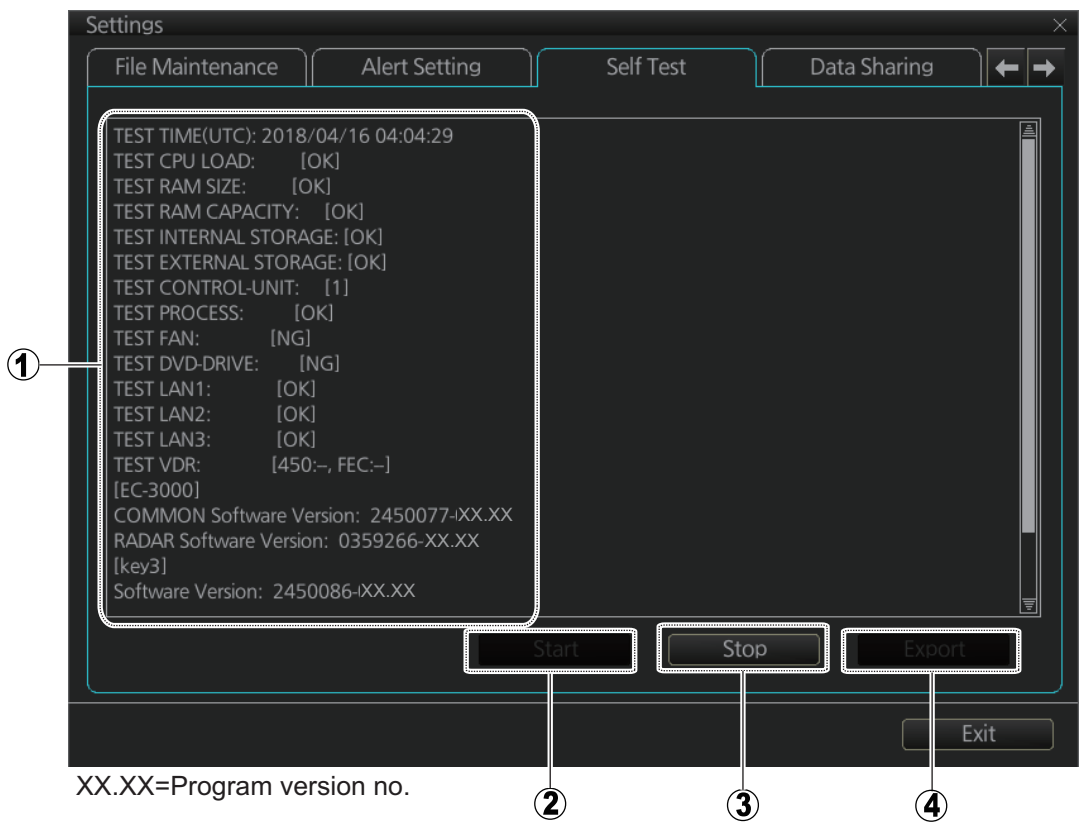


22.6 Self Test

The [Self Test] page is mainly used to check the equipment. The chart radar is inoperative during the test.



No.	Name	Description
1	Test results, program numbers, SSD info, Network status, IP conflict, dongle info	- Self test results - Program numbers for each software program - SSD's SMART information - Own equipment (EC-3000, EC-3005) network status - HUB-3000 network status - Sensor adapter network status - IP collision check result - Dongle information Note: Program number and version numbers are subject to change.
2	[Start] button	Start the self test.
3	[Stop] button	Stop the self test. (Shown during test.)
4	[Export] button	Export the results of the self test to an external medium (ex. USB flash memory).

Self test results display

The normal results of the boards are shown as follows.

Item	Normal result	
	Magnetron radar	Solid state radar
SPU Status (other than FAR-3015, FAR-3025, FAR-3025-NXT-MARK-2)		
12V Power Supply (V)	11.4 to 12.6	
5V Power Supply (V)	4.75 to 5.25	
3.3V Power Supply (V)	3.18 to 3.42	

22. SETTINGS MENU

Item	Normal result	
	Magnetron radar	Solid state radar
2.5V Power Supply (V)	2.4 to 2.6	
1.8V Power Supply (V)	1.71 to 1.89	
1.25V Power Supply (V)	1.19 to 1.31	
1.2V_1 Power Supply (V)	1.14 to 1.26	
1.2V_2 Power Supply (V)	1.14 to 1.26	
3.3V_A Power Supply (V)	3.18 to 3.42	
-10V Power Supply (V)	-10.5 to -9.5	not connect
0.9V_1 Power Supply (V)	not connect	0.86 to 0.94
0.9V_2 Power Supply (V)	not connect	0.86 to 0.94
1.8V_A Power Supply (V)	not connect	1.71 to 1.89
HV (V)	500 to 560	not connect
Magnetron Heater Voltage (V)	• X-band 12 kW: 8.1 to 8.6 or 6.8 to 7.3 • X-band 25 kW: 7.0 to 7.5 or 5.7 to 6.2 • S-band 7.4 to 7.9 or 6.3 to 6.8	not connect
Magnetron Heater Current (A)	• X-band: 0.5 to 0.6 • S-band: 1.1 to 1.4	not connect
IF 5V Voltage (V)	4.75 to 5.25	not connect
IF -10V Voltage (V)	-10.5 to -9.5	not connect
MD 12V Voltage (V)	11.4 to 12.6	not connect
Antenna Speed (rpm)	• Antenna rotation 24 rpm: 22 to 26 • Antenna rotation 42 rpm: 39 to 44	
Magnetron Current (A)	• X-band: 5.0 to 12.0 • S-band: 6.0 to 10.0	not connect
Trigger Frequency (Hz)	• STBY: 0 • [2ND ECHO REJ]=[OFF], TT range*= 24NM: S1: 2640 to 3360, S2: 2640 to 3360, M1: 1320 to 1680, M2: 1060 to 1340, M3: 880 to 1120, L: 530 to 670 • [2ND ECHO REJ]=[OFF], TT range*= 32NM: S1: 1940 to 2460, S2: 1940 to 2460, M1: 1320 to 1680, M2: 1060 to 1340, M3: 880 to 1120, L: 530 to 670 • [2ND ECHO REJ]=[ON]: S1: 2640 to 3360, S2: 2640 to 3360, M1: 440 to 560, M2: 440 to 560, M3: 440 to 560, L: 440 to 560 *: TT range ([MAX RANGE]) is set at the installation.	
LNA Monitor Voltage (V)	0.5 to 1.5	not connect
Tune Indicator (V)	2.0 to 3.0	not connect
Tune Initialize Indicator (V)	2.0 to 3.0	not connect
IF Frequency (MHz)	• Pulse length = [S1], [S2]: 0.0 • Pulse length = other than the above settings: 55.0 to 65.0	not connect
FAN1 Rotation Speed (rpm)	• X-band: 3000 to 5000 • S-band: 0	• X-band: 3000 to 5000 • S-band: not connect
FAN2 Rotation Speed (rpm)	3000 to 5000	

Item	Normal result	
	Magnetron radar	Solid state radar
Board Temperature (degC)	Ambient temperature +30°C or below	
V TRIG Voltage (V)	10.0 to 18.0	not connect
ROM Check	OK	
RAM Check	OK	
DIP Switch (SW7-SW0)	Displays the DIP switch settings on the SPU board	
Board Revision Number	Displays the version of the SPU board	
MD Board Revision Number	Displays the version of the MD board	
TX Type	X-12kW/X-25kW/S-30kW	S-Solid/X-Solid
IP Address	Displays IP address of the SPU board	
SPU Error Status	ffff	
SPU Status (for FAR-3015 and FAR-3025)		
12V Power Supply (V)	11.4 to 12.6	
5V Power Supply (V)	4.75 to 5.25	
2.5V Power Supply (V)	2.4 to 2.6	
1.8V Power Supply (V)	1.71 to 1.89	
1.8V_A Power Supply (V)	1.71 to 1.89	
-5V_A Power Supply (V)	-5.5 to -4.65	
HV (V)	500 to 560	
Antenna Speed (rpm)	Antenna rotation 24 rpm: 22 to 26 Antenna rotation 42 rpm: 40 to 45	
Magnetron Current (A)	5.0 to 12.0	
Trigger Frequency (Hz)	• STBY: 0 • [2ND ECHO REJ]=[OFF], TT range*= 24NM: S1: 2640 to 3360, S2: 2640 to 3360, M1: 1320 to 1680, M2: 1060 to 1340, M3: 880 to 1120, L: 530 to 670 • [2ND ECHO REJ]=[OFF], TT range*= 32NM: S1: 1940 to 2460, S2: 1940 to 2460, M1: 1320 to 1680, M2: 1060 to 1340, M3: 880 to 1120, L: 530 to 670 • [2ND ECHO REJ]=[ON]: S1: 2640 to 3360, S2: 2640 to 3360, M1: 440 to 560, M2: 440 to 560, M3: 440 to 560, L: 440 to 560 *: TT range ([MAX RANGE]) is set at the installation.	
LNA Monitor Voltage (V)	0.5 to 1.5	
Tune Indicator (V)	1.8 to 3.3	
Tune Initialize Indicator (V)	1.8 to 3.3	
IF Frequency (MHz)	• Pulse length = [S1], [S2]: 0.0 • Pulse length = other than the above settings: 55.0 to 65.0	
FAN1 Rotation Speed (rpm)	not connect	
FAN2 Rotation Speed (rpm)	3000 to 5000	
Board Temperature (degC)	Ambient temperature +30°C or below	
V TRIG Voltage (V)	10.0 to 18.0	
ROM Check	OK	
RAM Check	OK	
DIP Switch (SW7-SW0)	Displays the DIP switch settings on the SPU board	
Board Revision Number	Displays the version of the SPU board	
MD Board Revision Number	Displays the version of the MD board	

