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1

Cautions for safety



This chapter explains precautions to prevent incidents may be caused by user or environmental factor of this equipment.

1. Before operate the equipment (Safety warning)

Caution

- Hazardous voltage exists inside the equipment.
- Do not disassemble or reorganize this equipment except of approved technician.
There is risk of electric shock.
- Please contact our A/S center for repair.

Warning

- Install the equipment based on formal install method. Installation by Simple method may cause accident include personal injury.
- The information displayed on this equipment cannot be used as source of sail. It can be a reason of distress.
★ A formal chart must be used when determine of sailing.
- Do not turn on the power in a place with flammable material such as gas. It can be a reason of fire.
- Use of unapproved power can cause fire.
- Do not disassemble or reorganize the equipment. It can cause fire, electrical shock and injury.
- Never operate the equipment with wet hand. It can cause electrical shock or injury.

Warning

- Do not install on a place with rain or water spray. It can cause fire or electric shock.
- Do not install in a place of high temperature. Rise of internal temperature of the equipment can cause fire, injury and electric shock.
- The equipment must be grounded after installation. If not grounded properly, can be interfered by other equipment or affect to other.
- Install at the place without direct sunlight to prevent drop of visibility and heating the equipment.

2. Before handle cables (Safety instruction)

Caution

- Use the regular power code to prevent heating and fire.
- Do not leave the equipment as unplugged. Wet plug become short circuit and cause of heating and fire.
- Install the cables to not interfere steering. If foot or steering device are caught it cause incident.
 - ★ Do not put heavy thing on the cable or bend the cable excessively.
- Do not disassemble or reorganize the code. It can cause heating, fire and electrical shock.

Warning

- Do not pull the cable when unplug.
 - ★ Holding the plug body and pull.
- Be careful not to pinch the cables when install

3. Before handle the vibrator and water temperature sensor

Danger

- Operation on the ocean is very unstable and dangerous. Installation or repair of the vibrator or water temperature sensor should be done on the land, after fix the vessel body securely. Otherwise, severe injury can be caused.

Warning

- Ventilate enough the cabin when use solvent such as glue. Volatile gas of solvent can result poisoning.
- Do not unplug or insert the code of vibrator while the equipment is turned on. It can cause electrical shock or disorder.
- Do not use electrical tool with wet hand. It can cause electrical shock.
- Do enough water proof process after installation of thru-hull equipment. If not, it can cause water leaking and distress

4. Precautions

1. Turn the power off when start engine.

Rapid change of battery voltage is occurred when start engine and it cause bad effect to equipment

2. Power supply: AC 100~230V

This equipment should be used in range of power AC 100~230V.

3. Do not use solvent.

The main equipment is made by plastic and coated. Do not use solvents like thinner or alcohol on it. To remove dirt, wipe with soft fabric soaked in water or neutral detergent after squeeze enough

5. Set the equipment time

1. Clock Set

The instrument will display the current time through an external GPS signal (IEC61162-1).

If that is not the external GPS signal input by operating the setting time of the equipment, please set to the current time.

2. Equipment inside Coin Battery (CR2032) check.

If you do not receive an external GPS signal input, the time is going even when off the equipment after the time setting of the equipment.

This is conducted through the Coin Battery (CR2032).

If you do not have the capacity of the Coin Battery (CR2032) will occur if the current time is not correct.

In this case, please be sure to reset the time after replacing equipment Coin Battery (CR2032).

2. Coin Battery (CR2032) life

Life of the Coin Battery has a life expectancy of 1-2 years or so.

This life is not guaranteed, depending on the condition of the equipment or environmental conditions, the life can be wrong.

2

Specification



This chapter explains about specification of this equipment.

- ☐ TX/RX specification
- ☐ Specification of display unit
- ☐ Functional specification
- ☐ Component

1. TX/RX specification

TX frequency and output

- Frequency : Select two among 50/200KHz
- TX output : 1 KW ~ 1.5KW , Transmit by turns
- Power reduction : Auto/ 1~10
- TX pulse length : Short1 , Short2 , Standard , Long
0.05~5.0 msec when operation manually
- Frequency tuning : 5~10% of each TX frequency
- Amplifier : High dynamic range
- Rolling : +/- 10°
- Pitching : +/- 5°
- Ship Speed : 0 ~ 30 Knots
- Souding rate (Pulse Per Minute) : 40 ~ 705 ppm (shallow range)
40 ~ 42 ppm (deep range)

Shallow Range (10m)

TX Rate	1	2	3	4	5	Max
Pulse Per Minutes	40	100	120	171	342	705
Depth Display Indication	15min	6min	5min	3.5min	105sec	51sec

Deep Range (1,000m)

TX Rate	1	2	3	4	5	Max
Pulse Per Minutes	40	40	40	40	40	42
Depth Display Indication	15min	15min	15min	15min	15min	14min

