) | Control section | Communication error between the Companion MPU and the operation unit (serial) |
| OPU-USB(Communication error) | Control section | Communication error between the Companion MPU and the operation unit (USB connection) |
| Position Monitor | TCS | Position monitor<br>(Displayed by TCS Ed.1/Ed.2) |

| Message | Subject | Explanation |
|---|---|---|
| Position(failed) | INS | Integrity verification of Position data failed |
| Position(GPS#n) Not Differential | INS | GPS#n is not DGPS |
| Position(Navigational Status Not Valid, GPS#n) | Track Control | The Navigation status flag of GPS#n is invalid. |
| Position#n(NON-WGS84) | ECDIS | Geodetic positioning system error |
| Power(AC Low Voltage) | Power supply | AC Power supply OFF |
| Power(DC Low Voltage) | Power supply | DC Power supply voltage low |
| Power Fail | Control section | 3.3V/2.5V/1.5V/1.2V and other receiving power dropped or stopped |
| Power(Fan) | Power supply | The fan in the power supply unit is broken |
| Power(TXRX, Failed) | Power supply | Antenna power supply failure operation |
| RIF(Communication error) | Control section | Communication error with Companion MPU-RIF. |
| ROT(invalid) | INS | ROT data validity error |
| ROT(unavailable) | INS | ROT data not received yet |
| Rudder(Communication failed, Main LAN) | INS | Rudder communication failure on LAN1 (main network) |
| SLC1-#n(Communication failed, Main LAN) | INS | SLC1-#n Communication failure on LAN1 (Main network) |
| SLC2-#n(Communication failed, Sub LAN) | INS | SLC2-#n Communication failure on LAN2 (Sub network) |
| STW Speed(invalid) | INS | STW data validity error |
| STW Speed(not plausible) | INS | STW data plausibility error |
| STW Speed(unavailable) | INS | STW data not received yet |
| TEMP(invalid) | INS | Water temperature data validity error |
| TEMP(unavailable) | INS | Water temperature data not received yet |
| TXRX(Communication error) | RADAR/AIS | Communication error with Companion MPU-Radar antenna |
| TXRX(DRV AC LKV) | Antenna | Drive unit failure (insufficient AC power supply) |
| TXRX(DRV AC OVV) | Antenna | Drive unit failure (AC overvoltage) |
| TXRX(DRV COM) | Antenna | Drive unit failure (communication failure) |
| TXRX(DRV CPU1) | Antenna | Drive unit failure (motor driver CPU1 failure) |
| TXRX(DRV Hall Sensor) | Antenna | Drive unit failure (hall sensor failure) |
| TXRX(DRV High Rotate) | Antenna | Drive unit failure (high rotation failure) |
| TXRX(DRV IPM OVH) | Antenna | Drive unit failure (IPM overheating) |
| TXRX(DRV Low Rotate) | Antenna | Drive unit failure (low rotation failure) |
| TXRX(DRV MOT OVH) | Antenna | Drive unit failure (motor overheating) |

| Message | Subject | Explanation |
|---|---|---|
| TXRX(DRV OVC) | Antenna | Drive unit failure (overcurrent) |
| TXRX(DRV Over Rotate) | Antenna | Drive unit failure (excessive rotation failure) |
| TXRX(DRV VBUS LKV) | Antenna | Drive unit failure (VBUS insufficient voltage) |
| TXRX(DRV VBUS OVV) | Antenna | Drive unit failure (VBUS overvoltage) |
| TXRX(Fan1) | Antenna | Antenna fan 1 failure<br>(This warning is not issued when a solid-state antenna is connected.) |
| TXRX(Fan2) | Antenna | Antenna fan 2 failure<br>(This warning is not issued when a solid-state antenna is connected.) |
| TXRX(Heater) | Antenna | Magnetron heater voltage error<br>(Even if this warning is issued, radar transmission can be continued. However, since the error damages the equipment, it is recommended to be used in the emergency case only.) |
| TXRX(High Temperature) | Antenna | Antenna (temperature abnormality inside of the equipment) |
| TXRX(IF PLL) | Antenna | PLL lock error in IF DAC |
| TXRX(MHV) | Antenna | Modulation voltage abnormality |
| TXRX(Motor Current) | Antenna | Motor overcurrent abnormality |
| TXRX(Option) | Antenna | Antenna option module failure |
| TXRX(PROC) | Antenna | Antenna signal processing circuit failure |
| TXRX(PS) | Antenna | Antenna power supply circuit failure |
| TXRX(SSW Off) | Antenna | Safety switch OFF |
| VDR(Communication failed, Main LAN) | INS | VDR communication failure on LAN1 (main network) |
| VDR(Communication failed, Sub LAN) | INS | VDR communication failure on LAN2 (main network) |
| VDR(Delivery Failed) | RADAR/AIS | Failures of capture image distribution for VDR continued for one minute (that is, 4 times consecutively) |
| Water Thermometers (Communication failed, Main LAN) | INS | Water TEMP communication failure on LAN1 (Main network) |