22. SETTINGS MENU

Item	Normal result	
	Magnetron radar	Solid state radar
TX Type	X-12kW/X-25kW	
IP Address	Displays IP address of the SPU board	
SPU Error Status	ffff	
SPU Status (for FAR-3025-NXT-MARK-2)		
12V Power Supply (V)	10.8 to 13.4	
5V Power Supply (V)	4.5 to 5.6	
3.3V Power Supply (V)	3.0 to 3.6	
2.5V Power Supply (V)	not connect	
1.8V Power Supply (V)	1.6 to 2.0	
1.5V Power Supply (V)	1.3 to 1.7	
0.9V_1 Power Supply (V)	0.8 to 1.0	
3.3V_A Power Supply (V)	2.9 to 3.7	
1.8V_A Power Supply (V)	1.6 to 2.0	
1.2V_A Power Supply (V)	1.1 to 1.3	
-5V Power Supply (V)	-6.4 to -4.4	
HV (V)	not connect	
Antenna Speed (rpm)	Antenna rotation 24 rpm: 22 to 26 Antenna rotation 42 rpm: 40 to 45	
Magnetron Current (A)	not connect	
Trigger Frequency (Hz)	• STBY: 0 • [2ND ECHO REJ]=[OFF], TT range*= 24NM: S1: 1125 to 1875, S2: 1125 to 1875, M1: 900 to 1500, M2: 750 to 1250, M3: 750 to 1250, L: 450 to 750 • [2ND ECHO REJ]=[OFF], TT range*= 32NM: S1: 900 to 1500, S2: 900 to 1500, M1: 900 to 1500, M2: 750 to 1250, M3: 750 to 1250, L: 450 to 750 • [2ND ECHO REJ]=[ON]: S1: 750 to 1250, S2: 750 to 1250, M1: 450 to 750, M2: 450 to 750, M3: 450 to 750, L: 337.5 to 562.5 *: TT range ([MAX RANGE]) is set at the installation.	
LNA Monitor Voltage (V)	not connect	
Tune Indicator (V)	not connect	
Tune Initialize Indicator (V)	not connect	
IF Frequency (MHz)	not connect	
FAN1 Rotation Speed (rpm)	1900 to 4600	
FAN2 Rotation Speed (rpm)	1900 to 4600	
Board Temperature (degC)	Ambient temperature +30°C or below	
V TRIG Voltage (V)	not connect	
ROM Check	OK	
RAM Check	OK	
DIP Switch (SW7-SW0)	not connect	
Board Revision Number	Displays the version of the SPU board	
MD Board Revision Number	not connect	
TX Type	X-Solid	
SPU Type	0	
IP Address	Displays IP address of the SPU board	
SPU Error Status	ffff	

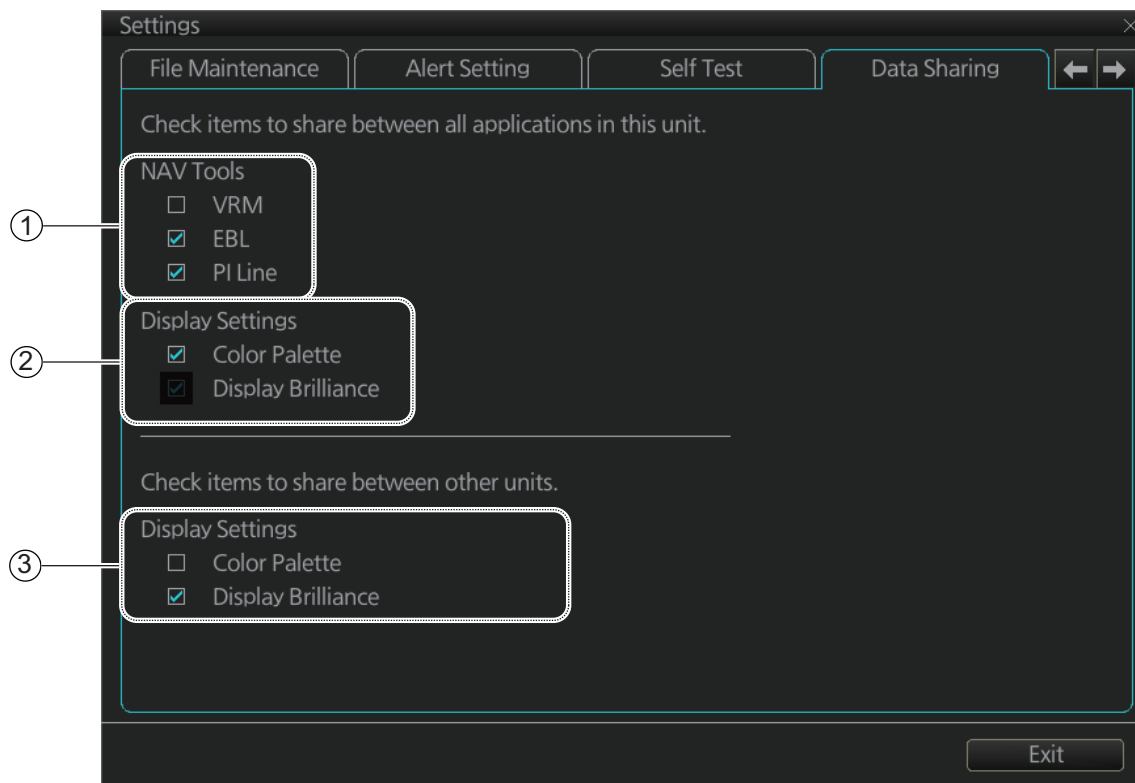
Item	Normal result	
	Magnetron radar	Solid state radar
MTR-DRV Status (other than FAR-3015, FAR-3025, and FAR-3025-NXT-MARK-2)		
Board Temperature (degC)	Ambient temperature +30°C or below	
12V Power Supply (V)	9 to 15	
Motor Current (A)	• X-band: 24rpm: 0.8 • X-band: 42rpm: 1.2 • S-band: 24rpm: 1.3 • S-band: 42rpm: 2	• 24rpm: 1.3 • 42rpm: 2
Motor Voltage (V)	43 to 53 (33 to 53*) *: For antenna unit installed on the foremast.	
Motor Rotation Speed (rpm)	0 (STBY)/24/36/42	
Board Revision Number	Displays the version of the MTR-DRV board.	
ROM Check	OK	
RAM Check	OK	
MTR-DRV Status (for FAR-3015, FAR-3025, and FAR-3025-NXT-MARK-2)		
Board Temperature (degC)	Ambient temperature +30°C or below	
50V Power Supply (V)	49.0 to 50.4	not connect
12V Power Supply (V)	9 to 15	
Motor Voltage (V)	43 to 53 (33 to 53*) *: For antenna unit installed on the foremast.	
Motor Current (A)	• 24 rpm: 0.8 • 42 rpm: 1.2	
Motor Rotation Speed (rpm)	0 (STBY)/24/36/43	
Magnetron Heater Voltage (V)	• 12 kW, STBY/S1/S2: 7.85 to 8.75 • 12 kW, M1/M2/M3/L: 6.55 to 7.45 • 25 kW, STBY/S1/S2: 6.75 to 7.65 • 12 kW, M1/M2/M3/L: 5.45 to 6.35	5.5 to 6.5
Magnetron Heater Current (A)	0.485 to 0.655	0.5 to 1.0
Board Revision Number	Displays the version of the MTR-DRV board.	
ROM Check	OK	
RAM Check	OK	
Error Status	Blank indicates no errors. When an error is found, the relevant error code appears.	
PM Status		
12V Power Supply (V)	9 to 15	
PLL Status	For X-band (with board revision number 1 or earlier) and S-band (with board revision number 0): UNLOCK For X-band (with board revision number 2 or later) and S-band (with board revision number 1 or later): • PM activated: LOCK • PM inactive: UNLOCK	• PM activated: LOCK • PM inactive: UNLOCK
Board Revision Number	Displays the version of the PM board.	
ROM Check	OK	