2. Specification of display unit

Specification

- LCD : 10.4inch
- Resolution : 600 x 800
- Brightness : 500 cd/m²
- Power supply : Main 100~230 VAC , 50/60Hz ±5%
Sub 22 ~ 30 VDC
- dimension : 320mm X 347mm X 133mm
(Width X Length X Height)

Operation environment

- Temperature : Main equipment = -15°C~+55°C
- Humidity : Less than 93% (+30°C~+60°C)

3. Functional specification

Display

- Display color : 8 / 16 / 64 ,
Background: selectable among 5 colors
- Range : 5,10,20,30,40,50,100,200,500,800,1000m
- Display : Single, Dual, History, Depth Mode
- Speed : x2 , x1 , 1/2 , 1/4 , 1/8 , Stop
- Alarm : Depth, Power, System Error
- Noise reduction : Off, Light, Medium, Strong or Frequency adjustment
(Range depends on transducer)
- Auto display : Auto gain, Auto depth
- Draft : 0~100m
- Record Function (Data Storage)
: 24 hours (save interval is 30 seconds)
- Accuracy : 0.5m(20m range), 5m(200m range)
- Time Mark : 30 seconds
- Software Version : 1.0.0

Interface

- Number of port : NMEA0183 Ver1.5/ 2.0 / 3.0 (I/O) -2 port
- Input data : GGA, VTG, ZDA
- Output data: DBT, DBS, DPT, GGA, GLL, GSA, GSV,
VTG, ZDA, ALR
- Output Alarm Signal : Depth, Power, System Error

4. Component

■ ECHO SOUNDER DISPLAY

No.	Description	Part number	Q/ty	Remark
1	Main unit	SES-5000	1EA	
2	AC Power Cable	SCN3-5M-FUSE Cable Ass'y	1EA	+AC PLUG
3	DC Power Cable	D1-5M-FUSE CABLE ASS'Y	1EA	
4	Spare FUSE	250V/5A	4EA	
5	Transducer Connector	SCK-25-8P	2EA	When connect with own transducer of vessel
6	Installation set		1SET	
7	Manual		1EA	

■ TRANSDUCER List

No.	Description	Part number	Q/ty	Remark
1	1.5KW Transducer	CM422 (50/200KHz , Single)		Airmar
2	1.5KW 50KHz	TD30 (50KHz , Single)		Hondex
3	1.5KW 200KHz	TD33 (200KHz , Single)		Hondex
4	1KW 50KHz	TD21 (50KHz , Single)		Hondex
5	1KW 200KHz	TD24 (200KHz , Single)		Hondex
One or two selected from the Transducer List				

■ Option

No.	Description	Part number	Q/ty	Remark
1	Interface Unit	SB-340		
2	Water Temp Sensor	T80		10Kohm sensor
3	Depth Indicator	SD-3000		Cable included
4	Dimmer Controller	DM-3001		
5	Transducer Tank	TE-2000 -xx		
6	Junction Box	SJ-2000		
7	Print Paper	2inch Thermal Print Paper		