# A.3 Cautions

| Message | Subject | Explanation |
|---|---|---|
| AIS(invalid) | INS | AIS data validity error |
| AIS(unavailable) | INS | AIS data not received |
| AMS #n(Alert Communication failed, Main LAN) | INS | AMS#n communication failure in LAN1 (main network) |
| AMS #n(Alert Communication failed, SubLAN) | INS | AMS#n communication failure in LAN2 (sub network) |
| COG/SOG(invalid) | INS | COG/SOG data validity error |
| COG/SOG(unavailable) | INS | COG/SOG data not received yet |
| DATUM(invalid) | INS | DATUM sentence validity error |
| DATUM(unavailable) | INS | DATUM sentence not received yet |
| Depth(invalid) | INS | Water depth data validity error |
| Depth(unavailable) | INS | Water depth data not received yet |
| External TT#n(invalid) | INS | TT#n data validity error |
| External TT#n(unavailable) | INS | TT#n data not received |
| HDOP exceeded(GPS#n) | INS | Increase of HDOP of GPS#n (deterioration of GPS precision) |
| Heading(invalid) | INS | Heading data validity error |
| Heading(unavailable) | INS | HDG data not received yet |
| Life Expectancy FAN(CCU) | Maintenance | The end of the estimated life expectancy of the CPU FAN is approaching |
| Life Expectancy FAN(Power) | Maintenance | The end of the estimated life expectancy of the Power FAN is approaching |
| Life Expectancy LCD Backlight | Maintenance | The end of the estimated life expectancy of the LCD Backlight is approaching |
| Life Expectancy LCD FAN#n | Maintenance | The end of the estimated life expectancy of the LCD FAN#n is approaching |
| Life Expectancy SSD#n | Maintenance | The end of the estimated life expectancy of the SSD#n is approaching |
| Life Expectancy UPS | Maintenance | The end of the estimated life expectancy of the UPS is approaching |
| Position Shift | Others | At offset of own ship’s position |
| Position(invalid) | INS | Position validity error |
| Position(not plausible) | INS | Position plausibility error |
| Position(unavailable) | INS | Position not received yet |
| Position(Low Integrity, GPS#n) | Track Control | GPS#n measurement position integrity deterioration |
| ROT(invalid) | INS | ROT data validity error |
| ROT(unavailable) | INS | ROT data not received yet |

| Message | Subject | Explanation |
|---|---|---|
| Scanner Rotating | RADAR/AIS | Scanner is rotating (wave not transmitted) ICE CLASS standby |
| STW Speed(invalid) | INS | STW data validity error |
| STW Speed(unavailable) | INS | STW data not received yet |
| TEMP(invalid) | INS | Water temperature data validity error |
| TEMP(unavailable) | INS | Water temperature data not received yet |
| TIME(invalid) | INS | Time validity error |
| TIME(unavailable) | INS | Time not received yet |

# A.4 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.<br>A symbol of loudspeaker in the middle of the triangle. | |
| 2 | Active – silenced alarm | A flashing red triangle.<br>A symbol as in icon number 1 with a prominent diagonal line above it. | |
| 3 | Active – acknowledged alarm | A red triangle.<br>An exclamation mark in the middle of the triangle. | |
| 4 | Active - responsibility transferred alarm | A red triangle.<br>An arrow pointing towards the right in the middle of the triangle. | |
| 5 | Rectified – unacknowledged alarm | A flashing red triangle.<br>A tick mark in the middle of the triangle. | |
| 6 | Active - unacknowledged warning | A flashing yellowish orange circle.<br>A symbol of loudspeaker in the middle of the circle. | |
| 7 | Active – silenced warning | A flashing yellowish orange circle.<br>A symbol as in icon number 6 with a prominent diagonal line above it. | |
| 8 | Active – acknowledged warning | A yellowish orange circle.<br>An exclamation mark in the middle of the circle. | |
| 9 | Active - responsibility transferred warning | A yellowish orange circle.<br>An arrow pointing towards the right in the middle of the circle. | |
| 10 | Rectified – unacknowledged warning | A flashing yellowish orange circle.<br>A tick mark in the middle of the circle. | |
| 11 | Caution | A yellow square.<br>An exclamation mark in the middle of the square. | |
| a | Aggregation | A plus sign.<br>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.<br>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.<br>To be presented together with icons number 6, 7 and 10. | |