Item	Normal result	
	Magnetron radar	Solid state radar
RAM Check	OK	
RF-Converter Status (other than FAR-3025-NXT-MARK-2)		
HPA Board Temperature (degC)	not connect	Ambient temperature +30°C or below
6V Power Supply (V)	not connect	4.9 to 8
48V Power Supply (V)	not connect	40 to 53
IF PLL Status	not connect	LOCK
RF PLL Status	not connect	LOCK
Antenna Output Power (dBm)	not connect	48 to 55 (After a restart, requires at least one transmission before the result is shown.)
Board Revision Number	not connect	Displays the version of the RF-CONV board.
ROM Check	not connect	OK
RAM Check	not connect	OK
Error Status	not connect	not connect
RF-Converter Status (for FAR-3025-NXT-MARK-2)		
HPA Board Temperature (degC)	Ambient temperature +30°C or below	
6V Power Supply (V)	5.5 to 6.5	
48V Power Supply (V)	48 to 52	
IF PLL Status	LOCK	
RF PLL Status	LOCK	
Antenna Output Power (dBm)	56.3 to 57.3	
HPA Voltage (V)	48.0 to 51.0	
HPA Broken Device	0	
Board Revision Number	Displays the version of the RF-CONV board.	
HPA Revision Number	Displays the version of the HPA board.	
ROM Check	not connect	
RAM Check	not connect	
RFC Type	1	
HPA Type	0	
Error Status	not connect	
PSU-Control Status (other than FAR-3025-NXT-MARK-2)		
Board Temperature (degC)	Ambient temperature +30°C or below	
FAN1 Rotation Speed (rpm)	3700 to 5700	
FAN2 Rotation Speed (rpm)	3700 to 5700	
FAN3 Rotation Speed (rpm)	• X-band: 0 • S-band: 3700 to 5700	
3.3V Power Supply (V)	3.0 to 3.6	
12V_LAN Power Supply (V)	10.8 to 13.2	
12V Power Supply (V)	10.0 to 13.2	
48V Voltage (V)	45.1 to 51.3	
48V Current (A)	0 to 7.5	
Motor1 Voltage (V)	45.1 to 51.3	
Motor2 Voltage (V)	• S-band, 42 rpm: 45.1 to 51.3 • Other than above: 100	
HV (V)	499.6 to 565.5	

Item	Normal result	
	Magnetron radar	Solid state radar
Board Revision Number	Displays the version of the PSU CTRL board.	
ROM Check	OK	
RAM Check	OK	
48V Status	OK	
HV Status	OK	
Motor1 Status	OK	
Motor2 Status	OK	
PSU-Control Status (for FAR-3025-NXT-MARK-2)		
Board Temperature (degC)	Ambient temperature +30°C or below	
FAN1 Rotation Speed (rpm)	3700 to 5700	
FAN2 Rotation Speed (rpm)	3700 to 5700	
FAN3 Rotation Speed (rpm)	not connect	
3.3V Power Supply (V)	3.0 to 3.6	
12V_LAN Power Supply (V)	10.8 to 13.2	
12V Power Supply (V)	10.8 to 13.2	
48V Voltage (V)	45.1 to 51.3	
48V Current (A)	0 to 3	
Motor1 Voltage (V)	45.1 to 51.3	
Motor2 Voltage (V)	100	
HV (V)	500 to 570	
Board Revision Number	Displays the version of the PSU CTRL board.	
ROM Check	OK	
RAM Check	OK	
48V Status	OK	
HV Status	OK	
Motor1 Status	OK	
Motor2 Status	OK	
Wave Analyzer		
Error Status	• When connected with analysis PC and software: 0000 • Not connected with analysis PC: not connect	

22.7 Data Sharing

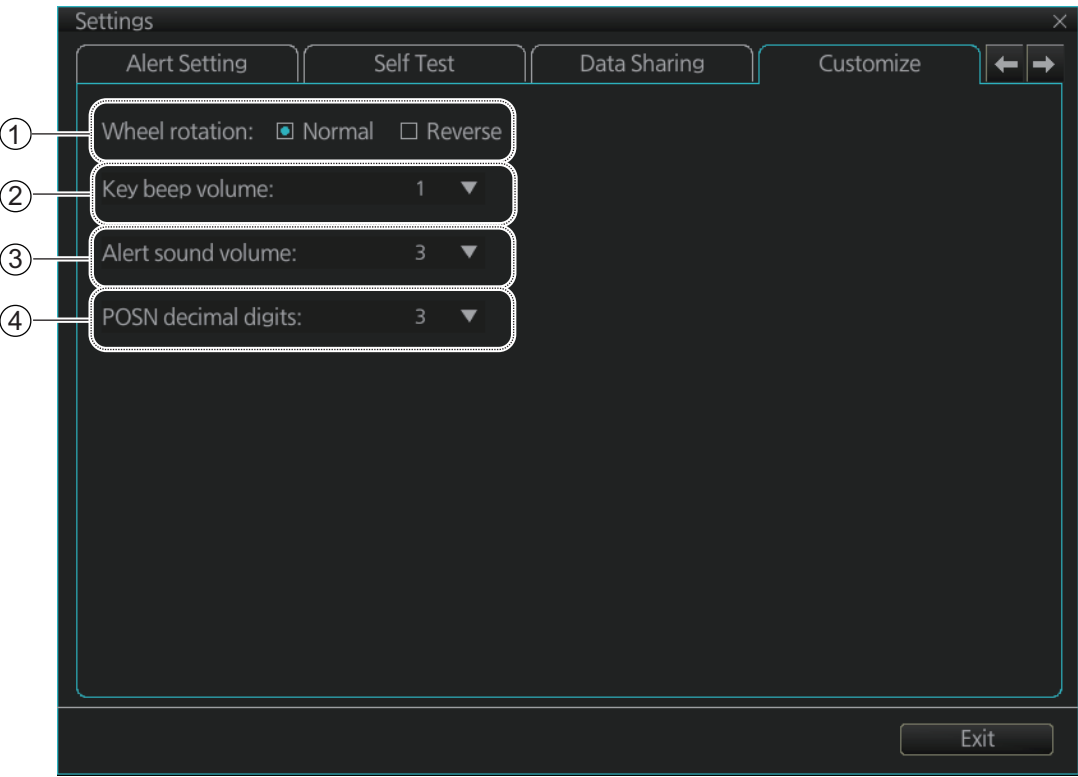
The [Data Sharing] page sets how to share brilliance and color palette settings. select the items to share with the applications in the unit (namely, ECDIS, Radar) and the data to share with other units (other FMD or FAR-3xxx). Uncheck an item to use it locally.



No.	Name	Description
1	[VRM], [EBL], [PI Line]	Check the items you want to share between the applications of this unit (radar function, chart function).
2	[Color Palette], [Display Brilliance]	Check the display settings items you want to share between the applications of this unit (radar function, chart function). The display brilliance setting is reflected to both main and sub displays. Note: Uncheck [Display Brilliance] or [Color Palette] in (3) to activate this setting.
3	[Color Palette], [Display Brilliance]	Set how to share color palette and display brilliance among the units (other FMD-3xxx, FAR-3xxx) of the system. Check to share a setting among units, or uncheck to use local setting. After checking an item, a confirmation message appears. Click the [Yes] button to confirm selection. The chosen setting is reflected on the brilliance and color palette buttons on the InstantAccess bar as shown below. See page 1-18 and page 6-8. - Item checked: "S" appears on the corresponding button to indicate the item is shared among the units of the system. - Item not checked: "L" appears on the corresponding button to indicate the item is not shared among the units of the system.

22.8 Customize

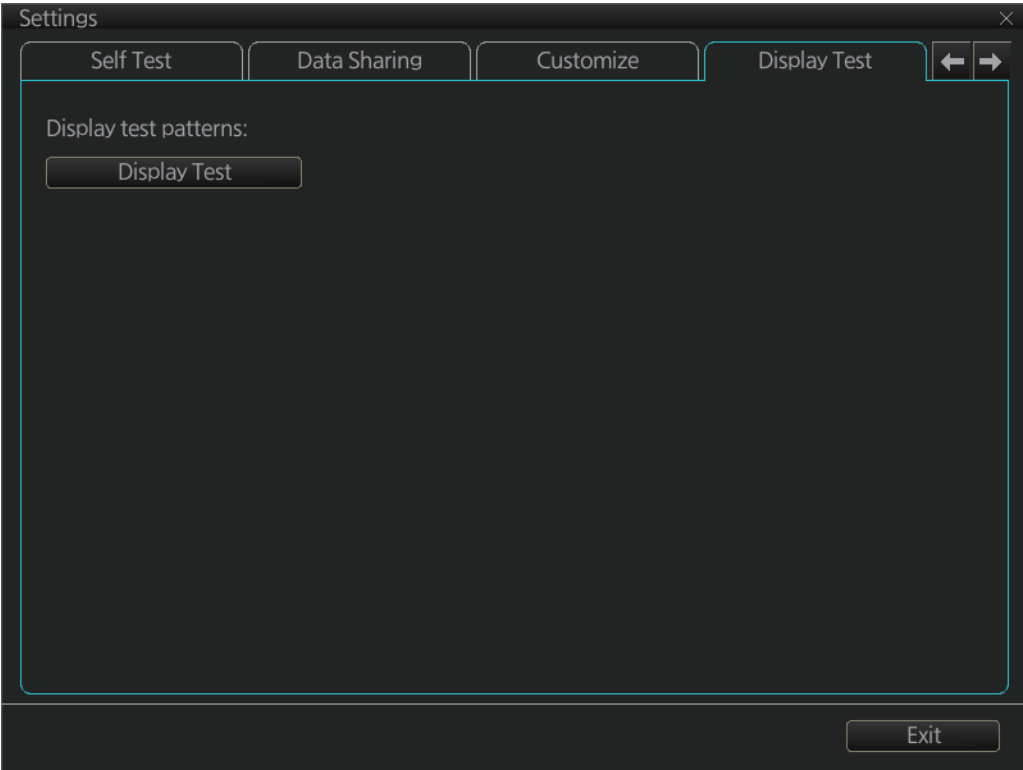
The [Customize] page lets you set buzzer volume, key beep volume, scrollwheel rotation direction, and the number of digits to display after the decimal point in position data.



