FURUNO

INSTRUCTION MANUAL

SETTING AND ADJUSTMENTS

Model **FMD-3100**

This manual is solely for use by the installer. Under no circumstances shall this manual be released to the user.

The installer shall remove this manual from the vessel after installation.

This manual contains no password data. Obtain password data from FURUNO before beginning the installation.

FURUNO ELECTRIC CO., LTD.

www.furuno.com

FURUNO ELECTRIC CO., LTD.

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INTRODUCTION

This manual explains the set up procedures after installing the FMD-3100.

After the software setup is completed, make a backup copy of the configuration data on a removable medium (USB memory, PC, etc.).

Items to prepare

- PC
- LAN cable

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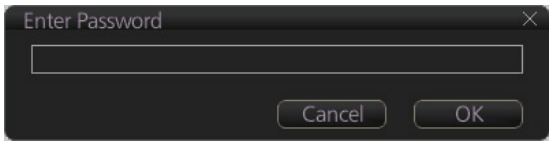
Silent mode

When the vessel is moored and normal functions are not required, you may set the equipment to silent mode.

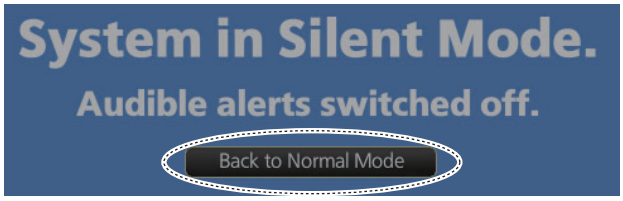
Note: Alerts and buzzers will not function during the silent mode.

To enable the silent mode:

1. Click the [OTHERS] button on the Status bar then click [SILENT].
   You are prompted for a password.



2. Enter "3000", then click the [OK] button.
   The following pop-up window appears.



Click to return to normal operation.

3. To return to normal operation, click the [Back to Normal Mode] button in the pop-up window shown above.

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1. INITIAL SETTINGS AND ADJUSTMENTS

This chapter covers the initial settings and adjustments to be applied after installation of the FMD-3100 is completed.

Note 1: Each unit of the FMD-3100 has a default IP address. Before connecting each unit and building the network, enter the initial settings (Equipment IDs) and change the IP address from the [Basic Setting] menu (see section 1.2). After entering the equipment IDs, connect each unit and build the network. Enter each unit's settings as you connect them, or complete building the network and enter all equipment settings at one time.

Note 2: To ensure the security of the FURUNO network, be sure to connect with non-FURUNO networks via the service gateway (tBOX810-83A-FL).

1.1 Accessing the [Common Installation Setting] Menu

All initial settings for the FMD-3100 and its units are performed using the [Common Installation Setting] menu. This menu works within a web browser.

Access the [Common Installation Setting] menu using one of the two methods below:

- Access via laptop PC using a LAN connection (see section 1.1.1.)
- Access via the Trackball Control Unit RCU-030 (see section 1.1.2.)

Note 1: The following browsers are compatible with this software.

• Internet Explorer®11
• Firefox ESR 68

Note 2: To update the software with the updating file (see section 1.12), access the [Common Installation Setting] menu via LAN connection. To update the software with the DVD, access the [Common Installation Setting] menu with the control unit.

Note 3: The [Alert Define List] menu is not accessible from the Internet Explorer® when the MC-3000S is connected directly to the processor unit. Connect the MC-3000S via the PCU-3000, or use Firefox.

1.1.1 Laptop PC (LAN connection) access

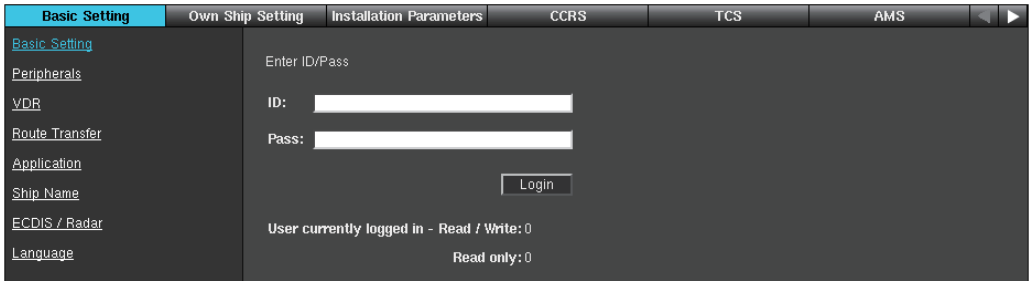
1. Set the IP address and subnet mask of the PC according to the LAN port where the PC is connected, referring to the table below:

LAN port	IP address/Subnet mask	Setting
LAN1 (Gateway network)	IP Address	192.168.31.200
	Subnet mask	255.255.255.0
LAN2 (Sensor network)	IP Address	172.31.16.200
	Subnet mask	255.255.0.0

2. Connect the PC to LAN port 1 or 2 with a LAN cable.
   Note: It is possible to connect to LAN1 or LAN2 using a LAN hub. In order to operate from the [Basic Setting] menu, however, turn all units off, except the unit to be set up. Enter settings for all other units in this manner.
3. Open a web browser on the laptop PC.
4. Enter the appropriate IP address in the browser's address bar, referring to the table below.

	Access point	IP Address
For initial setting	Gateway Network	192.168.31.1
	Sensor Network	172.31.16.1
For re-setting the unit	Gateway Network	Enter the IP address of the gateway or sensor network according to the Equipment ID used in the system. See the Equipment ID list at the back of this manual.
	Sensor Network	

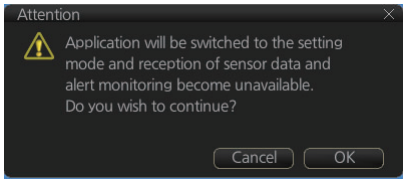
When entering the IP address on the address bar, you are asked to enter ID and password.



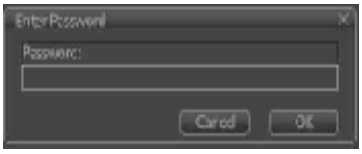
5. Enter ID and password, then click [Login] to access the [Common Installation Setting] menu.

1.1.2 Trackball Control Unit (RCU-030) access

1. Click the [] icon on the Status bar, then select [Settings]. The pop-up message shown below appears.

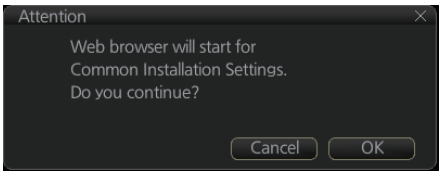


2. Click [OK] to show the [Settings] menu.
3. Click [SERVICE MODE] on the Status bar, then select [Service Login].
   A dialog box for password entry appears.

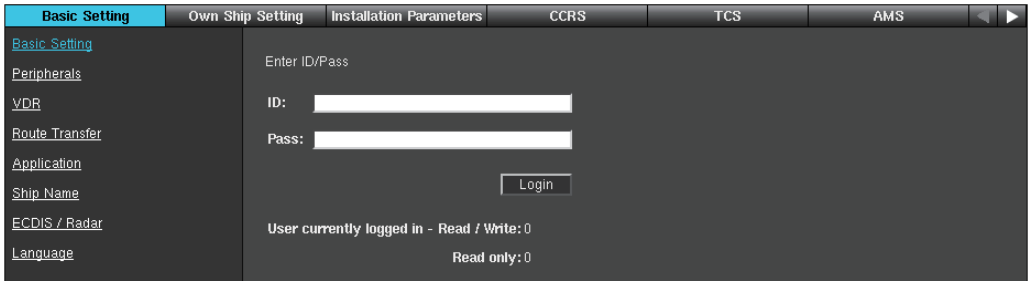


4. Use the software keyboard to enter the password and click [OK]. "Service Mode" is now displayed at the bottom left of the Settings window.
   Note: You can use the optional hardware keyboard to enter the password if you have one installed.

5. Click [SERVICE MODE] on the Status bar, then select [Common Installation Settings]. The message shown below appears.

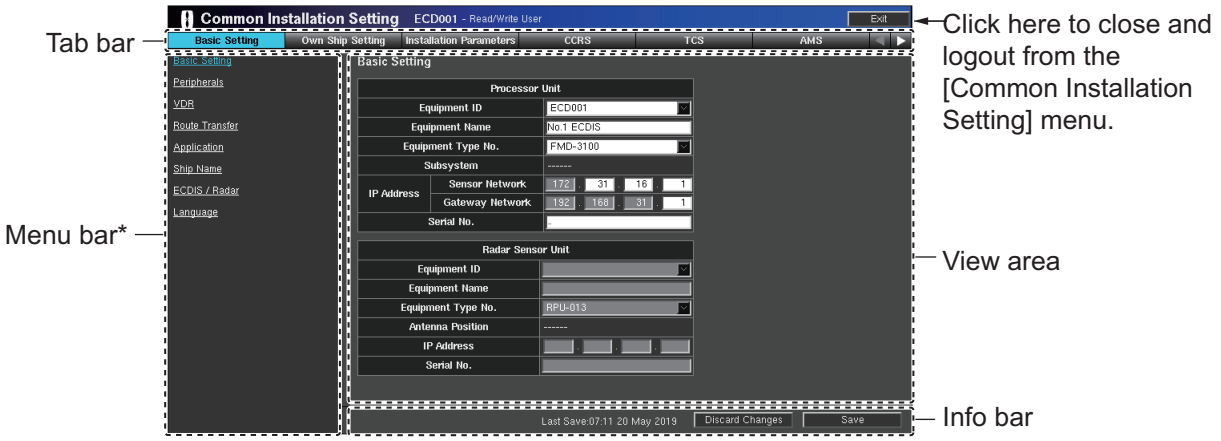


6. Click [OK] to activate the web browser and show the dialog box asking for ID and password.



7. Enter the ID and password, then click [Login] to access the [Common Installation Setting] menu.

1.1.3 Common installation setting menu contents



*: Selected item is highlighted in blue.

Click [Exit] to close and logout from the [Common Installation Setting] menu. You can close and logout by clicking ✕ on the web browser. However the menu can not be re-accessed for a while.

The selected tab is highlighted in blue on the tab bar. The view area and menu bar change according to the tab selected.

Click [◀ (or ▶)] at the tab bar to shift the tab to the left (or right).

Note: If the tab bar does not move when clicking either [◀ (or ▶)], clear the browser cache.

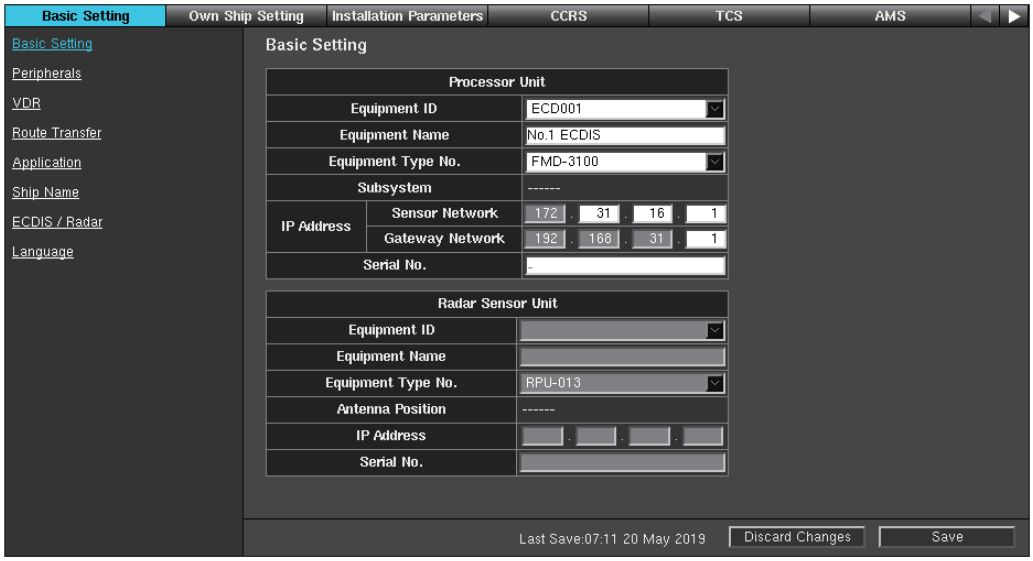
Tab bar menu item	Description
[Basic setting]	Sets the equipment ID, monitor, printer and own ship information.
[Own Ship Setting]	Enters the ship's parameters and sensor positions.
[Installation parameters]	Sets the system configuration and input/output data.
[CCRS]	Sets the priority of the sensors and NMEA sentences.
[TCS]	Sets route output-related settings.
[AMS]	Sets the AMS and relevant settings.
[Alert Define List]	Sets the alerts.
[Data Sharing]*	Sets the interlocking system between units.
[Save and Sync]	Saves and synchronizes the settings. Settings can also be saved to a removable medium.
[System Monitor]	Confirms the system condition.
[Software Update]	Updates the software.
[Factory Test and Default]	Performs the factory test or restores default settings.
[Conning]	Configures the mini-conning display.

*: Does not require adjustment.

1.2 [Basic Setting] Menu

1.2.1 [Basic Setting] window

1. Access the [Common Installation Setting] menu, then click [Basic Setting] on the tab bar.



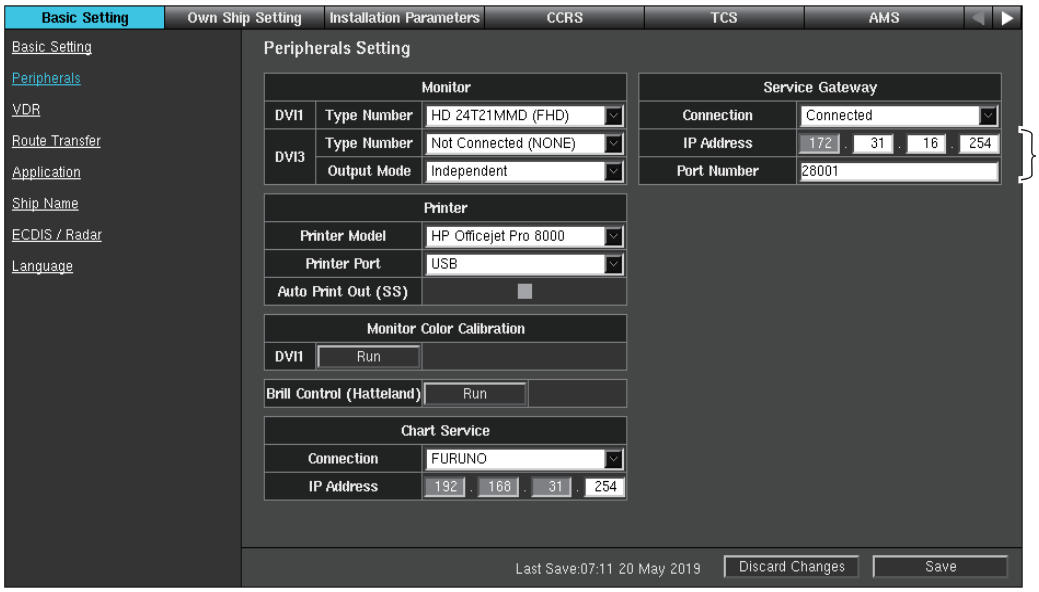
2. Select the [Equipment ID] from the drop-down list (setting range: [ECD001] to [ECD016]).
   The [Equipment Name], [Equipment Type No.], and [IP Address] are automatically entered according to the Equipment ID. For details, see the Equipment ID list at the back of this manual.
   Note 1: For the first ECDIS, set [Equipment ID] to "ECD001".
   Note 2: Assign a different [Equipment ID] to each unit in the network.

Note 3: [Serial No.] is entered before shipment. If you change the SSD or delete [Serial No.] by mistake, click the [Serial No.] box to enter the serial number of the PCU (example: xxxx-xxxx).

3. Confirm that [FMD-3100] is shown for [Equipment Type No.]. If not, select [FMD-3100] from the [Equipment Type No.] drop-down menu.
4. Click [Save] on the info bar. Several confirmation messages appear. Click [OK] to reboot the system. To discard all changes, click [Discard Changes].

1.2.2 [Peripherals] window

1. Access the [Common Installation Setting] menu and click [Basic Setting] on the tab bar.
2. Click [Peripherals] on the menu bar.

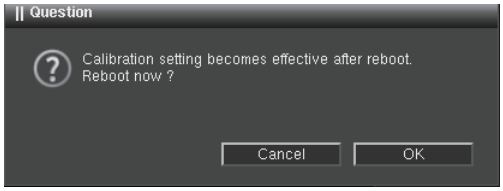


*: Shown when [Connected] is selected in [Connection] of [Service Gateway].

3. Confirm that the menu items for [Monitor] are entered as follows.

[DVI1]	[Type Number]:	[HD 24T21MMD (FHD)]
[DVI3]	[Type Number]:	[Not Connected (NONE)]
	[Output Mode]:	[Independent]

4. Click the [Run] button for [Monitor Color Calibration] to perform the color calibration.
   "Processing" appears at the next to the [Run] button during the color calibration. After completing the calibration, check result appears ([Succeeded] or [Failed]). When the check result is [Succeeded], the following confirmation message appears. Click the [OK] button to reboot the system and apply the calibration setting. When the check result is [Failed], retry the color calibration. If the error is not rectified, contact your dealer.



Note: Be sure to perform the color calibration. If the calibration is not performed, you cannot adjust the monitor brilliance.

5. Access the [Common Installation Setting] menu and open the [Peripherals] window again.
6. Select the Printer type from the [Printer Model] drop-down menu.

Setting option	Remarks
[HP Officejet Pro 8000]	Connect the printer to LAN1 port or USB port, and then set the IP address of the printer to "192.168.31.241". For how to set the IP address of the printer, see the operator's manual of the printer.
[HP Officejet Pro 8100]	
[HP Officejet Pro 8210]	
[HP Officejet 100 Mobile]	Connect the printer to the USB port of the processor unit.
[HP Officejet 200 Mobile]	

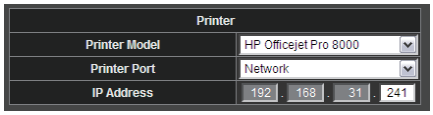
Note 1: For no printer, set [Printer Mode] to [HP Officejet 100 Mobile].

Note 2: The printer HP Officejet Pro 8000 Enterprise Printer can not be connected to the PCU.

7. Select the port to which the printer is connected from the [Printer Port] drop-down menu.

Printer	Printer Port
HP Officejet 100 Mobile/HP Officejet 200 Mobile/ Not Connected	[USB]
HP Officejet Pro 8000/HP Officejet Pro 8100/ HP Officejet Pro 8210	[USB], [Network]

- [USB]: Only the FMD-3100 connected to the printer can print.
- [Network]: FMD-3100s in the same network can print. The IP address of the printer is shown on the [Printer] screen. Do not change the IP address.



8. To automatically print images captured with [Screenshot] function, check the checkbox for [Auto Print out (SS)].
9. Select the chart data storage equipment from the [Connection] pull-down list in the [Chart Service] field. The IP address is automatically displayed. For [FURUNO] or [NAVTOR], do not change the IP address setting.

- [Not Connected]: Not connected to chart data storage equipment.
- [FURUNO]: Connected to the FURUNO Gate-1.
- [NAVTOR]: Connected to the NAVTOR NavBox.
- [NeCST]: Not used.
- [Cornes]: Connected to the ConnectNAS (Its IP address should be 192.168.31.231).

10. To connect a service gateway to the PCU-3000, select [Connected] at [Service gateway] then the IP address and the port number appear below the [Connected] item. Do not change these settings.
11. Click [Save] on the info bar. Several confirmation messages appear. Click [OK] to reboot the system. To discard all changes, click [Discard Changes].

1.2.3 [VDR] window

1. Access the [Common Installation Setting] menu and click [Basic Setting] on the tab bar.
2. Click [VDR] on the menu bar.

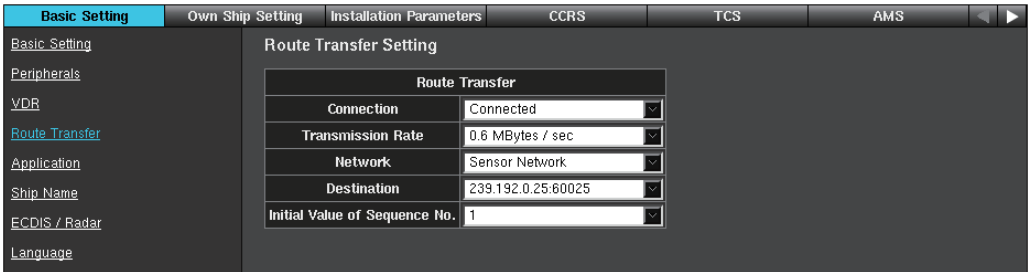
3. If a VDR is connected, select [Connected] from the [Connection] pull-down list. Refer to the table below to set the items in the menu.

Menu item/ interactive field	Description
[Monitor]	Select the DVI port connected with the VDR.
[Transmit per 15 sec.]	Set the number of transmissions in 15 seconds.
[Transmission Rate]	Set the transmitting rate.
[Image Format]	Set the image format.
[JPEG Quality]	Set the quality of JPEG data. (Available when [JPEG] is selected for [Image Format].)
[Network]	Select the network connected with the VDR
[Transmission Timing]	Set the delay timing.
[Destination]	Set the IP address and port of the destination.
[Source]	Set the status and information text, max. 16 characters.
[Location]	Set the status and information text, max. 32 characters.
[Initial Value of Sequence No.]	Set the initial value for the binary transmission sequence number (IEC61162-450 compliant) to be used when transmitting video to a VDR.

4. Click [Save] on the info bar. Several confirmation messages appear. Click [OK] to reboot the system. To discard all changes, click [Discard Changes].

1.2.4 [Route Transfer] window

1. Access the [Common Installation Setting] menu and click [Basic Setting] on the tab bar.
2. Click [Route Transfer] on the menu bar.



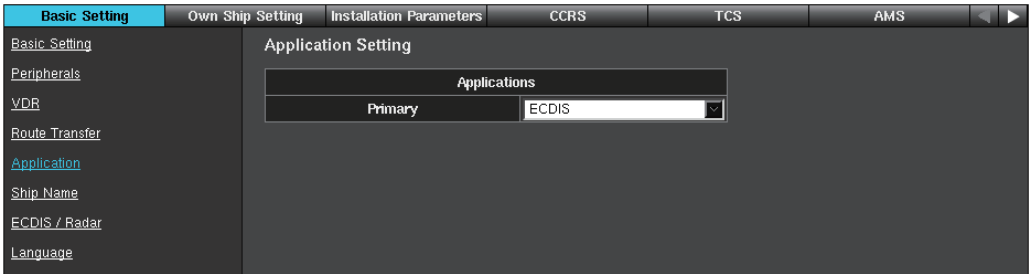
3. To transfer data to a specified network, select [Connected] from the [Connection] pull-down list.

Menu item	Description
[Connection]	Select [Connected] to transfer the data.
[Transmission Rate]	Set the transmission rate.
[Network]	Select the destination network for route data.
[Destination]	Set the IP address and port of the destination.
[Initial Value of Sequence No.]	Set the initial value for the binary transmission sequence number (IEC61162-450 compliant) to be used when transferring route data to a device(s) connected to the LAN.

4. Click [Save] on the info bar. Several confirmation messages appear. Click [OK] to reboot the system. To discard all changes, click [Discard Changes].

1.2.5 [Application] window (setting is not required)

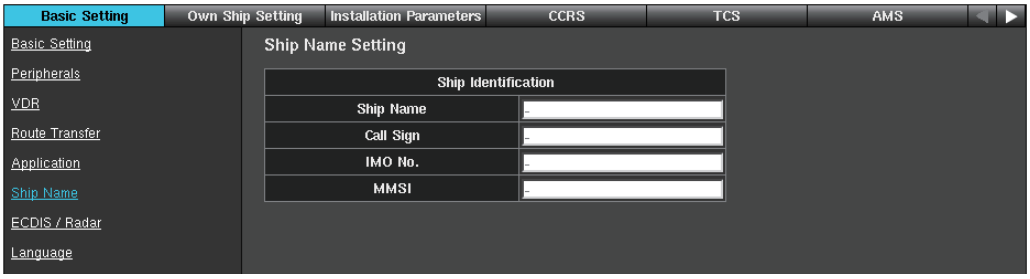
Do not change the setting on the [Application] window of the [Basic Setting] menu. Confirm that [Primary] is set to [ECDIS], if the setting is not [ECDIS], change it to [ECDIS].



1.2.6 [Ship Name] window

1. Access the [Common Installation Setting] menu and click [Basic Setting] on the tab bar.

2. Click [Ship Name] on the menu bar.



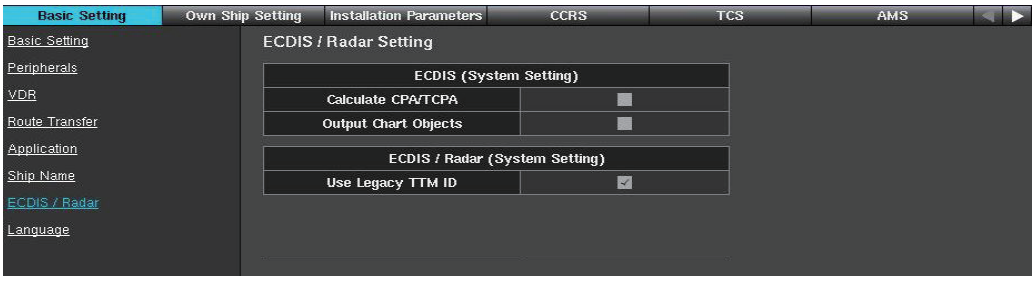
3. Enter your ship information. The data entered here is included in any printing.

   [Ship Name]: Own ship's name. [Call Sign]: Own ship's call sign
   [IMO No.]: Own ship's IMO no. [MMSI]: Own ship's ID

   Note: The FMD-3100 can display own ship's data input from AIS, on the [Own Ship] page in the [Nav Status] menu. The data entered here is not reflected to the AIS data.

4. Click [Save] on the info bar. Several confirmation messages appear. Click [OK] to reboot the system. To discard all changes, click [Discard Changes].

1.2.7 [ECDIS/Radar] window



Item	
[Calculate CPA/TCPA]	Setting cannot be changed. Keep "unchecked."
[Output Chart Objects]	Turn output of AR-100M chart objects on or off. Check the box to output. **Note:** If checked, set [Output Route Data Setting] ([TCS] menu→[Other Setting] tab) to [File and RMB].
[Use Legacy TTM ID]	Sets the behavior when the TTM sentence contains "ID = 0". Set according to the range of TTM ID of the connected device. **Note 1:** "N/A" means setting has no influence on system. **Note 2:** There is no problem if item is "checked" when a FURUNO radar is used.

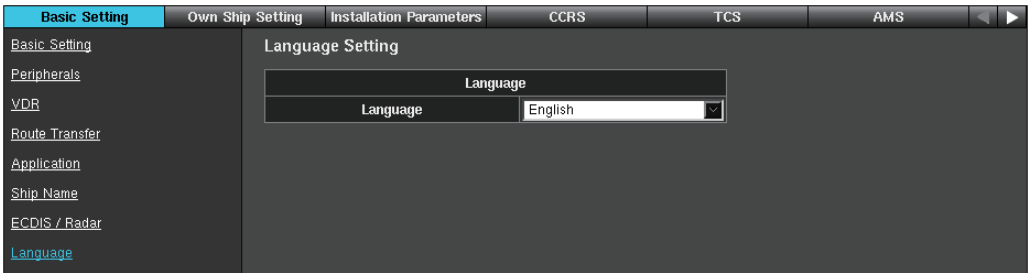
Radar manufacturer	TTM ID Setting range	Recommended setting
FURUNO	00~99	Checked
	01~200	N/A
Other	00~99	Checked
	01~99	N/A
	00~999	Unchecked
	01~999	N/A

1.2.8 [Language] window

The menu language for the everyday operating screens can be set to English or Japanese. The [Common Installation Setting] menu has English menus only.

Note: This language setting is synchronized with all units on the network. Reboot the synchronized unit(s) to use the selected menu language.

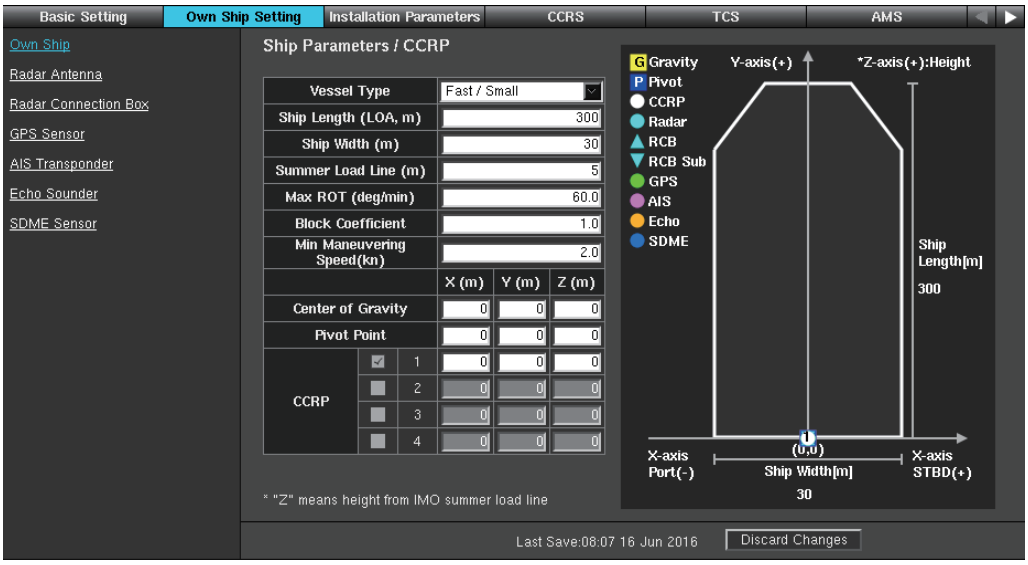
1. Access the [Common Installation Setting] menu and click [Basic Setting] on the tab bar.
2. Click [Language] on the menu bar.



3. Select [English] (default) or [Japanese].
4. Click [Save] on the info bar. Several confirmation messages appear. Click [OK] to reboot the system. To discard all changes, click [Discard Changes].

1.3 [Own Ship Setting] Menu

Enter the information for ship parameters/CCRP, antenna unit, GPS sensor, AIS transponder, echo sounder (E/S), and SDME sensor. Sensor symbols are displayed on the right half of the screen. There are six colors to show their priority: white (CCRP), cyan (radar), green (GPS), magenta (AIS), orange (E/S) and blue (SDME) in that order.

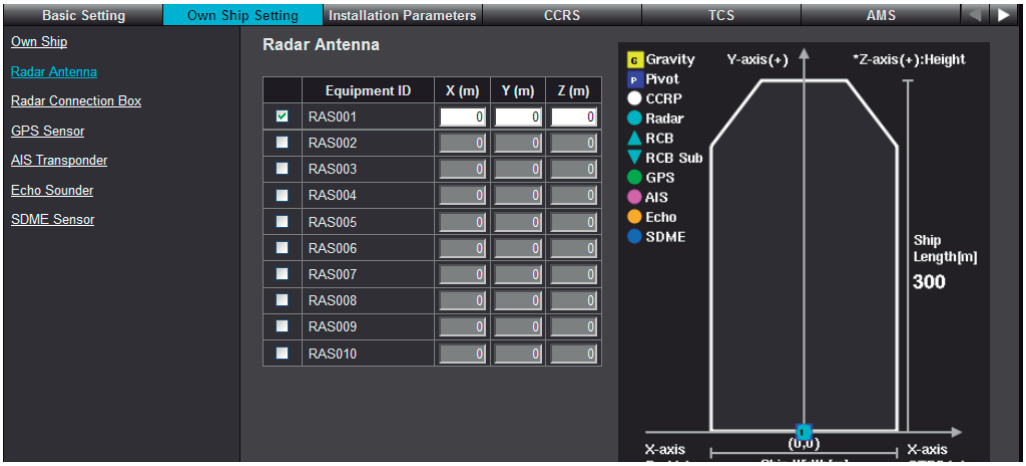


1. Access the [Common Installation Setting] menu and click [Own Ship Setting] on the tab bar.

2. Activate each field and enter own ship's data, using the table below for reference.

Menu item/interactive field	Description
[Vessel Type]	Own ship type among [Fast/Super Small], [Fast/Small], [Slow/Big] and [Super Tanker].
[Ship Length (LOA, m)]	Own ship's length, in meters.
[Ship Width (m)]	Own ship's width, in meters.
[Summer Load Line (m)]	Distance between own ship's bottom and the summer load line, in meters.
[MAX ROT (deg/min)]	Own ship's maximum angular velocity (Rate of turn).
[Block Coefficient]	Own ship's block coefficient.
[Min Maneuvering Speed (kn)]	Minimum maneuvering speed. This value is used as the threshold for the Low Speed Alarm.
[Center of Gravity]	Own ship's center of gravity, in meters, set by X, Y and Z axis.
[Pivot Point]	Own ship's pivot point, in meters, set by X, Y and Z axis. Approximately 80% of the ship's length is recommended for the pivot point.
[CCRP]	Select the [CCRP] you wish to setup by clicking the check box to the left of each CCRP number. You can set up a maximum of four CCRP positions. Set up of [CCRP1] is required.