APP A

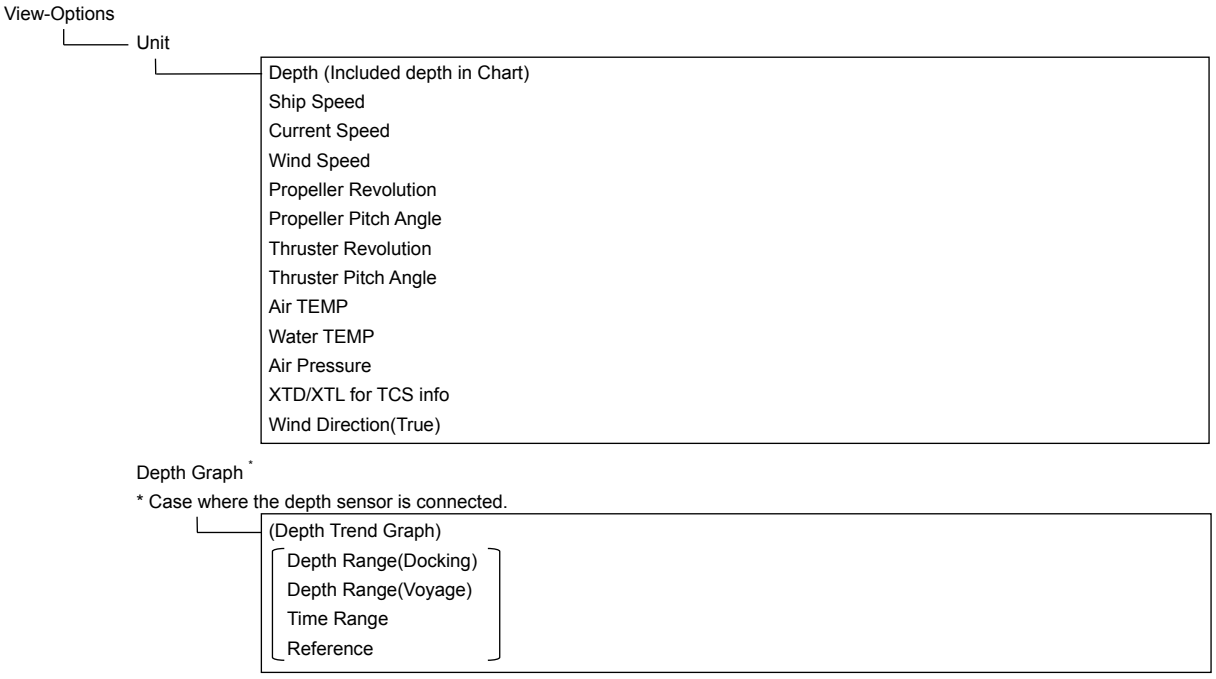
# Appendix B Menu List and Materials

## 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 View



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

ROT

(ROT)
- [ROT Scale]

## B.1.2 Alert

Depth/Safety Contour
- (Depth Below Keel Alarm)
  Depth Below Keel

Position Integrity
- (Position monitor warning)
  - Position Difference Limit
  - Radius Limit (GPS)
  - Radius Limit (DGPS)
  - Time Limit

  (HDOP exceeded caution)
  [HDOP Limit]

AMS
- (Reactivation of Silenced Alert)
  Time Limit
  (Transfer to BNWAS)
  Time Limit
  (Repetition of UNACK Warning)
  Time Limit

Timer
- (Timer)
  (LMT)

# B.1.3 Settings

Color and Brightness

- Day/Night
- Def.
- Display Color tab
  - [Character]
- 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
  - Navigation 1 Alarm *
  - * For UKC alarm
  - Navigation 2 Alarm
  - Navigation 3 Alarm
  - CPA/TCPA Alarm
  - Warning
- Melody tab
  - Navigation 1
  - Navigation 2
  - Navigation 3
  - CPA/TCPA