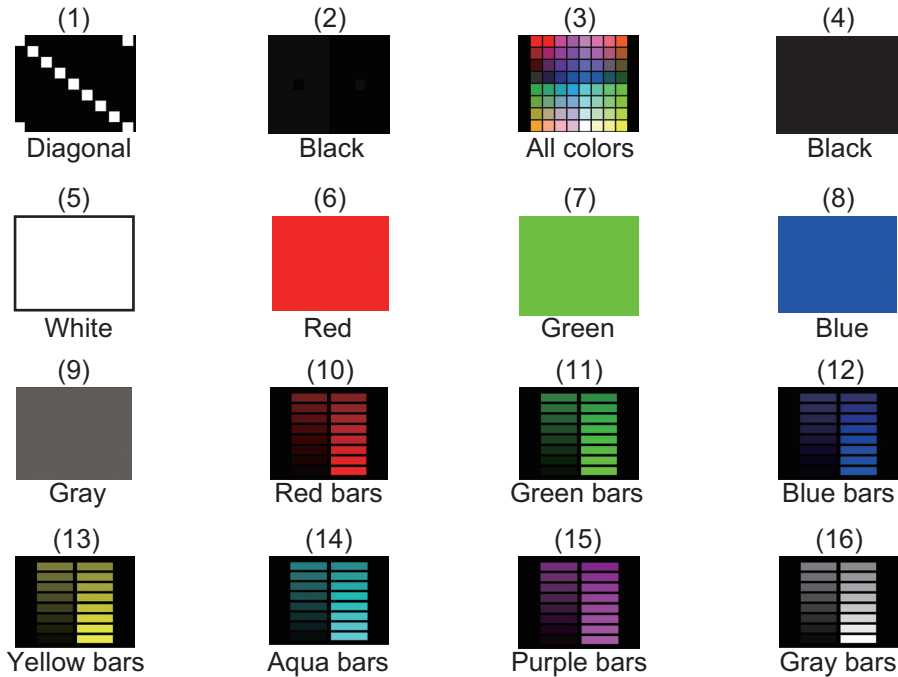
No.	Name	Description
1	[Wheel rotation]	Set the direction of scrollwheel rotation direction. [Normal]: Downward to increase value, upward to decrease value. [Reverse]: Reverse of [Normal].
2	[Key beep volume]	Set the loudness of the key beep that sounds for correct key or mouse button operation. 0: No beep, 1: LOW, 2: MID, 3: HIGH
3	[Alert sound volume]	Set the loudness of the alert buzzer. 1: LOW, 2: MID, 3: HIGH
4	[POSN decimal digits]	Set the number of digits (3 or 4) to show after the decimal place in position data.

22.9 Display Test

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



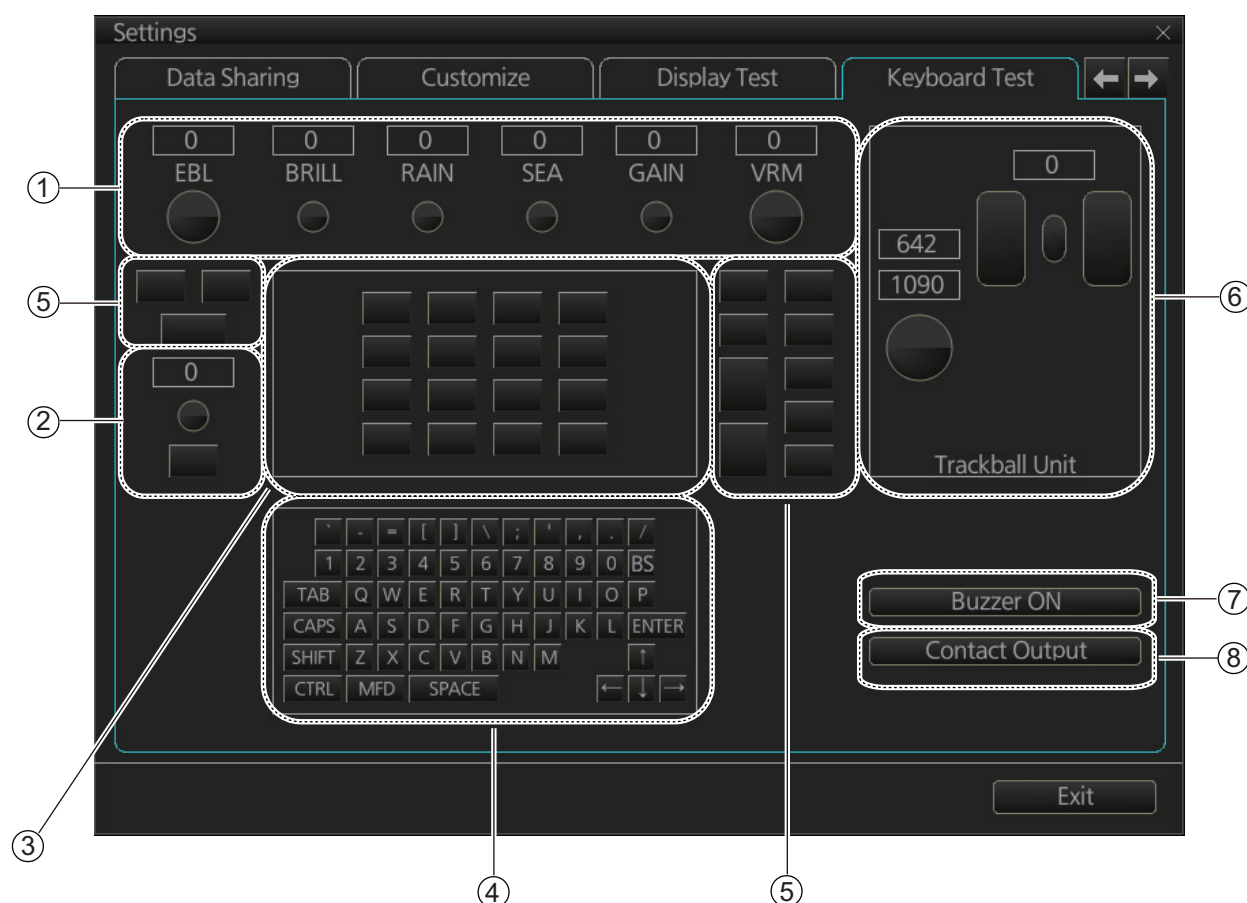
Left-click to proceed in the numerical order shown below; right-click to proceed in re-verse order.



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

22.10 Keyboard Test

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



22

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

22. SETTINGS MENU

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

22.11 Screenshots

The [Screenshot] page handles the exporting (to a USB flash memory) and deleting of screenshots from the SSD.

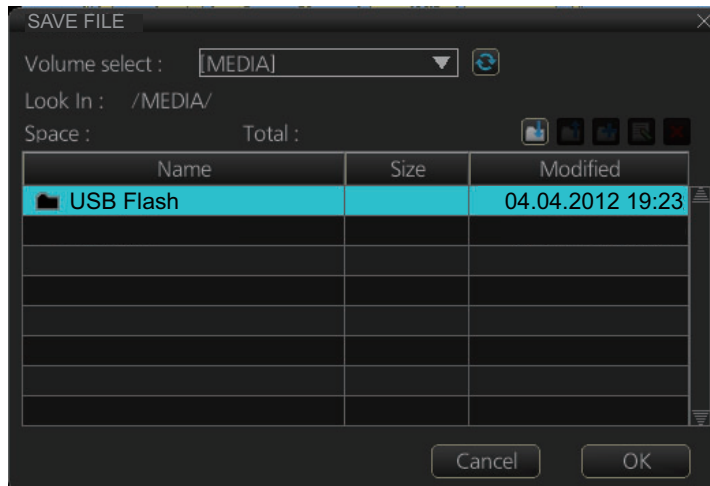


No.	Name	Description
1	List	List of screenshots taken. Screenshots are automatically assigned a file name consisting of the time and date the screenshot was taken.
2	Check boxes	Put a checkmark in the box of the screenshot to process.
3	[Preview]	Preview of the screenshot selected.
4	[Delete] button	Delete the screenshot(s) selected.
5	[Export] button	Export selected screenshot(s) to a USB flash memory.
6	[Print] button	Print the screenshot selected.
7	[Apply] button	Save comment.
8	[Comment] box	Enter comment for screenshot. Put a check in appropriate checkbox then enter comment.