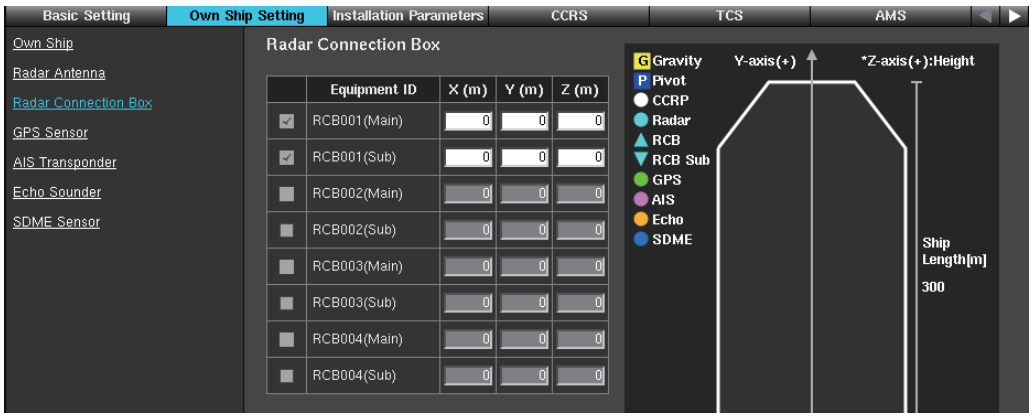
3. Click [Radar Antenna] on the menu bar.



Note: When you set the value for [Antenna Position] on the [Installation Parameters] menu, the setting value is shown at the right of [Equipment ID].

4. According to the number of antenna units connected to the PCU, check applicable checkbox to activate the antenna unit(s).
   You can activate up to four antenna units. Setting range: [RAS001] to [RAS004]. Do not select [RAS005] to [RAS010]. Setup the antenna units activated here on the [Installation Parameters] menu (see section 1.4.5).
   Note 1: Activate all antenna units connected to the FMD-3100.
   Note 2: For an FAR-2××7 and FAR-2××8 series radar antenna, set the antenna no. (Equipment ID), taking care not to duplicate the Equipment ID of other radars. For how to set the antenna no., see the installation manual of the radar.
5. Enter the position data of antenna unit(s) in the boxes [X (m)], [Y (m)], and [Z (m)].
6. Enter the information for the GPS sensor, AIS transponder, echo sounder, and SDME sensor in a similar manner.
   Note: When using the Radar Connection Box (RCB-002), make sure you input the location information for the external radar antenna. Also, when multiple RCB-002s

are connected to the same network, change the IP address of the RCB-002s, referring to "SUBSYSTEM" on page AP-3.



- [RCB00× (Main)] (×: 1 to 4): Input the location information of the external radar antenna that is connected to the [RADAR SIGNAL IN No.1] port.
- [RCB00× (Sub)] (×: 1 to 4): Input the location information of the external radar antenna that is connected to the [RADAR SIGNAL IN No.2] port. Set parameters for the [RCB00× (Main)] before setting parameters for the [RCB00× (Sub)].

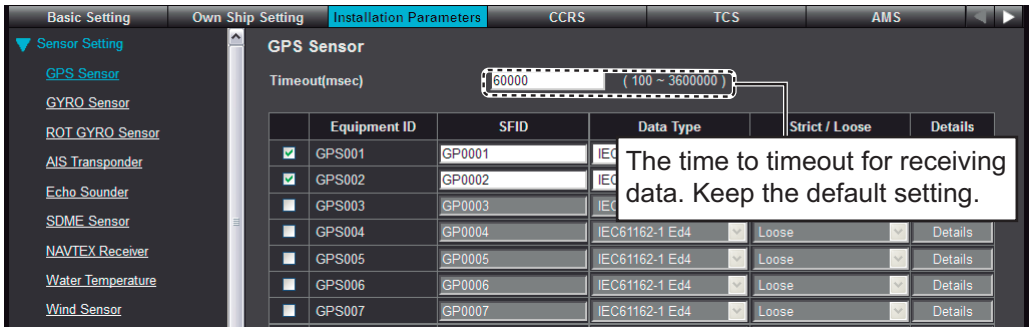
7. To save the configuration, perform a consistency check, then save the configuration data on the [Save and Sync] menu.

1.4 [Installation Parameters] Menu

The [Installation Parameters] menu sets the signals and input data of the sensors. First, select the sensor data at the [Sensor Setting] window. Then select the sensor from which the units (radar sensor (antenna unit), MFD, ECDIS, radar, and sensor adapter) obtain the sensor data.

1.4.1 Sensor setting

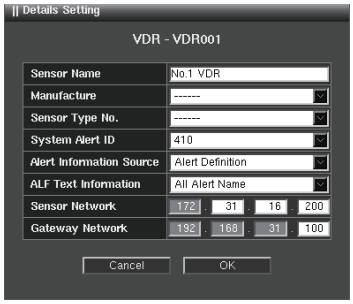
1. Access the [Common Installation Setting] menu and click [Installation Parameters] on the tab bar.
2. Click [Sensor Setting] on the menu bar, then click [GPS Sensor].



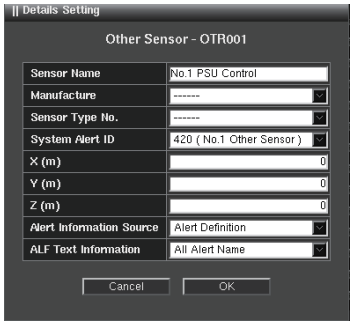
3. Check applicable check boxes according to the number of GPS receivers connected.
4. Set the following items for the units activated at step 3.

Data field	Comments
[SFID]	Keep the default setting. Do not use the “AI” prefix (AIS excluded) or the “II” prefix.
[Data Type]	Sets the RX sentence data format. Setting options: [IEC 61162-1 Ed3], [IEC 61162-1 Ed4], [IEC 61162-1 Ed5], [ASCII], [BINARY], [MODBUS], [PSU]. Do not select [ASCII] or [BINARY].
[Strict/Loose]	Sets the integrity of sentence data. [Strict]: Confirm the validity of checksum, then receive sentence. [Loose]: Receive sentence regardless of checksum invalidity.

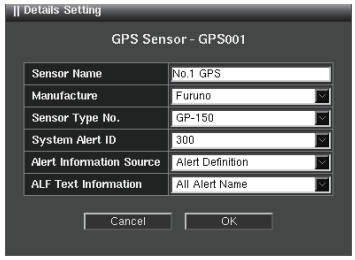
5. Click the [Details] button to set the following items, referring to the table shown below.



For [VDR]



For [Other Sensor]



For other units

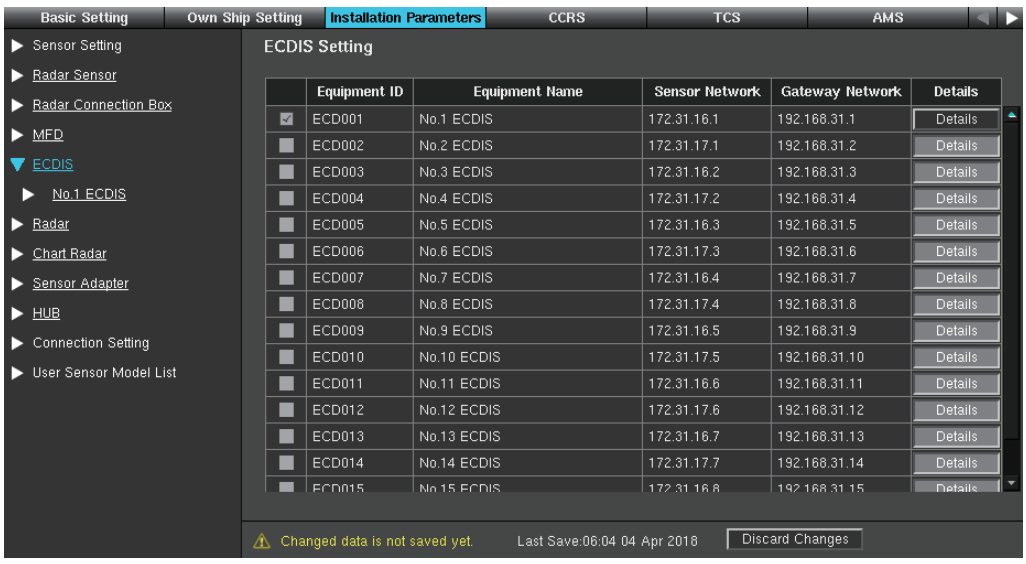
Item	Remarks
[Sensor Name]	Enter the appropriate sensor name.
[Manufacture]	Select the manufacturer of sensor from the pull-down list. **Note:** If the required manufacturer does not appear, add it manually (see section 1.4.9).
[Sensor Type No.]	Select the type of sensor from the pull-down list. **Note:** If the required type does not appear, add it manually (see section 1.4.9).
[System Alert ID]	The identification number that is assigned in the system is shown in this field. Do not change the setting.
[X (m)], [Y (m)], [Z (m)]	Set the location of X, Y and Z for [Other Sensor] only.
[Alert Information Source]	Set the source of alert definition to show on the display when the alert message is received in an ALF sentence. • [Alert Definition]: Show the alert definition registered to the PCU. • [Alert Sentence]: Show the alert definition included in the ALF sentence.

Item	Remarks
[ALF Text Information]	Select the type of the 2/2 packet text information of ALF sentence. • [All Alert Name]: Select this item if all alert text is included in the 2/2 packet of the ALF sentence. The text information on the 2/2 packet of the ALF sentence is shown as the alert name in the alert list/log. • [Remaining Alert Name]: Select this item if the alert text is divided in 1/2 and 2/2 packets of the ALF sentence. The text information for both the 1/2 and 2/2 packets of the ALF sentence is shown as the alert name in the alert list/log. • [Decision Support]: Select this item if the alert details information (Decision Support) is included in the 2/2 packet of the ALF sentence. The text information for the 2/2 packet of the ALF sentence is shown as the alert details in the alert list/log.
[Sensor Network]	Set the IP address of sensor network for [VDR] only.
[Gateway Network]	Set the IP address of gateway network for [VDR] only.

6. Set [Gyro Sensor], [ROT GYRO Sensor], [AIS Transponder], [Echo Sounder], [SDME Sensor], [NAVTEX Receiver], [Water Temperature], [Wind Sensor], [Magnet Compass Sensor], [Current Sensor], [Rudder Sensor], [HCS], [VDR], [BNWAS], and [Other Sensor] similarly.
   Note: Only sensors connected to the PCU should be set.
7. To save the configuration, perform a consistency check, then save the configuration data on the [Save and Sync] menu.

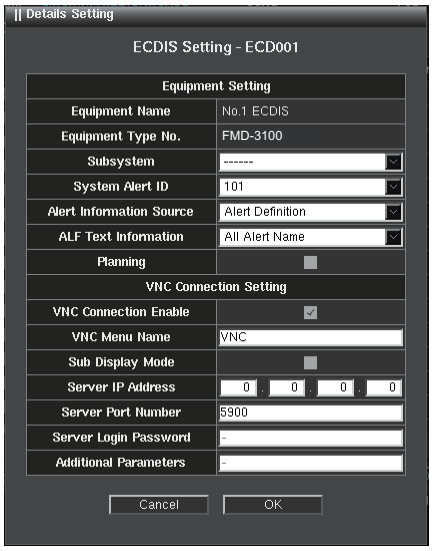
1.4.2 PCU-3000 configuration

1. Select [ECDIS] on the menu bar.



2. Check applicable checkbox to activate the corresponding PCU-3000.
   The Equipment ID checked on this step is shown on the menu bar.
   The maximum number of PCU-3000s that can be connected is three.
   Note: Do not check PCU-3000s not used, to prevent trouble.
   Check only the PCU-3000s to be used.

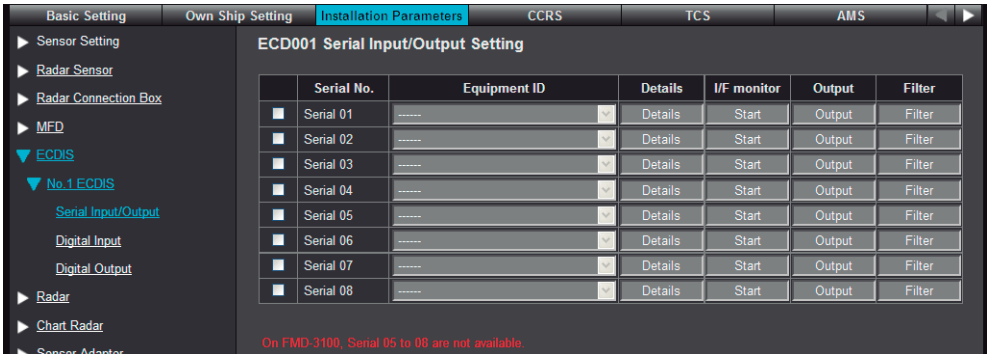
3. Click the [Details] button and set the items referring to the table shown below.



Item	Remarks
[Subsystem]	Set this menu item to share the sensor data through HUB-3000. For subsystem details, see page AP-3. When sharing the sensor data: Set the value. Setting range: “A” to “Z”. To not share the sensor data: Keep the default setting (“---”).
[System Alert ID]	The identification number that assigned in the system is shown in this field. Do not change the setting.
[Alert Information Source]	Set the source of alert definition to show on the display when the alert message is received in an ALF sentence. • [Alert Definition]: Show the alert definition registered to the processor unit. • [Alert Sentence]: Show the alert definition included in the ALF sentence.
[ALF Text Information]	Select the type of the 2/2 packet text information of ALF sentence. • [All Alert Name]: Select this item if all alert text is included in the 2/2 packet of the ALF sentence. The text information for the 2/2 packet of the ALF sentence is shown as the alert name in the alert list/log. • [Remaining Alert Name]: Select this item if the alert text is divided in 1/2 and 2/2 packets of the ALF sentence. The text information for both the 1/2 and 2/2 packets of the ALF sentence is shown as the alert name in the alert list/log. • [Decision Support]: Select this item if the alert details information (Decision Support) is included in the 2/2 packet of the ALF sentence. The text information for the 2/2 packet of the ALF sentence is shown as the alert details in the alert list/log.
[Planning]	Check the checkbox to assign the planning ECDIS. The planning ECDIS is a master unit to share the route data. For details of sharing the route data, see the operator’s manual of the ECDIS. **Note:** Alerts are not displayed on the planning ECDIS.

Item	Remarks
[VNC Connection Enable]	No use.
[Sub Display Mode]	
[Server IP Address]	
[Server Port Number]	
[Server Login Password]	
[Additional Parameters]	

4. Click [Serial Input/Output] of [No.1 ECDIS] on the menu bar.
   The PCU-3000 has four serial interface ports ([Serial 01] to [Serial 04]).

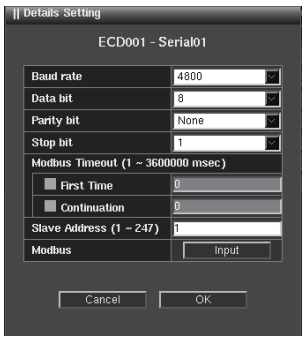
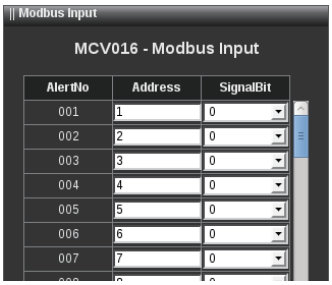


   [Serial 01] and [Serial 02] can input/output at 38,400 bps. For high-speed signal input (such as AIS and Gyro), click [Details] to set the baud rate as 38,400 bps. The connector no. on the I/O board of the panel computer unit PCU-3000 and the corresponding serial port no. are shown in following tale.

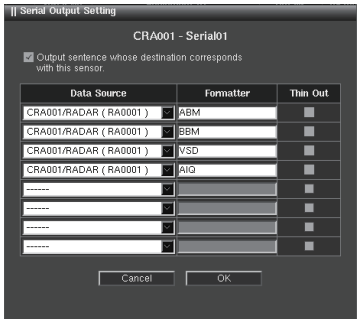
Connector No.	Serial Port No.
COM1 (C1)	Serial 01
COM2 (C2)	Serial 02
COM3 (C3)	Serial 03
COM4 (C4)	Serial 04

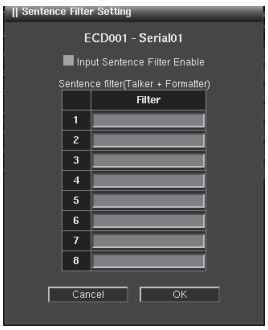
5. Check the applicable checkboxes of [Serial No.] according to sensor connection.
6. Set the items referring to the table shown below.

Item	Remarks
[Equipment ID]	Select the Equipment ID from the drop-down list. The drop-down list options depend on the setting at [Sensor Setting].

Item	Remarks
[Details]	Sets the serial communication format.  • [Baud rate]: Sets the baud rate. For high-speed signal input (such as AIS and Gyro), set the baud rate as 38,400 bps The available serial ports with communication in 38,400 bps are [Serial 01] and [Serial 02] (For sensor adapters, [Serial 01] to [Serial 04]). • [Data bit]: Sets the number of the data bit. • [Parity bit]: Select [Odd] or [Even] for the parity bit. The parity bit is used in parity error checking to find errors that may occur during data transmission. When you do not use the parity bit, select [None]. • [Stop bit]: Sets the stop bit (last data bit location). • [Timeout (sec)][*1]: When the data is not input during the time set here, timeout alert occurs. • [First Time][*2]: Check to activate and change setting. Set the amount of timeout until the sensor's first signal is detected after startup. • [Continuation][*2]: Check to activate and change setting. Set the timeout time until discovering that the signal is lost, after detecting the initial signal. • [Slave Address][*2]: Sets the slave address for the Modbus communication. • [Input] button[*2]: Sets the address and the signal bit for each alert on the [Modbus Input] window. On this window, alerts whose [Input Type] is set for [MODBUS] when setting alert definition (see section 1.8.6) appear.  • [Forward sensor data][*3]: Check the checkbox to forward data input from the serial port to the sensor adapter. Normally keep the default setting (unchecked). [*1] Not shown for ECDIS, sensor adapter serial input/output setting whose [Data Type] is selected to [MODBUS] (see section 1.4.1). [*2] Shown for the ECDIS, sensor adapter serial input/output setting whose [Data Type] is selected to [MODBUS] (see section 1.4.1). [*3] Not shown for the sensors whose [Data Type] is selected to [MODBUS] (see section 1.4.1).
[I/F monitor]	Click [Start] to monitor the input signal sentences from the interface.

Item	Remarks

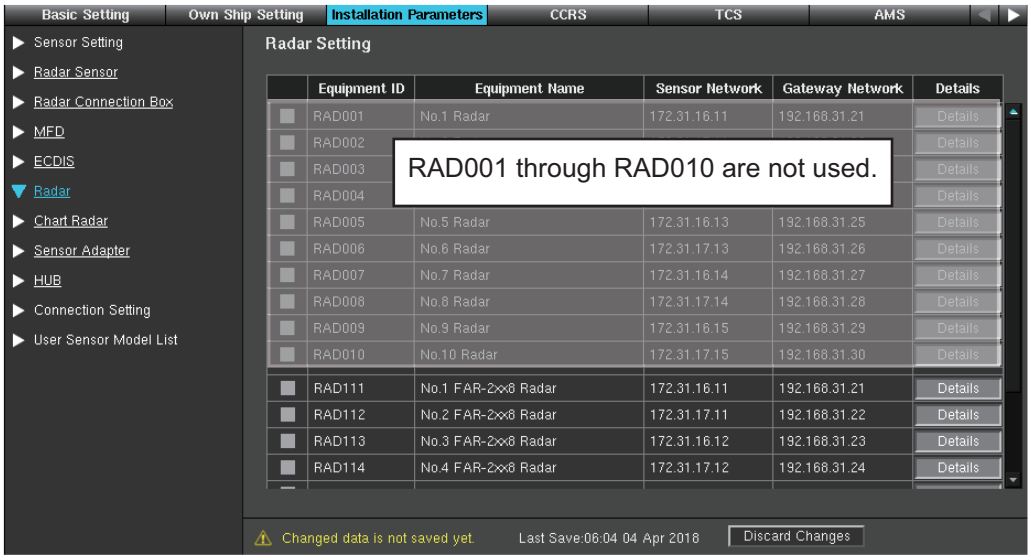
[Output]	Sets the output sentence formats from the serial port.
	• [Output sentence whose destination corresponds with this sensor.]: Check the checkbox to activate any of the following items.
	  • To output the ACK and HBT sentences in response to the ALR sentence from the external sensor.
	  • To output the ACN and HBT sentences in response to the ALF sentence from the external sensor.
	• [Data Source]: Select the serial source from the pull-down list.
	• [Formatter]: Input the formatter for serial output. Up to eight sentences can be input for one source. For example, input “HDT,ROT” to set the HDT and ROT sentences.
	• [Thin Out]: Check the checkbox to output with a lower transmission rate when forwarding data.
	Note 1: The ECDIS can send NAV STATUS (ship’s condition) and messages to an AIS transponder. Output the sentences VSD, ABM, AIQ and BBM, when an AIS transponder is connected.
	Note 2: Output the CRQ sentence to show the NAVTEX receiver mask information. For details about the NAVTEX receiver mask information, see the operator’s manual.
	Note 3: When the following setting is entered, the ECDIS outputs the EVE sentence. In this case, the maximum transmission cycle is one second.
	• [Data Source]: ECD***/ALERT or CRA***/ALERT
	• [Formatter]: EVE
	***: Changed according to the equipment ID.
	 

[Filter]	Activates or deactivates the input sentence filter. Check the checkbox to use only the specified sentences. For example, to use the HDT sentence when the HDT and ROT sentences are received, check the checkbox and enter “HDT” in the [Filter] column. **Note:** If it is not possible to input limit to the Talker, enter ** (wild card), before sentence name. For example, "**HDT". 

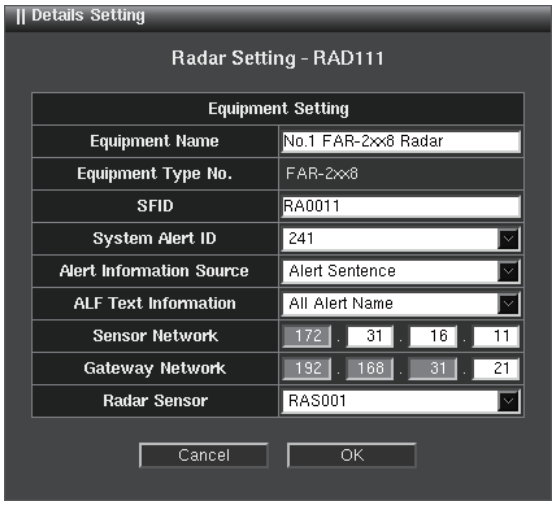
7. Repeat the procedures from step 3 to enter the settings to another ECDIS unit.
8. To save the configuration, perform a consistency check, then save the configuration data on the [Save and Sync] menu.

1.4.3 Activating the connection with the processor unit of the FAR-2xx8 series radar

1. Click [Radar] on the menu bar.



2. Check the check for each FAR-2××8 series radar processor unit to be connected.
   Setting range: [RAD111] to [RAD118]
   The Equipment ID checked on this step is shown on the menu bar.
   Note: Do not use [RAD001] to [RAD010].
3. Click the [Details] button to set the following items, referring to the table shown below.



Item	Remarks
[Equipment Name]	Enter the name of the equipment.
[Equipment Type No.]	Shows the equipment type number.
[SFID]	Keep the default settings.
[System Alert ID]	The identification number that is assigned in the system is shown in this field. Do not change the setting.

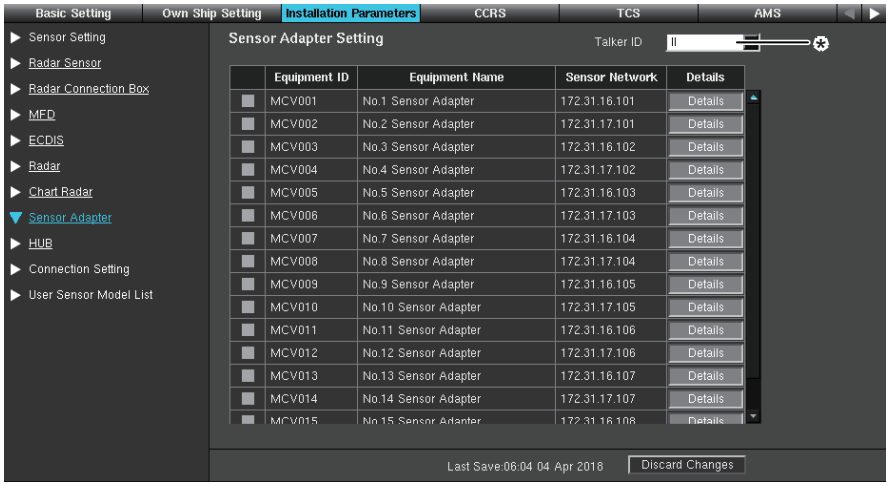
Item	Remarks
[Alert Information Source]	Select source of alert definition information to be displayed on the screen when alert occurrence is received in the ALF sentence. • [Alert Definition]: Display according to the alert definition stored in this equipment. • [Alert Sentence]: Displays based on alert definitions included in the ALF sentences.
[ALF Text Information]	Select the text information type of 2/2 packet of ALF sentence. • [All Alert Name]: The 2/2 packet of the ALF sentence contains all information of alert text. The text information of 2/2 packet of the ALF sentence is displayed as an alert name in the alert list/log. • [Remaining Alert Name]: Alert text is split into 1/2 packet and 2/2 packet of the ALF sentence. The text information of the 1/2 packet and 2/2 packet of the ALF sentence is displayed as an alert name in the alert list/log. • [Decision Support]: The 2/2 packet of the ALF sentence includes the detailed information (Decision Support) of the alert. Text information of the 2/2 packet of the ALF sentence is displayed as alert details of alert list/log.
[Sensor Network]	Shows the IP address of the sensor network. Do not change the setting.
[Gateway Network]	Shows the IP address of the gateway network. Do not change the setting.
[Radar Sensor]	Select the Equipment ID of the antenna unit connected with the processor unit.

4. To save the configuration, perform a consistency check, then save the configuration data on the [Save and Sync] menu.

1.4.4 Sensor adapter configuration

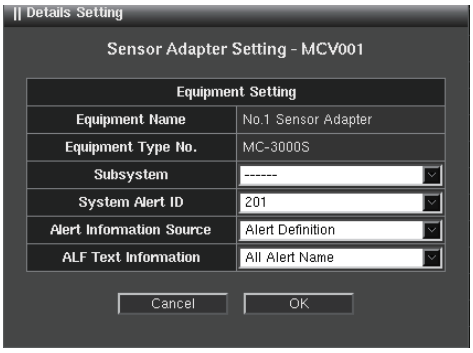
A maximum of eight MC-3000S Sensor Adapters can be connected to the sensor network. In case of the redundant configuration, sixteen sensor adapters can be connected to the network. The MC-3000S can connect a max. ten additional units (MC-3020D/MC-3030D).

1. Click [Sensor Adapter] on the menu bar.

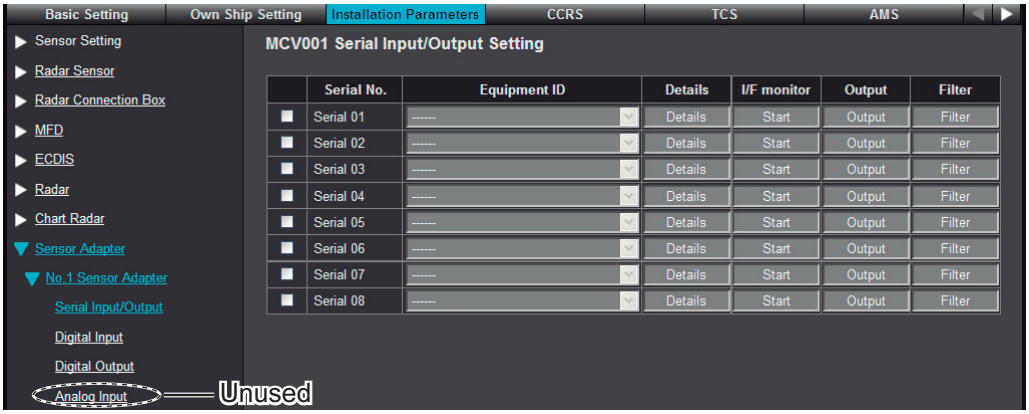


*: Set the talker of the sentence output by the sensor adapter, [II] or [SI]. Normally, keep the factory setting ([II]). Select [SI] only when it is necessary to change the talker of the sensor adapter due to the connection with other devices.

2. Check the check box of [MCV001] to activate.
3. Click [Details] to display the window as shown below. For the descriptions of the each items, see step 3 of section 1.4.2.



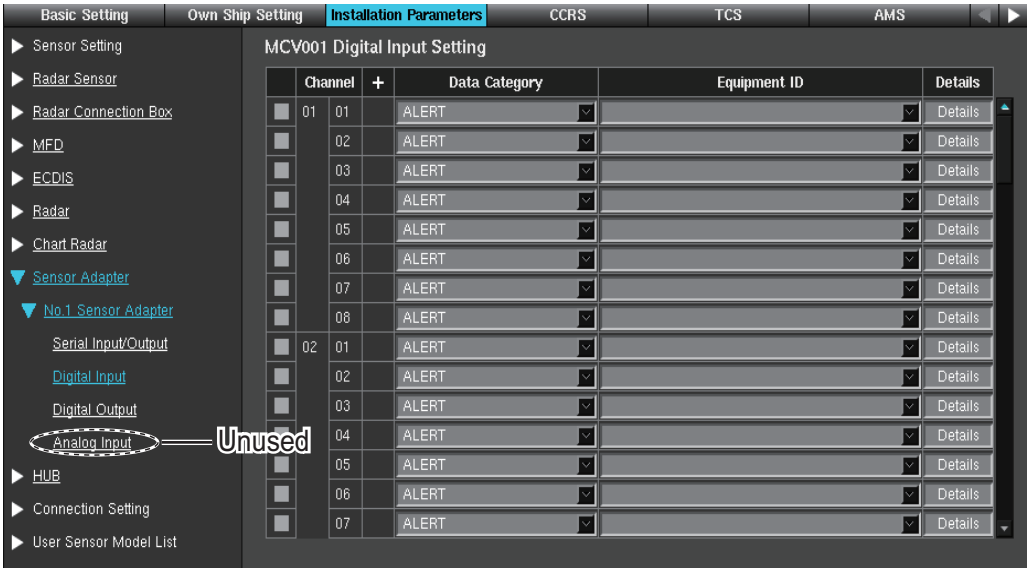
4. Click [No.1 Sensor Adapter] on the menu bar.
   The sensor adapter consists of four sub units: [Serial Input/Output], [Digital Input]*, [Digital Output]*, and [Analog Input]*. [Analog Input] is not used on the FMD-3100.
   * Not displayed when the MC-3000S is connected directly to LAN. If it is necessary to change the setting, connect the MC-3000S via the PCU-3000.
5. Click [Serial Input/Output]. There are eight ports in the Serial Input/Output. [Serial 01] to [Serial 04] can input/output at 38,400 bps for the AIS and Gyro.



The connector no. on the MC-3000S board and the corresponding serial port no. are shown in the following table.

Connector No.	Serial Port No.	Connector No.	Serial Port No.
J4	Serial 01	J8	Serial 05
J5	Serial 02		Serial 06
J6	Serial 03	J9	Serial 07
J7	Serial 04		Serial 08

6. Set the items referring to step 6 of section 1.4.2.
7. Click [Digital Input] on the menu bar.



[Channel 01-01] to [Channel 01-08] are shown on the display. Each sensor adapter MC-3020D has eight input ports. When one sensor adapter MC-3020D is connected to the MC-3000S, [Channel 01-01] to [Channel 01-08] can be used. When ten sensor adapters MC-3020D are connected, [Channel 01-01] to [Channel 10-08] can be used.
The connector no. on the MC-3020D board and the corresponding channel port no. are shown below.