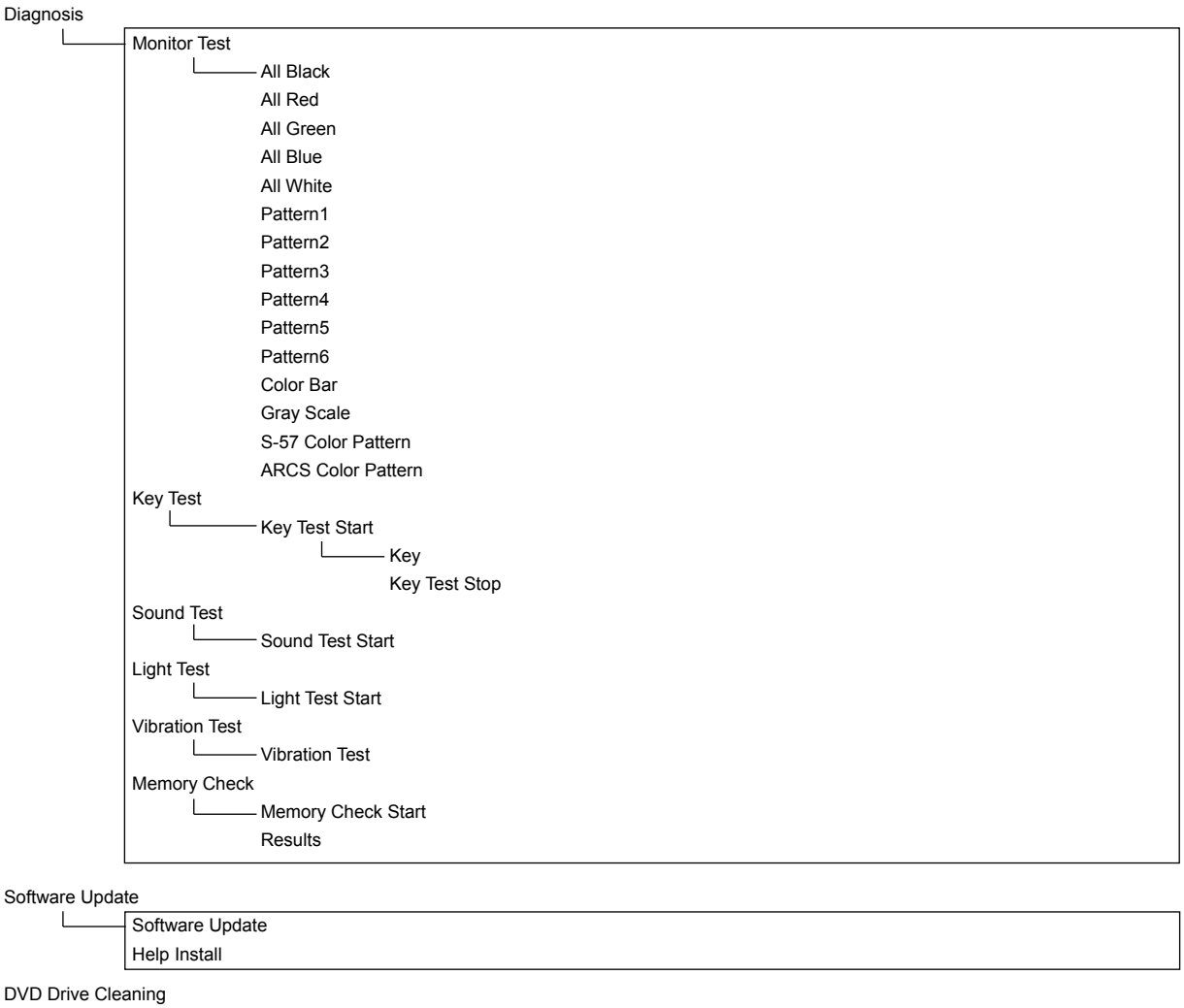
Key Assignment

- Multi Dial tab
  - Display Brightness
  - Panel Brightness

# B.1.4 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

APP B


Diagnosis
Monitor Test
All Black
All Red
All Green
All Blue
All White
Pattern1
Pattern2
Pattern3
Pattern4
Pattern5
Pattern6
Color Bar
Gray Scale
S-57 Color Pattern
ARCS Color Pattern
Key Test
Key Test Start
Key
Key Test Stop
Sound Test
Sound Test Start
Light Test
Light Test Start
Vibration Test
Vibration Test
Memory Check
Memory Check Start
Results
Software Update
Software Update
Help Install
DVD Drive Cleaning

## B.1.5 Help

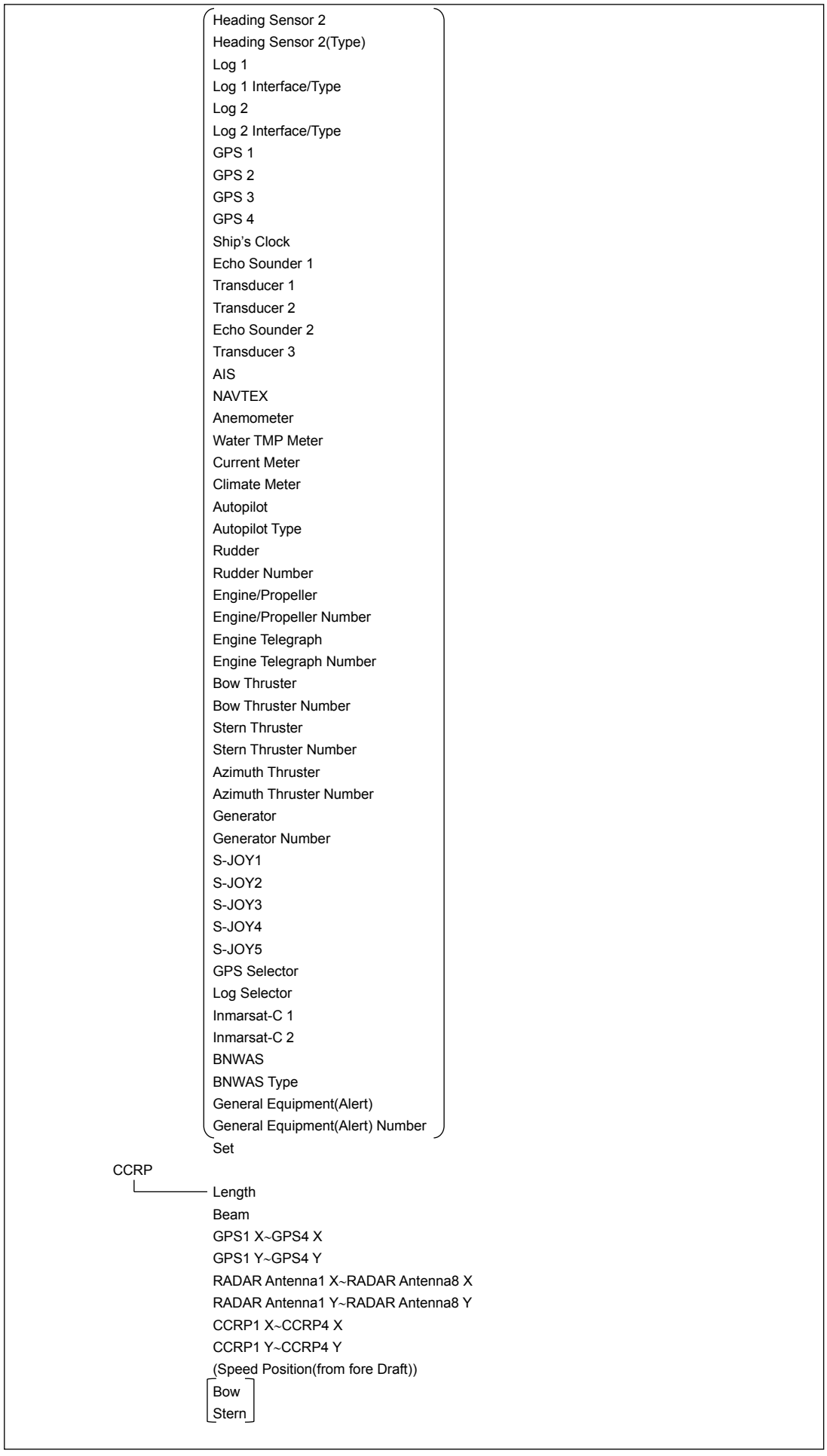
←
→
Home
(Contents tab)
(Search tab)
[keyword
Search
Results]