22.11.1 How to export screenshots

You can export screenshots to a USB flash memory as follows:

1. Insert a USB flash memory in the USB port on the Control Unit.
2. Open the [Screenshot] page.
3. Put a checkmark in the checkbox of the screenshot(s) to export.
4. Click the [Export] button.



5. Select the USB flash memory.
6. Click the [OK] button to export the screenshots selected.
7. If the exporting was successful, a window showing the number of files exported appears. Click the [OK] button to finish.

22.11.2 How to delete screenshots

You can delete the screenshots saved in the SSD inside the processor unit.

1. Select the [Screenshot] page.
2. Put a checkmark in the checkbox of the screenshot(s) to delete. To select all screenshots, right-click the box to the left of the [Date] column then select [Select all]. To clear all check marks, select [Clear all].
3. Click the [Delete] button. The confirmation message "Attention: Selected files will be deleted. Do you wish to continue?" appears.
4. Click the [Yes] button to delete the screenshots selected. The message "File deletion succeeded" appears.
5. Click the [OK] button.

22.11.3 How to print screenshots

With connection of a printer you can print the screenshots stored in the SSD of the processor unit.

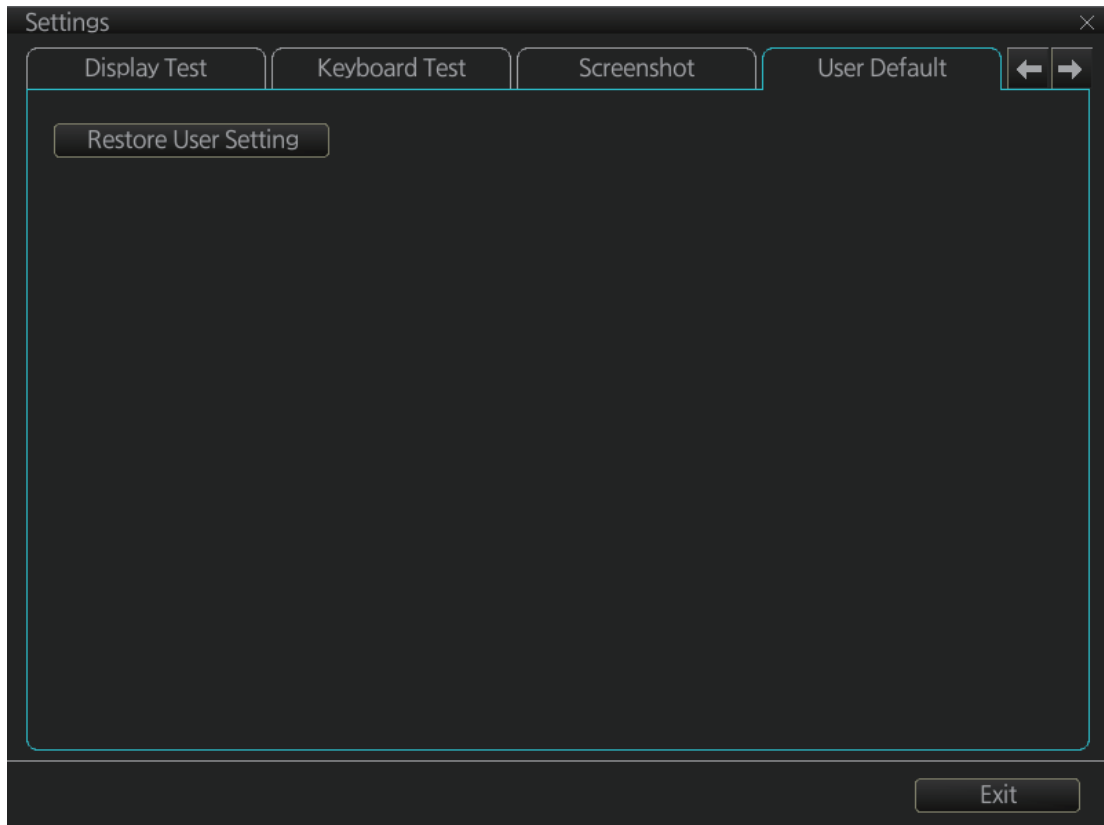
1. Select the [Screenshot] page.
2. Select the screenshot to print. Note that multiple screenshots cannot be printed at the same time.
3. Click the [Print] button.
4. Click the [OK] button to finish.

22.12 User Default

The [User Default] page restores all default settings for [Radar menu], [Chart menu], [User profile] and [Setting menu]. Click the [Restore User Setting] button. The message "All setting data will be restored to the default. Do you wish to continue?" appears. Click the [Yes] button to restore default settings and reset the power.

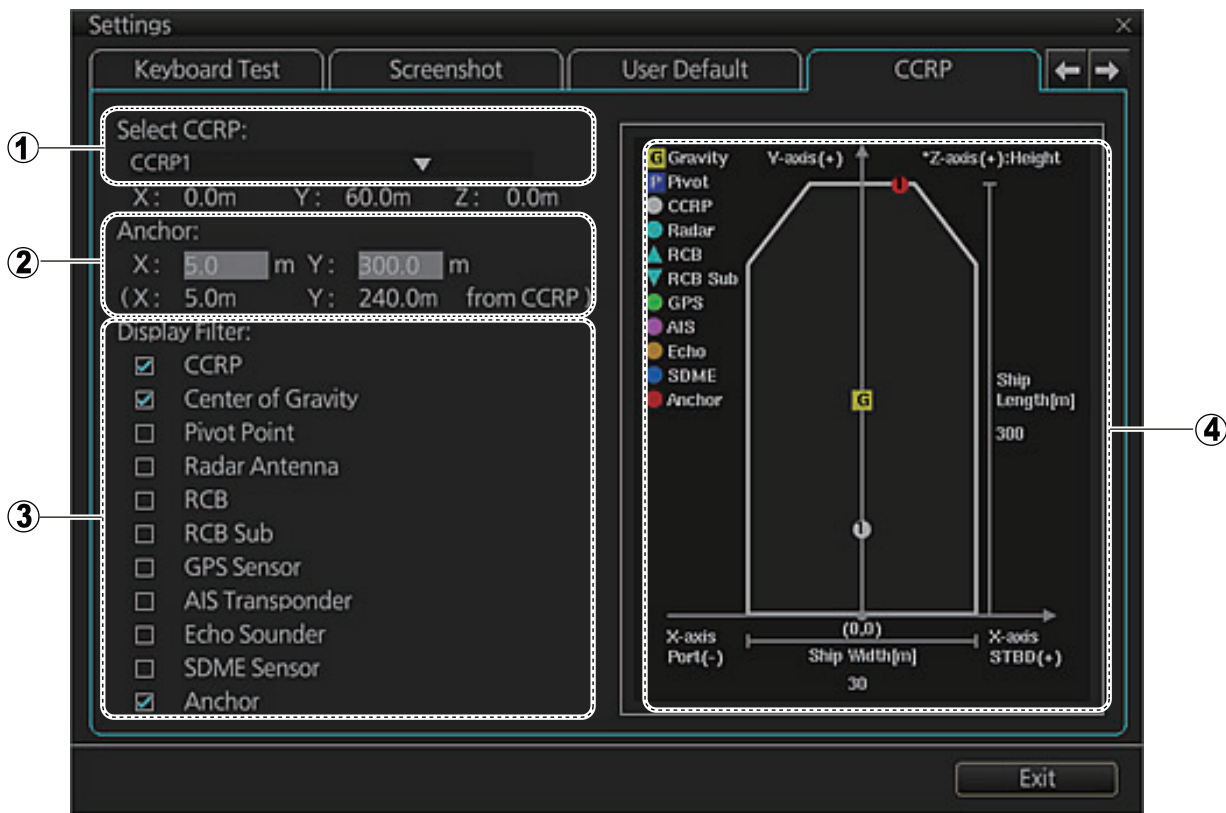
Note 1: If you require the setting data, copy it to a USB flash memory (using the file export feature), BEFORE restoring user defaults.

Note 2: Restart all units (FAR-3xx0, FCR-2xx9, FMD-3x00) in the same network after restoring user defaults.