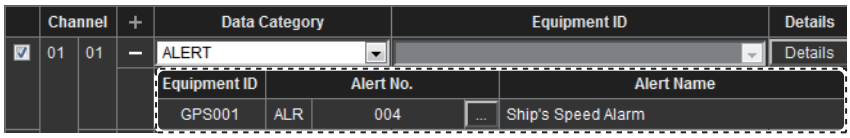
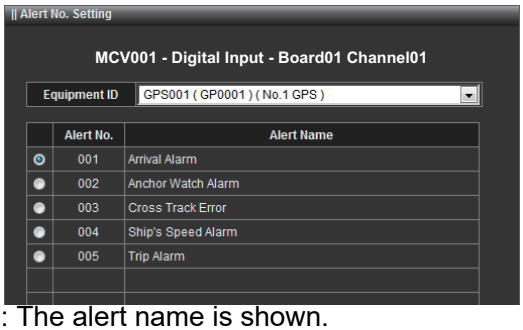
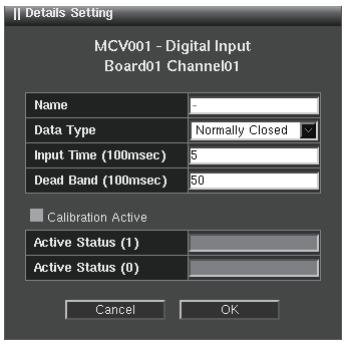
No.1 sensor adapter MC-3020D

Connector No.	Channel No.	Connector No.	Channel No.
J3	Channel 01-01	J5	Channel 01-05
	Channel 01-02		Channel 01-06
J4	Channel 01-03	J6	Channel 01-07
	Channel 01-04		Channel 01-08

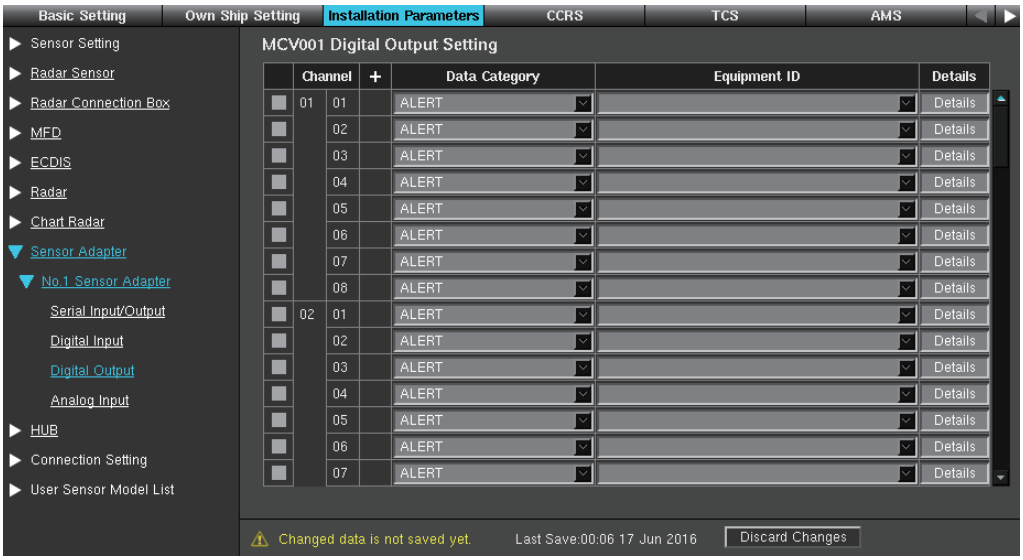
No.2 sensor adapter MC-3020D

Connector No.	Channel No.	Connector No.	Channel No.
J3	Channel 02-01	J5	Channel 02-05
	Channel 02-02		Channel 02-06
J4	Channel 02-03	J6	Channel 02-07
	Channel 02-04		Channel 02-08

8. Check the checkbox for [Channel No.] to set the items referring to the table shown below.

Item	Remarks
[Data Category]	Sets the data category. Settings: [ALERT], [ACK], [BUZZER STOP], [OPERATOR FITNESS], [OTHER], [GYRO SELECTOR], [MOB].
[+] button	This appears when the [Data Category] is set to [ALERT]. Click to show the configuration of the alert input.  Example: ALR is the alert notification sentence. • [Equipment ID]: The Equipment ID is shown. • [Alert ID]: The alert notification sentence* (ALF or ALR) and alert number are shown. When the alert notification sentence is ALF, the instance ID is shown. *: According to the connected sensors. • [...] button: Opens the [Alert No. Setting] window to select the input alert. The following example uses the alert notification sentence ALR. Select the Equipment ID for the connected sensors from the [Equipment ID] pull-down list. Then check the radio button of the desired alert and click the [OK] button.  • [Alert Name]: The alert name is shown.
[Equipment ID]	Select the Equipment ID from the pull-down list. This appears when the [Data Category] is set to [ACK] or [BUZZER STOP]. The pull-down list options change according to the setting at [Sensor Setting].
[Details]	• [Name]: Enter the appropriate sensor name. • [Data Type]: Set the contact input ([Normally Open] or [Normally Closed]). • [Input Time (100msec)]: Set the input time. • [Dead Band (100msec)]: Set the dead band after input. • [Calibration Active]: Keep the default setting. (Default: without check) • [Active Status (1)], [Active Status (0)]: Keep the default setting. 

9. Click [Digital Output] on the menu bar.



[Channel 01-01] to [Channel 10-08] are shown on the display. Each sensor adapter MC-3030D has eight input ports. When one sensor adapter MC-3030D is connected to the MC-3000S, [Channel 01-01] to [Channel 01-08] can be used. When ten sensor adapters MC-3030D are connected, [Channel 01-01] to [Channel 10-08] can be used.
The connector no. on the MC-3030D board and the corresponding channel no. are shown below.

No.1 sensor adapter MC-3030D

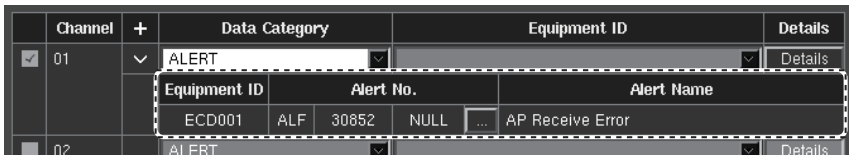
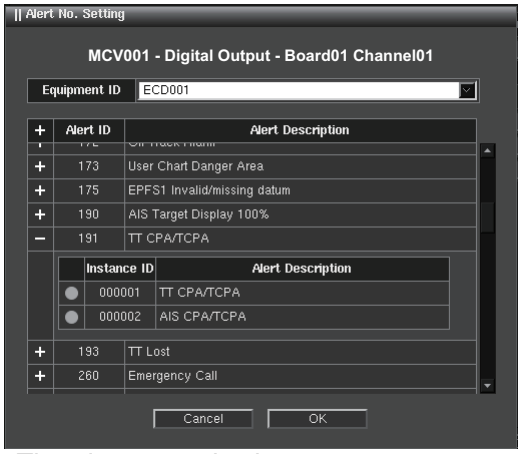
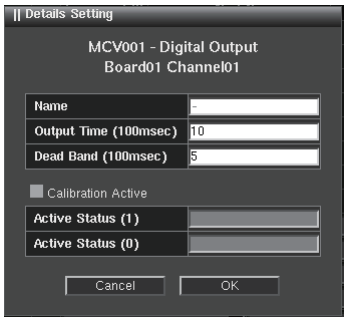
Connector No.	Channel No.	Connector No.	Channel No.
J3	Channel 01-01	J5	Channel 01-05
	Channel 01-02		Channel 01-06
J4	Channel 01-03	J6	Channel 01-07
	Channel 01-04		Channel 01-08

No.2 sensor adapter MC-3030D

Connector No.	Channel No.	Connector No.	Channel No.
J3	Channel 02-01	J5	Channel 02-05
	Channel 02-02		Channel 02-06
J4	Channel 02-03	J6	Channel 02-07
	Channel 02-04		Channel 02-08

10. Check the checkbox for [Channel No.] to set the items referring to the table shown below.

Item	Remarks
[Data Category]	Sets the data category. Settings: [ALERT], [ACK], [BUZZER STOP], [OPERATOR FITNESS], [OTHER], [TRANSFER], [BACKUP NAVIGATOR].

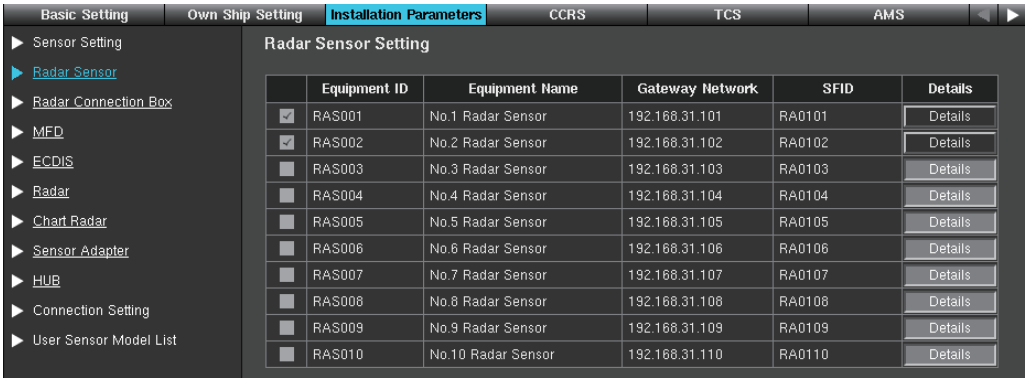
Item	Remarks
[+] button	This appears when the [Data Category] is set to [ALERT]. Click to show the configuration of the alert output.  Example: ALF is the alert notification sentence. • [Equipment ID]: The Equipment ID is shown. • [Alert ID]: The alert notification sentence* (ALF or ALR) and alert number are shown. When the alert notification sentence is ALF, the instance ID is shown. *: According to setting of [Output Data Type for INS] in the [AMS] menu (see section 1.7). • [...] button: Opens the [Alert No. Setting] window to select the output alert. The following example uses the alert notification sentence ALF. Check the radio button of the desired alert and click the [OK] button.  • [Alert Name]: The alert name is shown.
[Equipment ID]	Select the Equipment ID from the pull-down list. The pull-down list options change according to the setting at [Sensor Setting].
[Details]	• [Name]: Enter the appropriate sensor name. • [Output Time (100msec)]: Set the output time. • [Dead Band (100msec)]: Set the dead band after output. • [Calibration Active]: Keep the default setting. (Default: without check) • [Active Status (1)], [Active Status (0)]: Keep the default setting. 

11. To save the configuration, perform a consistency check, then save the configuration data on the [Save and Sync] menu.

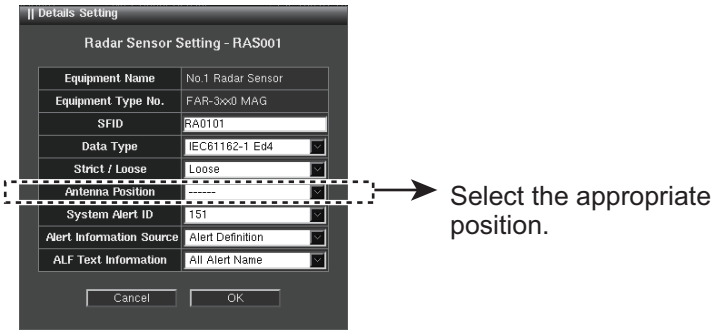
1.4.5 Antenna unit configuration

Do the procedure here to set the antenna unit.

1. Click [Radar Sensor] on the menu bar.
2. Confirm that the Equipment ID checked at the [Own Ship Setting] menu (see section 1.3) is activated.



3. Click the [Details] button to show the [Details Setting] window.
4. Set the appropriate antenna position from the [Antenna Position] pull-down list. The interswitch function requires correct input of the antenna position.



5. Click the [OK] button.
6. To save the configuration, perform a consistency check, then save the configuration data on the [Save and Sync] menu.
7. For FCR-2××9 or FAR-2××7 series antenna unit, perform the self test to confirm that the SPU program version and DIP switch setting are as shown below.
   For FCR-2××9 series
   Open the [System Monitor] menu (see section 1.11), then click the [Self-test] button→[Radar Sensor (FCR-2××9)]→[Sensor Status].
   [SPU Software Version]: 0359204-03.50, or after
   [SPU DIP switch (SW16-SW1)]: 0100
   For FAR-2××7 series
   Perform the self test, referring the operator's manual of FAR-2××7 series radar.
   [SPU PROGRAM NO.]: 0359204-03.50, or after
   [DIP SW]: 1000 or 1001

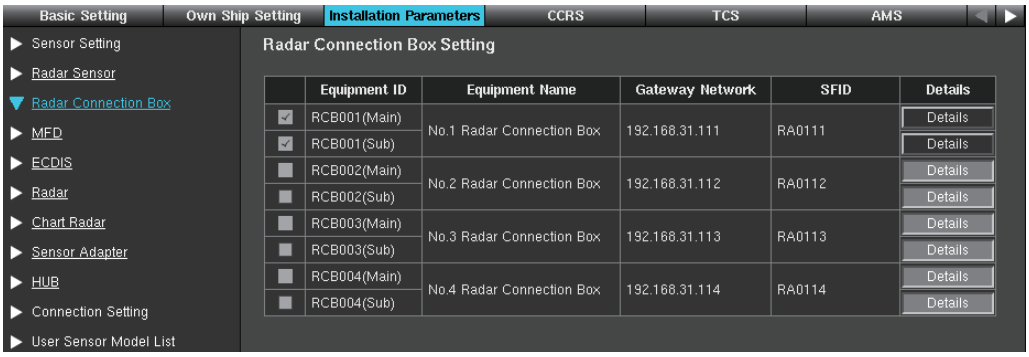
1.4.6 Radar connection box configuration

You can display echoes from non-Furuno radars by connecting them to the ECDIS through the Radar Connection Box RCB-002. A maximum of four Radar Connection Boxes can be connected to this system.

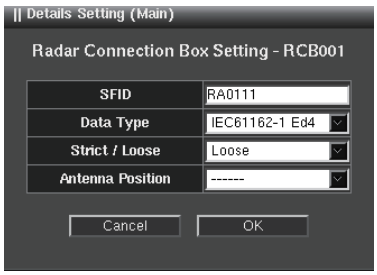
Set the location information of the external radar antenna on the [Own Ship Setting] menu (see page 1-11) before doing the following procedure.

Note: When multiple RCB-002s are connected to the same network, change the IP address of the RCB-002s, referring to "SUBSYSTEM" on page AP-3.

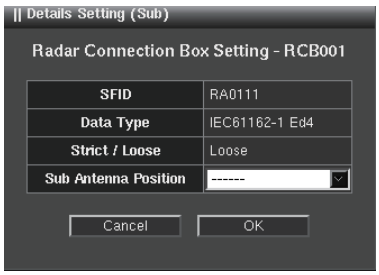
1. Click [Radar Connection Box] on the menu bar.



2. Click the check box for [RCB00× (Main)] (×: 1 to 4). This box must be checked to use the radar connection box.
3. When you connect two external radars to the radar connection box, click the check box for [RCB00× (Sub)] (×: 1 to 4).
4. Click the [Details] button and set the following items.



For “Main” radar



For “Sub” radar

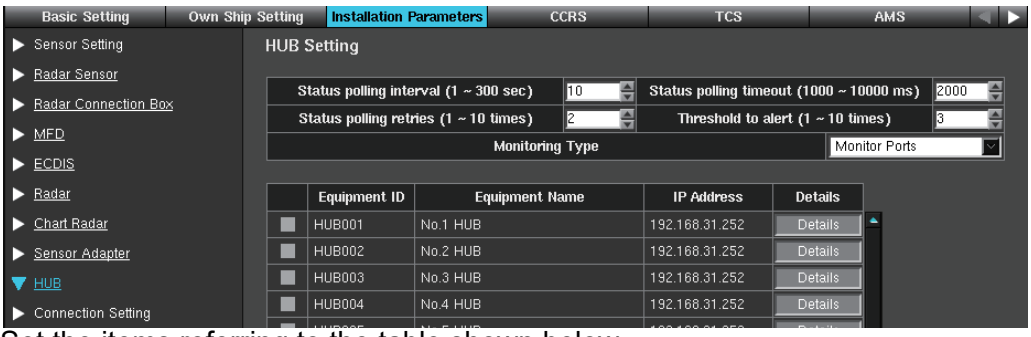
Item	Remarks
[SFID]	Keep the default setting.
[Data Type]	Sets the RX sentence data format. Setting options: [IEC 61162-1 Ed3], [IEC 61162-1 Ed4], [IEC 61162-1 Ed5]
[Strict/Loose]	Sets the integrity of sentence data. [Strict]: Confirm the validity of checksum, then receive sentence. [Loose]: Receive sentence regardless of checksum invalidity.
[Antenna Position/] [Sub Antenna Position]	Set the location for the antenna units of the external radar that is connected to the radar connection box. Setting options: [Fore], [Main Top], [Main 2nd], [Main 3rd], [Aft], [Port], [Starboard].

5. To save the configuration, perform a consistency check, then save the configuration data on the [Save and Sync] menu.

1.4.7 Monitoring of HUB

To monitor the HUB, do as follows.

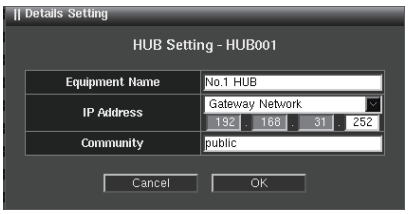
1. Click [HUB] on the menu bar.



2. Set the items referring to the table shown below.

Item	Remarks
[Status polling interval (1~300 sec)]	Polling interval for the HUB connection status request.
[Status polling timeout (1000~10000 ms)]	Time to wait for the HUB connection status response.
[Status polling retries (1~10 times)]	Retry times to request the HUB connection status.
[Threshold to alert (1~10 times)]	The number of times the HUB link is lost to wait before generating an alert.
[Monitoring Type]	Set the alert location when a connection error with the HUB-3000 occurs. • [Monitor Ports]: The device connected to the HUB-3000 detects disconnect between it and the HUB-3000 and generates an alert. • [Monitor Units]: The device disconnected from the HUB-3000 generates an alert.

3. Check the checkbox for the HUB(s) to activate.
4. Click the [Details] button to open the [Details Setting] window and enter the appropriate items.



• [Equipment Name]: Enter the name of the HUB.

• [IP Address]: Select the network and IP Address of the HUB from the pull-down list.

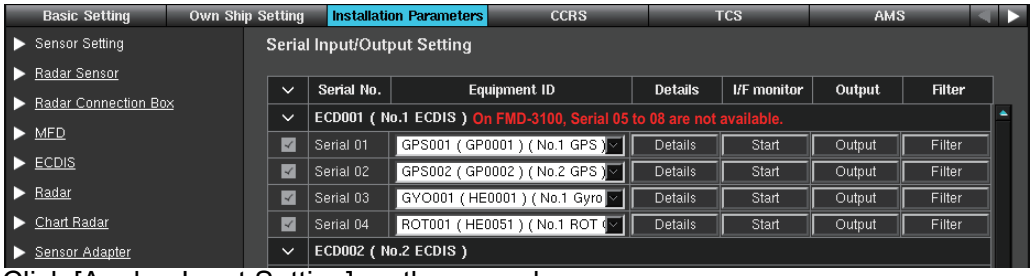
• [Community]: Set the parameters for SNMP protocol. This setting must be the same as set at the HUB.

5. To save the configuration, perform a consistency check, then save the configuration data on the [Save and Sync] menu.

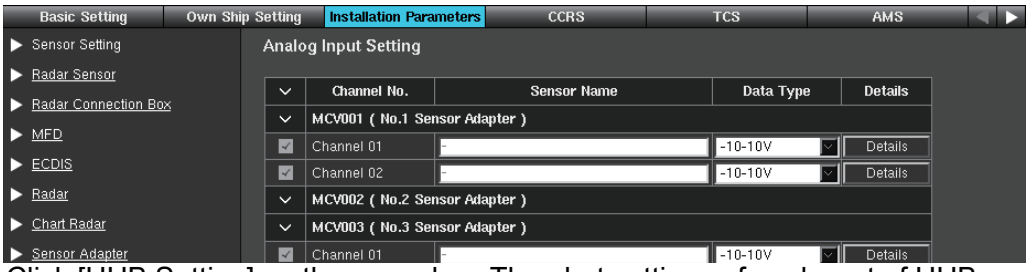
1.4.8 Signal and Port setting for external equipment

This connection setting menu can set the serial I/O for external equipment, the analog input for sensor adapter, and HUB port.

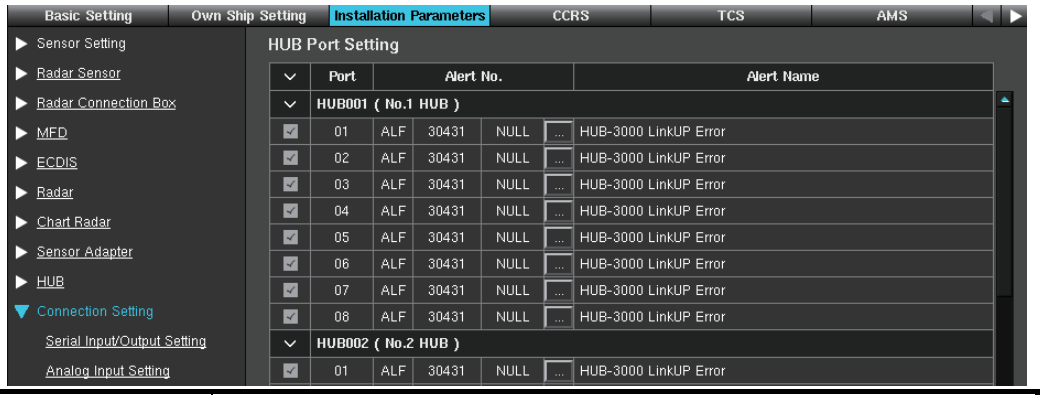
1. Click [Connection Setting] on the menu bar.
2. Click [Serial Input/Output Setting] on the menu bar.
   The serial input/output settings are shown. The settings can be changed, referring to step 6 of section 1.4.2.



3. Click [Analog Input Setting] on the menu bar.
   The analog settings are shown.

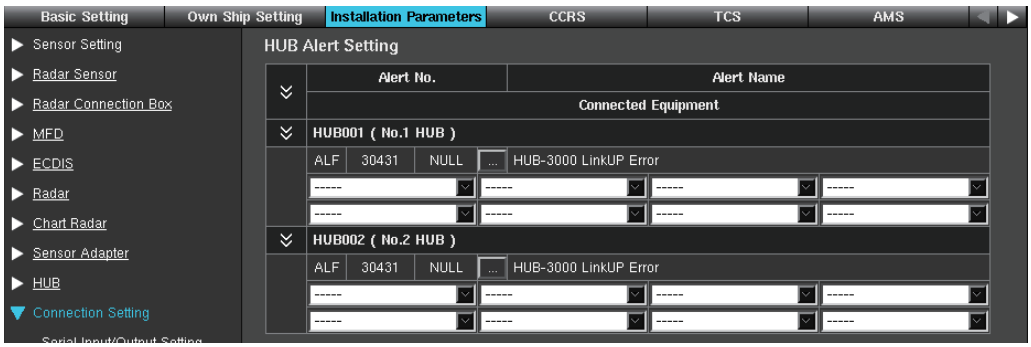


4. Click [HUB Setting] on the menu bar. The alert settings of each port of HUBs are shown. The alert settings of each port of HUBs are shown. The display changes according to the setting for [Monitoring Type] (see page 1-28).
   - [HUB Port Setting] window ([Monitoring Type] = [Monitor Ports])



Item	Remarks
Checkbox	Check the checkbox for the port which generates the alert when the connection is interrupted.
[Port]	HUB port number.
[Alert No.]	When the alert notification sentence is ALR, the alert number is shown. When the alert notification sentence is ALF, the alert number and the Instance ID are shown. Click the [...] button to open the [Alert No. Setting] window. Set the output alert on the [Alert No. Setting] window. Check the radio button for the desired alert and click the [OK] button.
[Alert Name]	Alert name of each HUB port

- [HUB Alert Setting] window ([Monitoring Type] = [Monitor Units])



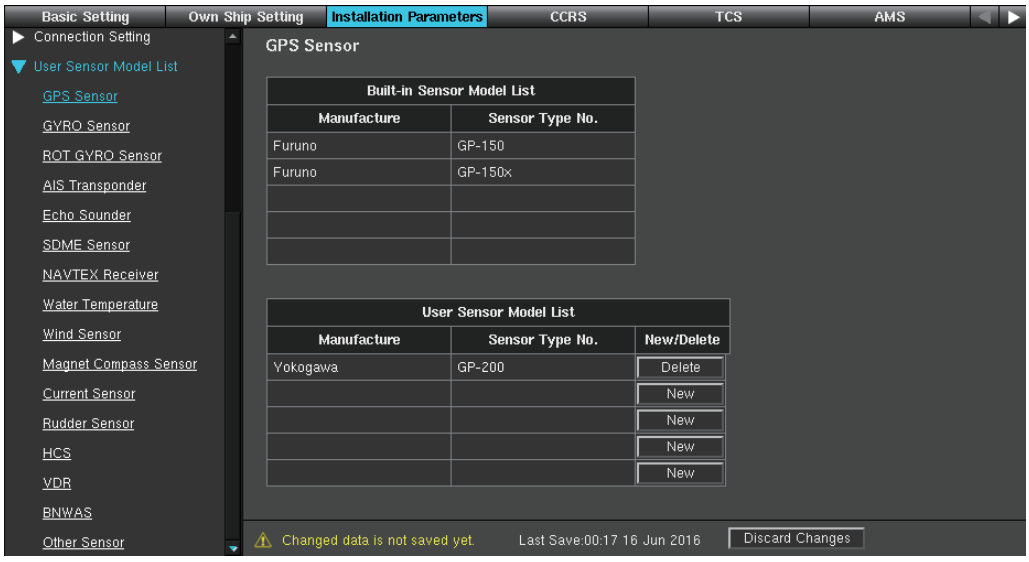
Item	Remarks
[Alert No.]	When the alert notification sentence is ALR, the alert number is shown. When the alert notification sentence is ALF, the alert number and the Instance ID are shown. Click the [...] button to open the [Alert No. Setting] window. Set the output alert on the [Alert No. Setting] window. Check the radio button for the desired alert and click the [OK] button.
[Alert Name]	Name of the alert set for each port.
Drop-down list	Select Equipment ID of device connected to HUB-3000.

5. To save the configuration, perform a consistency check, then save the configuration data on the [Save and Sync] menu.

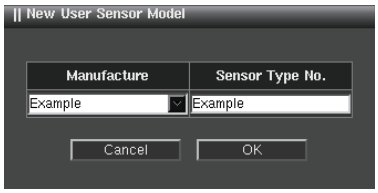
1.4.9 Customized sensor setting

Set the sensor types and manufacturers in the [Sensor Setting] menu.

1. Click [User Sensor Model List] on the menu bar.
2. Click the appropriate sensor to edit. The figure below shows an example where the [GPS Sensor] is selected.



Item	Remarks
[Built-in Sensor Model List]	Displays the sensor types and manufacturers preset already. [Manufacture]: Manufacturer of sensor [Sensor Type No.]: Type of sensor

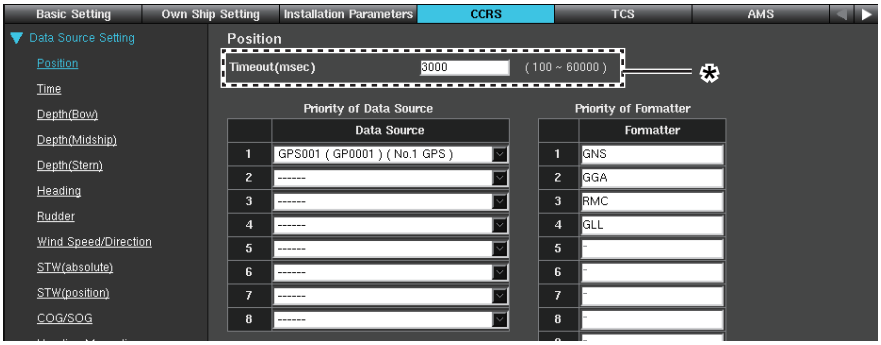
Item	Remarks
[User Sensor Model List]	Click the [New] button to add a new type or manufacturer of sensor. Enter the desired manufacturer name and the desired type of sensor, then click the [OK] button.  Click the [Delete] button to delete the added contents. The confirmation message appears, then click the [OK] button. **Note:** The contents added or deleted in this setting are applied to the [Sensor Setting] menu. See section 1.4.1.

3. To save the configuration, perform a consistency check, then save the configuration data on the [Save and Sync] menu.

1.5 [CCRS] Menu

1.5.1 How to select the [Data Source]

1. Access the [Common Installation Setting] menu and click [CCRS] on the tab bar.
2. Click [Position] of [Data Source Setting] on the menu bar.



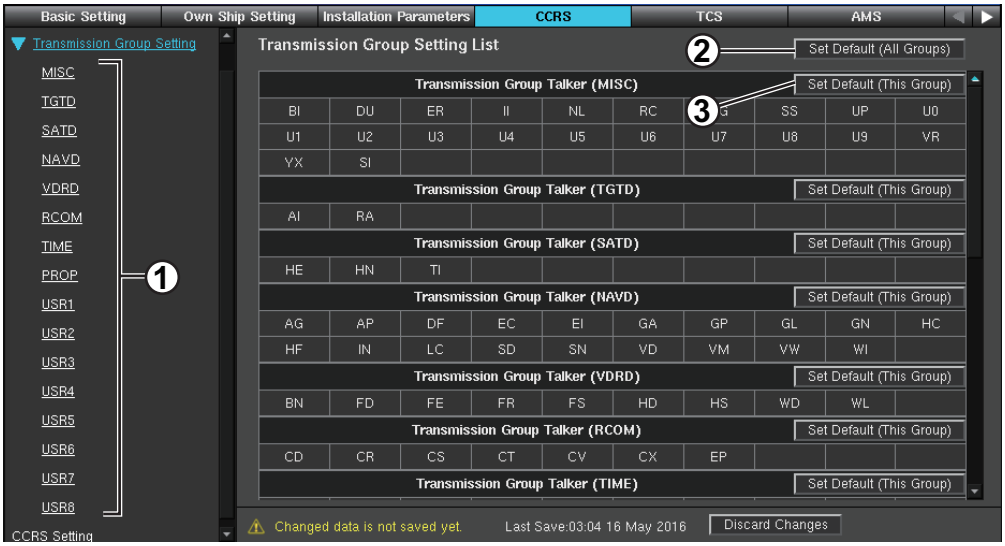
*: Position, Heading, STW, COG/SOG, Rate of Turn: Keep the default setting (3000). For other than the above settings, set “30000” (30 sec.).

3. Select the data source in order of priority from the [Data Source] drop-down list. The Equipment ID checked at the [Installation Parameters] menu are shown on the drop-down list.
   When entering the data source, the [Formatter] is automatically entered.
   Note: When more than two [Data Source] and [Formatter] are entered, the topmost entry has the highest priority.
4. Set [Time], [Depth(Bow)], [Depth(Midship)], [Depth(Stern)], [Heading], [Rudder], [Wind Speed/Direction], [STW(absolute)] (speed through the water), [STW(position)] (speed through the water), [COG/SOG], [Heading Magnetic], [Water Temperature], [Current], and [Rate of Turn] in a similar manner.
5. To save the configuration, perform a consistency check, then save the configuration data on the [Save and Sync] menu.

1.5.2 How to set [Transmission Group]

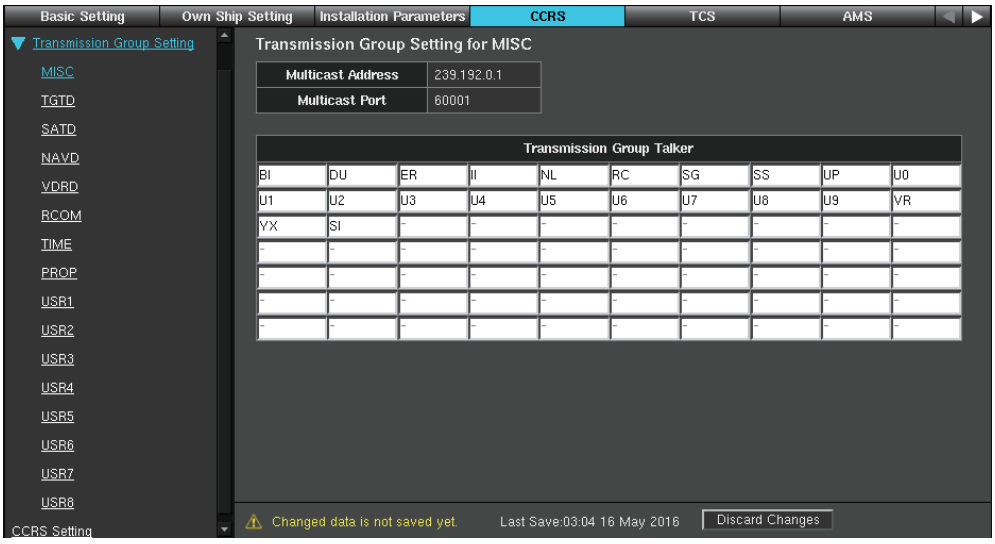
When connecting IEC61162-450 compatible sensors, you may need to adjust [Transmission Group Setting]. Under normal circumstances, you do not need to adjust these settings. When adjusting items in [Transmission Group Setting], you will need to configure for all devices in the configuration.

1. Access the [Common Installation Setting] menu, then click [CCRS] on the tab bar.
2. Select [Transmission Group Setting] from the menu bar.



No.	Item	Description
1	[Transmission Group name]	Click the Transmission Group name to show the Setting List.
2	[Set Default (All Groups)]	Revert all Transmission Groups to default settings.
3	[Set Default (This Group)]	Revert the selected Transmission Group to default settings.

3. Select a Transmission Group from the menu bar.



Example: Transmission Group Settings for MISC.

4. In the [Transmission Group Talker] fields, remove or add entries as appropriate.
5. Select and adjust other Transmission Group settings as appropriate.