3

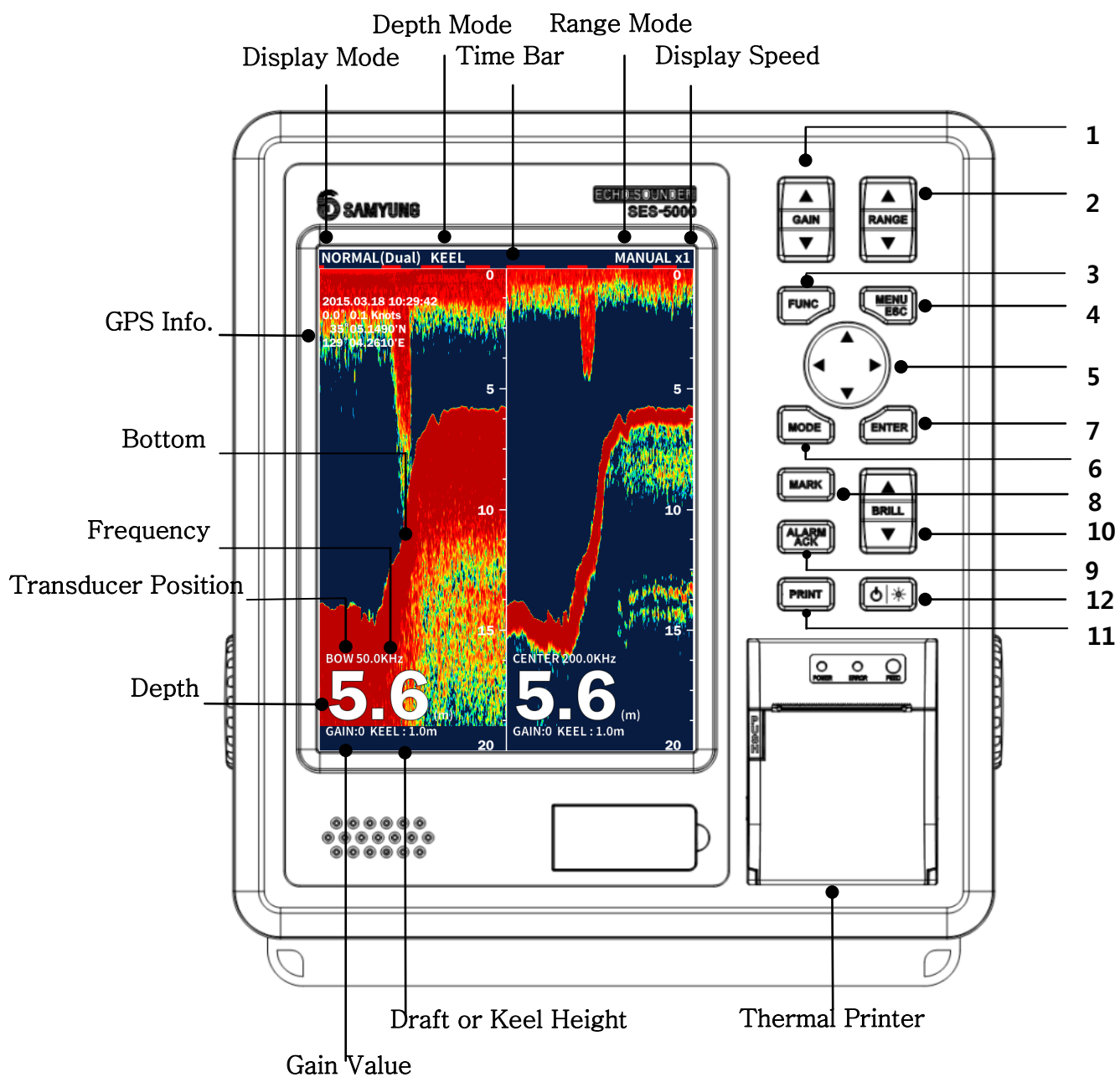
Description



This chapter explains about SES-5000 equipment and display.

- ☐ Display description
- ☐ Menu tree
- ☐ Screen mode

1 Display description



No.	Key/Button	Description
1	GAIN	Setting gain. value Press and hold both the ▲ and ▼ keys for three seconds. Once Automatic gain mode is selected. The Automatic gain mode is cancelled by pressing the ▲ or ▼ key.
2	RANGE	Setting depth range Press and hold both the ▲ and ▼ keys for three seconds. Once Automatic range mode is selected. The Automatic range mode is cancelled by pressing the ▲ or ▼ key..
3	FUNC	Please read 8.3 Func key
4	MENU/ESC	Open/Close the menu Escape from current operation.
5	Cursor	Move in the menu list. Set the level of adjustment Move VRM marker.
6	MODE	Choose the screen to display.
7	ENTER	Choose and apply the menu. Open the next submenu list
8	MARK	Input waypoint.
9	ALARM ACK	Cancels the buzzer.
10	BRILL	Adjusts the screen brilliance.
11	PRINT	Starts printing.
12	POWER	Turn the power on/off

2 Menu Tree

MENU	Settings Value (Default)
└ 1.SONAR	
└ 1.Tx Power	Off Min 1 2 3 4 5 6 7 8 9 10 <u>Auto</u>
└ 2. Tx Rate	1 2 3 4 5 <u>Max</u>
└ 3. Freq. Setting(1st)	Off <u>50</u> 200
└ Freq. Adjust	<u>50.0</u> (48.8 ~ 205.0)
└ Pulse Length	Short1 Short2 <u>Std.</u> Long 0.05 0.1 0.2 0.4 0.6
	0.8 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0
└ Pulse Edge	<u>Off</u> On
└ POS	BOW <u>CENTER</u> STERN
└ KEEEL	<u>0.0</u> (0.0 ~ 10.0)
└ 4. Freq. Setting(2nd)	Off 50 <u>200</u>
└ Freq. Adjust	<u>200.0</u> (48.8 ~ 205.0)
└ Pulse Length	Short1 Short2 <u>Std.</u> Long 0.05 0.1 0.2 0.4 0.6
	0.8 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0
└ Pulse Edge	<u>Off</u> On
└ POS	BOW <u>CENTER</u> STERN
└ KEEEL	<u>0.0</u> (0.0 ~ 10.0)
└ 5.Depth Mode	<u>TRANS</u> SURF KEEL
└ 6.Draft	<u>0.0</u> (0.0 ~ 100.0)
└ 7.Memory Length	4h 6h 12h <u>24h</u>
└ 8.Tx Fix	<u>Off</u> 1st 2nd
└ 2.DISPLAY	
└ 1.Mode	<u>NORMAL(Dual)</u> NORMAL(1st) NORMAL(2nd)
	HISTORY(1st) HISTORY(2nd) DEPTH MODE
└ 2.Range	<u>20</u> (5 ~ 1,000)
└ 3.Auto Range	<u>Off</u> AutoRange
└ 4.Display Speed	x2 <u>x1</u> x½ x¼ x⅛ STOP
└ 5.Interference	<u>Off</u> Low Medium High
└ 6.Noise Reduction	<u>Off</u> On
└ 7.Refresh Area	<u>All</u> From Now
└ 8.TVG	
└ TVG(1st)	<u>1</u> (1 ~ 8)