22

22.13 CCRP

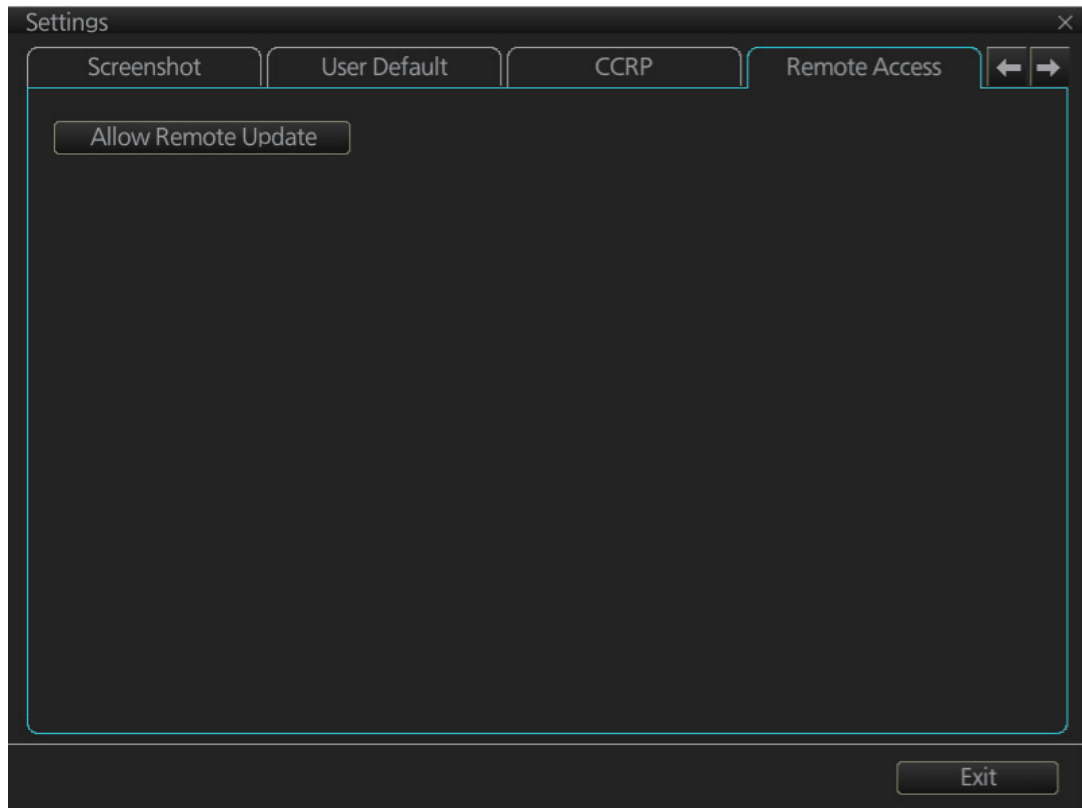
The [CCRP] page provides for selection of CCRP (Consistent Common Reference Point) and shows the location of various sensors.



No.	Name	Description
1	CCRP	Select the CCRP to use in the case of multiple CCRPs. Note: CCRP setting is not shared with other unit in the system. Select same CCRP at each unit, then reboot all units.
2	Anchor	Enter anchor installation position (X and Y values from CCRP). The setting ranges are X, -15.0 to 15 m; Y, 0.0 to 300.0 m.
3	Display Filter	Check the items to show on the ship's graphic.
4	Ship's graphic	Shows the location of the sensors selected at the [Display Filter].

22.14 Remote Access

The [Remote Access] page is used to activate remote access from external equipment and operate this equipment remotely. Do not use this page, unless otherwise specifically directed.

**22**

This page is intentionally left blank.

23. COMMON REFERENCE SYSTEM

23.1 Installation of the System

Special attention of following topics is required to maintain the "Common Reference System." The origin of the common reference system is the conning position on vessel.

- The values of the center and conning positions depend on the size and geometry of the ship.
- Offsets from the antenna position to the conning position of position sensors depend on the location of the antennas of the position sensor.
- Offsets from the antenna position to the conning position of the radars depend on the location of the radar antennas.

23

23.2 Accuracy of the System

Accuracy depends on the following conditions:

- Gyro error referenced to chart orientation
- Accuracy of EPFS
- Accuracy of radar performance and display (see the specifications at the back of this manual).
- Accuracy of setting of CCRP (see section 2.33)

The following items must be properly adjusted to meet the above conditions:

- Timing (Tx timing of radar echo). Timing is adjusted from the [RADAR INSTALLATION] menu, accessible by the service technician. Contact a FURUNO dealer for details.
- Heading (Adjustment of radar echo heading). Heading is adjusted from the [RADAR INSTALLATION] menu, accessible by the service technician. Contact a FURUNO dealer for details.
- Radar ANT position (Center of radar image is the radar antenna position). Radar antenna position is set on the [Common Installation Settings] menu, accessible by the service technician. Contact a FURUNO dealer for details.
- Conning position:
 - The chart radar uses position data fed from a GPS navigator to calculate the latitude and longitude position of the conning position.
 - GPS antenna position and conning position are entered during the installation. GPS antenna and conning positions are set on the [Common Installation Settings] menu, accessible by the service technician. Contact a FURUNO dealer for details.
 - The latitude and longitude position displayed at the top-right position on the screen is the latitude and longitude position of the conning position.
 - The chart datum used by the chart radar is recorded in geodetic datum WGS-84; therefore, the geodetic datum setting on the GPS navigator must be WGS-84.

23. COMMON REFERENCE SYSTEM

- Gyro data:
 - Serial format gyro data is fed directly from a gyrocompass, thus adjustment of the heading indication on the chart radar is not necessary.
 - If synchro or stepper gyro data is fed to the chart radar, the heading indication on the chart radar must be adjusted to match that of the gyro. For the adjustment procedure, see section 1.16.
- Speed data:
 - Speed may be input from SDME or GPS.
 - SDME may be single-axis water speed or dual-axis ground speed.
 - GPS may be used to input COG/SOG.
 - Ground speed may also be taken from TT reference target.
 - Speed is entered from the [Setting] menu. For details, see section 1.15.

24. CONNING (optional specification)/MINI CONNING/SIDE CONNING

24.1 Conning Display

The conning display provides relevant sensor information data (including engine data) from external equipment, on one display to facilitate safe and efficient monitoring. This equipment accepts sensor information data in analog, serial and contact signal formats.

Six sets of conning displays are available, and they are arranged at installation. Consult with the installer of the equipment to decide the content and layout of each display.

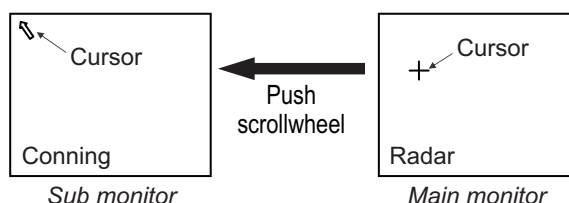
To show the conning display, click the Operating Mode button on the Status bar to select [CONNING for RADAR].

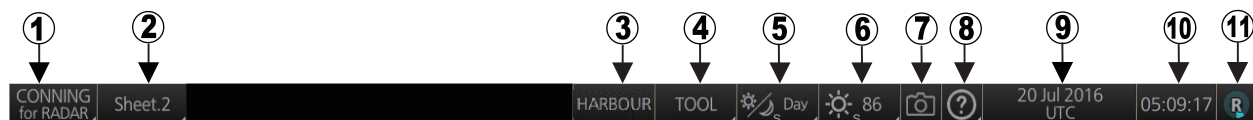
Note: Analog data is shown in the lowest value of the setting range when the data is not input.

Conning display Status bar (see next page)



Note: The cursor can be moved between the main monitor and a sub monitor and vice versa if the sub monitor is configured to show the Conning display. Push the scrollwheel until the cursor moves to the other monitor.



Conning display Status bar

No.	Button	Description
1	Operating mode	Selects the operating mode, [RADAR], [CHART for RADAR] or [CONNING].
2	Conning display sheet	Selects the conning display sheet to use. (Sheet name is decided at installation.)
3	[HARBOUR]	Goes to the harbour mode. See section 6.7.
4	[TOOL]	Shows, hides the software keyboard; adjusts the volume of the key beep and audio alert.
5	 OR 	Selects a display palette. See section 1.5. The indication on the button changes according to the [Data Sharing] page. The default setting is "S". See section 22.7.
6	 OR 	Adjusts the brilliance of a the monitor. See section 1.6. The indication on the button changes according to the [Data Sharing] page. The default setting is "S". See section 22.7.
7		Takes a screenshot. See section 1.20.
8		Displays AMS and conning software version and system information. The information shown in the figure may differ from your own. For System and System 2, see section 1.23.
9	Date	See section 1.19.
10	Time	See section 1.19.
11	Status Indicator 	- Rotates clockwise if the system is working properly. If it is not spinning the system is not working. Shortly after the working indicator stops spinning the buzzer sounds and the status LED turns red. Reset the power to restore normal operation. - If the primary display mode is specified during installation, the first letter of the primary mode name appears at the center of the working indicator as follows: C: Conning, E: ECDIS, R: Radar. The letter can be clicked to return to the primary display mode.