6. To save the configuration, perform a consistency check, then save the configuration data on the [Save and Sync] menu.

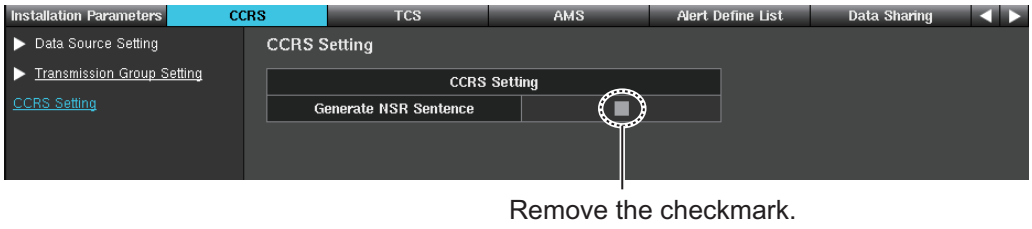
Default settings for each Transmission Group

Transmission Group	Talker	Multicast Address	Multicast Port
MISC	BI	239.192.0.1	60001
	DU		
	ER		
	II		
	NL		
	RC		
	SG		
	SS		
	UP		
	U0		
	U1		
	U2		
	U3		
	U4		
	U5		
	U6		
	U7		
	U8		
	U9		
	VR		
	YX		
	SI		
TGTD	AI	239.192.0.2	60002
	RA		
SATD	HE	239.192.0.3	60003
	HN		
	TI		

Transmission Group	Talker	Multicast Address	Multicast Port
NAVD	AG	239.192.0.4	60004
	AP		
	DF		
	EC		
	EI		
	GA		
	GP		
	GL		
	GN		
	HC		
	HF		
	IN		
	LC		
	SD		
	SN		
	VD		
	VM		
	VW		
	WI		
VDRD	BN	239.192.0.5	60005
	FD		
	FE		
	FR		
	FS		
	HD		
	HS		
	WD		
	WL		
RCOM	CD	239.192.0.6	60006
	CR		
	CS		
	CT		
	CV		
	CX		
	EP		
TIME	ZA	239.192.0.7	60007
	ZC		
	ZQ		
	ZV		
PROP	-	239.192.0.8	60008
USR1	-	239.192.0.9	60009
USR2	-	239.192.0.10	60010
USR3	-	239.192.0.11	60011
USR4	-	239.192.0.12	60012
USR5	-	239.192.0.13	60013
USR6	-	239.192.0.14	60014
USR7	-	239.192.0.15	60015
USR8	-	239.192.0.16	60016

1.5.3 [CCRS Setting] window

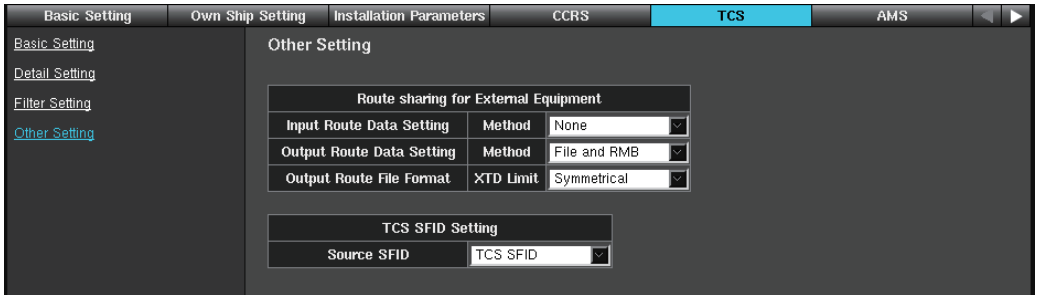
Set if the NSR sentence is output from the CCRS in the [CCRS Setting] window of the [TCS] menu. This setting is currently unavailable. Confirm that the box has no check mark.



1.6 [TCS] Menu

The [Other Setting] window in the [TCS] menu is used to setup output of routes created on the ECDIS. The route data can be output to the external equipment (GP-170 etc). The [Basic Setting], [Detail Setting] and [Filter Setting] items in the [TCS] menu are not used on the FMD-3100.

1. Access the [Common Installation Setting] menu, then select [TCS] from the tab bar.
2. Select [Other Setting] on the menu bar.



Item	Description
[Input Route Data Setting]	Select the input method for route data received from other equipment. • [None]: Route data from other equipment is not used. • [File (HTTP)]: Uses data uploaded via the HTTP protocol. The connected equipment must support the FMD-3100's upload function. **Note 1:** After changing this setting, reboot the system to apply the setting. **Note 2:** Do not select [File (HTTP)] when the manufacturer does not sign the non-disclosure agreement with FURUNO. Detailed specification depends on the disclosed information between FURUNO and manufacturer.
[Output Route Data Setting]	Select the route data format. • [File and RMB]: Output the route data with the file format and RMB sentence. The LAN connection with the external equipment is required. • [RTE and WPL]: Output the route data with the RTE and WPL sentences. The serial connection with the external equipment is required. **Note:** When the AR-100M is connected, select [File and RMB].

Item	Description
[Output Route File Format]	Select whether the channel limit is symmetrical or asymmetrical. This setting is available when [Output Route Data Setting] is set to [File and RMB]. • [Symmetrical]: The channel limit is symmetrical. • [Asymmetrical]: The channel limit is asymmetrical.
[Source SFID]	Select the additional SFID when CCRS outputs the sentence from the TCS ([ECDIS SFID] or [TCS SFID]).

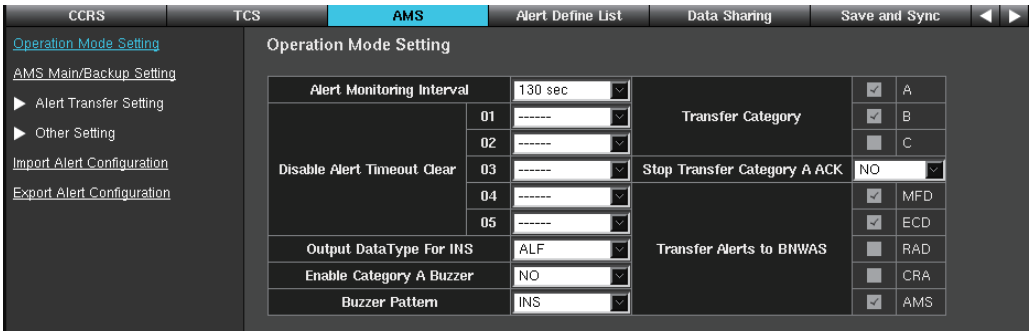
1.7 [AMS] Menu

The AMS menu sets up the interface between the AMS (Alert Management System) and the FMD-3100, including the AMS operating mode.

Note: For how to set the alert definition of AMS, see the FURUNO information.

1.7.1 AMS mode operation

1. Access the [Common Installation Setting] menu, then select [AMS] from the tab bar.
2. Select [Operation Mode Setting] on the menu bar.



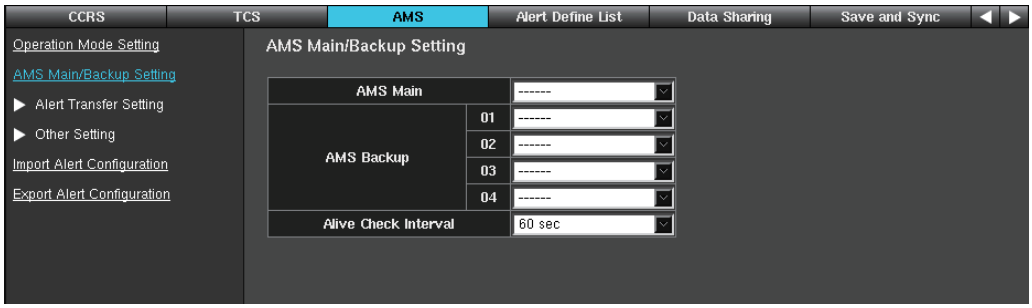
Item	Remarks
[Alert Monitoring Interval]	Set the time to wait before clearing the corresponding alert when communication with a sensor is interrupted.
[Disable Alert Timeout Clear] (01 to 05)	Select the units where the alert is not to be cleared.
[Output Data Type For INS]	Select the data type of alert notification, ALR or ALF.
[Enable Category A Buzzer]	Select if the alert buzzer sounds when the alert of Category A occurs.
[Buzzer Pattern]	Sets the buzzer sound pattern to output when an alert occurs. [INS]: • Alert priority = “Alarm”: Three short beeps, four seconds mute, then repeat. • Alert priority = “Warning”: Two short beeps, four seconds mute, then repeat. [Legacy]: • Alert priority = “Alarm” or “Warning”: Alarm sounds continuously.
[Transfer Category] (A~C)	Check the checkbox of the appropriate Category (A to C) to transfer the alerts.

Item	Remarks
[Stop Transfer Category A ACK]	Select [YES] to enable stopping of the alert transfer for Category A alerts by ACK operation. In this case, the alert is not acknowledged.
[Transfer Alerts to BNWAS]	Set the permissions for the alert transmission to BNWAS (Bridge Navigational Watch Alarm System). The unit(s) checked here are allowed to output the alert signal to the BNWAS. • [MFD]: Multifunction Display • [ECD]: ECDIS • [RAD]: Radar • [CRA]: Chart Radar

3. To save the configuration, perform a consistency check, then save the configuration data on the [Save and Sync] menu.

1.7.2 Master/Backup AMS setting

Set the master and backup AMS among the units connected to AMS. The master AMS outputs the alert data to the external AMS. When communication with the master AMS is lost, the backup AMS outputs the alert data to the external AMS instead of the master AMS.



Follow the procedure below to set master and backup AMS.

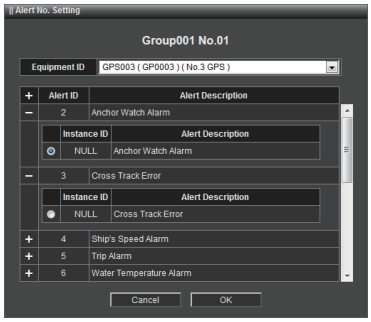
1. Access the [Common Installation Setting] menu, then select [AMS] from the tab bar.
2. Select [AMS Main/Backup Setting] on the menu bar.
3. Select the Equipment ID from the pull-down list for [AMS Main] to assign the master AMS.
   Note: The FMD-3100 cannot be assigned as master or backup AMS. Assign an ECDIS other than the FMD-3100 as the master and backup AMS.
4. Select the Equipment ID from the pull-down list for [AMS Backup] to assign the backup AMS.
   A maximum of four units can be assigned as backup AMS. The topmost entry has the highest priority.
5. Select the communication check interval for the master AMS from the pull-down list for [Alive Check Interval].
6. To save the configuration, perform a consistency check, then save the configuration data on the [Save and Sync] menu.

1.7.3 Alert transfer setting

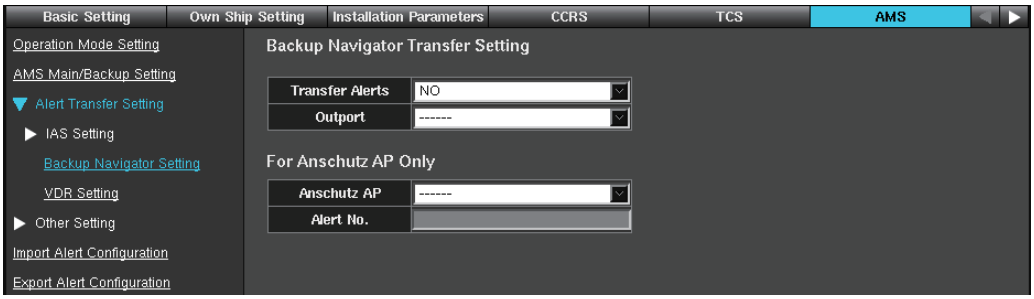
1. Access the [Common Installation Setting] menu, then select [AMS] from the tab bar.
2. Select [Alert Transfer Setting] → [IAS Setting] on the menu bar.
   You can create the alert group and transfer the alert to the navigational equipment. A maximum of ten alert groups ([Group001] to [Group010]) can be created, and a maximum of 99 alerts can be registered to one alert group.

3. Select the appropriate alert group number ([Group001] to [Group010]) to transfer, then set the following items.

Item	Remarks
[Event Transmission]	Select the alert to be transferred. • [Change Status Alert]: Transfer the alert whose status is changed. For example, when alert problem is rectified and alert status is changed from unrectified to rectified, alert is transferred. • [all target Alerts]: All alerts in the group are transferred.
[Fixed Transmission]	Select the alert to be transferred periodically. • [all target Alerts]: All alerts in the group are transferred periodically. • [send “all occurred Alerts” or “ALR <null>, V,V”]: Transfer only active alert periodically.
[Periodic Interval (1 - 60 sec)]	Set the interval to transfer the alert data.
[Sentence]	Select the data type of alert notification, ALR or ALF.
[Output 01(02)]	Select Equipment ID of the destination equipment to transfer the alert data. A maximum of two equipments can be assigned to the destination.

Item	Remarks
[...] button	Opens the [Alert No.Setting] dialog box to register the alert to the group. Select the alert source equipment from the [Equipment ID] pull-down list. Activate the radio button of the appropriate alert(s), then [OK] button to register the alert. The right figure is the example when alert notification sentence is ALF. The alert notification sentence is dependent on the specification of the equipment connected to this ECDIS. After clicking the [OK] button, Equipment ID, alert no. and alert description appear in the alert registration field. 

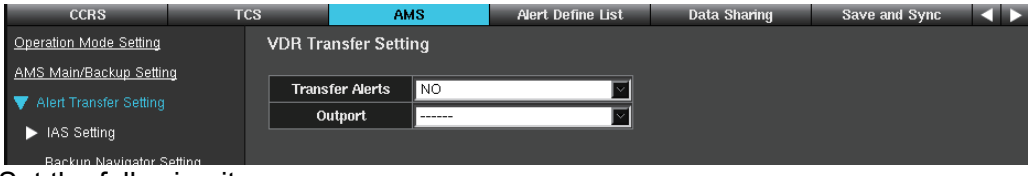
4. Select [Alert Transfer Setting] and [Backup Navigator Setting] on the menu bar.



5. Set the following items.

Item	Remarks
[Transfer Alerts]	Select [YES] to transfer the alert to the backup navigator equipment when an alarm is not acknowledged for 30 seconds.
[Output]	Select the backup navigator equipment to be used for alert data transfer.
[Anschutz AP]	Not used.
[Alert No.]	

6. Select [VDR Setting] on the menu bar.



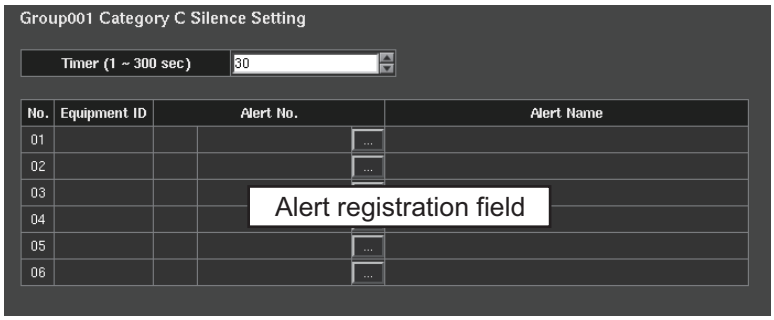
7. Set the following items.

Item	Remarks
[Transfer Alerts]	Select [YES] to transfer the alert to VDR.
[Output]	Select the VDR to be used for alert data transfer.

8. To save the configuration, perform a consistency check, then save the configuration data on the [Save and Sync] menu.

1.7.4 Other setting window

This section provides a description for the contents of the [Other Setting] window. Open the [AMS] menu and select [Other Setting] on the menu bar, then select an appropriate setting item.

Item	Remarks
[Category C Silence Setting]	Set the alert silence time for Category C alerts and register alerts. A maximum of ten groups ([Group001] to [Group010]) can be created, and a maximum of six alerts can be registered to one group. Different alert silence time can be set for each group.  • [Timer]: Set the time for which the alert is silent. Aural alerts are not generated during the time set here (setting range: 1 to 300 sec). • [...] button: Opens the [Alert No.Setting] dialog box to register an alert to a group. For how to register the alert on the [Alert No.Setting] dialog box, see page 1-39. After registering the alert, Equipment ID, alert no. and alert name appear on the alert registration field. **Note:** The text in the alert registration field is changed to red when registered alert is not Category C or the alert is registered to the other group.
[BR-2000 Connection Setting]	Set this item when a FEA-21×7 is replaced with a FMD-3×00 and the BR-2000 is connected to the FMD-3×00. Set the FMD-3×00 with the same setting selected in [Message Type] in the [Alarm Inputs+Outputs/AMWSS] dialog box of the FEA-21×7. When a BR-2000 is not installed, select [Not Connected]. **Note:** When a BR-2000 is to be used, connect it to the serial port of the PCU-3000. Do not connect it to a serial adapter; data cannot be output.
[ACK Send/Receive Setting]	Set the options for the alert ACK signal. [Send Setting] • [ACK Type]: Select the sentence to use when transmitting the alert ACK signal (ACN, ACM, ACN/ACM). • [Periodic Interval ACK sentence]: Select the transmission interval for the alert ACK signal. [Receive Setting] • [Monitoring Interval]: Keep the default setting.
[Silence Time Setting]	Set the time for which the alert is silent. Aural alerts are not generated during the time set here.
[Responsibility Transfer Setting]	Keep the default setting.
[Alert Managed Log Setting]	Keep the default setting.
[Change Active Alert Setting]	Select [YES] to switch to the [ACTIVE ALERT] window automatically when a new alert occurs.

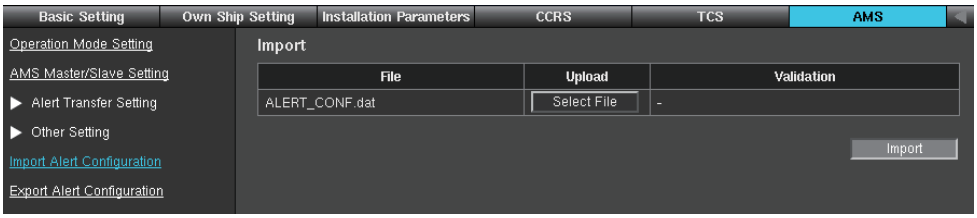
Item	Remarks
[Enable Silence Button Setting]	Keep the default setting.
[Redraw Interval Setting]	Keep the default setting.
[Unknown Alert Notify Setting]	Keep the default setting.
[HBT Sentence Setting]	Set the options for the HBT sentence. [Send Setting] • [Periodic Interval]: Set the transmission interval for the HBT sentence. • [Broadcast]: Select [YES] to transmit the HBT sentence to all equipment in the same network. [Receive Setting] • [Timeout Count]: Communication lost alert occurs when HBT sentence is not received after the time set here. • [Additional Time]: Set a time "gap" from the [Timeout Count] setting to when the communication lost alert is actually sent.
[FELCOM-18 ACK Port Setting]	Select the item according to [Transmission Group Setting] of FELCOM18. For how to set [Transmission Group Setting] of FELCOM18, see the installation manual of FELCOM18. • [MISC (60001)]: Select when [Transmission Group Setting] of FELCOM18 is set [MISC]. • [Depend on Talker]: Select when [Transmission Group Setting] of FELCOM18 is set [RCOM].

1.7.5 How to import and export [AMS] menu settings

You can import and export the [AMS] menu settings.

Import the [AMS] menu settings

1. Access the [Common Installation Setting] menu, then select [AMS] from the tab bar.
2. Select [Import Alert Configuration] on the menu bar.



3. Click the [Select File] button, then select the setting file to import.
   After selecting the setting file, the check result of the setting file appears at [Validation] field. When the check result is "OK", the [Import] button is available.
4. Click the [Import] button to import the setting file.
5. To save the configuration, perform a consistency check, then save the configuration data on the [Save and Sync] menu.

Export the [AMS] menu settings

1. Access the [Common Installation Setting] menu, then select [AMS] from the tab bar.
2. Select [Export Alert Configuration] on the menu bar.

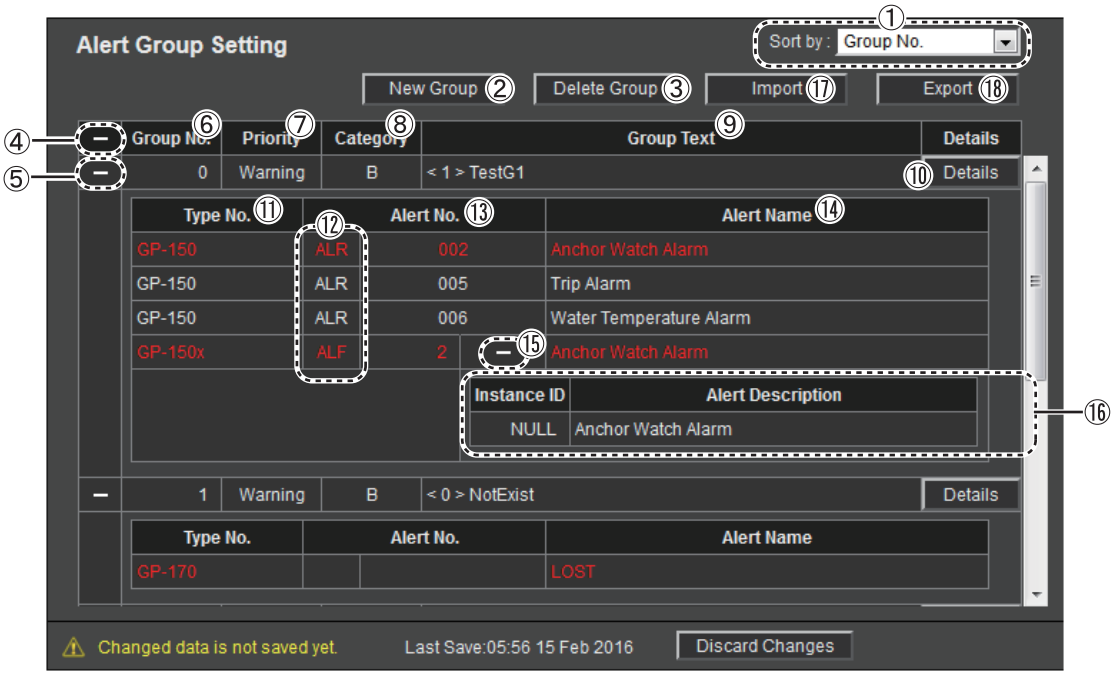
3. Click the [Export File] button to export the setting file.

1.8 [Alert Define List] Menu

This [Alert Define List] menu sets the alert group and the alert definition.

1.8.1 Alert Group Setting

1. Access the [Common Installation Setting] menu and click [Alert Define List] on the tab bar.
2. Click [Alert Group Setting] on the menu bar.
   The list of the alert groups is shown on the [Alert Group Setting] window.



Item		Remarks
1	[Sort by]	Select the order to show the alert group. • [Group No.]: Sorted by the alert group number in ascending order. • [Priority/Category]: Sorted by the alert priority (Alarm/Warning/Caution) and category (A to C). • [Group Text]: Sorted by the [Group Text] column in alphabetical order.

Item		Remarks
2	[New Group] button	Add a new alert group. See section 1.8.2.
3	[Delete Group] button	Delete an alert group. See section 1.8.4.
4	All extension button	Click to open/close the detail setting window for all groups ([+]: Open all groups, [-]: Close all groups).
5	[+]/[-] button	Click to open/close the detail setting window for the selected group ([+]: Open, [-]: Close).
6	[Group No.]	Group number
7	[Priority]	The priority of the alert group (Alarm/Warning/Caution). The priority of all grouped alerts is the same.
8	[Category]	The category of the alert group (A to C). The category of all grouped alerts is the same.
9	[Group Text]	Text shown on the display when an alert in an alert group occurs. The number in "< >" means the number of alerts.
10	[Details] button	Change the settings for the alert group. See section 1.8.3.
11	[Type No.]*	The equipment type which generates the alert.
12	[Data Type]*	The alert sentence format (ALF or ALR). This is dependent on the equipment connected to this system.
13	[Alert No.]*	Alert number.
14	[Alert Name]*	Alert Name.
15	[+]/[-] button (ALF)	Click to open/close the alert instance data ([+]: Open, [-]: Close). This appears only when the alert sentence is ALF format.
16	Instance data*	Show/Close the instance data. • [Instance ID]: The instance ID of the alert • [Alert Description]: Contents of the alert instance.
17	[Import] button	Import the specified group setting.
18	[Export] button	Export the specified group setting.

*: The columns are empty or in red for any of the following cases.

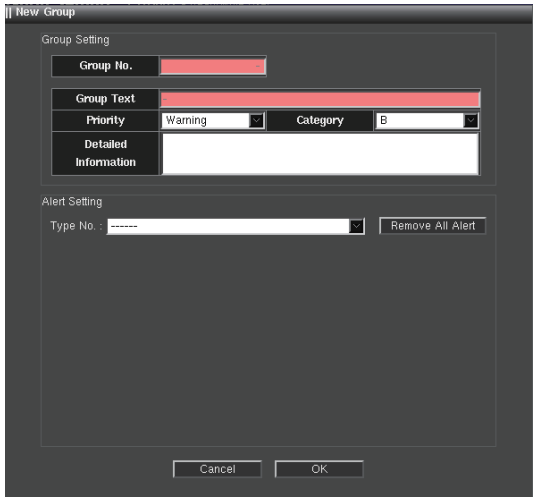
- An alert which is preset in another alert group.
- An alert which is not included in the alert definition.
- An ALR sentence is assigned an ALF alert number.
- The Priority or Category of the alert is different from the ones of the group.

3. To save the configuration, perform a consistency check, then save the configuration data on the [Save and Sync] menu.

1.8.2 How to add an alert group

An alert group can be added newly. The maximum number of alert groups is 1,000.

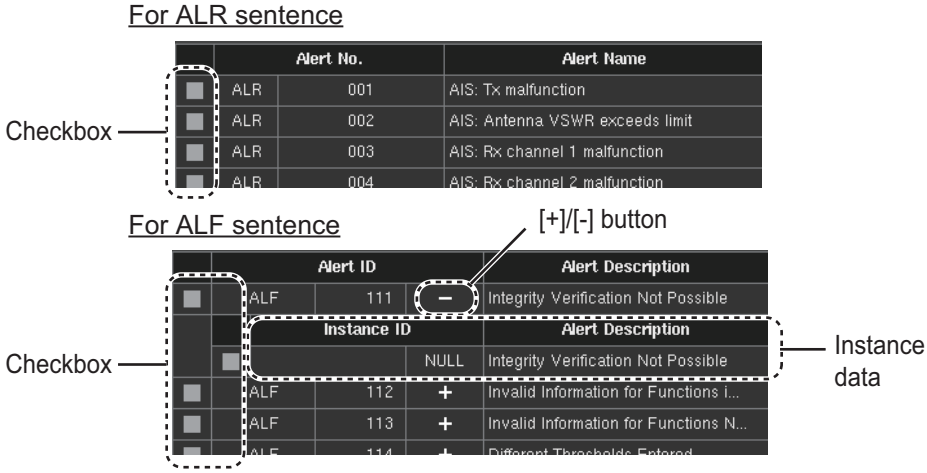
1. Click the [New Group] on the [Alert Group Setting] window referring to the figure in step 2 of section 1.8.1. The [New Group] window is shown.
   Note: When 1,000 alert groups have already been registered, the message "Too many groups. Please delete group" is shown. If this occurs, delete any alert group to make space for new alert group.



2. Set the options referring to the table shown below.

Item	Remarks
[Group No.]	Set the alert group number.
[Group Text]	Enter the text (max. 64 characters) to show on the display when an alert included in this alert group occurs.
[Priority]	The priority of the alert group (Alarm/Warning/Caution). The priority of all grouped alerts is the same.
[Category]	The category of the alert group (A to C). The category of all grouped alerts is the same.
[Detailed Information]	Set the detail information (max. 1023 characters) for the alert group.

3. From the [Type No.] pull-down list in the [Alert Setting] window, select the equipment that handles the alert that you want to register in this group.The alert list appearance depends on the external equipment's sentence format.

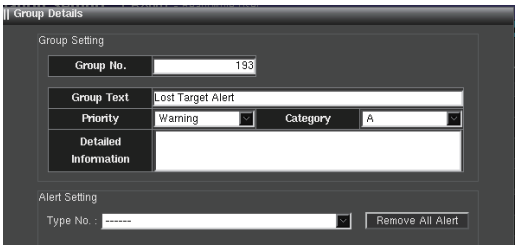


4. Check the checkbox of the alert to be set in the alert group (multiple selection possible).
   Note: To unregister all alerts from the alert group, click the [Remove All Alert] button (see the figure in step 1.).
5. Click the [OK] button to close the [New Group] window.

6. To set alerts for other equipment, click the [Details] button of the added alert group (see the figure in step 2 of section 1.8.1.). The [Group Details] window is shown.
7. Set the alert to the alert group with the same procedure as step 3 to step 5.
8. To save the configuration, perform a consistency check, then save the configuration data on the [Save and Sync] menu.

1.8.3 How to edit an alert group

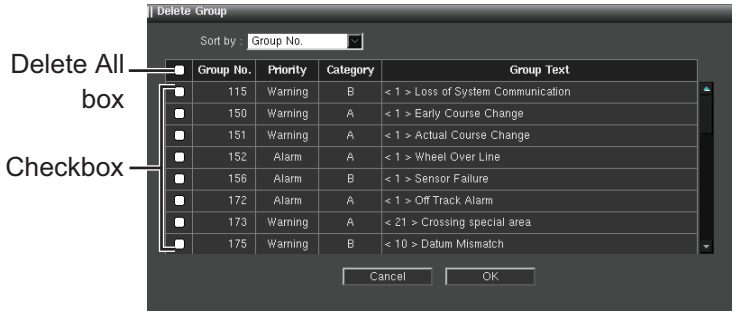
1. Click the [Details] button of the alert group to edit on the [Alert Group Setting] window, referring to the figure in step 2 of section 1.8.1. The [Group Details] window is shown.



2. Set the appropriate items in the [Group Setting] column referring to the step 2 of section 1.8.2.
3. Select the alert to add in the alert group referring to the step 3 to step 4of section 1.8.2.
4. Click the [OK] button to close the [Group Details] window.
5. To save the configuration, perform a consistency check, then save the configuration data on the [Save and Sync] menu.

1.8.4 How to delete an alert group

1. Click the [Delete Group] button on the [Alert Group Setting] window, referring to the figure in step 2 of section 1.8.1. The list of the alert groups is shown in the [Group Details] window.



2. Check the checkbox of the alert group to delete. To delete all groups, check the “Delete All” box.
3. Click the [OK] button.
4. To save the configuration, perform a consistency check, then save the configuration data on the [Save and Sync] menu.

1.8.5 Alert Definition setting for each equipment

You can create alert definitions and activate/deactivate the alert(s) for each external equipment or sensor.

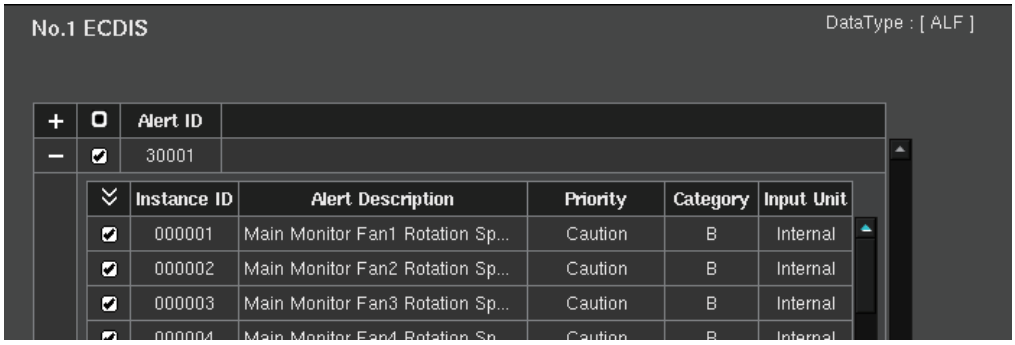
1. Access the [Common Installation Setting] menu, then select [Alert Define List] on the tab bar.
2. Select the appropriate equipment type on the menu bar. For example, select [ECDIS] → [FMD-3100] to set the alert definitions for FMD-3100.
   Note: The equipment and sensors shown on the menu bar depend on the [Installation Parameters] menu settings.

3. Set the appropriate options referring to the table shown below.

Item		Remarks
1	Equipment type	Selected equipment type.
2	[Source]	Define the source category to which the alert is assigned for display in the AMS mode's alert list window ([Navigation], [Communication] or [External]).
3	[Data Type]	Alert sentence format (ALF or ALR). For sensors, select the alert notification sentence from the pull-down list.
4	[New Alert] button	Add a new alert definition. See section 1.8.6.
5	[Delete Alert] button	Delete the alert definition. See section 1.8.8.
6	Alert extension button/ All selection checkbox	• [+]/[–]: Click to open/close all alerts ([+]: Open, [-]: Close). This appears when the alert notification sentence is ALF. • Check the checkbox to select all alert instances. This appears when the alert notification sentence is ALF.
7	Separate change button	• [+]/[–]: Click to open/close the detail window for the alert ([+]: Open, [-]: Close). • Check the checkbox to select the alert, and all instances are selected for ALF sentence. This only appears when the alert notification sentence is ALF.
8	Switching checkbox (for alert instance)	Show all instances or show only valid state instances. This only appears when the alert notification sentence is ALF. • [⌄⌄]: Show the data for all instances. • [⌄]: Show the data for activated instances.
9	Checkbox to activate/deactivate	Check the checkbox to activate the alert.
10	[Alert No.] (ALR) [Alert ID] (ALF)	Alert number
11	[Instance ID]	Instance number. This appears when the alert notification sentence is ALF.