		└ TVG Range(1st)	<u>100</u> (30 ~ 1,000)
		└ TVG(2nd)	<u>1</u> (1 ~ 8)
		└ TVG Range(2nd)	<u>100</u> (30 ~ 1,000)
		└ 9.STC	
		└ STC(1st)	<u>0</u> (0 ~ 10)
		└ STC(2nd)	<u>0</u> (0 ~ 10)
		└ 10.Gain Offset	
		└ Gain Offset(1st)	<u>0</u> (-20 ~ +20)
		└ Gain Offset(2nd)	<u>0</u> (-20 ~ +20)
		└ 10.Auto Gain Offset	
		└ Auto Gain Offset(1st)	<u>0</u> (-5 ~ +5)
		└ Auto Gain Offset(2nd)	<u>0</u> (-5 ~ +5)
		└ 3.COLOR	
		└ 1.Day/Night	<u>Day</u> Night
		└ 2.Colors	64 <u>16</u> 8
		└ 3.Hue	[A]Type1 [B]Type1 <u>[S]Type1</u> [S]Mono [S]Blue
			[S]Yellow [S]Green [C]Type1 [C]Type2 [C]Type3
		└ 4.Background	White LightBlue Blue <u>DeepBlue</u> Black
		└ 5.Color Erase	<u>0</u> (0 ~ 50%)
		└ 6.Clutter	<u>0</u> (0 ~ 80%)
		└ 4.VIEW	
		└ 1.Division	<u>Vertical</u> Horizontal
		└ 2.Depth Size	Off 1 2 <u>3</u> 4 5
		└ 3.Help	Off <u>View</u> Close(5")
		└ 4.Color Table	<u>Off</u> On
		└ 5.Header Info	Off <u>On</u>
		└ 6.Temp. Graph	<u>Off</u> On
		└ 7.Units(Depth)	ft <u>m</u> fa
		└ 8.Units(Temp.)	<u>°C</u> °F
		└ 9.Date/Time	Off <u>On</u>
		└ 10.COG/SOG	Off <u>On</u>
		└ 11.Lati./Longi.	Off <u>Deg.Min.</u> Deg.Min.Sec
		└ 5.ALARM	

	└ 1.ALARM TEST	<u>NO</u> YES
	└ 2.Depth	<u>Off</u> On
	└ Depth Setting	<u>3</u> (0 ~ 900)
	└ 3.Depth Lost	<u>Off</u> on
	└ 4.Printer Alaram	<u>Off</u> on
	└ 5.DC Power Alarm	<u>Off</u> on
	└ 6.AC Power Alaram	<u>Off</u> on
	└ 7.Alaram Log View	
	└ 6.NMEA	
	└ 1.NMEA Output	Off UART1 <u>UART2</u>
	└ 2.NMEA Output Data	<u>DBT</u> DBS DBK <u>DPT</u> <u>GGA</u> GLL GSA GSV <u>VTG</u> <u>ZDA</u> <u>ALR</u>
	└ 3.NMEA Input	Off <u>UART1</u> UART2
	└ 4.UART1	<u>4800</u> 9600 38400
	└ 5.UART2	<u>4800</u> 9600 38400
	└ 6.UART Monitor	
	└ 7.Depth Indicator	Off <u>UART1</u> UART2
	└ 7.PRINTER	
	└ 1.Print Test	<u>No</u> Yes
	└ 2.Print	<u>No</u> Yes
	└ 3.Speed	9600 19200 38400 <u>57600</u>
	└ 8.ETC	
	└ 1.Language	Korean <u>English</u>
	└ 2.Key Beep	Off <u>On</u>
	└ 3.Func Key	TxPower TxRate AutoRange Disp.Speed Interference
		NoiseReduction TVG STC GainOffset AGOffset Hue
		Background <u>Capture</u>
	└ 4.Simulation	<u>Off</u> Demo1 Demo2
	└ 5.Version	
	└ 6.Reset	<u>NO</u> YES
	└ 7.Temp. Calibration	<u>0</u> (-20 ~ +20)
	└ 9. Date/Time	
	└ 1.Year	<u>2015</u> (2014 ~ 2099)

└ 2.Month	<u>1</u> (1 ~ 12)
└ 3.Day	<u>1</u> (1 ~ 31)
└ 4.Hour	<u>0</u> (0 ~ 23)
└ 5.Minute	<u>0</u> (0 ~ 59)
└ 6.Second	<u>0</u> (0 ~ 59)
└ 7.GPS Sync	<u>Off</u> On
└ 8.Local Offset	<u>+9</u> (-13 ~ +13)
└ 9.Time Format	<u>24Hours</u> 12Hours
└ 10.Date Format	<u>yyyy.MM.dd</u> dd/MMM/yy MMM/dd/yy dd/MM/yy MM/dd/yy

3 Screen Mode

The Echosounder provide unique display **MODE** for each mode.