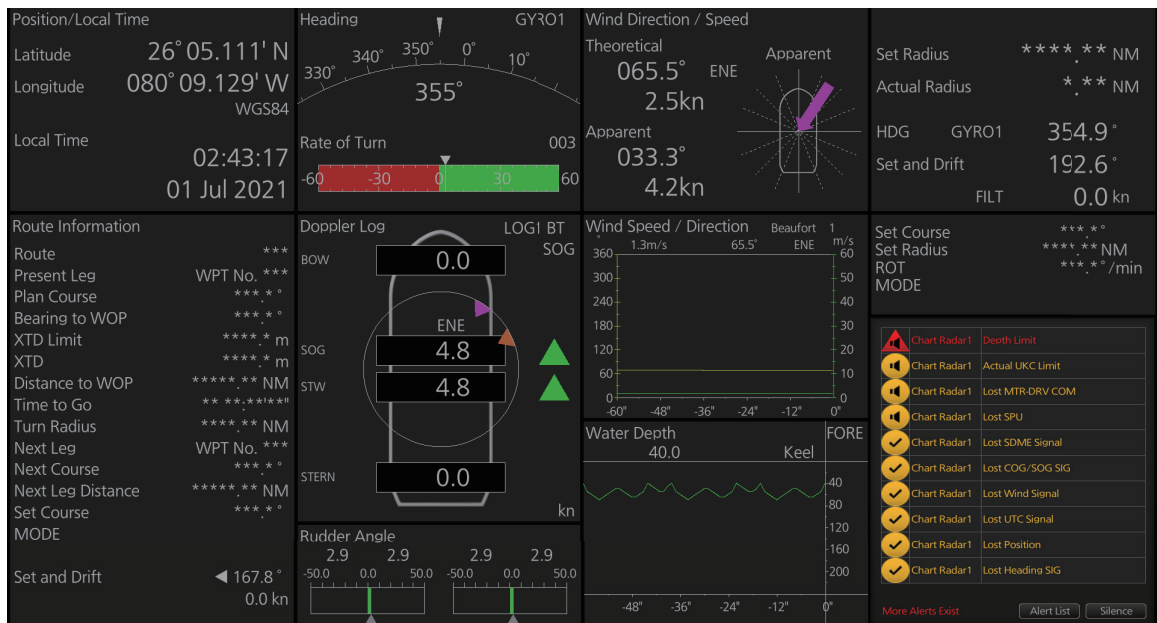
24.2 Conning Display Examples

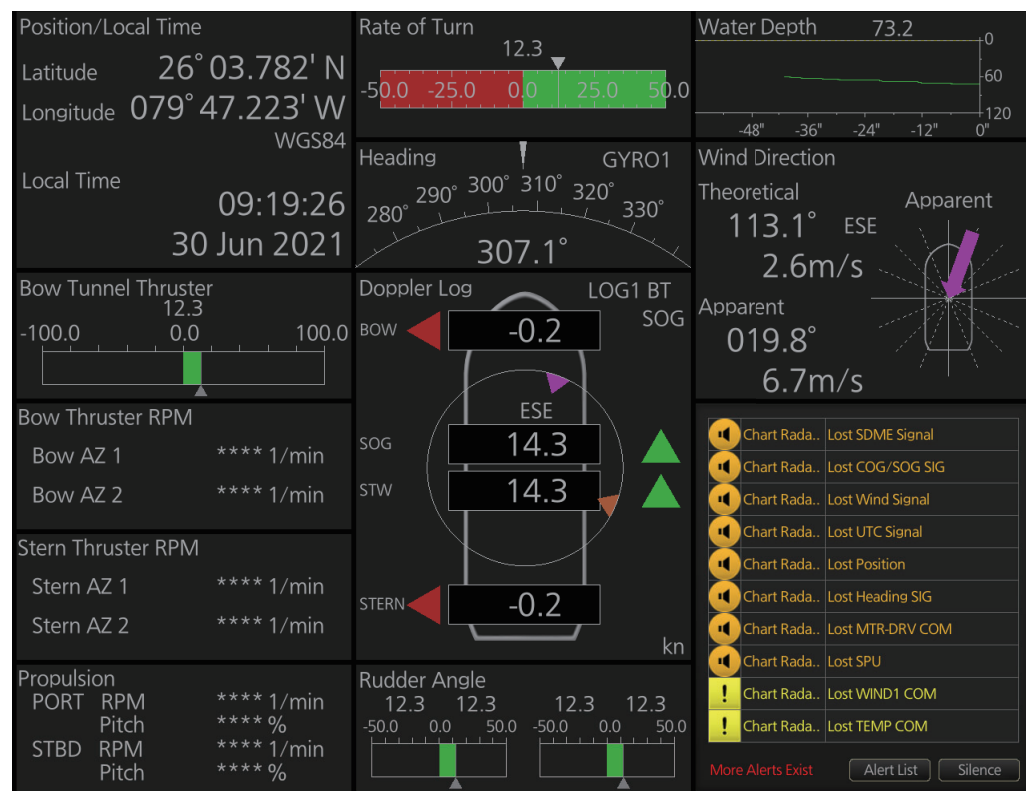
Six conning display sheets are available, and the content, layout and name of each sheet can be customized, by the service technician. Below are some examples conning display sheets.

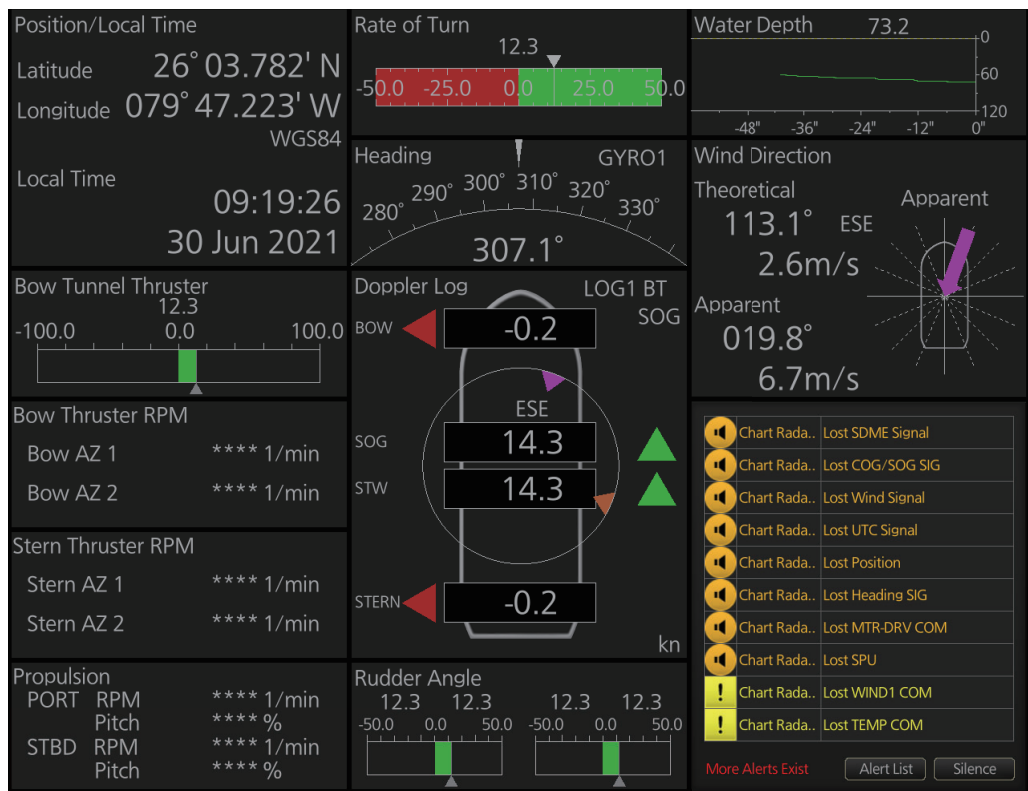
Example 1 (General navigation)



Example 2 (General navigation)