Item		Remarks
12	[Alert Name] (ALR) [Alert Description] (ALF)	Alert name (editing possible)
13	[Priority]	The priority of the alert group (Alarm/Warning/Caution), possible to edit.
14	[Category]	The category of the alert group (A to C), possible to edit.
15	[Input Unit]	The unit which input the alert.
16	[Details] button	Show the detail window for the alert. See section 1.8.7.
17	[Edit] button	Edit the alert number. This appears when the alert notification sentence is ALF.
18	[Import] button	Import the alert definition for currently displayed equipment.
19	[Export] button	Export the alert definition for currently displayed equipment.

4. Select the appropriate equipment on the menu bar to activate the alert for each equipment. For example, the alert number “153” can be activated for No.1 ECDIS and deactivated for No.2 ECDIS. The following figure is the sample when the No.1 ECDIS is selected. The alerts are listed based on the alert definition of the equipment.

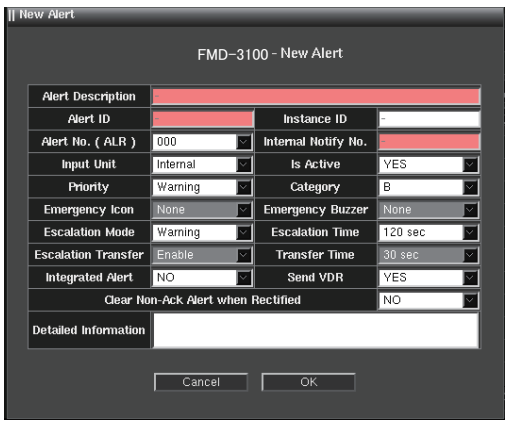


5. Check the checkbox of the alert to activate.
6. To save the configuration, perform a consistency check, then save the configuration data on the [Save and Sync] menu.

1.8.6 How to add an alert definition

An alert definition can be added newly. The maximum number of alert definition is 1,000.

1. Click the [New Alert] button on the alert definition window referring to the figure in step 2 of section 1.8.5. The [New Alert] window is shown.
   Note: The 1,000 alert definitions have been registered, the message "Too many alert. Please delete any alert." is shown. If this occurs, delete any alert definition to make space for the new alert definition.



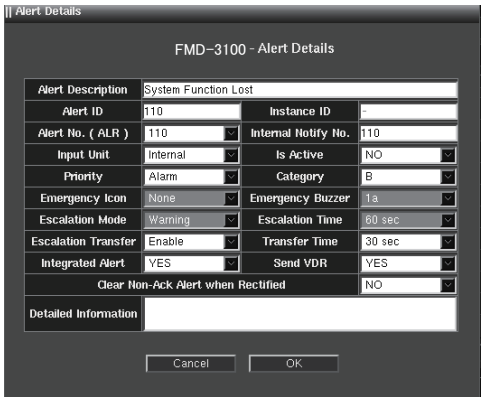
2. Set the options referring to the table shown below.

Item	Remarks
[Alert Name] (ALR) [Alert Description] (ALF)	Enter the alert name (max. 64 characters).
[Alert ID] (For ALF)	Enter the alert number for the ALF sentence.
[Instance ID] (For ALF)	Enter the Instance ID.
[Internal Notify No.]	Enter the notify number of the equipment. For sensors, this is automatically numbered.
[Input Unit]	Select the input source for the alert. • For other than sensors: [Internal], [Digital] • For sensors: [CCRS], [Digital], [MODBUS]
[Is Active]	Activate/Deactivate the alert. [YES]: activated, [NO]: deactivated.
[Priority]	The priority of the alert group ([Emergency]/[Alarm]/[Warning]/[Caution]).
[Category]	The category of the alert group (A to C).
[Emergency Icon]	Select the icon for the emergency alert. Available only for alerts with [Priority] set to [Emergency].
[Emergency Buzzer]	Select the buzzer sound for the emergency alert. Available only for alerts with [Priority] set to [Emergency].
[Escalation Mode]	Select the priority that escalates the status of an alert, [Alarm] or [Warning]. Available only for alerts with [Priority] set to [Warning]. • [Alarm]: When the alert is left unacknowledged, the priority is changed to [Alarm]. • [Warning]: When the alert is left unacknowledged, the priority remains as [Warning]. Then, the alert buzzer sounds again.
[Escalation Time]	Set the time to wait before activating the escalation function against an alert. Available only for alerts with [Priority] set to [Warning].
[Escalation Transfer]	Enable or disable transfer of an Alarm priority alert in the transfer escalation mode. Available only for alerts with [Escalation Mode] set to [Alarm].
[Transfer Time]	Set the time to wait before transferring an Alarm priority alert in the transfer escalation mode. Available only for alerts with [Escalation Mode] set to [Alarm].
[Integrated Alert]	Keep the default setting.
[Send VDR]	Select [YES] to transfer the ALR sentence to the VDR.
[Clear Non-Ack Alert when Rectified]	Select [YES] to delete the non-acknowledged alerts automatically when they are rectified.
[Detailed Information]	Enter the detail information (max. 1023 characters) of the alert.

3. Click the [OK] button to close the [New Alert] window.
4. To save the configuration, perform a consistency check, then save the configuration data on the [Save and Sync] menu.

1.8.7 How to edit an alert definition

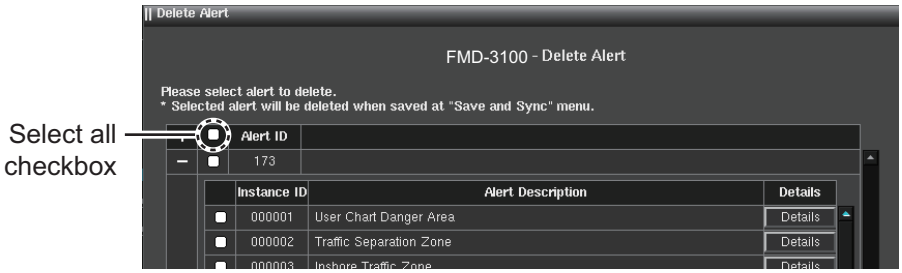
1. Click the [Details] button on the alert definition window of equipment type, referring to the figure in step 2 of section 1.8.5. The [Alert Details] window is shown.



2. Edit the options referring to step 2 of section 1.8.6.
3. Click the [OK] button to close the [Alert Details] window.
4. To save the configuration, perform a consistency check, then save the configuration data on the [Save and Sync] menu.

1.8.8 How to delete an alert definition

1. Click the [Delete Alert] button on the alert definition window of equipment type, referring to the figure in step 2 of section 1.8.5. The [Delete Alert] window is shown.



2. Check the checkbox to delete the alert. If all alerts are deleted, check the “Select all” checkbox.
3. Click the [OK] button.
4. To save the configuration, perform a consistency check, then save the configuration data on the [Save and Sync] menu.

1.9 [Data Sharing] Menu

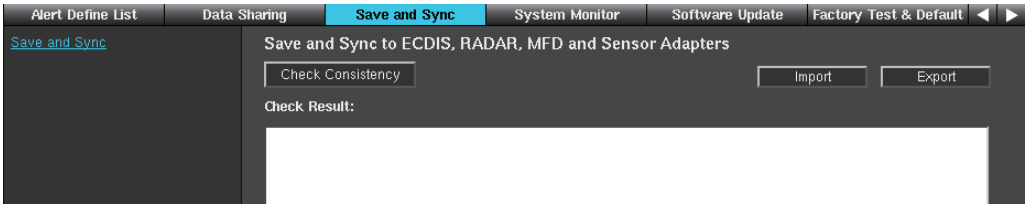
The [Data Sharing] menu is not used.

1.10 [Save and Sync] Menu

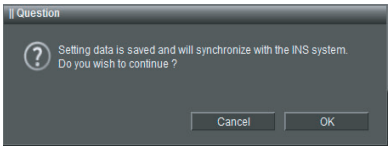
After completing the settings on the [Own Ship Setting], [Installation Parameters], [CCRS], [TCS], [AMS] and [Alert Define List] menus, confirm the consistency of the configuration and save it on this menu. By saving the configuration, the configuration data can be copied to other units connected to the network. The configuration data can be saved to a medium and loaded to a unit.

1.10.1 Consistency check and save the configuration

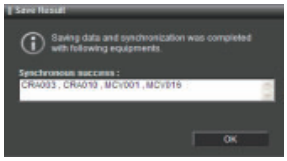
1. Access the [Common Installation Setting] menu and click [Save and Sync] on the tab bar.



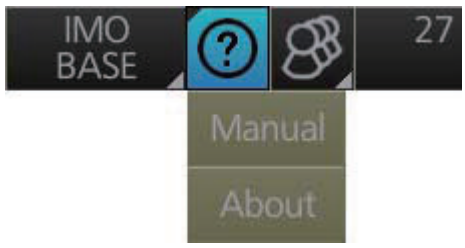
2. Click [Consistency Check] to confirm the consistency of the setting.
   When the consistency check is completed, the result of the check is shown.
   If an inconsistency is detected, an error message appears. You can not save the configuration until the inconsistency is corrected. Check the setting and correct the inconsistency, then perform the consistency check again.
3. When the message “Check consistency completed, you can save data. Please push the “Save” button” is shown, click [Save] in the Info bar.
   The pop-up message shown below appears.



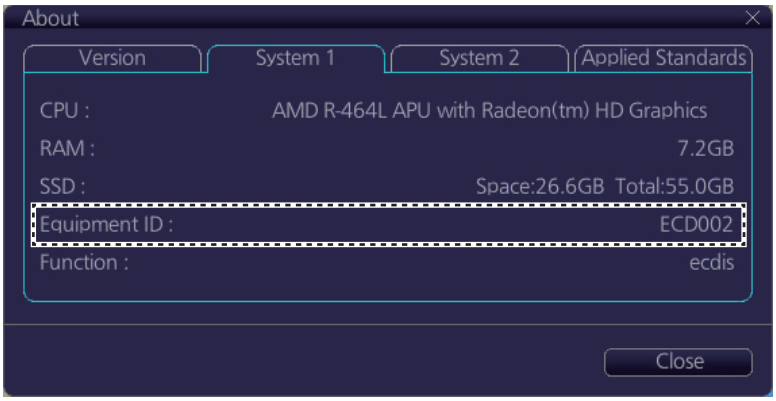
4. Click [OK] to save the configuration.
   If other ECDIS units and Sensor Adapters are connected to the network, a confirmation message similar to the one shown below appears. The message does not appear if a unit in the network is not powered. Click [OK] to save the configuration.



   Note: If you did the consistency check and save after entering settings on [Own Ship Setting], reboot the unit.
5. After saving the configuration, confirm that the Equipment ID of all units are correct.
   - **Panel computer unit PCU-3000**
     Check the Equipment ID as shown below.
     1) Click the [?] button on the Status bar.
     2) Click [About].



3) Check [Equipment ID] on the [System1] tab.



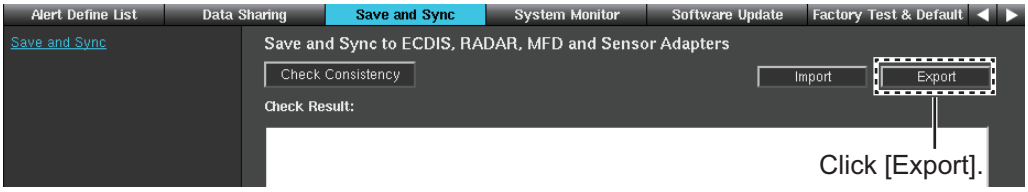
- **Sensor adapter**
  If the Equipment ID of the sensor adapter is not correct, the alert shown below appears.
  "Sensor adapter: Sensor Adapter * COM Timeout" (* = 1 to 16)

If the Equipment ID is not correct, set the Equipment ID on the [Basic Setting] menu (see section 1.2). At this time, turn off all units except the unit to be set, or disconnect all LAN cables except the cable for PC.

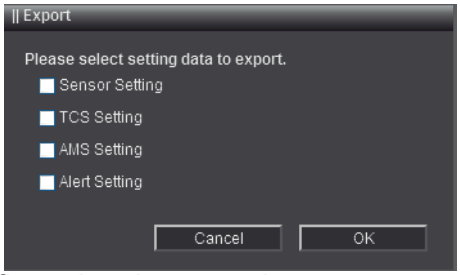
1.10.2 How to save the configuration data to a medium

This function is only available through a LAN-connected PC. You can save the configuration data to USB memory. Set the medium and then do as follows:

1. Select [Export] at the upper right of the [Save and Sync] menu.



The window shown below appears.

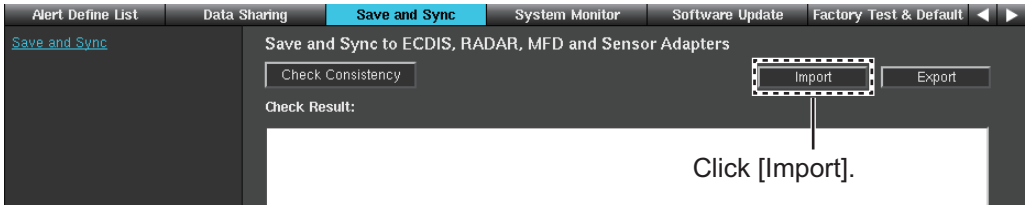


2. Select the configuration data type that you want to save, and then click [OK].
   - [Sensor Setting]: Configuration data on the [Own Ship Setting], [Installation Parameters] and [CCRS] menu.
   - [TCS Setting]: Configuration data on the [TCS] menu. Not used on FMD-3100.
   - [AMS Setting]: Configuration data on the [AMS] menu.
   - [Alert Setting]: Configuration data on the [Alert Define List] menu.
3. Select where to save the configuration data.
   The file name "SettingFiles.tar" is created.

1.10.3 How to load the configuration data

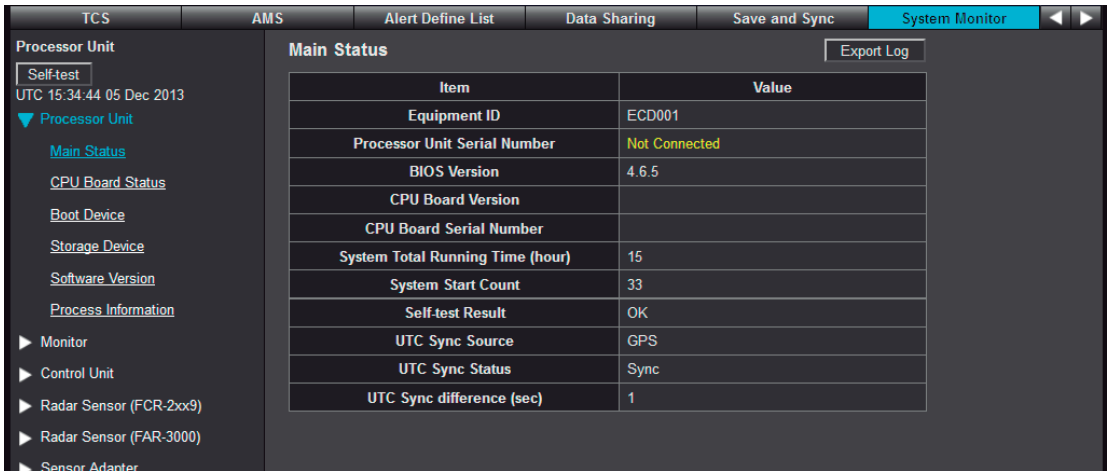
This function is only available through a LAN-connected PC. You can load the configuration data from USB memory. Set the medium and then do as follows:

1. Click [Import] at the upper right of the [Save and Sync] menu.



2. Select the configuration data file (“SettingFiles.tar”).
3. Select the configuration data type that you want to load, and then click [OK].
   - [Sensor Setting]: Configuration data on the [Own Ship Setting], [Installation Parameters] and [CCRS] menu.
   - [TCS Setting]: Configuration data on the [TCS] menu. Not used on FMD-3100.
   - [AMS Setting]: Configuration data on the [AMS] menu.
   - [Alert Setting]: Configuration data on the [Alert Define List] menu.
4. After loading the data, perform the consistency check and save the configuration data on the [Save and Sync] menu.

1.11 [System Monitor] Menu



This menu displays system information of units as shown below.

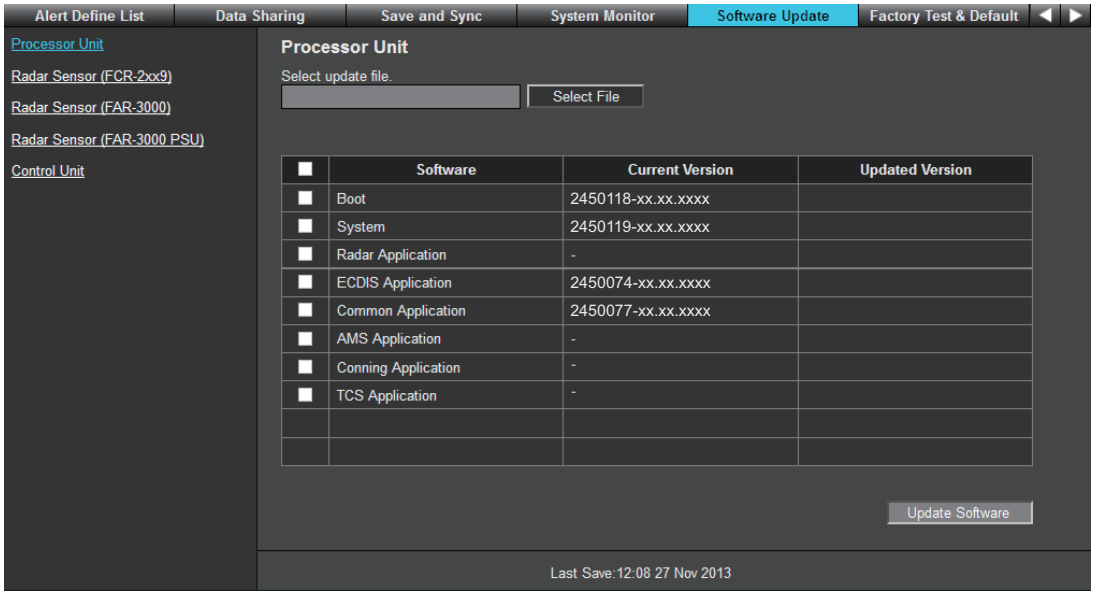
- Panel Computer Unit (PCU-3000)
- Trackball Control Unit
- Sensor Adapter

Click [System Log] to save the log data to the connected PC.

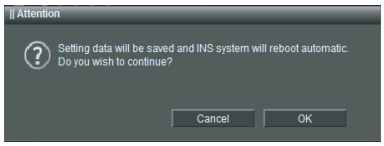
1.12 [Software Update] Menu

You can update the software for the PCU-3000 and Trackball Control Unit RCU-030 on the [Software Update] menu. To update sensor adapter software, see section 2.3.

Note: To update the software with the update file, access the [Common Installation Setting] menu via LAN connection. To update the software with the DVD, access the [Common Installation Setting] menu with the Trackball Control Unit.



1. For LAN connection, connect the USB memory which has the update file to the PC connected via LAN. For access with the Trackball Control Unit, insert the update DVD in the DVD drive.
2. Access the [Common Installation Setting] menu and click [Software Update] on the tab bar.
   For the IP address of the unit to update, see the Equipment ID list at the back of this manual.
3. Select the unit to update from the menu bar.
4. Click [Select File] to select the update, and then click [OK].
   The current software version and updated software version are displayed.
5. Check the checkbox for the software to update.
6. Click [Update Software]. A confirmation message appears.



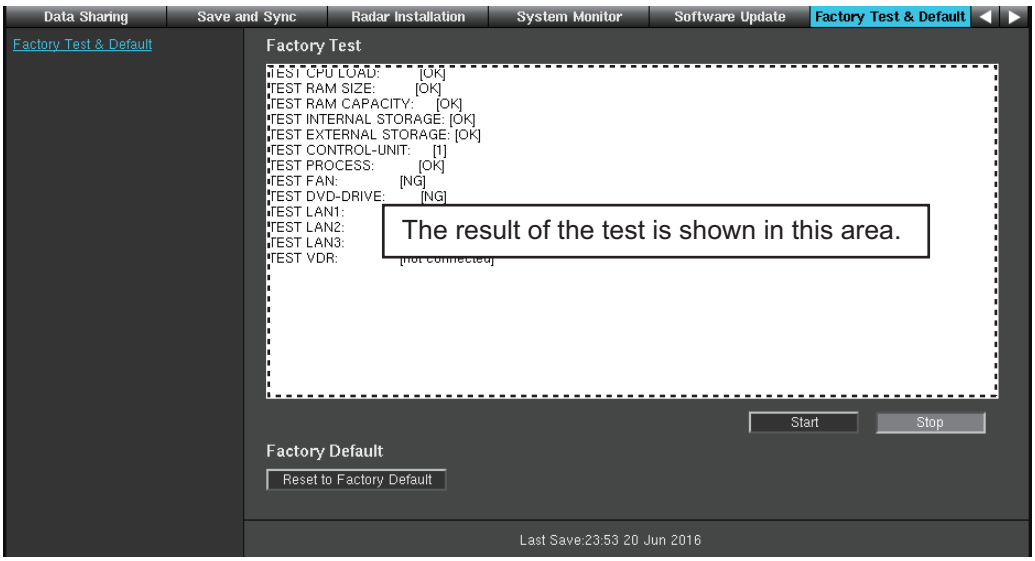
7. Click [OK] to update the software.
   The progress bar shows the update progress. After completing the update, the system is automatically rebooted.
8. **If connected to the gateway network via LAN**, the link is shown on the display after completing the system reboot. Click the link on the display to access the [Common Installation Setting] menu.
   If connected to the sensor network, enter the IP address of the sensor network to access the [Common Installation Setting] menu after completing the system reboot.

1.13 [Factory Test & Default] Menu

The [Factory Test & Default] menu does the factory test to check operation and restores the system default settings.

Factory Test

Click [Start] to perform the factory test. The result of the test is shown on the display.



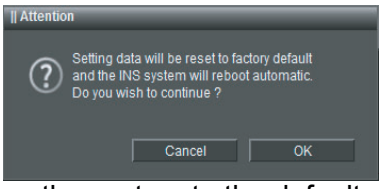
If “NG” appears, confirm the state of the unit on the [System Monitor] menu.

Factory Default

The factory default function restores all factory defaults (except the settings on the [Basic Setting] menu). In the default arrangement all ECDIS units powered in the network are restored to default condition.

Note: Restoring the unit to factory default will not erase user chart data or route data.

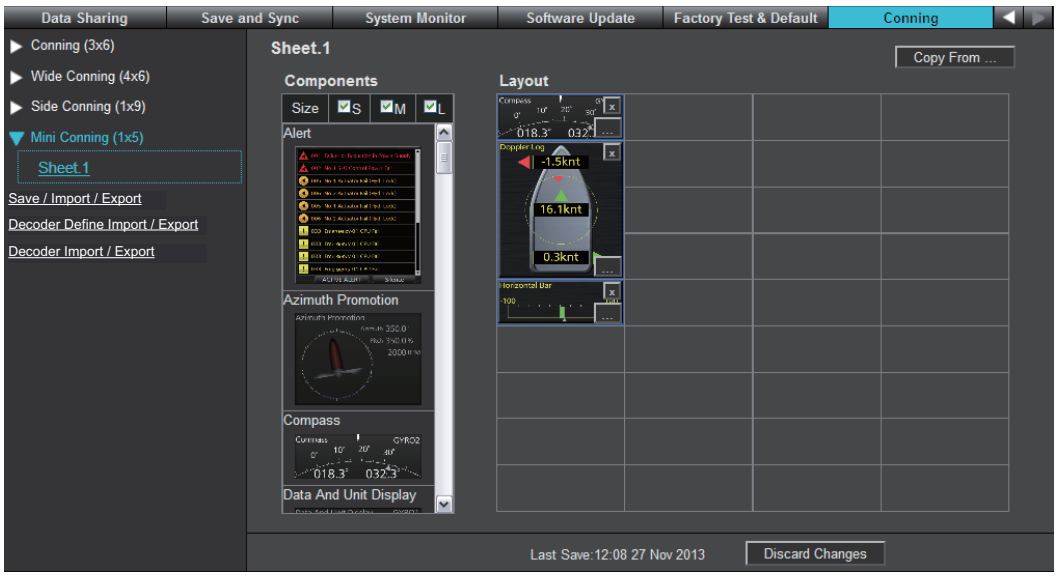
1. Click [Reset to Factory Default]. The following message appears on the screen.



2. Click [OK] to restore the system to the default setting.
   The progress bar shows update progress. When the restoration is completed, the system is automatically rebooted.
3. **If connected to the gateway network**, the link is shown on the display after completing the system reboot.
   Click the link on the display to access the [Common Installation Setting] menu.
   If connected to the sensor network, enter the IP address of the sensor network to access the [Common Installation Setting] menu after completing the system reboot.

1.14 [Conning] Menu

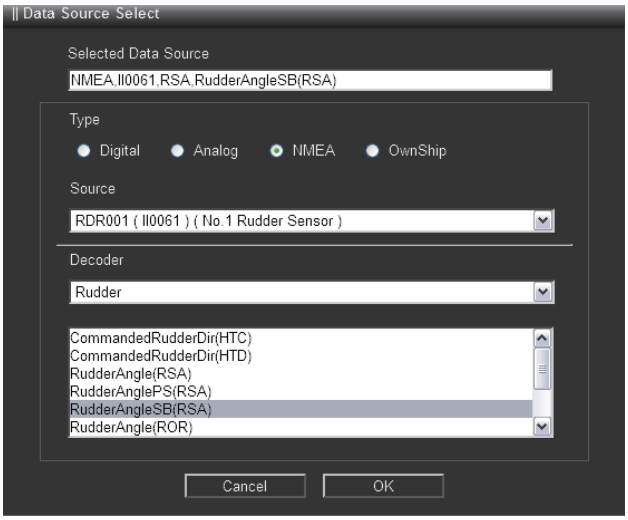
The [Conning] menu configures the layout and data to show on the conning display.



Menu item	Explanation
Items on the menu bar	
[Conning (3x6)]	No use.
[Wide Conning (4x6)]	
[Side Conning (1x9)]	
[Mini Conning (1x5)]	Consists of 5 blocks (1x5).
[Save/Import/Export]	You can save the conning display data to a medium and load it on the network.
[Decoder Define Import/Export]	No use.
[Decoder Import/Export]	No use.
Items in the view area	
[Name]	No use.
[Show]	No use.
[Copy From]	No use.
[Components]	Select the components to show on the conning display. The components are available in three sizes: [Small], [Medium], [Large]. The [Small] components occupy one block. The [Medium] components occupy two blocks. The [Large] components occupy three or more blocks. Check the size of the component to show on the [Components] window. Select the component and click it to show the component on the [Layout] window.
[Layout]	You can configure the layout and data to show on the conning display. Drag and drop the components to configure the layout. Click x to delete a component from the [Layout] window. To select the data source for a component, click ... to display the advanced settings window. See the procedure on section 1.14.1.

1.14.1 How to select the data source

You may select the data source for each component window in the layout. Click ... on the advanced settings window (see section 1.14.2 for specific component details) to display the [Data Source Select] window. Select the data source in the [Data Source Select] window to show the respective data on the conning display.



- [Selected Data Source]: This is automatically generated when [Type], [Source] and [Decoder] are selected.
- [Type]: Select the data source type.

Setting	Description
[Digital]	Displays contact input data.
[Analog]	Displays analog input data.
[NMEA]	Displays data received directly from NMEA device.
[Own Ship]	Displays Own Ship data received from own ship management program.

- [Source]: Select the sensor from which the data will be sourced.
- [Decoder]: Select which data from the source sensor to use.

1.14.2 Advanced settings window

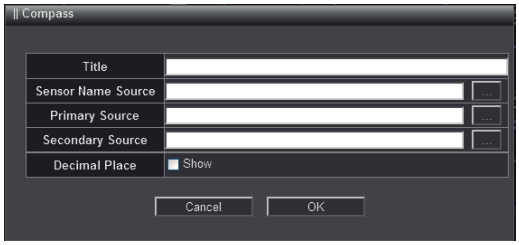
Note: Do not use the following components:

- CommonMP
- Fore & AFT bridge (Wide) U10662/ 10683/10782/1340
- Motion Sensor
- Steering Mode for GSI
- Fore & AFT bridge (Wide) Havyard122
- Fore & AFT bridge (Wide) NB802/818/ 830/832/857
- Nav. Information For GSI

[Small] components (one block)

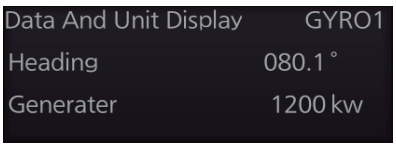
- **[Alert (Current Only)]**

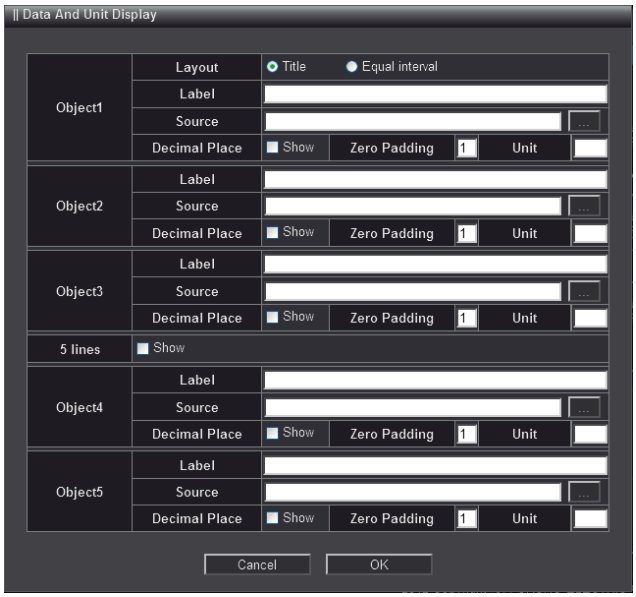
- **Compass**



[Title]: Enter the title of the component.
[Sensor Name Source]: Enter the sensor name.
[Primary Source]: Select the data source of the upper pointer.
[Secondary Source]: Select the data source of the lower pointer.
[Decimal Place]: Check the checkbox to show the value after decimal point.

- **Data And Unit Display**

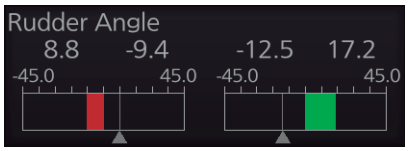


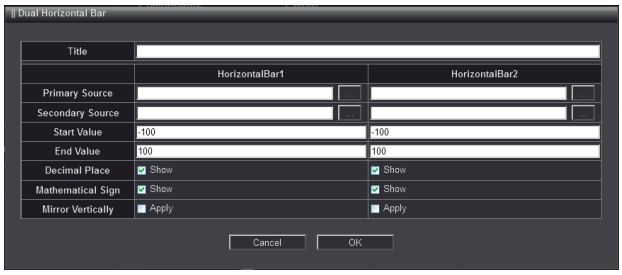


[Layout]: Check the checkbox of [Title] to show the title of the component. Check the checkbox of [Equal interval] to show only numeric data.
[Label]: Enter the data name of [Object 1] to [Object 4]. Example: "Heading", "Speed", etc.
[Source]: Select the data source of [Object 1] to [Object 4].

[Decimal Place]: Check the checkbox to show the value after decimal point.
[Unit]: Enter the unit.
[5 lines]: Check the checkbox to show five lines of data on the component.

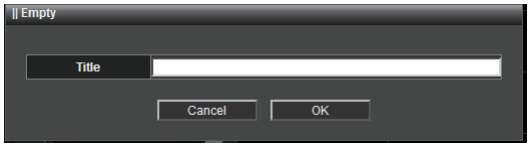
- **Dual Horizontal Bar**





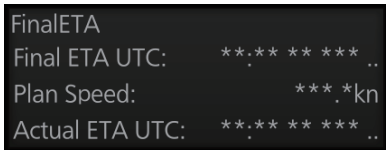
[Title]: Enter the title of the component.
[Primary Source]: Select the data source of the bar.
[Secondary Source]: Select the data source of the triangle below the bar.
[Start Value]: Set the minimum value of the bar.
[End Value]: Set the maximum value of the bar.
[Decimal Place]: Check the checkbox to show the value after decimal point.
[Mathematical Sign]: Check the checkbox to show the minus sign (-) when the value is minus.
[Mirror Vertically]: Check the box to invert the position of the bar and value.

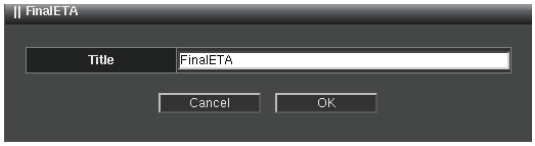
- **Empty**



[Title]: Enter the title of the component.