Press Screen button to select a desired screen mode.

.

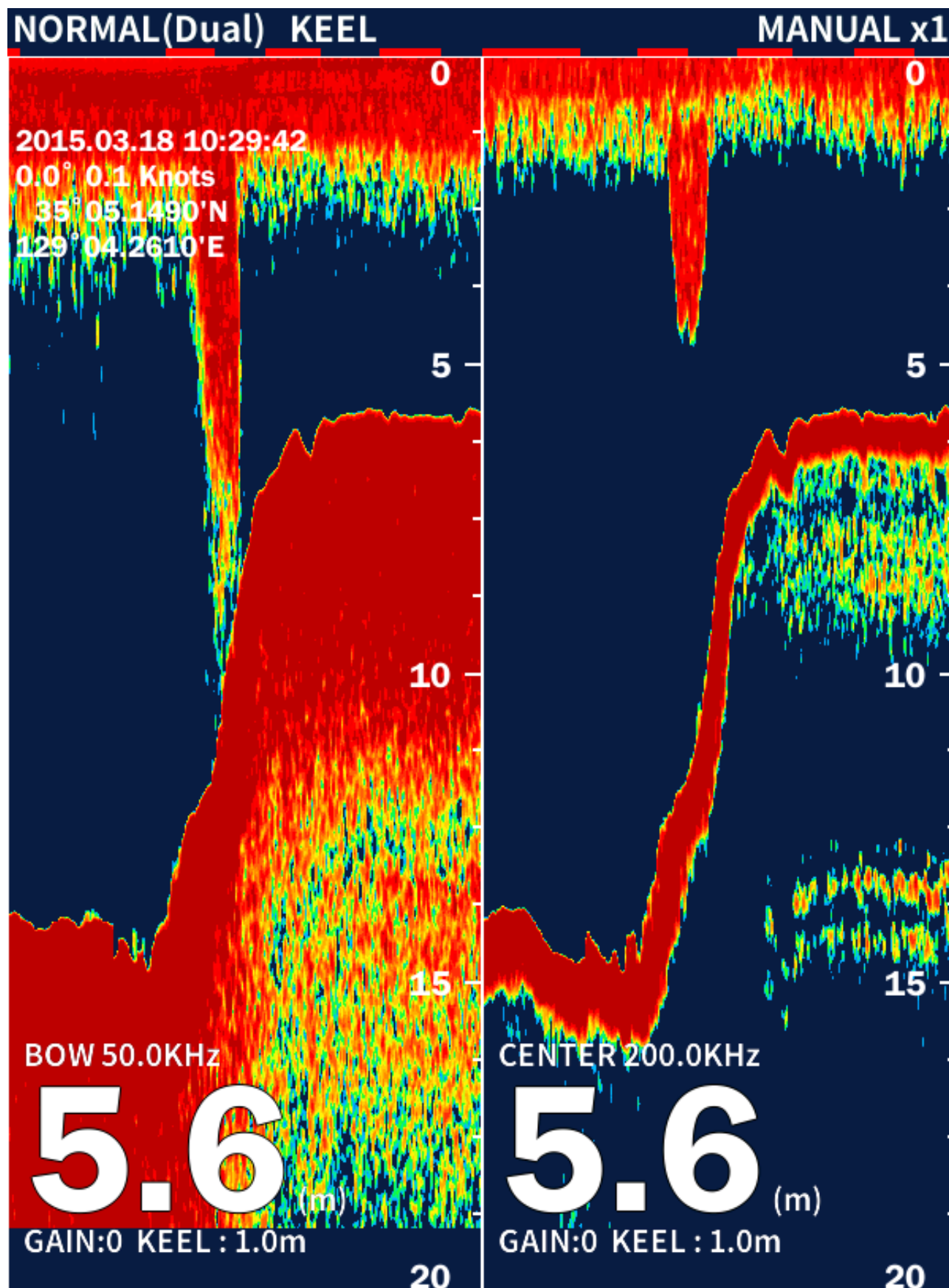
- Each time you press the MODE key, the display mode changes.