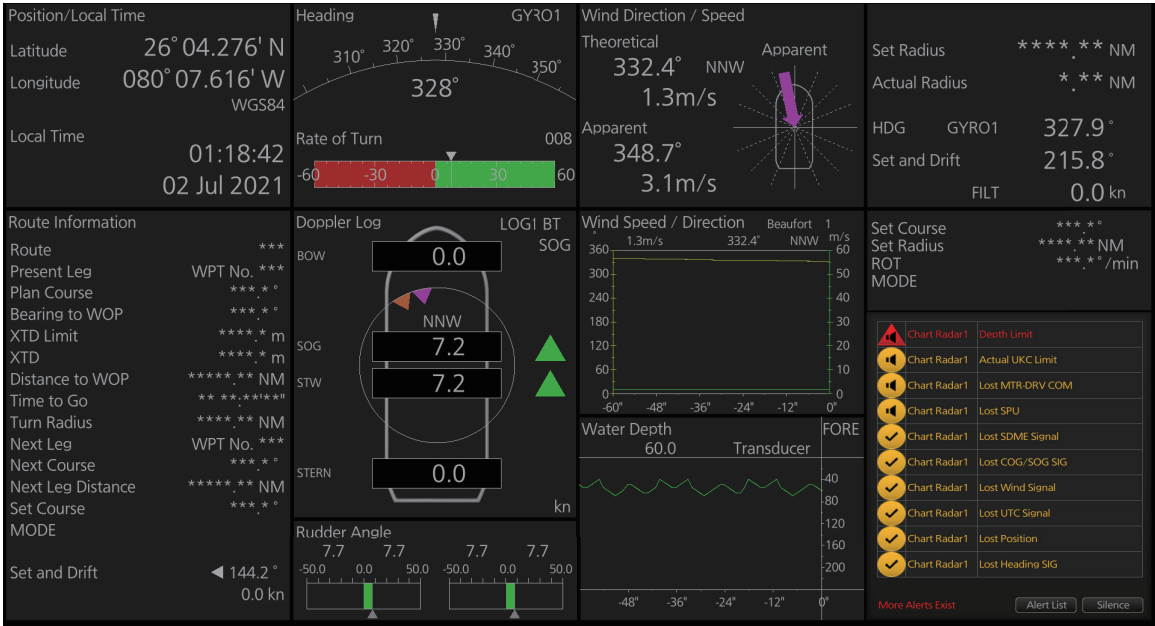


Example 3 (All waters, navigation)**Example 4 (All waters, harbour)**

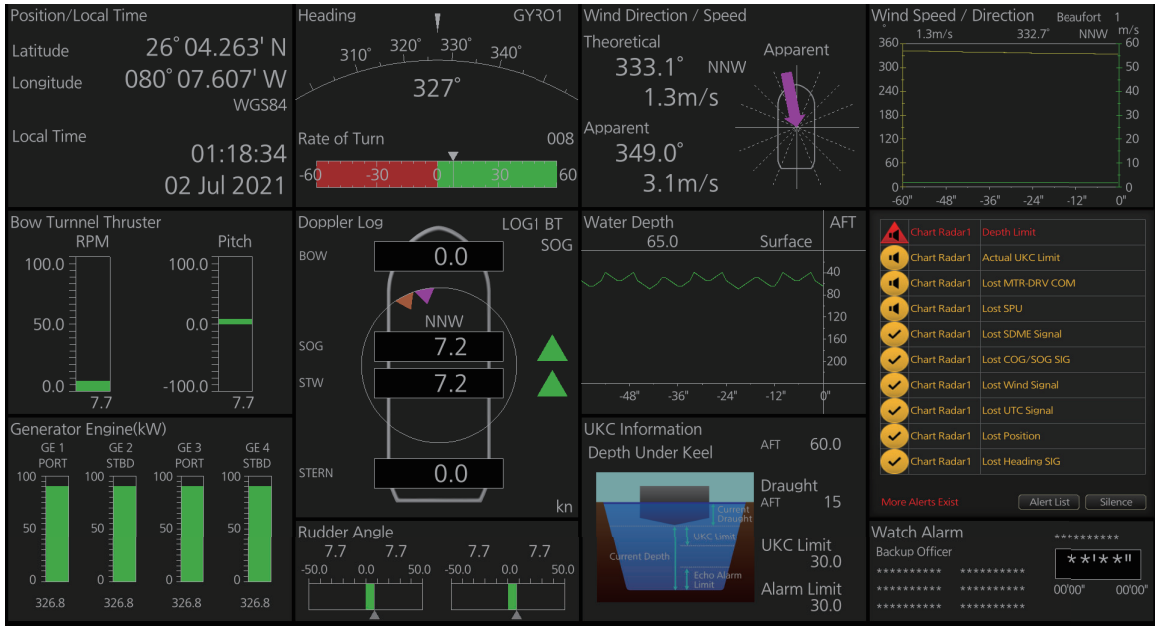
Example 5 (Ocean. navigation)**Example 6 (Ocean. harbour)**

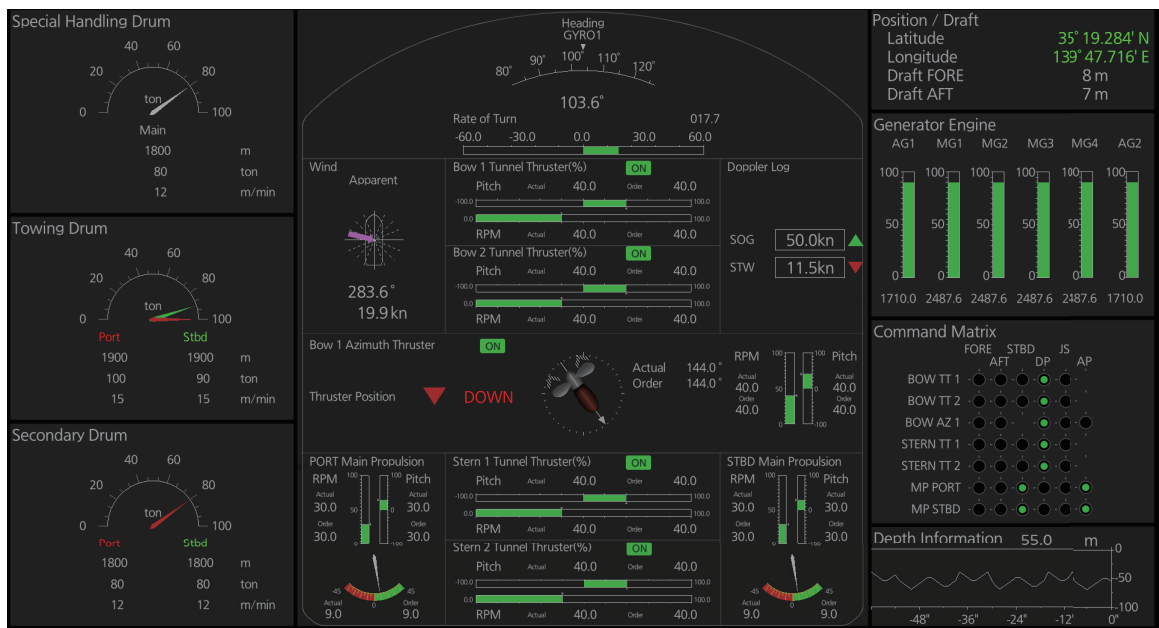
24. CONNING (optional specification)/MINI CONNING/SIDE CONNING

Example 7 (Ocean, harbour)



Example 8 (Ocean, harbour)



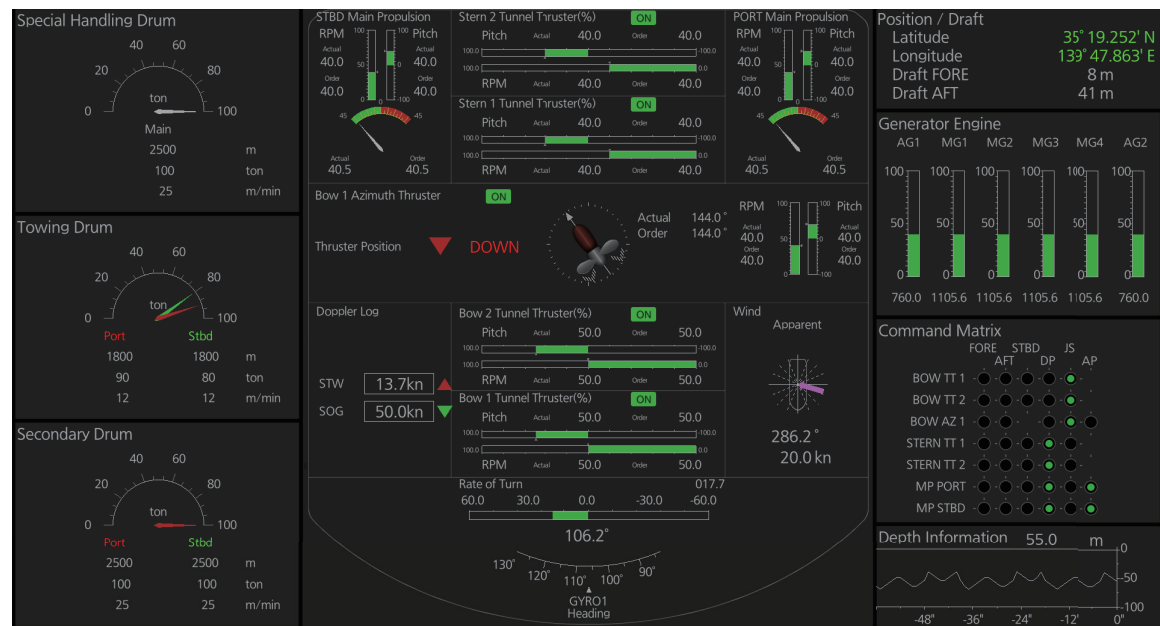
Example 9 (Offshore Service Vessel. Fore 1)**Example 10 (Offshore Service Vessel. Fore 2)**

24. CONNING (optional specification)/MINI CONNING/SIDE CONNING

Example 11 (Offshore Service Vessel. Aft 1)



Example 12 (Offshore Service Vessel. Aft 2)



24.3 Mini Conning Display

The mini conning display, available in the Voyage navigation mode, provides various navigation information and is set during the installation. The display example below shows heading, doppler log speed and rudder angle. To show or hide the mini conning display, click the [Mini Conning] button on the InstantAccess bar™.

To shift the mini conning display, right-click the mini conning display to show the context-sensitive menu. Click an option: [Left Top], [Left Middle], [Left Bottom], [Right Top], [Right Middle] or [Right Bottom].