## B.1.6 Code Input

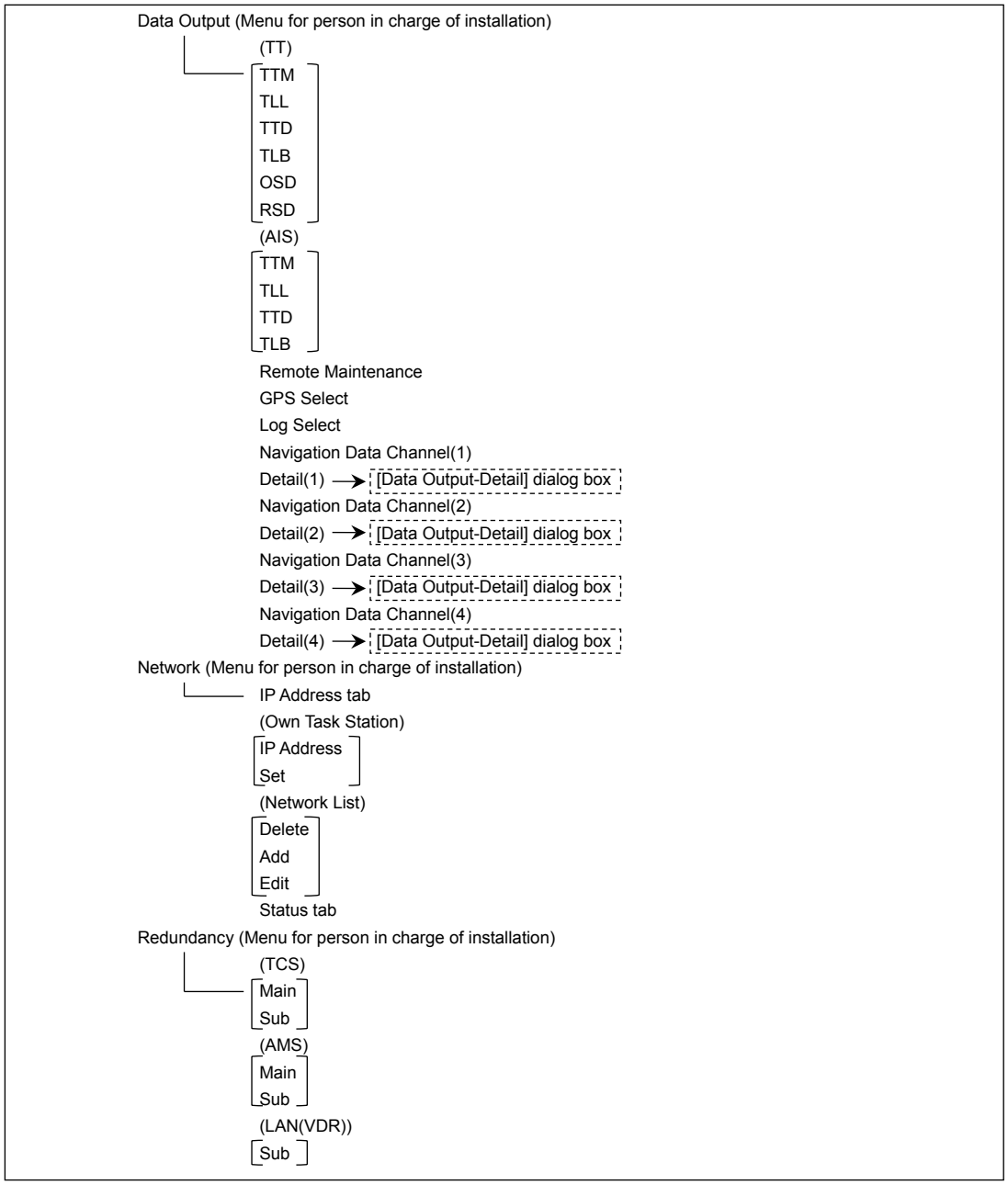
Password

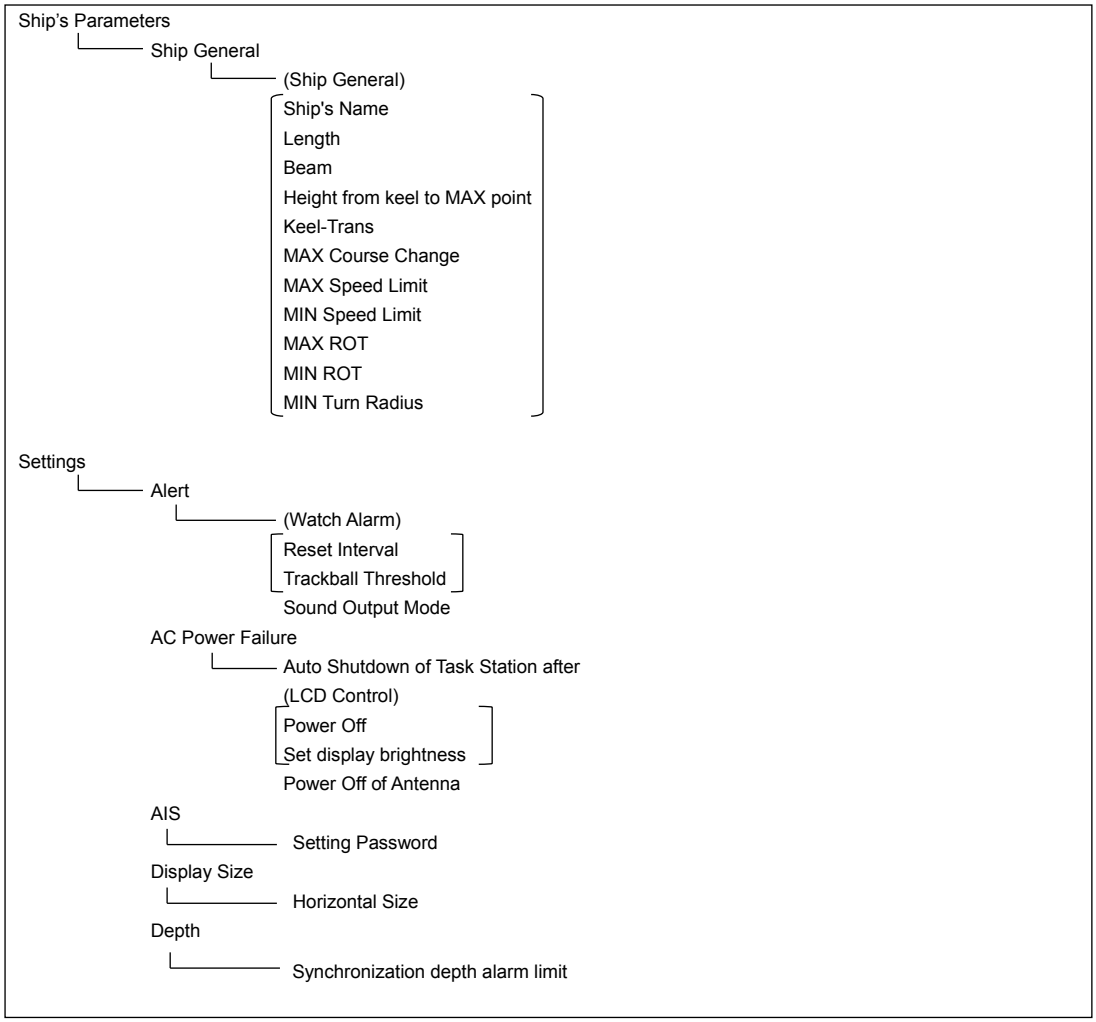
# B.1.7 Service

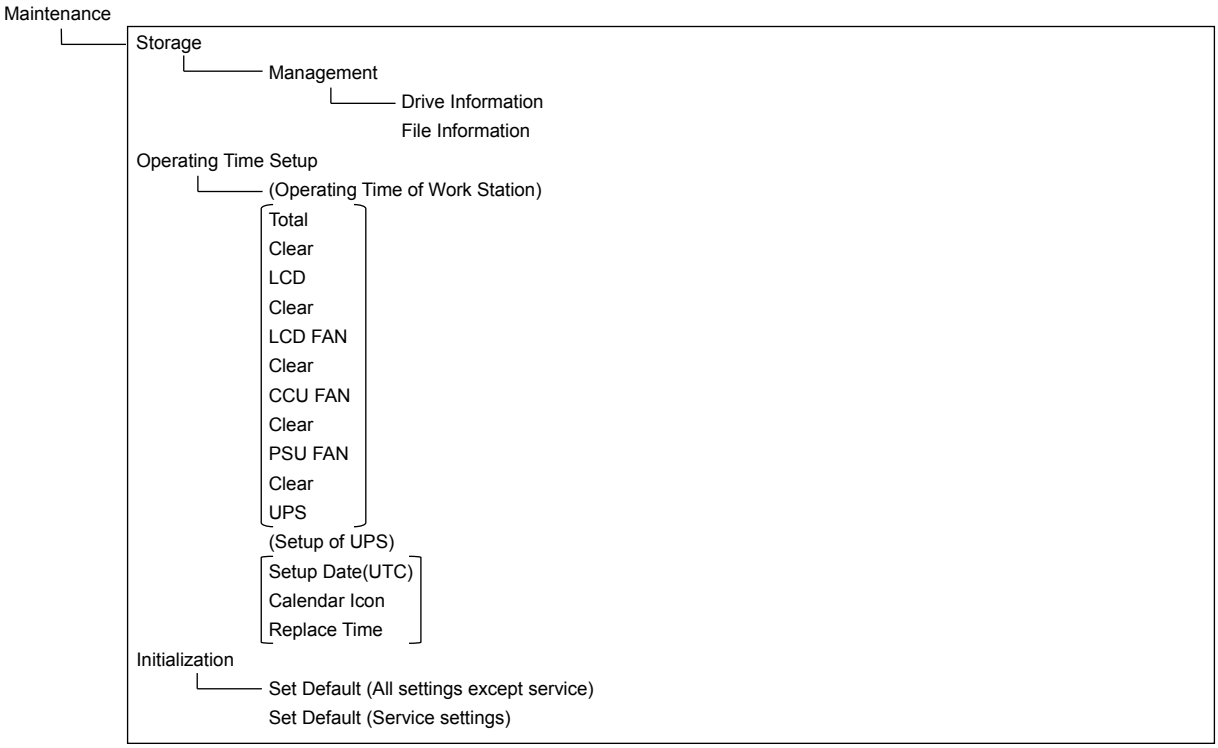
- Installation
  - Installation Information (Menu for a person in charge of installation)
    - (Installation Information)
      - Date:
      - Calendar Icon
      - Name:
      - Company:
      - SSR Scanner type *
      - * Under compact solid-state radar connection
  - Language (English version only) (Menu for a person in charge of installation)
    - Language
  - System Configuration
    - Subsystem Installation (Menu for a person in charge of installation)
      - (Own Task Station)
        - Task Station No.
        - Own Equipment No.
        - IP Address(Main):
        - IP Address(Sub):
        - USB OPU
        - Serial OPU
      - (Junction Box)
        - Junction Box 1
        - Task Station
        - Space A
        - Space B
        - AOC
      - (Junction Box 2 : Same as Junction Box 1)
      - (Junction Box 3 : Same as Junction Box 1)
      - (Junction Box 4 : Same as Junction Box 1)
      - (Junction Box 5 : Same as Junction Box 1)
      - (Junction Box 6 : Same as Junction Box 1)
      - (Junction Box 7 : Same as Junction Box 1)
      - (Junction Box 8 : Same as Junction Box 1)
      - (Device Installation)
        - Task Station 1
        - Equipment No. 1
        - Task Station 2
        - Equipment No. 2
        - Task Station 3
        - Equipment No. 3
        - Task Station 4
        - Equipment No. 4
        - Task Station 5
        - Equipment No. 5
        - Task Station 6
        - Equipment No. 6
        - Task Station 7
        - Equipment No. 7
        - Task Station 8
        - Equipment No. 8
        - RADAR 1
        - RADAR 2
        - VDR(JRC)
        - Printer
        - Heading Sensor 1
        - Heading Sensor 1(Type)