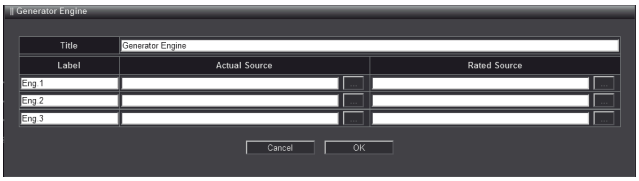
- **[Final ETA]**





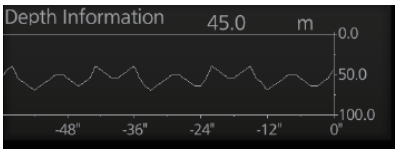
[Title]: Enter the title of the component.

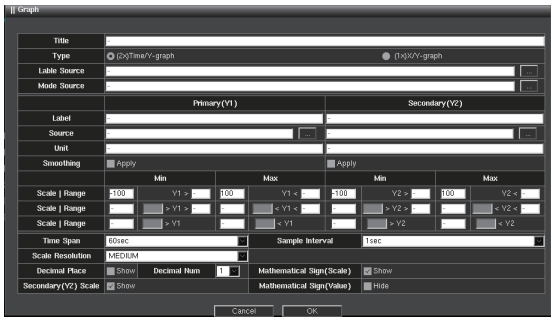
- **Generator Engine**



[Title]: Enter the title of the component.
[Label]: Enter the data name.
[Actual Source]: Select the data source of the actual engine generating power.
[Rated Source]: Select the data source of the rated engine generating power.

- **Graph**



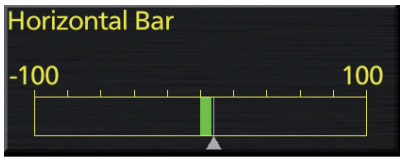


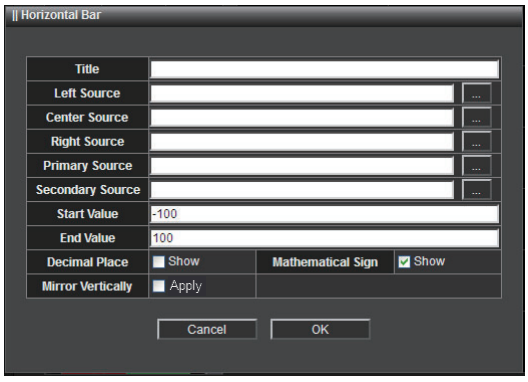
[Title]: Enter the title of the component.
[Type]: Set the graph type.

- [(2x)Time/Y-graph]: The [Primary (Y1)] and [Secondary (Y2)] are used as Y-coordinate for two independent graphs. The time is used as the X-coordinate for both graphs.
- [(1x)X/Y-graph]: The [Primary (Y1)] input is used for the X-coordinate and the [Secondary (Y2)] for the Y-coordinate.

[Label Source]: No use.
[Mode Source]: No use.
[Label]: Enter the title of [Primary (Y1)] and [Secondary (Y2)] graph.
[Source]: Select the data source of [Primary (Y1)] and [Secondary (Y2)].
[Unit]: Set the unit used in [Primary (Y1)] and [Secondary (Y2)] graphs.
[Smoothing]: Select [Apply] to smooth the graph.
[Scale │ Range]: Set the display range of the Y-coordinate. Three display ranges can be entered.
[Time Span]: Set the display range of the X-coordinate.
[Sample Interval]: Set the interval of [Primary (Y1)] and [Secondary (Y2)] graph plot.
[Scale Resolution]: Select the scale resolution of the graph.
[Decimal Place]: Check the checkbox to show the value after decimal point.
[Decimal Num]: Select the number of digits after decimal point.
[Mathematical Sign (Scale)]: Check the checkbox to show the minus sign (-) when the value of the Y-coordinate is minus.
[Mathematical Sign (Value)]: Check the checkbox to hide the minus sign (-) when the value above graph is minus.

- **Horizontal Bar**

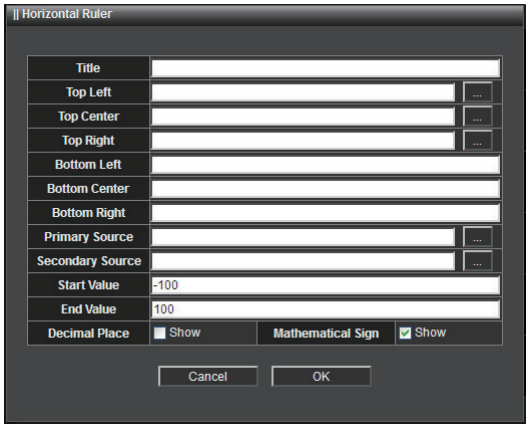




[Title]: Enter the title of the component.
[Left Source]: Select the data source of the value shown at the upper left of the bar.
[Center Source]: Select the data source of the value shown above the bar.
[Right Source]: Select the data source of the value shown at the upper right of the bar.

[Primary Source]: Select the data source of the green bar.
[Secondary Source]: Select the data source of the triangle below the bar.
[Start Value]: Set the minimum value of the bar.
[End Value]: Set the maximum value of the bar.
[Decimal Place]: Check the checkbox to show the value after decimal point.
[Mathematical Sign]: Check the checkbox to show the minus sign (-) when the value is minus.
[Mirror Vertically]: Check the checkbox to invert the position of the bar and value.

- **Horizontal Ruler**



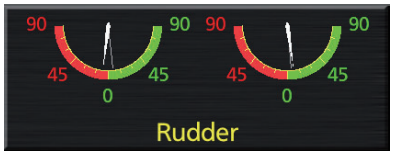
[Title]: Enter the title of the component.
[Top Left]: Select the data source of the value shown at the upper left of the bar.
[Top Center]: Select the data source of the value shown above the bar.
[Top Right]: Select the data source of the value shown at the upper right of the bar.
[Bottom Left]: Enter the text shown at the lower left of the bar.
[Bottom Center]: Enter the text shown below the bar.
[Bottom Right]: Enter the text shown at the lower right of the bar.
[Primary Source]: Select the data source of the indication shown with white triangle.
[Secondary Source]: Select the data source of the indication shown with gray triangle.
[Start Value]: Set the minimum value of the bar.
[End Value]: Set the maximum value of the bar.
[Decimal Place]: Check the checkbox to show the value after decimal point.
[Mathematical Sign]: Check the checkbox to show the minus sign (-) when the value is minus.

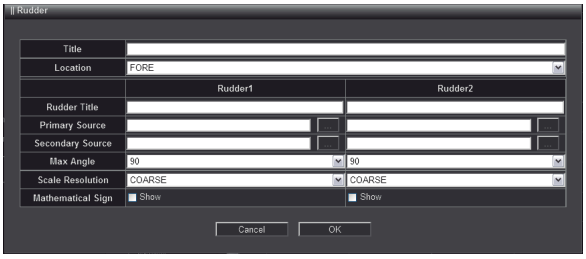
- **Numeric Data Display**

[Title]: Enter the title of the component.

[Source]: Select the data source same as [Object 1] or [Object 2] to show the abbreviated name of the data source unit.
[Label]: Enter the data name of [Object 1 (or 2)].
[Limit]: Set the digit number of the data of [Object 1 (or 2)].
[Source]: Select the data source of [Object 1 (or 2)].
[Zero Padding]: Set the number of decimal points to show "0" in the [Source] for each object.
[Unit]: Set the unit of data for [Object 1 (or 2)].

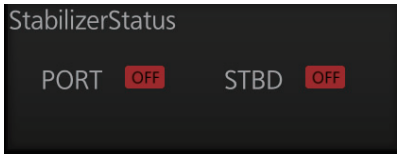
- **Rudder**

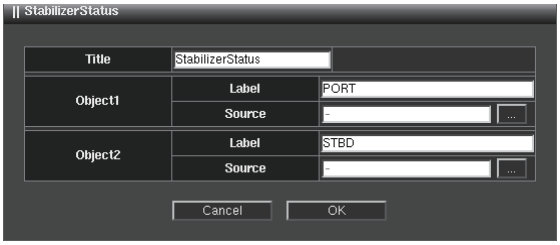




[Title]: Enter the title of the component.
[Location]: Select the rudder location from the pull-down list.
[Rudder Title]: Enter the title of the [Rudder 1 (or 2)] indicator.
[Primary Source]: Select the data source of the long pointer of [Rudder 1 (or 2)] indicator.
[Secondary Source]: Select the data source of the long pointer of [Rudder 1 (or 2)] indicator.
[Max Angle]: Set the maximum rudder angle of [Rudder 1 (or 2)] indicator.
[Scale Resolution]: Select the scale resolution.
[Mathematical Sign]: Check the checkbox to show the minus sign (-) when the value is minus.
[Zero Padding]: Set the number of decimal points to show "0" in the [Source] for each object.
[Unit]: Set the unit of data for [Object 1 (or 2)].

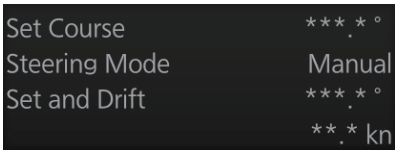
- **[Stabilizer Status]**



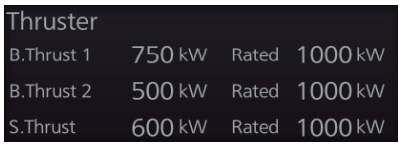


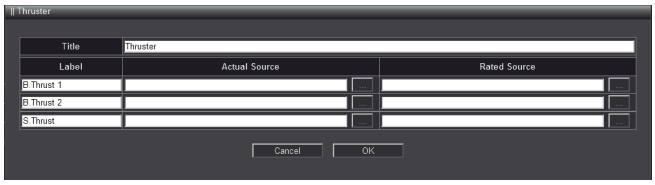
[Title]: Enter the title of the component.
[Object1 (to 4)]
[Label]: Enter the data name of [Object 1 (or 2)].
[Source]: Select the data source of [Object 1 (or 2)].

- **[Steering Mode]**



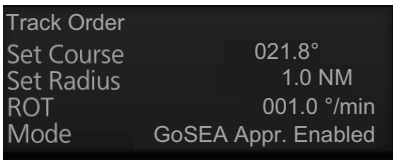
- **Thruster**

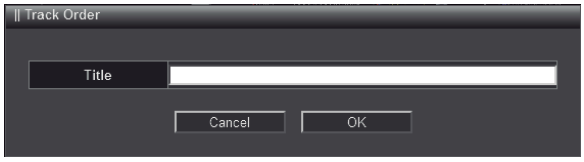




[Title]: Enter the title of the component.
[Label]: Enter the data name.
[Actual Source]: Select the data source of the actual thruster generating power.
[Rated Source]: Select the data source of the rated thruster generating power.

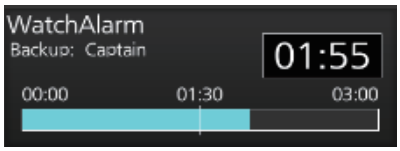
- **Track Order**

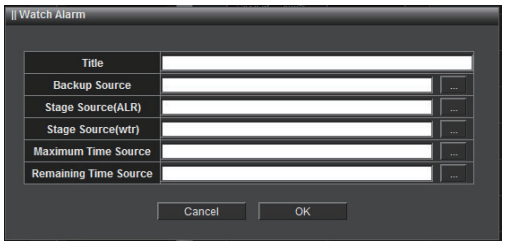




[Title]: Enter the title of the component.

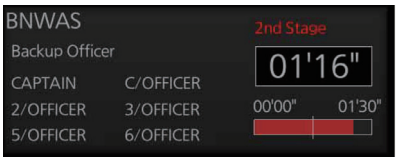
- **Watch Alarm**





[Title]: Enter the title of the component.
[Backup Source]: Select the data source of the backup officer name.
[Stage Source (ALR)]: Select the Stage Source (ALR).
[Stage Source (wtr)]: Select the Stage Source (wtr).
[Maximum Time Source]: Select the data source of the watch time setting.
[Remaining Time Source]: Select the data source of the remaining time.

- **[Watch Alarm (Multi)]**



[Title]: Enter the title of the component.
[Backup Source]: Cannot be changed. Set automatically.
[Stage Source (ALR)]: Select the Stage Source (ALR).
[Stage Source (wtr)]: Select the Stage Source (wtr).
[Maximum Time Source]: Select the Maximum Time Source.
[Remaining Time Source]: Select the Remaining Time Source.

[Medium] component (two blocks.)

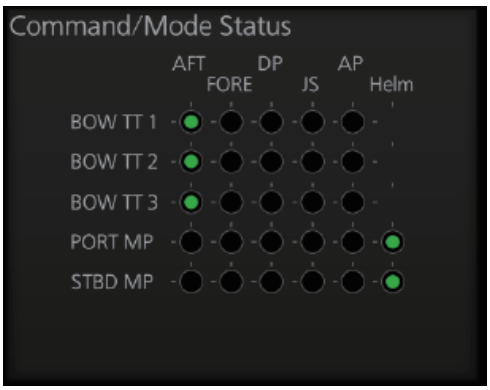
- **Azimuth Propulsion**

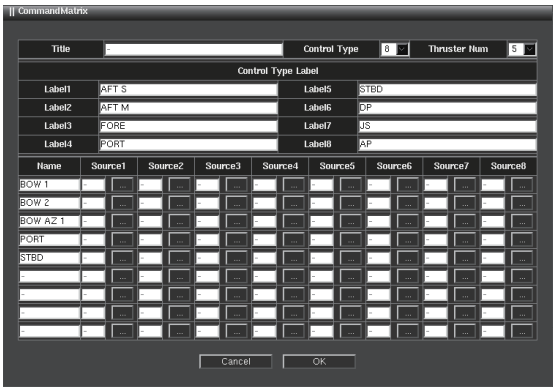
[Title]: Enter the title of the component.
Azimuth
[Label]: Enter the data name shown at the bottom of the indicator.
[Source]: Select the data source of the azimuth propulsion.
[Unit]: Enter the unit for the azimuth propulsion.
[North Angle]: Enter the north angle relative to the screen. Normally, enter "0".
[Value Mapping]: When the checkbox is checked, if the input azimuth angle is other than 0° to 359°, this equipment calculates the input value so that the azimuth angle is within 0° to 359°. For example, the input azimuth angle is “-90°”, the displayed value is “270°”. When the checkbox is unchecked, this equipment shows the same value as the input data.
Object
[Label]: Enter the data name of [Object1 (to 4)].
[Source]: Select the data source of the numeric data for [Object1 (to 4)].
[Unit]: Enter the unit for [Object1 (to 4)].

- **[Check ETA]**

[Title]: Enter the title of the component.

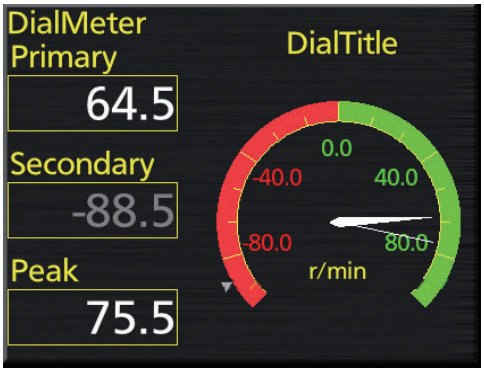
- **Command Matrix**

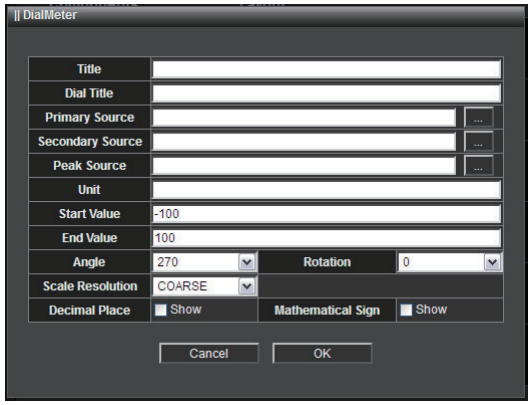




[Title]: Enter the title of the component.
[Control Type]: Set the number of columns for the matrix.
[Thruster Num]: Set the number of rows for the matrix.
[Control Type Label]: Enter the text that appears at the top of the matrix.
[Name]: Enter the text that appears at the left side of the matrix.
[Source1] to [Source8]: Set the source for the thruster data for the matrix.

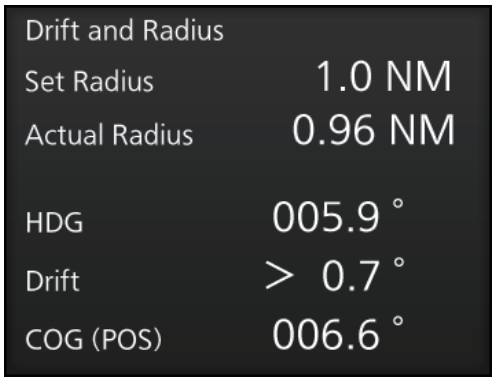
- **Dial Meter**

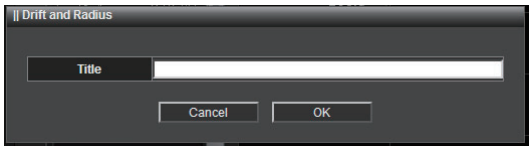




[Title]: Enter the title of the component.
[Dial Title]: Enter the text to show above the indicator.
[Primary Source]: Select the data source of the long pointer of the indicator.
[Secondary Source]: Select the data source of the outer pointer of the indicator.
[Peak Source]: Select the data source of the short pointer of the indicator.
[Unit]: Set the unit of the data.
[Start Value]: Set the minimum value of the indicator.
[End Value]: Set the maximum value of the indicator.
[Angle]: Define the extent of the dial.
[Rotation]: It can be rotate the direction of the indicator. Normally, set to ”0”.
[Scale Resolution]: Select the scale resolution.
[Decimal Place]: Check the checkbox to show the value after decimal point.
[Mathematical Sign]: Check the checkbox to show the minus sign (-) when the value is minus.

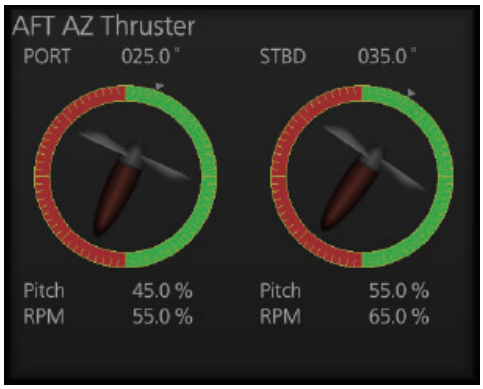
- **Drift And Radius**

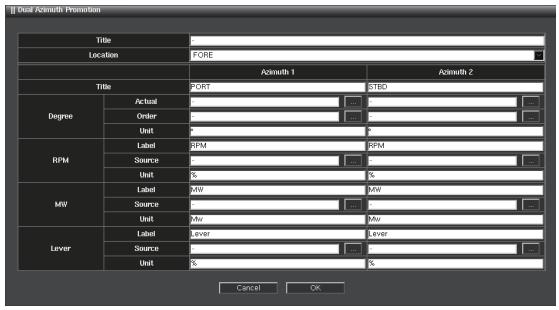




[Title]: Enter the title of the component.

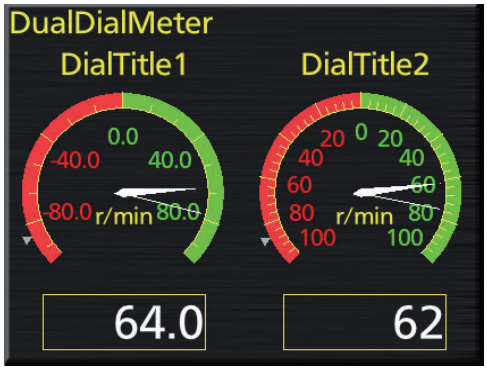
- **Dual Azimuth Promotion**





[Title]: Enter the title of the component.
[Location]: Select the position of thruster ([FORE] or [AFT]).
[Title]: Enter the title to show at the top of the indicator.
[Degree]
[Actual]: Set the source of the angle which the needle of the outer periphery points to (feedback angle of the thruster).
[Order]: Set the source of the angle which the needle of the inner periphery points to (actual azimuth of the thruster).
[Unit]: Enter the unit of measurement for the azimuth of the thruster.
[RPM]/[MW]/[Lever]
A maximum of three data can be displayed under the indicator.
[Label]: Enter the name of the data shown beneath the analog indicator,
[Source]: Set the source of the data that appears beneath the analog indicator.
[Unit]: Enter the unit for the data that appears beneath the analog indicator.

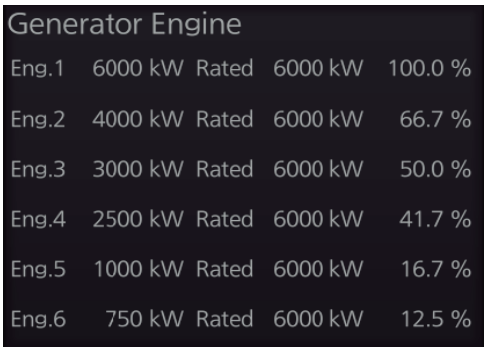
- **Dual Dial Meter**

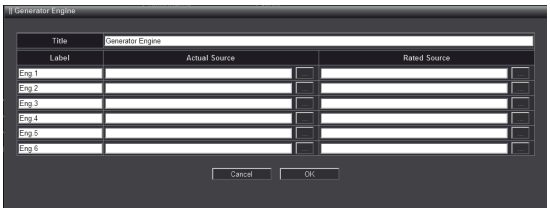


[Title]: Enter the title of the component.

[Dial Title]: Enter the title to show above [Dial Meter 1 (or 2)] indicator.
[Primary Source]: Select the data source of the long pointer of [Dial Meter 1 (or 2)] indicator.
[Secondary Source]: Select the data source of the outer pointer of [Dial Meter 1 (or 2)] indicator.
[Peak Source]: Select the data source of the short pointer of [Dial Meter 1 (or 2)] indicator.
[Unit]: Set the unit of the data.
[Start Value]: Set the minimum value of the [Dial Meter 1 (or 2)] indicator.
[End Value]: Set the maximum value of the [Dial Meter 1 (or 2)] indicator.
[Angle]: Define the extent of the dial.
[Rotation]: It can be rotate the direction of the [Dial Meter 1 (or 2)] indicator. Normally, set to ”0”.
[Scale Resolution]: Select the scale resolution of [Dial Meter 1 (or 2)] indicator.
[Decimal Place]: Check the checkbox to show the value after decimal point.
[Mathematical Sign]: Check the checkbox to show the minus sign (-) when the value is minus.

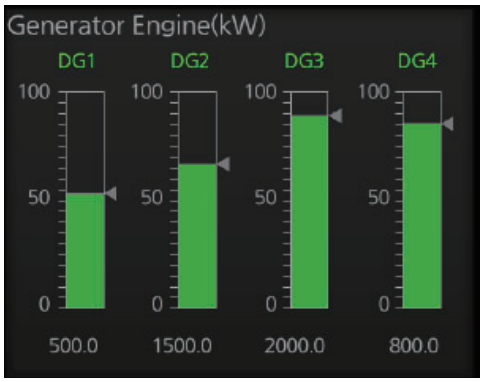
- **Generator Engine**





[Title]: Enter the title of the component.
[Label]: Enter the data name.
[Actual Source]: Select the data source of the actual engine generating power.
[Rated Source]: Select the data source of the rated engine generating power.

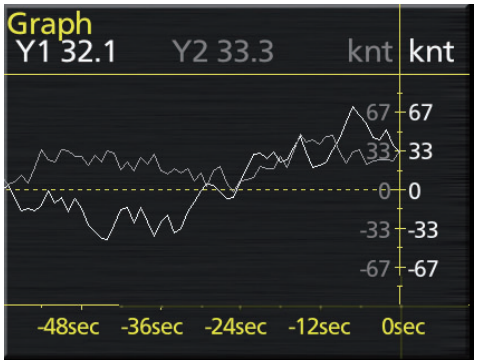
- **Generator Engine Bar**

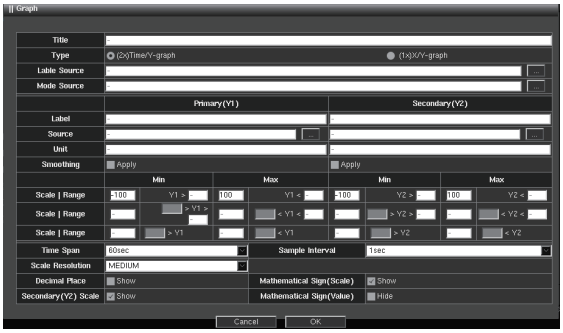


[Title]: Enter the title of the component.
[Number of Show]: Set the number of graphs.
[Label]: Enter the text on the upper of the graphs ([Object 1] to [Object 9]).
[Source]: Enter the source of the graphs ([Object 1] to [Object 9]).

[MAX Generate (kW)]: Enter the maximum values of the graphs ([Object 1] to [Object 9]).
[Source State]: Set the source that outputs operating status. The green indication of the graph means the generator is working, the red indication means the generator has stopped.

- **Graph**



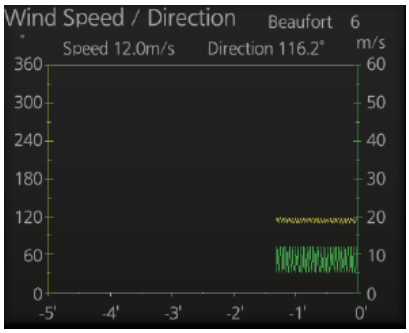


[Title]: Enter the title of the component.
[Type]: Set the graph type.

- [(2x)Time/Y-graph]: The [Primary (Y1)] and [Secondary (Y2)] are used as Y-coordinate for two independent graphs. The time is used as the X-coordinate for both graphs.
- [(1x)X/Y-graph]: The [Primary (Y1)] input is used for the X-coordinate and the [Secondary (Y2)] for the Y-coordinate.

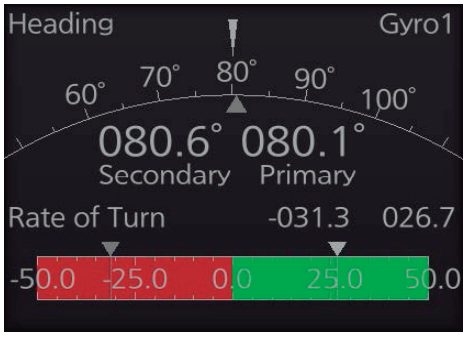
[Label Source]: No use.
[Mode Source]: No use.
[Label]: Enter the title of [Primary (Y1)] and [Secondary (Y2)] graph.
[Source]: Select the data source of [Primary (Y1)] and [Secondary (Y2)].
[Unit]: Set the unit used in [Primary (Y1)] and [Secondary (Y2)] graphs.
[Smoothing]: Select [Apply] to smooth the graph.
[Scale │ Range]: Set the display range of the Y-coordinate. Three display ranges can be entered.
[Time Span]: Set the display range of the X-coordinate.
[Sample Interval]: Set the interval of [Primary (Y1)] and [Secondary (Y2)] graph plot.
[Scale Resolution]: Select the scale resolution of the graph.
[Decimal Place]: Check the checkbox to show the value after decimal point.
[Secondary (Y2) Scale]: Check the check box to show the value input from the data source of [Secondary (Y2)].
[Mathematical Sign (Scale)]: Check the checkbox to show the minus sign (-) when the value of the Y-coordinate is minus.
[Mathematical Sign (Value)]: Check the checkbox to hide the minus sign (-) when the value above graph is minus.

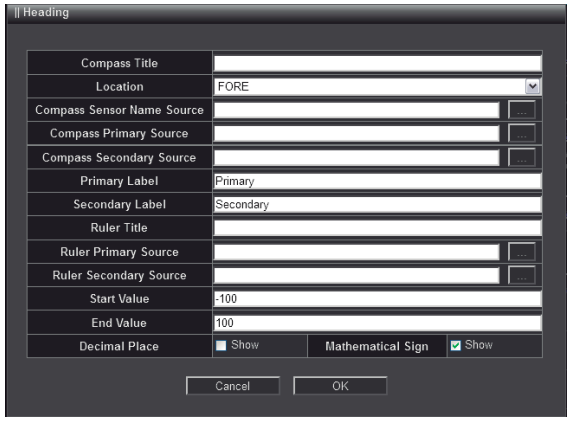
- **Graph (Wind Speed & Direction)**



[Title]: Enter the title of the component.
[Label]: Enter the title of [Wind Speed] and [Wind Direction].
[Source]: Select the source of [Wind Speed] and [Wind Direction].
[Unit]: Enter the unit of [Wind Speed] and [Wind Direction].
[Smoothing]: Select [Apply] to smooth the graph.
[Scale │ Range]: Set the display range of the Y-coordinate. Three display ranges can be entered.
[Time Span]: Set the display range of the X-coordinate.
[Sample Interval]: Set the interval of [Primary (Y1)] and [Secondary (Y2)] graph plot.
[Scale Resolution]: Select the scale resolution of the graph.
[Decimal Place]: Check the checkbox to show the value after decimal point.
[Secondary (Y2) Scale]: Check the check box to show the value input from the data source of [Secondary (Y2)].
[Mathematical Sign (Scale)]: Check the checkbox to show the minus sign (-) when the value of the Y-coordinate is minus.
[Mathematical Sign (Value)]: Check the checkbox to hide the minus sign (-) when the value above graph is minus.

- **Heading**

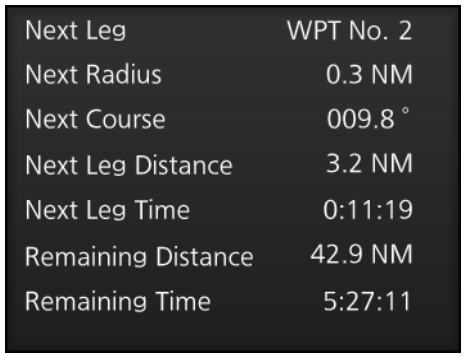




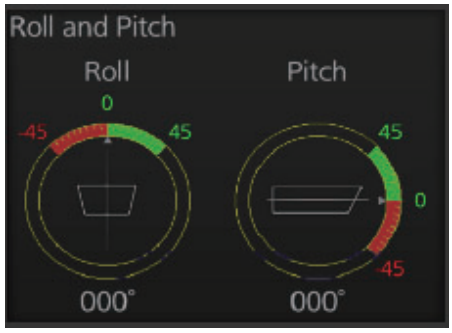
[Compass Title]: Enter the title shown at the top of the compass meter.
[Location]: Select the location of the heading sensor from the pull-down list.
[Compass Sensor Name Source]: Enter the name of the heading sensor.
[Compass Primary Source]: Select the data source of the upper pointer.
[Compass Secondary Source]: Select the data source of the lower pointer.
[Primary Label]: Enter the title for the primary source.
[Ruler Title]: Enter the title of the ruler.
[Ruler Primary Source]: Select the data source of the white triangle pointer.
[Ruler Secondary Source]: Select the data source of the gray triangle pointer.
[Start Value]: Set the minimum value of the bar.
[End Value]: Set the maximum value of the bar.

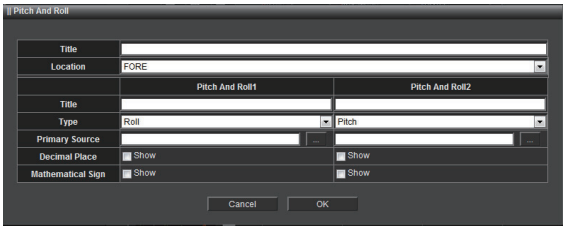
[Decimal Place]: Check the checkbox to show the value after decimal point.
[Mathematical Sign]: Check the checkbox to show the minus sign (-) when the value is minus.

- **Next Leg**



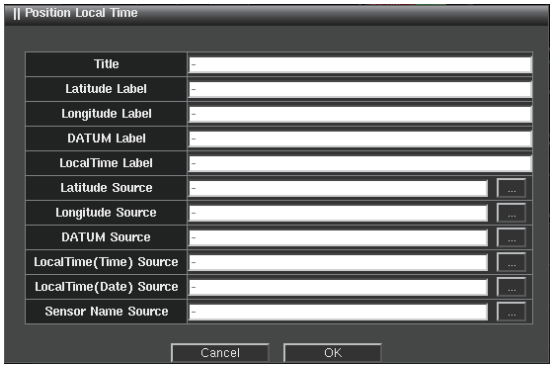
- **Pitch And Roll**





[Title]: Enter the title of the component.
[Location]: Select the reference point for the pitch and roll from the pull-down list.
[Title (Pitch And Roll 1 / Pitch And Roll 2)]: Enter the text shown above [Pitch And Roll 1 (or 2)] indicator.
[Type]: Select the object to show in the [Pitch And Roll 1 (or 2)]. Setting range: [Roll], [Pitch].
[Primary Source]: Select the data source of [Pitch And Roll 1 (or 2)] indicator.
[Decimal Place]: Check the checkbox to show the value after decimal point.
[Mathematical Sign]: Check the checkbox to show the minus sign (-) when the value is minus.