When single frequency : NORMAL – HISTORY – DEPTH MODE

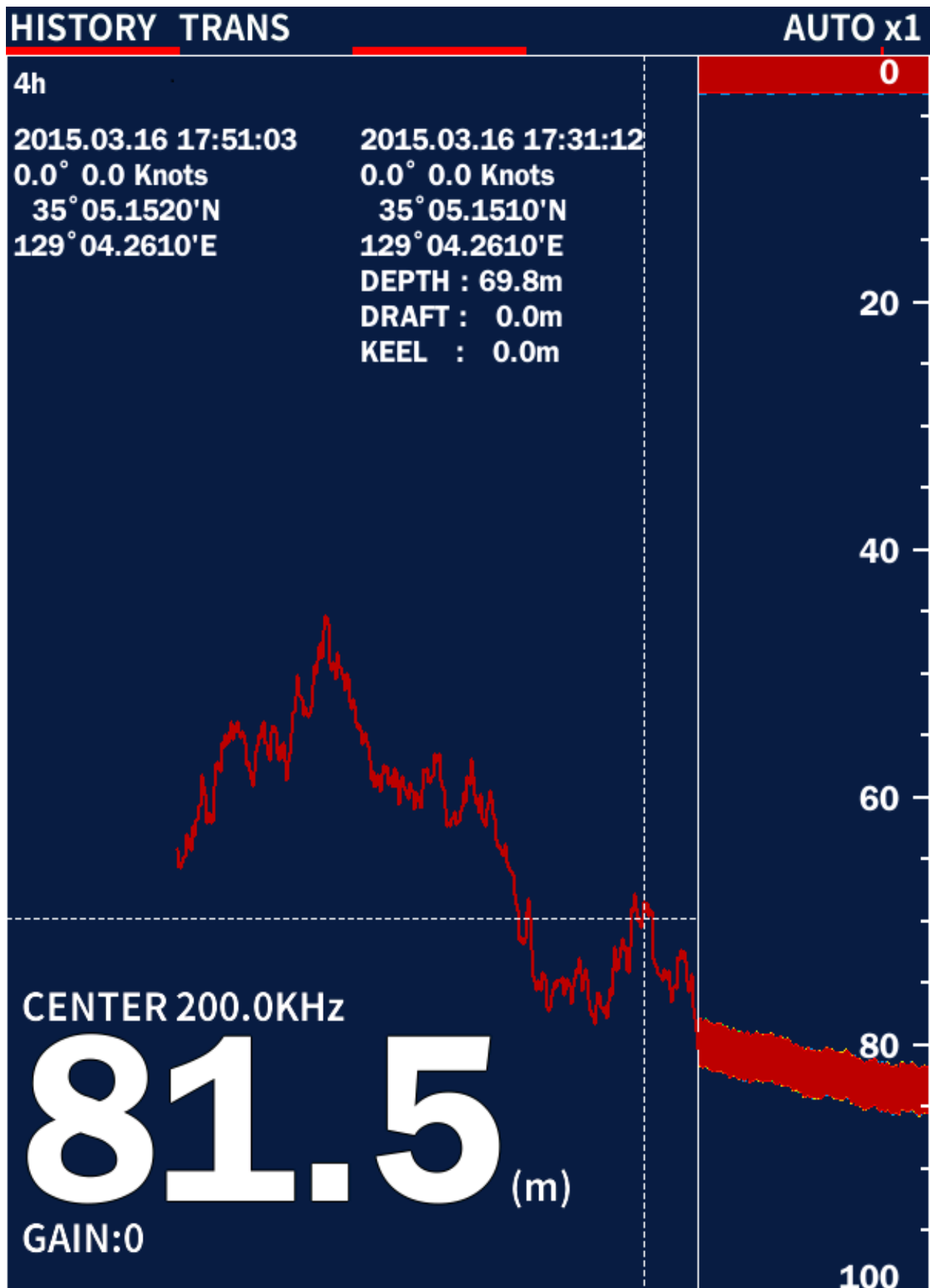
When dual frequency : NORMAL(Dual) – NORMAL(1st) – NORMAL(2nd) -

HISTORY(1st) – HISTORY(2nd) – DEPTH MODE

3.1 NORMAL MODE



3.2 HISTORY MODE



3.3 DEPTH MODE

DEPTH MODE SURF

MANUAL x1

2015.03.18 11:37:14

242.0° 0.0 Knots

35°05.1510'N

129°04.2630'E

BOW 50.0KHz

23.8 (m)

GAIN:0 DRAFT : 2.4m

CENTER 200.0KHz

23.8 (m)

GAIN:0 DRAFT : 2.4m

4

Functions



This chapter explains the functions.