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 TMP 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-JOY1
S-JOY2
S-JOY3
S-JOY4
S-JOY5
GPS Selector
Log Selector
Inmarsat-C 1
Inmarsat-C 2
BNWAS
BNWAS Type
General Equipment(Alert)
General Equipment(Alert) Number
Set
CCRP
Length
Beam
GPS1 X~GPS4 X
GPS1 Y~GPS4 Y
RADAR Antenna1 X~RADAR Antenna8 X
RADAR Antenna1 Y~RADAR Antenna8 Y
CCRP1 X~CCRP4 X
CCRP1 Y~CCRP4 Y
(Speed Position(from fore Draft))
Bow
Stern

- Serial Port
  - (CCU)
    - [Gyro/Log/GPS/AIS]
      - Sensor
      - Diagnosis
      - Detail → [Serial Port-Detail] dialog box
      - Monitor → [Serial Port-Monitor] dialog box
    - [ISW/MTR/Serial OPU]
      - Diagnosis
      - Monitor → [Serial Port-Monitor] dialog box
      - SLC1(M) tab
        - [CH1 ~ CH8 / CH9 ~ CH10 / Gyro I/F]
        - Sensor
        - Diagnosis
        - Detail → [Serial Port-Detail] dialog box
        - Monitor → [Serial Port-Monitor] dialog box
      - (SLC2(M) ~ SLC4(M) : SAME AS SLC1(M))
      - (SLC2(S) ~ SLC4(S) : SAME AS SLC1(M))
      - (ALC1 ~ ALC4 : SAME AS SLC1(M))
      - Same as SLC(Main)
- Contact (Menu for a person in charge of installation)
  - (CCU)
    - [WMRST / PWR FAIL]
    - SLC1 tab
      - Contact Output tab
        - [Contact1 ~ Contact8 / Test / Task Station]
      - Contact Input tab
        - [Contact1 ~ Contact4 / Diagnosis / Task Station]
    - (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)
  - (SLC1)
  - Connect (common)
    - CH1~CH4 → [A/D-A/D CH Configuration] dialog box
    - Contents (common)
    - Generator Power
    - Value (common)
    - Data Unit (common)
    - Clear (common)
    - (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)
    - (Analog Option Circuit2)
    - Connect (common)
    - CH1~CH4
    - Contents (common)
    - Value (common)
    - Data Unit (common)
    - Clear (common)


Data Output (Menu for person in charge of installation)
(TT)
TTM
TLL
TTD
TLB
OSD
RSD
(AIS)
TTM
TLL
TTD
TLB
Remote Maintenance
GPS Select
Log Select
Navigation Data Channel(1)
Detail(1)
[Data Output-Detail] dialog box
Navigation Data Channel(2)
Detail(2)
[Data Output-Detail] dialog box
Navigation Data Channel(3)
Detail(3)
[Data Output-Detail] dialog box
Navigation Data Channel(4)
Detail(4)
[Data Output-Detail] dialog box
Network (Menu for person in charge of installation)
IP Address tab
(Own Task Station)
IP Address
Set
(Network List)
Delete
Add
Edit
Status tab
Redundancy (Menu for person in charge of installation)
(TCS)
Main
Sub
(AMS)
Main
Sub
(LAN(VDR))
Sub