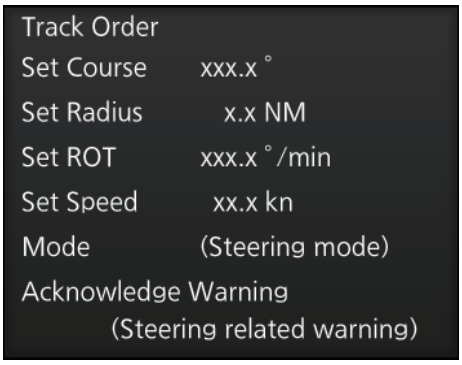
- **Position Local Time**

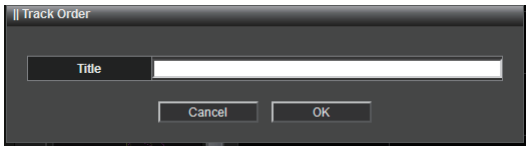


[Title]: Enter the title of the component.
[Latitude Label]: Enter the text to show at the left of the latitude value.
[Longitude Label]: Enter the text to show at the left of the longitude value.
[DATUM Label]: Enter the text that indicates the datum.
[Local Time Label]: Enter the text to show at the left of the time information.

[Latitude Source]: Select the data source of the latitude.
[Longitude Source]: Select the data source of the longitude.
[DATUM Source]: Select the data source of the datum.
[Local Time (Time) Source]: Select the data source of the time information.
[Local Time (Date) Source]: Select the data source of the date information.
[Sensor Name Source]: Select the appropriate sensor name source.

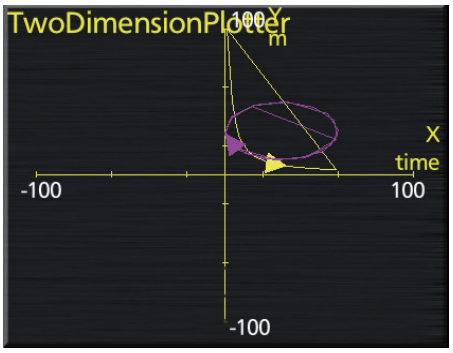
- **Track Order**

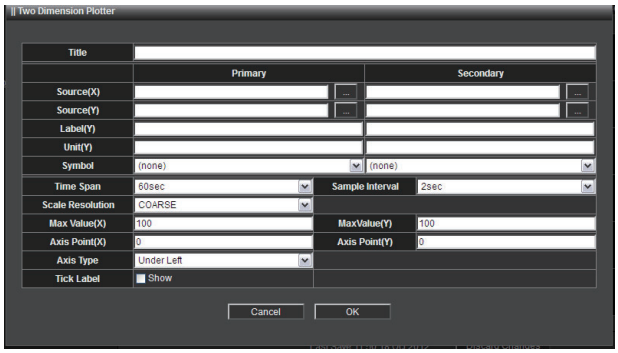




[Title]: Enter the title of the component.

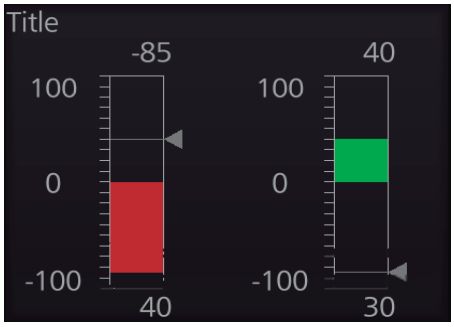
- **Two Dimension Plotter**

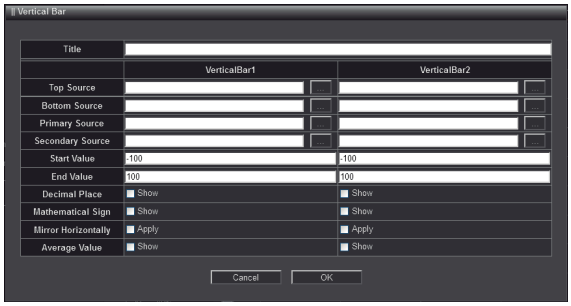




[Title]: Enter the title of the component.
[Source (X)]: Select the data source of the X-coordinate value.
[Source (Y)]: Select the data source of the Y-coordinate value.
[Label (Y)]: Enter the title of the Y-coordinate.
[Unit (Y)]: Set the unit of the Y-coordinate.
[Symbol]: Select the plot mark.
[Time Span]: Enter the time span for the plotter screen.
[Sample Interval]: Enter the sample interval for the plotter screen.
[Max Value (X)]: Enter the maximum value of the X-coordinate.
[Max Value (Y)]: Enter the maximum value of the Y-coordinate.
[Axis Point (X)]: Enter the axis point of X-coordinate.
[Axis Point (Y)]: Enter the axis point of Y-coordinate.
[Axis Type]: Select the axis type. [Under Left]: The axis point is located at the under left of the screen. [Central]: The axis point is located at the center of the screen.
[Tick Label]: Check the checkbox to show the tick label.

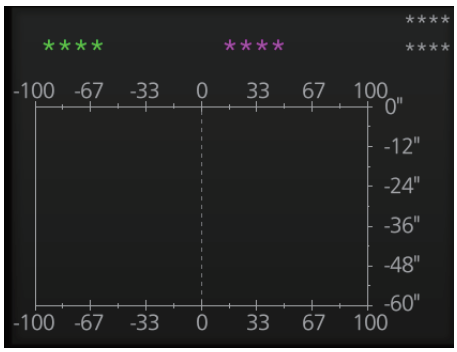
- **Vertical Bar**

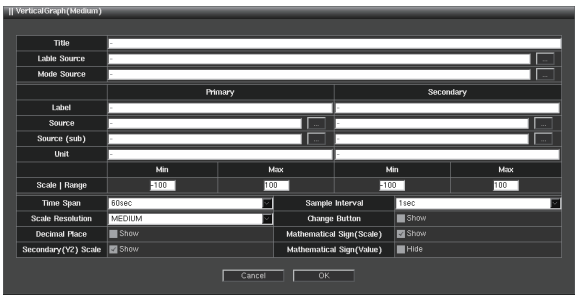




[Title]: Enter the title of the component.
[Top Source]: Select the data source of the data at the top of the vertical bar.
[Bottom Source]: Select the data source of the data at the bottom of the vertical bar.
[Primary Source]: Select the data source of the bar.
[Secondary Source]: Select the data source of the triangle indicator.
[Start Value]: Set the minimum value of the bar.
[End Value]: Set the maximum value of the bar.
[Decimal Place]: Check the checkbox to show the value after decimal point.
[Mathematical Sign]: Check the checkbox to show the minus sign (-) when the value is minus.
[Mirror Horizontally]: Check the checkbox to invert the position of the bar and value horizontally.
[Average Value]: Check the checkbox to show the average value.

- **Vertical Graph (Middle)**

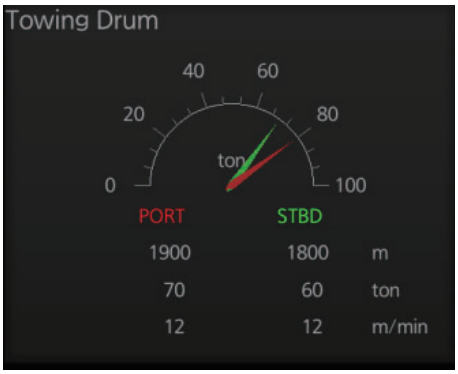


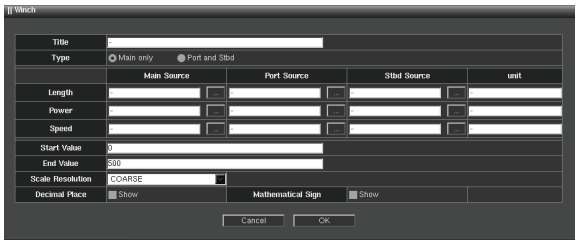


[Title]: Enter the title of the component.
[Label Source]: Enter the source of text shown on the right of the graph. Manual input is available.
[Mode Source]: Enter the source of text shown on the right of the value indication. Manual input is available.
[Label]: Enter the title of [Primary] and [Secondary].
[Source]: Select the data source of [Primary] and [Secondary].
[Source (sub)]: Set the other data source in the same range as the data of [Primary]. The [Source (sub)] appears only when the source of [Secondary] is not entered.
[Unit]: Set the unit in the [Primary] and [Secondary].
[Scale │ Range]: Set the display range of the X-coordinate. [Primary] is for the range of the upper of the graph, [Secondary] is for the range of the lower of the graph.
[Time Span]: Set the display range of the Y-coordinate.
[Sample Interval]: Set the interval of the graph plot.
[Scale Resolution]: Select the scale resolution of the graph.

[Change button]: Check the checkbox to show the [Change] button. Click the [Change] button to show the [Vertical Graph (Middle)] hidden behind. Check the checkbox of [Show] in [Change Button] to show the component hidden behind.
[Decimal Place]: Check the checkbox to show the value after decimal point.
[Secondary (Y2) Scale]: Check the check box to show the value input from the data source of [Secondary].
[Mathematical Sign (Scale)]: Check the checkbox to show the minus sign (-) when the value of the X-coordinate is minus.
[Mathematical Sign (Value)]: Check the checkbox to hide the minus sign (-) when the value above graph is minus.

- **Winch**





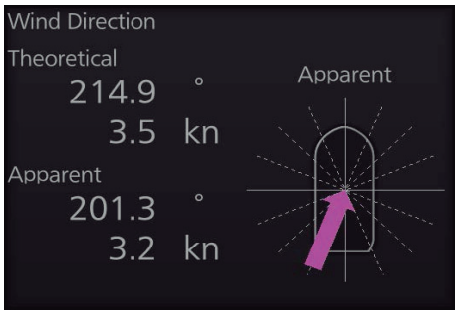
[Title]: Enter the title of the component.
[Type]: Select [Main only] or [Port and Stbd]. For [Main only], the information of only the main winch is shown. For [Port and Stbd], the information of each winch on both the port and starboard is shown.
[Length]: Set the source and unit of length for rope.
[Power]: Set the source and unit for rope winding force.
[Speed]: Set the source and unit for rope winding speed.
[Start Value]: Set the minimum value of the bar.
[End Value]: Set the maximum value of the bar.
[Scale Resolution]: Select the scale resolution of the graph.
[Decimal Place]: Check the checkbox to show the value after decimal point.
[Mathematical Sign]: Check the checkbox to show the minus sign (-) when the value is minus.

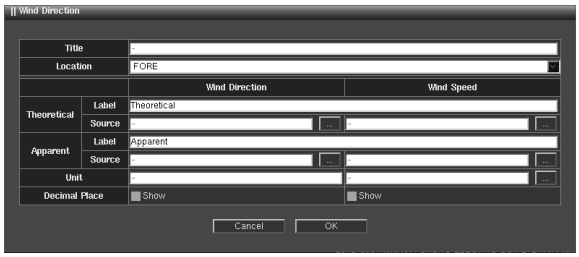
- **Winch Information**

[Title]: Enter the title of the component.
[Length]: Set the source and unit of length for rope.
[Power]: Set the source and unit for rope winding force.
[Speed]: Set the source and unit for rope winding speed.
[Decimal Place]: Check the checkbox to show the value after decimal point.

[Mathematical Sign]: Check the checkbox to show the minus sign (-) when the value is minus.

- **Wind Direction**

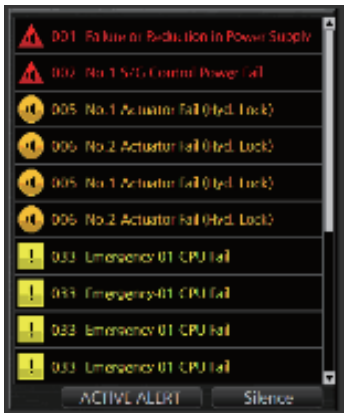




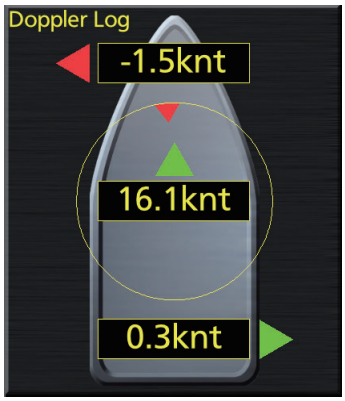
[Title]: Enter the title of the component.
[Location]: Select the reference point for the wind direction and speed from the pull-down list.
[Theoretical]
[Label]: Enter the data name for the theoretical wind direction and speed.
[Source]: Select the data source of the theoretical wind direction and speed.
[Apparent]
[Label]: Enter the data name for the apparent wind direction and speed.
[Source]: Select the data source of the apparent wind direction and speed.
[Unit]: Set the unit of the wind direction and wind speed.
[Decimal Place]: Check the checkbox to show the value after decimal point.

[Large] component (three or more blocks)

- **Alert**

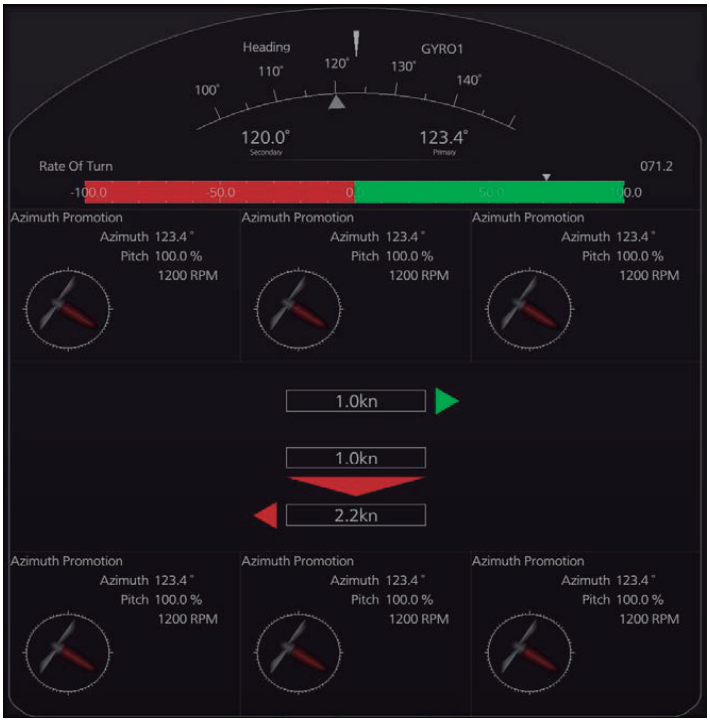


- **Doppler Log**



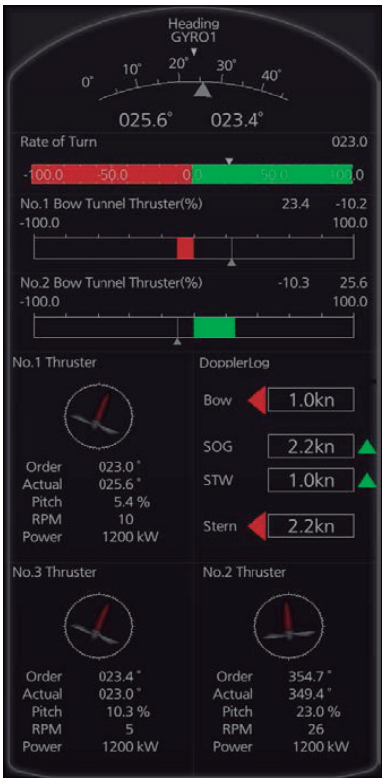
[Title]: Enter the title of the component.
[SOG Longitudinal Speed]: Select the data source of the longitudinal SOG.
[STW Longitudinal Speed]: Select the data source of the longitudinal STW.
[Bow Transverse Speed]: Select the data source of the longitudinal speed at the bow position.
[Stern Transverse Speed]: Select the data source of the longitudinal speed at the stern position.
[True Wind Direction Source]: Select the source of true wind direction indicated as the red triangle in the center of the component.
[Relative Wind Direction Source]: Select the source of relative wind direction indicated as the red triangle in the center of the component.
[Speed Type Source]: Select the data source same as [Longitudinal Speed Source] to show the abbreviated name of the data source unit.
[Sensor Name Source]: Select the appropriate sensor name source.
[Unit]: Set the unit of the ship's speed.
[Decimal Place]: Check the checkbox to show the value after decimal point
[Mathematical Sign]: Check the checkbox to show the minus sign (-) when the value is minus.
[Mirror Vertically]: Check the checkbox to invert the display vertically.

- **DP**



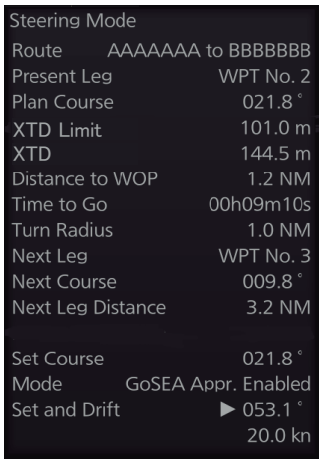
For the setting, see the description for [Compass], [Horizontal Ruler], [Azimuth Promotion], and [Doppler Log].

- **Fore & AFT bridge**, **Fore & AFT bridge (Wide) to Fore & AFT bridge9 (Wide)**



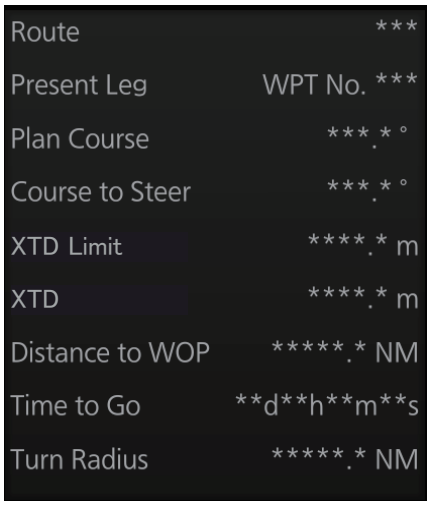
Multiple components are combined on this window. The contents are same as the single component.

- **NAV Information**

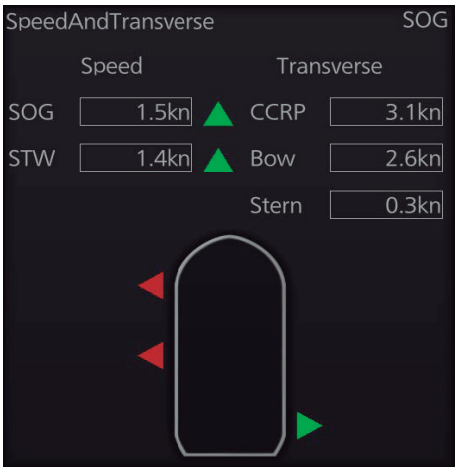


[Title]: Enter the title of the component.
[Component.Height]: Select the size of component.

- **Present Leg**

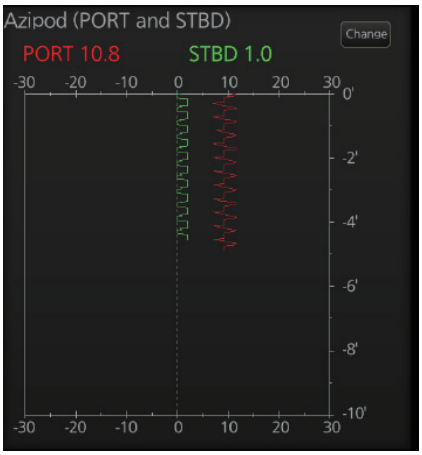


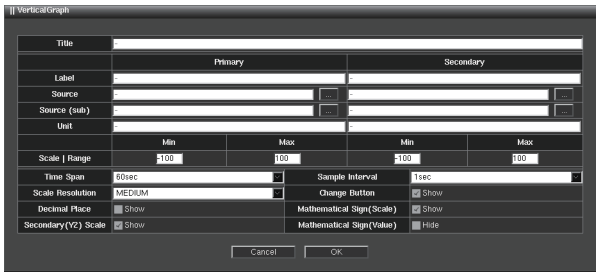
- **Speed And Transverse**



[Title]: Enter the title of the component.
[Location]: Select the reference point for the speed from the pull-down list.
[Speed Label]: Enter the title shown at the upper of the longitudinal speed value.
[Transverse Label]: Enter the title shown at the upper of the transverse speed value.
[SOG Longitudinal Speed]: Select the data source of the longitudinal SOG.
[STW Longitudinal Speed]: Select the data source of the longitudinal STW.
[CCRP Transverse Speed]: Select the data source of the longitudinal speed at the CCRP position.
[Bow Transverse Speed]: Select the data source of the longitudinal speed at the bow position.
[Stern Transverse Speed]: Select the data source of the longitudinal speed at the stern position.
[Speed Type Source]: Select the data source same as [Longitudinal Speed Source] to show the abbreviated name of the data source unit.
[Sensor Name Source]: Select the appropriate sensor name source.
[Unit]: Set the unit of the ship's speed.
[Decimal Place]: Check the checkbox to show the value after decimal point
[Mathematical Sign]: Check the checkbox to show the minus sign (-) when the value is minus.

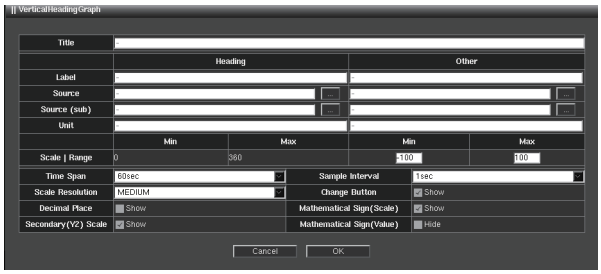
- **Vertical Graph**





[Title]: Enter the title of the component.
[Label]: Enter the title of [Primary] or [Secondary].
[Source]: Select the data source of [Primary] or [Secondary].
[Source (sub)]: Set the other data source in the same range as the data of [Primary]. The [Source (sub)] appears only when the source of [Secondary] is not entered.
[Unit]: Set the unit in the [Primary] or [Secondary].
[Scale │ Range]: Set the display range of the X-coordinate. [Primary] is for the range of the upper of the graph, [Secondary] is for the range of the lower of the graph.
[Time Span]: Set the display range of the Y-coordinate.
[Sample Interval]: Set the interval of the graph plot.
[Scale Resolution]: Select the scale resolution of the graph.
[Change button]: Check the checkbox to show the [Change] button. Click the [Change] button to show the [Vertical Graph (Middle)] hidden behind. Check the checkbox of [Show] in [Change Button] of the component hidden behind.
[Decimal Place]: Check the checkbox to show the value after decimal point.
[Secondary (Y2) Scale]: Check the check box to show the value input from the data source of [Secondary].
[Mathematical Sign (Scale)]: Check the checkbox to show the minus sign (-) when the value of the X-coordinate is minus.
[Mathematical Sign (Value)]: Check the checkbox to hide the minus sign (-) when the value above graph is minus.

- **Vertical Heading Graph**



[Title]: Enter the title of the component.
[Label]: Enter the title of [Heading] or [Other].

[Source]: Select the data source of [Heading] or [Other].
[Source (sub)]: Set the other data source in the same range as the data of [Heading]. The [Source (sub)] appears only when the source of [Other] is not entered.
[Unit]: Set the unit in the [Heading] and [Other].
[Scale │ Range]: Set the display range of the X-coordinate. [Heading] is for the range of the upper of the graph, [Other] is for the range of the lower of the graph.
[Time Span]: Set the display range of the Y-coordinate.
[Sample Interval]: Set the interval of the graph plot.
[Scale Resolution]: Select the scale resolution of the graph.
[Change button]: Check the checkbox to show the [Change] button. Click the [Change] button to show the [Vertical Heading Graph] hidden behind. Check the checkbox of [Show] in [Change Button] of the component hidden behind.
[Decimal Place]: Check the checkbox to show the value after decimal point.
[Secondary (Y2) Scale]: Check the check box to show the value input from the data source of [Secondary].
[Mathematical Sign (Scale)]: Check the checkbox to show the minus sign (-) when the value of the X-coordinate is minus.
[Mathematical Sign (Value)]: Check the checkbox to hide the minus sign (-) when the value above graph is minus.

1.15 The Network Transmission Setting Between ECDIS and Radar

Connect the ECDIS and radar (FAR-2××7/FAR-2××8/FCR-2××9/FAR-3××0 series) with the LAN cable to show the radar echo and TT symbols on the ECDIS chart display, and show the ECDIS route and user chart symbol on the radar display.

For non-Furuno radar, the ECDIS chart display can show the radar echo and TT symbol on the ECDIS chart display by connecting the ECDIS and radar by serial interface, using the radar connection box (RCB-002).

For FAR-2××7, FCR-2××9 series

Note: Confirm that the SPU board program version of the FAR-2xx7/FCR-2xx9 series is version “03.50” or after.

1. On the SPU board of the FAR-2xx7 and FCR-2xx9 series radars, set the Dip SW (S4) to ON.
2. To connect two antenna units, change the antenna number of second antenna unit to [2] and set the IP address and subnet mask as shown below.
   IP address: 192.168.031.102
   Subnet mask: 255.255.255.0
3. Do one of the two procedures below according to the radar connected.
   For FAR-2××7 series
   1) Press the **MENU** key to open the main menu.
   2) Press and hold the **1 HL OFF** key, then press the **MENU** key five times to open the [INITIALIZE] menu.
   3) Open [8. OTHERS] → [5. INS], then select [LAN].
   4) Go back to the [INITIALIZE] menu and open [6. TT PRESET] → [2. TT DATA OUTPUT], then select [TTM], [TRUE] and [4800].

For FCR-2××9 series

1) Press and hold the **1 HL OFF** key, then press the **MENU** key five times.
2) Select [9 RADAR INSTALLATION]→[4 TT PRESET]→[1 TTM/TTD PREFERENCE] and then select [TRUE].

4. Access the [Common Installation Setting] menu on the ECDIS.
5. Open the [Own Ship Setting] menu, then select [Radar Antenna] on the menu bar.
6. For one antenna unit, check [RAS001]. For two antenna units, check [RAS001] and [RAS002].

For FAR-3××0 series

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

For FAR-2××8 series

1. Press and hold the **1 HL OFF** key, then press the **MENU** key five times to open the [RADAR INSTALLATION] menu.
2. Select [0 NEXT].
3. Select [2 NETWORK SETTINGS], then set [2 LAN1•3 IP ADDRESS] to [CLASS C].
4. Go back to the first page of the [RADAR INSTALLATION] menu, then select [5 INSTALLATION].
5. Set the antenna number ([3 RADAR NO]), taking care not to duplicate the antenna number of other radars.
6. Go back to the second page of the [RADAR INSTALLATION] menu, then select [3 OTHER SETTINGS].
7. Set [4 ECDIS] to [LAN].
8. Go back to the first page of the [RADAR INSTALLATION] menu, then select [6 TT PRESET] → [2 TT DATA OUTPUT].
9. Set [2 SELECT SENTENCE] to [TTM] or [TTD].
10. Set [3 TTM/TTD REFERENCE] to [TRUE].
11. If you want to share the ship's speed and location data with the ECDIS, select [ECDIS] on the either of the following menu items:
    - Main menu → [7 INFORMATION BOX] → [2 OWN SHIP INFO] → [3 SPEED] → [2 SHIP SPEED]
    - Main menu → [7 IINFORMATION BOX] → [2 OWN SHIP INFO] → [4 OWN SHIP POSN] → [2 POSITION SOURCE]

    Note: The settings for the above two menu items are shared. When either one is changed, the other is also changed.

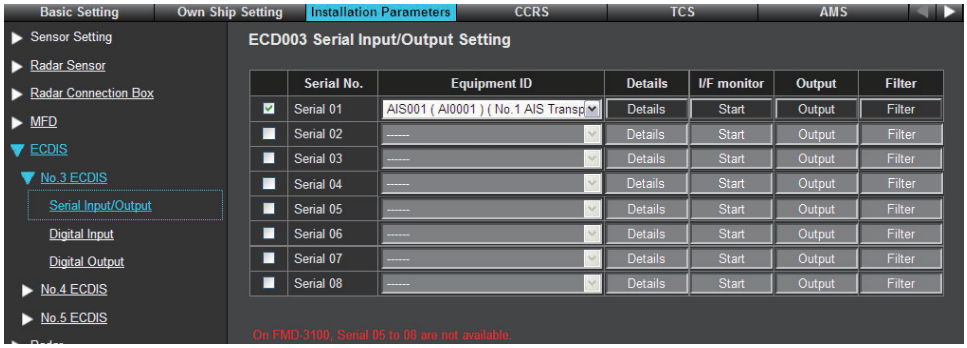
12. If you want to show the marks received from the ECDIS on the FAR-2××8 screen, open the main menu → [2 MARKS] → [6 ECDIS MARKS DISPLAY], then select [ON] or [OFF] as appropriate.
13. Access the [Common Installation Setting] menu on the ECDIS.
14. Open the [Own Ship Setting] menu, then select [Radar Antenna] on the menu bar.
15. For one antenna unit, check [RAS001]. For two antenna units, check [RAS001] and [RAS002].

For non-Furuno radar

1. Open [Installation Parameters]→[Sensor Setting]→[Other Sensor] menu on the ECDIS.
2. Check [OTR001] and enter “RA0201” in the [SFID] field. Do not use other than [RA0201] to [RA0204].
   Note 1: When entering the SFID, do not use the prefix "AI" (AIS excluded) or "II".
   Note 2: Do not enter the same SFID as any other equipment in the network.

	Equipment ID	SFID	Data Type	Strict / Loose	Details
☑	OTR001	RA0201	IEC61162-1 Ed4	Loose	Details
☐	OTR002		IEC61162-1 Ed4	Loose	Details
☐	OTR003		IEC61162-1 Ed4	Loose	Details
☐	OTR004		IEC61162-1 Ed4	Loose	Details
☐	OTR005		IEC61162-1 Ed4	Loose	Details
☐	OTR006		IEC61162-1 Ed4	Loose	Details

3. Select [Serial Input/Output] of the PCU you want to set on the menu bar.
4. Check the serial port to receive the TT symbol data and select “OTR001” from the [Equipment ID] drop-down list.
   The example shown below indicates that the [Serial 01] port of [ECD003] receives the No.1 AIS data.

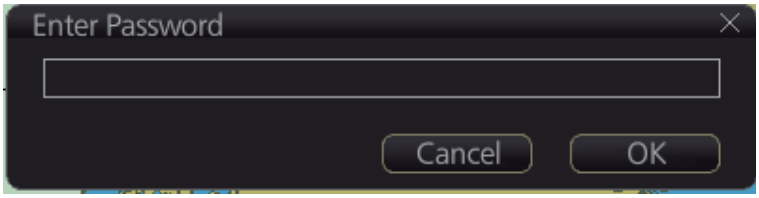


1.16 How to Set the Forwarding Distance

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

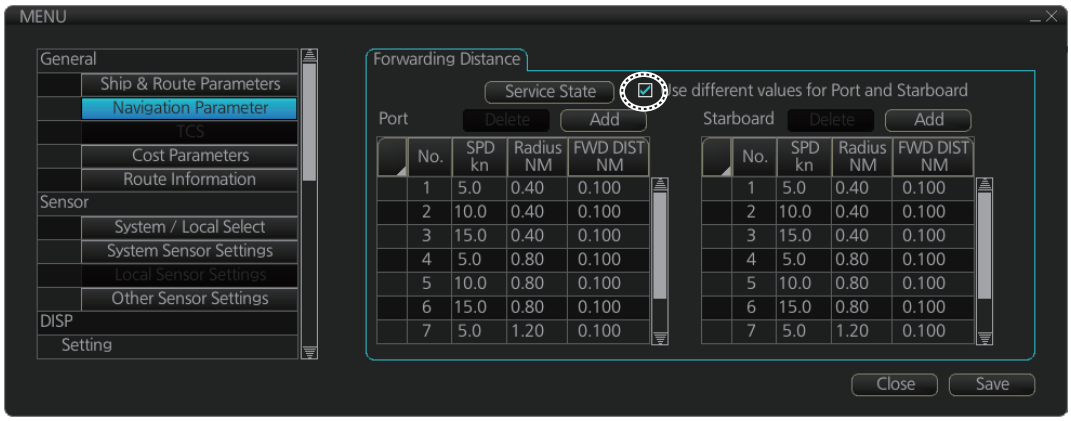
*: The distance the ship travels straight after the steering control.

1. Press **Ctrl**, **Shift** and **t** keys simultaneously on the control unit or keyboard.
   A dialog box for entry of password appears.



2. Enter the password and click the [OK] button.
   Note: The edit mode is enabled until you press **Ctrl**, **Shift** and **t** keys simultaneously or reboot the unit.
3. Click [MENU] to open the menu.
4. Click [Navigation Parameter] to show the [Navigation Parameter] setting window.

5. Enter [SPD kn] (ship speed), [Radius NM] (turning radius) and [FWD DIST NM] (forwarding distance*).
6. When [FWD DIST NM] is different between port and starboard sides, check the checkbox of "Use different values for Port and Starboard" and then enter each setting value.