- ☐ Sonar
- ☐ Display
- ☐ Color
- ☐ View
- ☐ Alarm
- ☐ NMEA
- ☐ PRINTER
- ☐ ETC.
- ☐ Date/Time

1. SONAR

1.1 Transmitting (Tx)Power

If same frequency is used by near vessel's fish finder, there could be interference noise in the display. If there is an anyway to reduce other's Echosounder's output then the interference noise can be suppressed. The transmitting power can be adjusted manually and it can be changed automatically. If you want to stop the transmitting, select stop.

☐ Transmitting (Tx) power setup

MENU ➔ [SONAR] ➔ [Tx Power] ➔ Select desired power

1.2 Transmitting (Tx) Speed

You can select transmitting speed. If you select smaller speed, the transmitting interval is getting longer and the display time is getting long.

☐ Setting for Transmitting (Tx) Speed

MENU ➔ [SONAR] ➔ [Tx Rate] ➔ Select desired speed

1.3 Frequency setting

Select a frequency to be displayed in 1st and 2nd frequency screen.

☐ Setting for frequency

MENU ➔ [SONAR] ➔ [Freq. Setting] ➔ Change to a desired value

1.4 Frequency adjust

You can do fine tune the selected frequency in the frequency selection.

☐ Adjust for frequency

MENU ➔ [SONAR] ➔ [Freq. Adjust] ➔ Change to a desired value

1.5 Pulse Width

The pulse width is changing depending on range and Shift but it could be set by manually. If you set short pulse range, you can have better image and if you set long pulse range, you can see deeper.

If you want to have better image, set short1, short2.

Short1 : You can have a better Image but less depth compare to short2.

Short2 : You can have better target image in short depth.

Standard : In general, this can use used for various fish search .

long : Target image is not clear but search distance is longer.

☐ Setting for frequency pulse edge

MENU ➡ [SONAR] ➡ [Pulse edge(L)] ➡ Change to a desired value

1.6 High resolution pulse

If you set it ON then, you can reduce your interference on other vessel.

☐ Setting for pulse edge

MENU ➡ [SONAR] ➡ [Pulse Edge] ➡ Select 『On or off』

1.7 POS

Setting for transducer position.

☐ Setting for Transducer Position

MENU ➡ [SONAR] ➡ [POS] ➡ Select 『BOW/CENTER/STERN』

1.8 KEEL

Setting for Keel height.

❑ Setting for KEEL

MENU ➔ [SONAR] ➔ [KEEL] ➔ Change to a desired value

1.9 Depth Mode

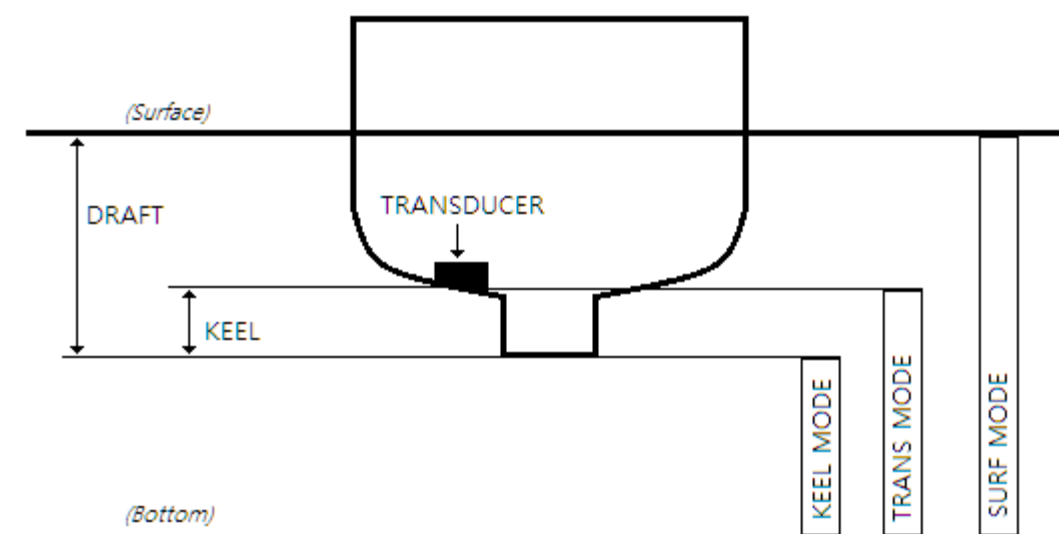
TRANS : Displays the depth below the transducer.

SURF : Displays the depth below water surface.

KEEL : Displays the depth below the keel.

❑ Setting for Depth mode

MENU ➔ [SONAR] ➔ [Depth Mode] ➔ Select 『TRANS/SURF/KEEL』



1.10 Draft

Setting for Draft height.

☐ Setting for Draft

MENU ➡ [SONAR] ➡ [DRAFT] ➡ Change to a desired value

1.11 Memory Length

Set the playback time is displayed when the History mode.

☐ Setting for Memory Length

MENU ➡ [SONAR] ➡ [Memory Length] ➡ Select 『4h/6h/12h/24h』

1.12 Fixed Transmission (Tx Fix)

Below is the transmission/receiving fixed type according to transducers.