Ship's Parameters
Ship General
(Ship General)
Ship's Name
Length
Beam
Height from keel to MAX point
Keel-Trans
MAX Course Change
MAX Speed Limit
MIN Speed Limit
MAX ROT
MIN ROT
MIN Turn Radius
Settings
Alert
(Watch Alarm)
Reset Interval
Trackball Threshold
Sound Output Mode
AC Power Failure
Auto Shutdown of Task Station after
(LCD Control)
Power Off
Set display brightness
Power Off of Antenna
AIS
Setting Password
Display Size
Horizontal Size
Depth
Synchronization depth alarm limit


Maintenance
Storage
Management
Drive Information
File Information
Operating Time Setup
(Operating Time of Work Station)
Total
Clear
LCD
Clear
LCD FAN
Clear
CCU FAN
Clear
PSU FAN
Clear
UPS
(Setup of UPS)
Setup Date(UTC)
Calendar Icon
Replace Time
Initialization
Set Default (All settings except service)
Set Default (Service settings)

# 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 |
|---|---|
| **A** | |
| 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 |
| AZ | Acquisition Zone |
| AZI | Azimuth Stabilisation Mode |
| **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 |
| BZ | Bearing Zero |
| **C** | |

| Abbreviation | Term |
|---|---|
| C UP | Course Up |
| CA-CFAR | Cell Averaging CFAR |
| Cargo.Cat | Cargo Category |
| 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 | 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 |
| **D** | |
| 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 |

| Abbreviation | Term |
|---|---|
| **E** | |
| EBL | Electronic Bearing Line |
| ECC | Early Course Change |
| ECDIS | Electronic Chart Display and Information System |
| Ed. | Edition |
| EGC | Enhanced Group Calling |
| 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 |
| **F** | |
| FPGA | Field Programmable Gate Array |
| FTC | Fast Time Constant |
| FWD | Forward |
| **G** | |
| 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 |
| **H** | |
| 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 |

| Abbreviation | Term |
|---|---|
| **I** | |
| 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 |
| INT | Interval |
| IP Address | Internet Protocol Address |
| IR | Interference Rejection |
| ISW | Interswitch |
| **J** | |
| **K** | |
| **L** | |
| 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 |
| **M** | |
| 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 |

| Abbreviation | Term |
|---|---|
| MMSI | Maritime Mobile Services Identity Number |
| MOB | Man Overboard |
| MON | Monitor |
| MP | Medium Pulse |
| MSC | Maritime Safety Committee |
| MSG | Message |
| **N** | |
| 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 |
| NMEA0183 | NMEA 0183 standards |
| NMT | Not More Than |
| No. = NUM | Number |
| NW | North West |
| **O** | |
| OPE | Operation |
| OPU | Operation Unit |
| OSD | Own Ship Data |
| OVRD | Override |
| **P** | |
| 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 |
| PWR | Power |
| **Q** | |
| **R** | |
| R | Relative |
| RADAR | Radio Detecting and Ranging |
| RAND | Random |

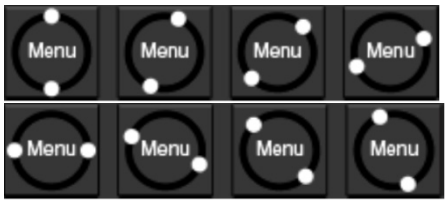
| Abbreviation | Term |
|---|---|
| RCID | Raster Chart Issue Date |
| REF | Reference |
| REL | Relative |
| Rev. | Revolution |
| RIF | Radar I/F Circuit |
| RL | Rhumb Line |
| RM | Relative Motion |
| RM(R) | Relative Motion. Relative Trails. |
| RM(T) | Relative Motion. True Trails. |
| RMS | Root 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 |
| **S** | |
| 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 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 |

| Abbreviation | Term |
|---|---|
| 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 |
| **T** | |
| 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 |
| TPL | Transferred Line of Position |
| Trans | Transducer |
| TRX | Transceiver |
| TT | Target Tracking |
| TTG | Time to Go |
| TX | Transmitter |
| TXRX | Transmitter Receiver Unit |
| **U** | |
| U.Map | User Map |
| UNACK | Un-Acknowledge |
| Up.No. | Update Number |
| USB | Universal Serial Bus |
| UTC | Coordinated Universal Time |
| **V** | |
| VD | Video |
| VDIN | Video In |
| VDR | Voyage Data Recorder |
| Ver. | Version |
| VHF | Very High Frequency |

| Abbreviation | Term |
|---|---|
| VOL | Volume |
| VRM | Variable Range Marker |
| **W** | |
| 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 |
| **X** | |
| XTD | Cross Track Distance |
| XTE | Cross Track Error |
| XTL | Cross Track Limit, Route Width |
| **Y** | |
| **Z** | |
| **Unit** | |
| bps | bit per second |
| cm | centimetre |
| dB | decibel |
| deg | degree |
| fm | fathom |
| ft | feet, foot |
| 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.<br>In the MOB mode, a symbol display of the position of the sailor falling over board and a dotted like connecting it to the own ship are displayed graphically. | |
| 12 | Menu | [Menu] button with freeze indicator function.<br>Displays the menu.<br>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. | |

APP B

| 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.<br>Sets the graph display. | |
| 18 | Alert | Opens the alert related menu.<br>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.<br>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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CODE No.7ZPNA4452E OCT. 2016 Edition 6