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

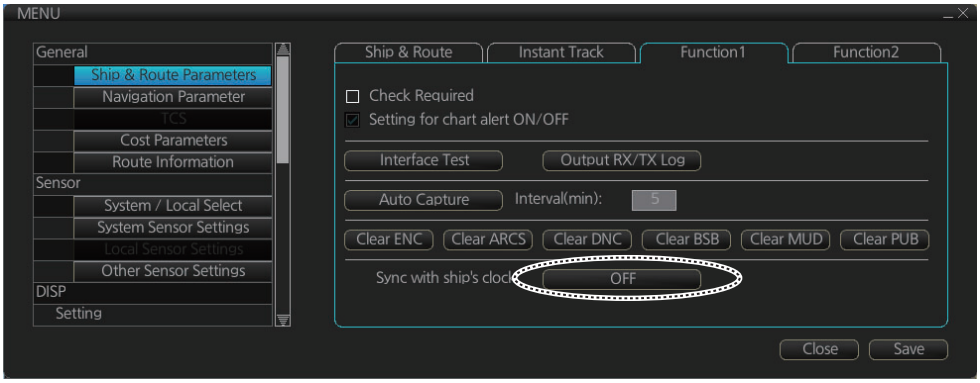
1.17 Synchronization With Ship's Clock

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

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

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

1. Press **Ctrl**, **Shift** and **t** keys simultaneously on the control unit or keyboard. The password input dialog box appears.
2. Enter the password and click the [OK] button.
   Note: The service mode remains enabled until you press **Ctrl**, **Shift** and **t** keys simultaneously or reboot the unit.
3. Click [MENU] to open the menu.
4. Click [Ship & Route Parameters], then click the [Function1] tab.



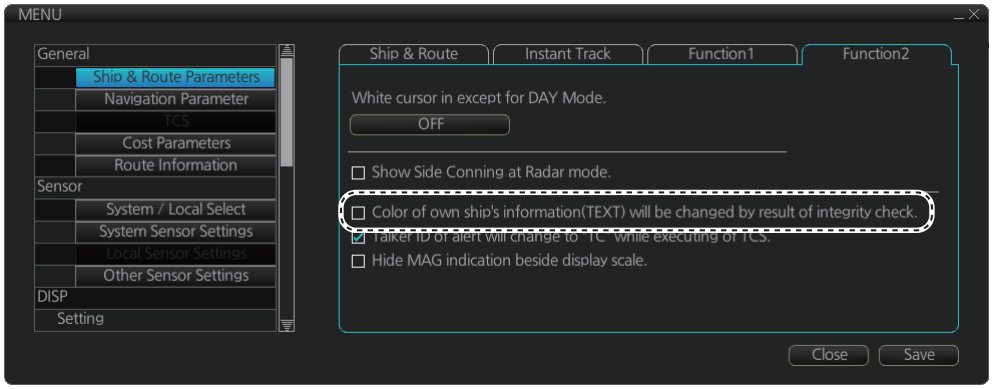
5. Click the [OFF] button of [Sync with ship's clock] to set "ON".
6. Click the [Save] button to save the configuration.

1.18 How to Change the Color of Data in the Sensor Information Box According to Integrity

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

1. Press **Ctrl**, **Shift** and **t** keys simultaneously on the control unit or keyboard. The password input dialog box appears.
2. Enter the password and click the [OK] button.
   Note: The service mode remains enabled until you press **Ctrl**, **Shift** and **t** keys simultaneously or reboot the unit.
3. Click [MENU] to open the menu.

4. Click [Ship & Route Parameters], then click the [Function2] tab.



5. Check the checkbox of [Color of own ship's information (TEXT) will be changed by result of integrity check].
6. Click the [Save] button to save the configuration.

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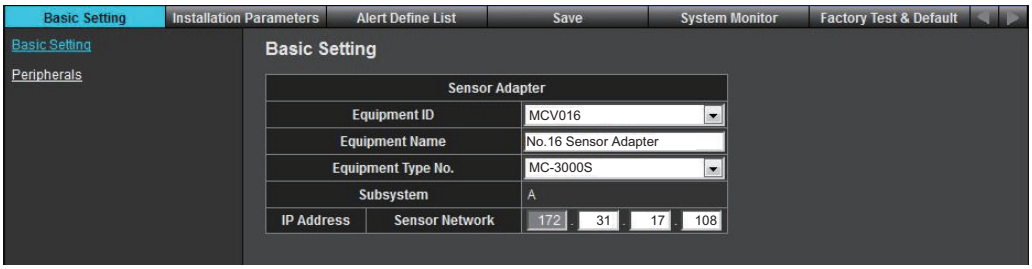
2. SETTINGS FOR SENSOR ADAPTER

The default Equipment ID of the Sensor Adapter is “MCV016“. Set the individual Equipment ID before connecting to the network.

Connect the Sensor Adapter to the ECDIS unit after setting the Equipment ID. Then enter the other settings of the Sensor Adapter from the [Common Installation Setting] menu on the ECDIS unit.

2.1 How to Set the Equipment ID

1. Set the IP address and subnet mask of the PC as shown below.
   IP address: 172.31.16.200
   Subnet mask: 255.255.0.0
2. Connect the laptop PC to the Sensor Adapter with the LAN cable.
3. Activate the web browser on the PC and enter the default IP address of the sensor adapter: “172.31.17.108”.
4. Access the [Common Installation Setting] menu and click [Basic Setting] on the tab bar.



5. Select the Equipment ID from the drop-down list. The [Equipment Name], [Equipment Type No.] and [IP Address] are automatically entered according to the Equipment ID.
   Setting range: “MCV001” to “MCV016”
6. After entering the setting, click [Save] on the Info bar. Several confirmation messages appear. Click [OK] to reboot the system.
   If you want to discard the entry, click [Discard Changes].

How to restore the default Equipment ID

When you can not define the Equipment ID of the Sensor Adapter, restore the default and set the Equipment ID again.

1. Turn on the No. 8 segment of the DIP switch S10 on the board in the MC-3000S.
2. Turn on the Sensor Adapter.
   The Equipment ID of the Sensor Adapter turns to default “MCV016”, and the IP address is set to “172.31.17.108”.
3. See section 2.1 “How to set the Equipment ID“ to set the Equipment ID of the Sensor Adapter.
4. Turn off the No. 8 segment of the DIP switch S10 on the board in the MC-3000S.

2.2 How to Save the Log File

The log file of the sensor adapter can be saved to a medium (PC, USB memory, etc.). The log file is used to check the status of the sensor adapter.

1. Connect the PC to the sensor adapter with the LAN cable.
2. Activate the web browser and enter the following address in the address bar.
   “http://172.31.xx.xxx/cgi-bin/logall.cgi”
   “172.31.xx.xxx” is the IP address of the sensor adapter where to save the log file.
3. After entering the address, the window to save the log file appears. Save the log file to the PC.

2.3 How to Update the Firmware (MC-3000S)

This section shows you how to update the firmware program of the sensor adapter MC-3000S.

Preparation

- PC that has a LAN port
  Windows® XP is recommended. Disable the firewall and set the IP address and subnet mask of the PC as shown below.
  IP address: 172.31.16.200
  Subnet mask: 255.255.0.0
- LAN cable
- Binary file for update

2450080-xxxxxxxx_mc_cs_boot.bin	Boot program
2450081-xxxxxxxx_mc_cs_mainpg.bin	Main program
2450082-xxxxxxxx_mc_cs_maint.bin	Maintenance program
2450084-xxxxxxxx_mc_io_mainpg.bin	Main program (analog, digital input, and digital output board)

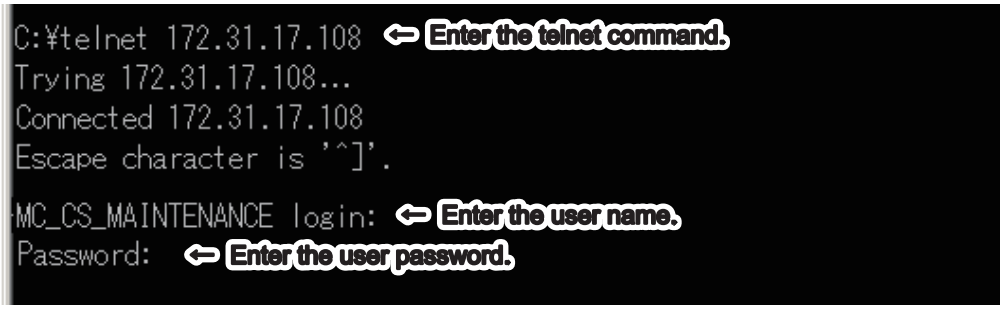
(xxxxxxxx: program version)

2.3.1 How to activate the maintenance program

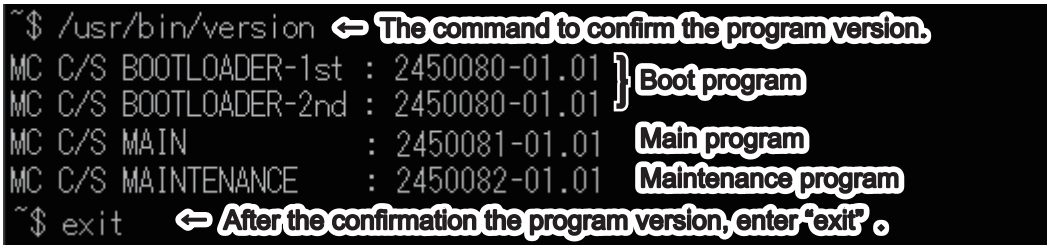
1. Turn off all Sensor Adapters.
2. Connect the applicable MC-3000S to the PC with the LAN cable.
3. Turn on the No. 6 of the DIP-SW (S10) on the MC-CS board (24P0114).
4. Turn on the Sensor Adapter MC-3000S.
5. The maintenance program activates after about 30 seconds. At this time, the IP address of MC-3000S is changed to “172.31.17.108”.
   Confirm that the LED (CR 74) on the MC-CS board lights 3 times and goes off for a while repeatedly.

2.3.2 How to confirm the firmware program version

1. Activate the maintenance program of the sensor adapter MC-3000S.
2. Activate the command prompt of Windows®.
3. Enter “telnet 172.31.17.108” on the command prompt.
4. Enter the user name and password correctly.



5. Enter “/usr/sbin/version” on the command prompt to confirm the program version. The program version is shown on the command prompt.



Note: The image shown above is an example. The program version number may be different.

6. After confirming the program version, enter “exit” to finish the telnet command.

2.3.3 How to update the firmware program

1. Delete the version number from the firmware binary file name.

Example：2450081-01010088_mc_cs_mainpg.bin

Program number　Version number

Delete the version number from the file name.

Example：2450081_mc_cs_mainpg.bin

2. Activate the maintenance program of the Sensor Adapter MC-3000S.
3. Activate the command prompt of Windows®.
4. Change the current directory to the directory where the firmware binary program is saved.

   In the example shown below, binary file is saved at C:¥update .

```
C:  ⇦ The command to change the current drive
cd ¥update  ⇦ The command to change the current directory
```

   Note: Change the current directory to the one where the binary file is saved.

5. Enter “ftp 172.31.17.108” on the command prompt.
   Confirm that “220-MC3000_CS_MAINTENANCE” is shown.
6. Enter the user name and password.

```
ftp 172.31.17.108    ⇦ Enter the ftp command.
Connected to 172.31.17.108.
220- MC3000_CS_MAINTENANCE  ⇦ Confirm that this massage appears。
220 MC_CS_MAINTENANCE FTP server (Version 6.4/OpenBSD/Linux-ftpd-0.17) ready.
Name (172.31.17.108:tanaka-toshihisa): ⇦ Enter the user name.
331 Password required for root.
Password : ⇦ Enter the password.
```

7. After the login, enter “dir”.
   The file names that are saved in the Sensor Adapter are displayed. Confirm that the file names shown below are shown on the display.

```
Name (172.31.17.108:tanaka-toshihisa): ⇦ Enter the user name.
331 Password required for root.
Password : ⇦ Enter the password.
230 User root logged in.
Remote system type is UNIX.
Using binary mode to transfer files.
ftp> dir    ⇦ Enter “dir”。
200 PORT command successful.
150 Opening ASCII mode data connection for ‘/bin/ls’.
crw-r--r--    1 root    root    90,    2 Sep 30  2011 2450080_mc_cs_boot.bin
crw-r--r--    1 root    root    90,    4 Sep 30  2011 2450081_mc_cs_mainpg.bin
crw-r--r--    1 root    root    90,    6 Sep 30  2011 2450082_mc_cs_maint.bin
crw-r--r--    1 root    root    90,   12 Sep 30  2011 2450084_mc_io_mainpg.bin
drwr-xr-x     2 root    root            0 Sep 30  2011 backup
226 Transfer complete                                  Check these file names.
ftp>
```

8. Enter “bin“, and then enter “hash”.
9. Enter the command to transfer the firmware program.
   Example: put 24500810_mc_cs_mainpg.bin
10. When you transfer other program, enter the command to transfer the program.
11. Enter “bye” to finish updating the firmware program.

```
ftp> bin   ⇦ Enter necessarily.
200 Type set to I.
ftp> hash  ⇦ Enter necessarily.
Hash mark printing on (1024 bytes/hash mark).
ftp> put 2450081_mc_cs_mainpg.bin ⇦ The command to transfer the firmware program.
local: 2450081_mc_cs_mainpg.bin remote: 2450081_mc_cs_mainpg.bin
200 PORT command successful.
150 Opening BINARY mode data connection for '2450081_mc_cs_mainpg.bin'.
##################################
....
##################################
226 Transfer complete.
10888576 bytes sent in 87.84 secs (121.1 kB/s)
ftp> bye   ⇦ The command to finish the ftp command.
221 Goodbye
```

12. Confirm the firmware program version (see section 2.3.2).

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3. HUB-3000 IGMP QUERIER SETTINGS

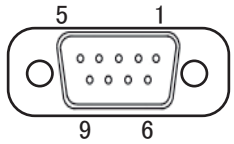
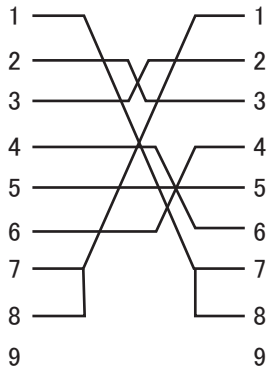
When constructing a network with two or more FAR-2××7 radars via HUB-3000, set the IGMP querier of the HUB-3000.

Items to prepare:

- PC with RS-232C serial port (with D-SUB9 pin connections)
- RS-232C serial crossover cable (with D-SUB9 pin connections)
- Software to control a serial device (HyperTerminal, TeraTerm, Putty, etc.)

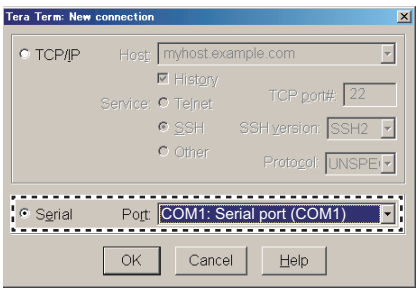
Note: This manual uses TeraTerm in the explanations and procedure which follow.

RS-232C crossover cable

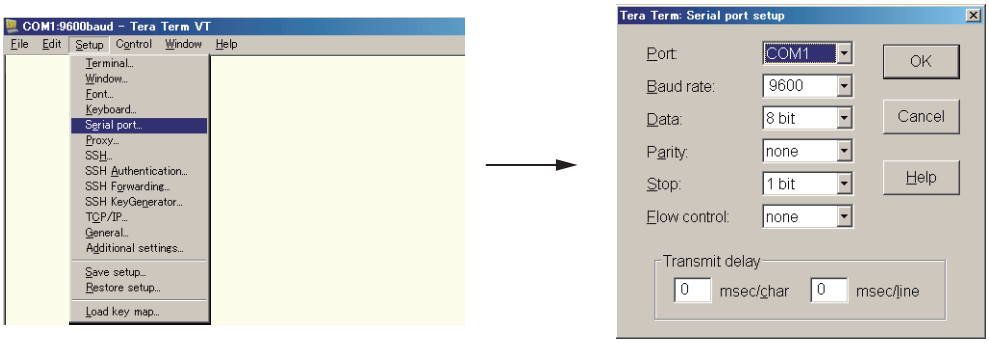
Pin locations (Female)	Pin No.	Signal	Connection
	1	NC	
	2	RD	
	3	SD	
	4	NC	
	5	SG	
	6	NC	
	7	NC	
	8	NC	
	9	NC	
	Shell	FG	

Procedure

1. Connect the RS-232C serial cable to the PC serial port.
2. Connect the loose end of the RS-232C serial cable to the HUB-3000 serial port.
   Note: When removing the serial cable, disconnect the HUB-3000 first, then disconnect the PC.
3. Start the TeraTerm application on the PC.
4. Click the [Serial Port] radio button, then select the connected COM port from the dropdown menu.



5. Click [OK].
6. Click [Setup], then [Serial port] to open the [Serial port setup] window.



7. Change the settings as shown below, then click [OK].

Baud rate	: 9600	Data	: 8 bit	Parity	: none
Stop	: 1 bit	Flow Control	: none		

8. Press the **Enter** key. You will be prompted for a Username and Password.
9. Enter the [Username] and [Password] as shown below, then press the **Enter** key.

```
Username: admin
Password: admin
                Welcome to   HUB-3000 GigabitHUB
Switch>
```

10. Input “enter” at the “Switch>” line, then press the **Enter** key.
11. Press the **Enter** key again.
12. At the “Switch#” line, input “show ip igmp-snooping”, then press the **Enter** key. The current settings for the HUB-3000 will be displayed.

```
Switch> enter
Switch#Jan  1 20:32:14 User admin enter privilege mode from console 0, level
= 15
Switch# show ip igmp-snooping
Global IGMP snooping configuration:
-----------------------------------
Globally enable      : Enabled
VLAN nodes           : 1
Dlf-frames filtering : Enabled
Sensitive            : Disabled
Querier              : Disabled
Querier address      : 10.0.0.200
Router age           : 260 s
```

If the “Querier” line shows “Enabled”, skip to step 17.
If the “Querier” line shows “Disabled”, go to step 13.

13. At the “Switch#” line, input “config” then press the **Enter** key.
14. At the “Switch_config#” line, input “ip igmp-snooping querier” then press the **Enter** key.
15. At the “Switch_config#” line, input “show ip igmp-snooping” then press the **Enter** key.
16. The “Querier” line should now show “Enabled”. If not, repeat steps 13 to 15.

17. At the “Switch#” line, input “write” then press the **Enter** key. This will save the configuration.

```
Switch#  config

Switch_config#  ip igmp-snooping querier

Switch_config# show ip igmp-snooping

Global IGMP snooping configuration:
-----------------------------------
Globally enable      : Enabled
VLAN nodes           : 1
Dlf-frames filtering : Enabled
Sensitive            : Disabled
Querier              : Enabled
Querier address      : 10.0.0.200
Router age           : 260 s
Response time        : 15 s

Switch_config#  write
Saving current configuration...
OK!
```

18. When the write process finishes, the HUB-3000 will restart.
19. Referring to steps 8 through 12, check to make sure the “Querier” line is showing “Enabled”. If the “Querier” line shows “Disabled”, repeat the above procedure.

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APPX. 1 EQUIPMENT ID LIST

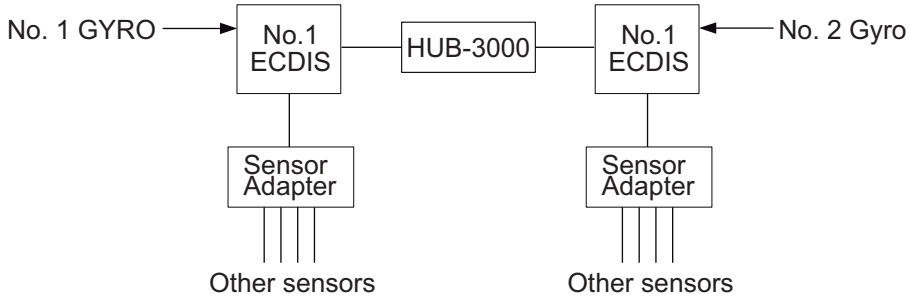
Equipment ID	Equipment Name	Gateway Network	Sensor Network	Remarks
MFD001	No.1 MFD	192.168.31.51	172.31.16.51	
MFD002	No.2 MFD	192.168.31.52	172.31.17.51	
MFD003	No.3 MFD	192.168.31.53	172.31.16.52	
MFD004	No.4 MFD	192.168.31.54	172.31.17.52	
MFD005	No.5 MFD	192.168.31.55	172.31.16.53	
MFD006	No.6 MFD	192.168.31.56	172.31.17.53	
MFD007	No.7 MFD	192.168.31.57	172.31.16.54	
MFD008	No.8 MFD	192.168.31.58	172.31.17.54	
MFD009	No.9 MFD	192.168.31.59	172.31.16.55	
MFD010	No.10 MFD	192.168.31.60	172.31.17.55	
MFD011	No.11 MFD	192.168.31.61	172.31.16.56	
MFD012	No.12 MFD	192.168.31.62	172.31.17.56	
MFD013	No.13 MFD	192.168.31.63	172.31.16.57	
MFD014	No.14 MFD	192.168.31.64	172.31.17.57	
MFD015	No.15 MFD	192.168.31.65	172.31.16.58	
MFD016	No.16 MFD	192.168.31.66	172.31.17.58	
ECD001	No.1 ECDIS	192.168.31.1	172.31.16.1	Default setting for PCU-3000
ECD002	No.2 ECDIS	192.168.31.2	172.31.17.1	
ECD003	No.3 ECDIS	192.168.31.3	172.31.16.2	
ECD004	No.4 ECDIS	192.168.31.4	172.31.17.2	
ECD005	No.5 ECDIS	192.168.31.5	172.31.16.3	
ECD006	No.6 ECDIS	192.168.31.6	172.31.17.3	
ECD007	No.7 ECDIS	192.168.31.7	172.31.16.4	
ECD008	No.8 ECDIS	192.168.31.8	172.31.17.4	
ECD009	No.9 ECDIS	192.168.31.9	172.31.16.5	
ECD010	No.10 ECDIS	192.168.31.10	172.31.17.5	
ECD011	No.11 ECDIS	192.168.31.11	172.31.16.6	
ECD012	No.12 ECDIS	192.168.31.12	172.31.17.6	
ECD013	No.13 ECDIS	192.168.31.13	172.31.16.7	
ECD014	No.14 ECDIS	192.168.31.14	172.31.17.7	
ECD015	No.15 ECDIS	192.168.31.15	172.31.16.8	
ECD016	No.16 ECDIS	192.168.31.16	172.31.17.8	
RAD001	No.1 Radar	192.168.31.21	172.31.16.11	
RAD002	No.2 Radar	192.168.31.22	172.31.17.11	
RAD003	No.3 Radar	192.168.31.23	172.31.16.12	
RAD004	No.4 Radar	192.168.31.24	172.31.17.12	
RAD005	No.5 Radar	192.168.31.25	172.31.16.13	
RAD006	No.6 Radar	192.168.31.26	172.31.17.13	
RAD007	No.7 Radar	192.168.31.27	172.31.16.14	
RAD008	No.8 Radar	192.168.31.28	172.31.17.14	
RAD009	No.9 Radar	192.168.31.29	172.31.16.15	
RAD010	No.10 Radar	192.168.31.30	172.31.17.15	
RAD111	No.1 FAR-2××8 Radar	192.168.31.21	172.31.16.11	

Equipment ID	Equipment Name	Gateway Network	Sensor Network	Remarks
RAD112	No.2 FAR-2××8 Radar	192.168.31.22	172.31.17.11	
RAD113	No.3 FAR-2××8 Radar	192.168.31.23	172.31.16.12	
RAD114	No.4 FAR-2××8 Radar	192.168.31.24	172.31.17.12	
RAD115	No.5 FAR-2××8 Radar	192.168.31.25	172.31.16.13	
RAD116	No.6 FAR-2××8 Radar	192.168.31.26	172.31.17.13	
RAD117	No.7 FAR-2××8 Radar	192.168.31.27	172.31.16.14	
RAD118	No.8 FAR-2××8 Radar	192.168.31.28	172.31.17.14	
CRA001	No.1 Chart Radar	192.168.31.31	172.31.16.21	
CRA002	No.2 Chart Radar	192.168.31.32	172.31.17.21	
CRA003	No.3 Chart Radar	192.168.31.33	172.31.16.22	
CRA004	No.4 Chart Radar	192.168.31.34	172.31.17.22	
CRA005	No.5 Chart Radar	192.168.31.35	172.31.16.23	Do not Select.
CRA006	No.6 Chart Radar	192.168.31.36	172.31.17.23	
CRA007	No.7 Chart Radar	192.168.31.37	172.31.16.24	
CRA008	No.8 Chart Radar	192.168.31.38	172.31.17.24	
CRA009	No.9 Chart Radar	192.168.31.39	172.31.16.25	
CRA010	No.10 Chart Radar	192.168.31.40	172.31.17.25	
RAS001	No.1 Radar Sensor	192.168.31.101	-	
RAS002	No.2 Radar Sensor	192.168.31.102	-	
RAS003	No.3 Radar Sensor	192.168.31.103	-	
RAS004	No.4 Radar Sensor	192.168.31.104	-	
RAS005	No.5 Radar Sensor	192.168.31.105	-	Do not Select.
RAS006	No.6 Radar Sensor	192.168.31.106	-	
RAS007	No.7 Radar Sensor	192.168.31.107	-	
RAS008	No.8 Radar Sensor	192.168.31.108	-	
RAS009	No.9 Radar Sensor	192.168.31.109	-	
RAS010	No.10 Radar Sensor	192.168.31.110	-	
MCV001	No.1 Sensor Adapter	-	172.31.16.101	
MCV002	No.2 Sensor Adapter	-	172.31.17.101	
MCV003	No.3 Sensor Adapter	-	172.31.16.102	
MCV004	No.4 Sensor Adapter	-	172.31.17.102	
MCV005	No.5 Sensor Adapter	-	172.31.16.103	
MCV006	No.6 Sensor Adapter	-	172.31.17.103	
MCV007	No.7 Sensor Adapter	-	172.31.16.104	
MCV008	No.8 Sensor Adapter	-	172.31.17.104	
MCV009	No.9 Sensor Adapter	-	172.31.16.105	
MCV010	No.10 Sensor Adapter	-	172.31.17.105	
MCV011	No.11 Sensor Adapter	-	172.31.16.106	
MCV012	No.12 Sensor Adapter	-	172.31.17.106	
MCV013	No.13 Sensor Adapter	-	172.31.16.107	
MCV014	No.14 Sensor Adapter	-	172.31.17.107	
MCV015	No.15 Sensor Adapter	-	172.31.16.108	
MCV016	No.16 Sensor Adapter	-	172.31.17.108	Default setting for sensor adapter

APPX. 2 SUBSYSTEM

Where the network configuration requires the use of a HUB-3000, the [Subsystem] settings must also be configured. For example, in a configuration like the one below, if the Subsystem settings are not configured, No. 1 ECDIS can only receive data from No. 1 Gyro, and No. 2 ECDIS can only receive data from No. 2 Gyro.

By configuring the Subsystem settings, the HUB-3000 allows the sharing of sensor data between No. 1 ECDIS and No. 2 ECDIS.

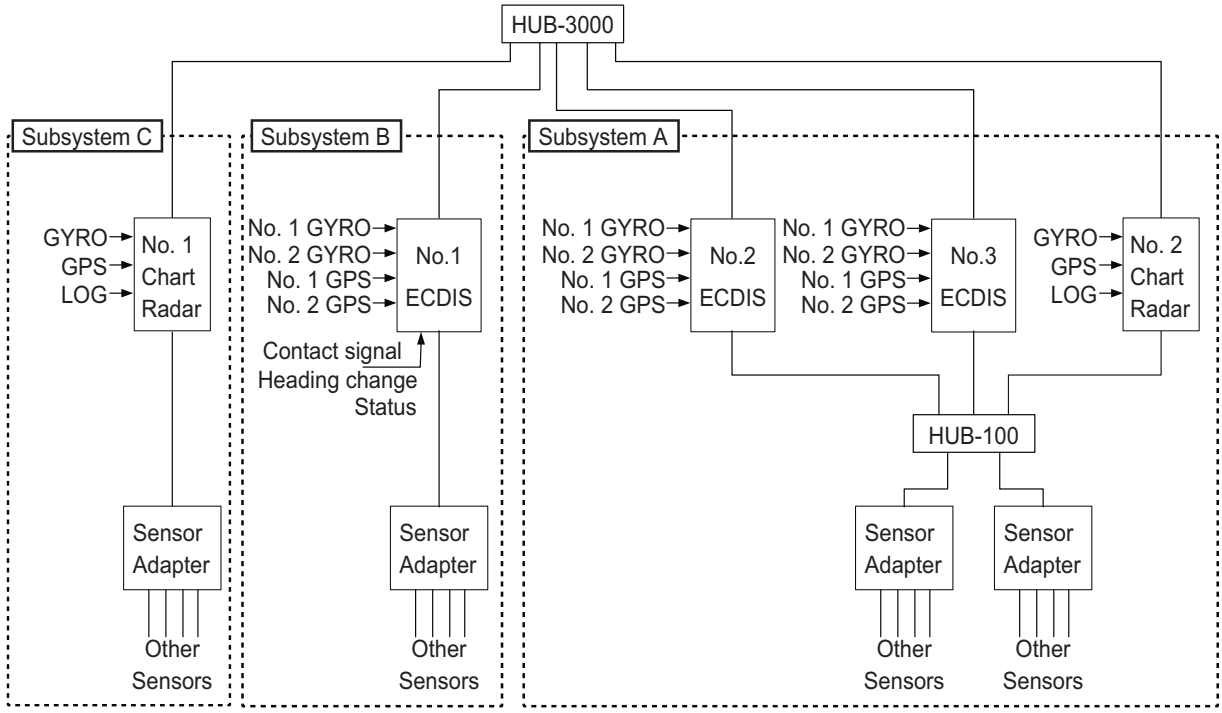


Subsystems A to Z are defined as follows:

- Subsystem A: Configurations which include sensor adapters connected to a HUB-100.
- Subsystem B to Z: Configurations where sensor adapters are directly connected to the PCU.

Examples of Subsystem settings are:

- Subsystem A: No. 2 Chart Radar, No.2 ECDIS, No. 3 ECDIS
- Subsystem B: No. 1 ECDIS
- Subsystem C: No. 1 Chart Radar



APPX. 3 RCB-002 IP ADDRESS SETTING

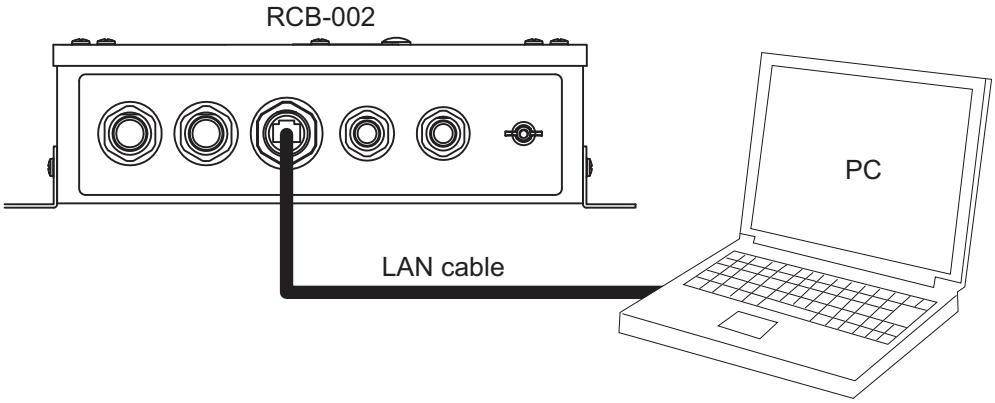
When multiple Radar Connection Box RCB-002s are connected to the same network, change the IP address as follows. Assign a different IP address to each RCB-002. IP address setting is not required for configurations with a single RCB-002.

Preparation

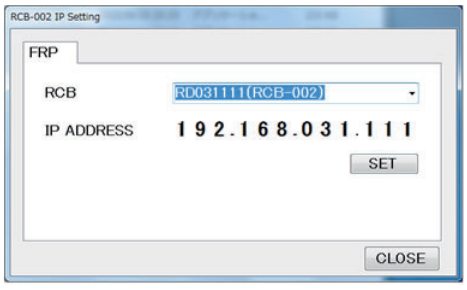
- PC: Used for LAN connection with the RCB-002
- LAN cable: Used for connection between PC and RCB-002
- IP address setting tool (IPSetting.exe): Download from “Tech-Net” and save it on the PC.

Procedure

1. Set the IP address and subnet mask for the PC as follows.
   - IP address: 192.168.31.110
   - Subnet mask: 255.255.255.0
2. Connect the PC to the RCB-002, using a LAN cable.



3. Turn on the RCB-002 power.
4. Run the IP address setting tool (IPSetting.exe) on the PC.



5. Confirm that “RD031111 (RCB-002)” and “192.168.031.111” appear on the [RCB-002 IP Setting] window.
   Note: When the indication on the [RCB-002 IP Setting] window is not correct, confirm the following points.
   - Confirm that the IP address and subnet mask setting for the PC is correct.
   - Check the connection between the PC and RCB-002. Reconnect as necessary.

6. Enter the IP address as follows, then click the [SET] button.
   - No.1 RCB: 192.168.031.111 (Default setting)
   - No.2 RCB: 192.168.031.112
   - No.3 RCB: 192.168.031.113
   - No.4 RCB: 192.168.031.114
7. Click the [CLOSE] button.
8. Run the IP address setting tool (IPSetting.exe) on the PC again, then the IP address entered at step 6 appear in the [RCB-002 IP Setting] window.
   Note: If the IP address setting is not applied, reboot the RCB-002 and PC, then retry step 4 to step 8.