- 1st : transmit and receive 1st & 2nd in order using the 1st transmitter.
 - 2nd : transmit and receive 1st & 2nd in order using the 1st frequency transmitter.
 - OFF : Use all 1st & 2nd transmitter in order.
-
- 1st or 2nd setup can be set when a transducer is connected to single line.
(two lines, shield)
 - OFF setup can be set when a transducer is connected to dual line (four lines, shield) or when 1st and 2nd transducer is used separately.
 - Above setup need to be set by authorized distributor.

☐ Setting for Fixed transmitting

MENU ➡ [SONAR] ➡ [Tx Fix] ➡ Select a desired fixed transmitting frequency

2. DISPLAY

2.1 Mode

It can set a screen display mode.

When single frequency : NORMAL – HISTORY – DEPTH MODE

When dual frequency : NORMAL(Dual) – NORMAL(1st) – NORMAL(2nd) -
HISTORY(1st) – HISTORY(2nd) – DEPTH MODE

☐ Setting for Mode selection

MENU ➡ [DISPLAY] ➡ [Mode] ➡ Change to a desired value

2.2 Range

Range value can be changed by range key.

(5,10,20,30,40,50,100,200,500,800,1000 m)

☐ Setting for Range setup

MENU ➡ [DISPLAY] ➡ [Range] ➡ Select a desired range value

2.3 Auto Range

Range can be adjusted manually or automatically.

Automatic adjustment is useful when you are preoccupied with other tasks and do not have the time to adjust the display.

☐ Setting Auto Range

MENU ➡ [DISPLAY] ➡ [Auto Range] ➡ Select among 『Off/Auto range』

2.4 Display speed

The picture advance speed determines how quickly the vertical scan lines run across the screen. When choosing a picture advance speed, keep in mind that a fast advance speed will expand echoes horizontally on the screen and a slow advance speed will contract them. A fast advance speed is useful for observing the rugged bottom closely. A slow advance speed is useful for observing the smooth bottom.(Maximum speed x2 , Minimum Speed x1/8.

☐ Setting for display speed

MENU ➔ [DISPLAY] ➔ [Display Speed] ➔ Select desired speed

2.5 Interference/Noise Reduction

Their induced noise from the electric apparatus and the occurrence of periodic interference from the lineup of a fish finder is the ability to eliminate noise.

☐ Setting for interference

MENU ➔ [Display] ➔ [Interference] ➔ Select desired level

☐ Setting for noise reduction

MENU ➔ [DISPLAY] ➔ [Noise Reduction] ➔ Select among 『off/on』

2.6 Refresh area

Change from the current value, whether, as a whole should choose.

☐ Setting for refresh area

MENU ➔ [DISPLAY] ➔ [Refresh Area] ➔ Select among 『All/From now』

2.7 TVG

This is due to propagation attenuation of the ultrasonic wave. To compensate for this difference, use TVG. TVG automatically adjusts the gain with depth so that echoes of the same strength and different depths are shown in the same colors regardless of their depths. Do not set the TVG too high; close-range echoes may not be displayed.

2.7.1 Setting for TVG level

Set-up for TVG level. Do not set the TVG too high; close-range echoes may not be displayed.

☐ Setting for TVG

MENU ➡ [DISPLAY] ➡ [TVG] ➡ Select desired level

2.7.2 Setting for TVG distance

TVG set up for applied distance.

☐ Setting for TVG distance

MENU ➡ [DISPLAY] ➡ [TVG Range] ➡ Select desired distance

2.8 STC

This is useful to clear the surface of unwanted echoes to look for surface fish. The setting range is 0-10, and 0 is Off. In setting 10, STC deletes unwanted echoes from the surface to about 5m. Avoid setting the STC too high; fish echoes near the surface may be erased.

☐ Setting for STC

MENU ➡ [DISPLAY] ➡ [STC] ➡ Select desired value

2.9 Gain Offset

If you want to increase or decrease the sensitivity or to control the sensitivity balance between low frequency and high frequency, you can set offset value. If sensitivity setting value is so small, weak signal is suppressed, then there's no image. If the values is so big, it will be difficult to identify the images because of noise. So you should control the gain.

☐ Setting for Gain offset

MENU ➔ **[DISPLAY]** ➔ **[Gain Offset]** ➔ **Select desired value**

2.10 Auto Gain Offset

In automatic operation, seabed is automatically adjusted as reddish-brown color. You can modify offset value to set the sensitivity up or down in automatic gain. Clutter function operate automatically to eliminate small echo by dirt seawater and plankton. This allow good picture to identify.

☐ Setting for Auto Gain Offset

[MENU] ➔ **[DISPLAY]** ➔ **[Auto Gain Offset]** ➔ **Select desired value**

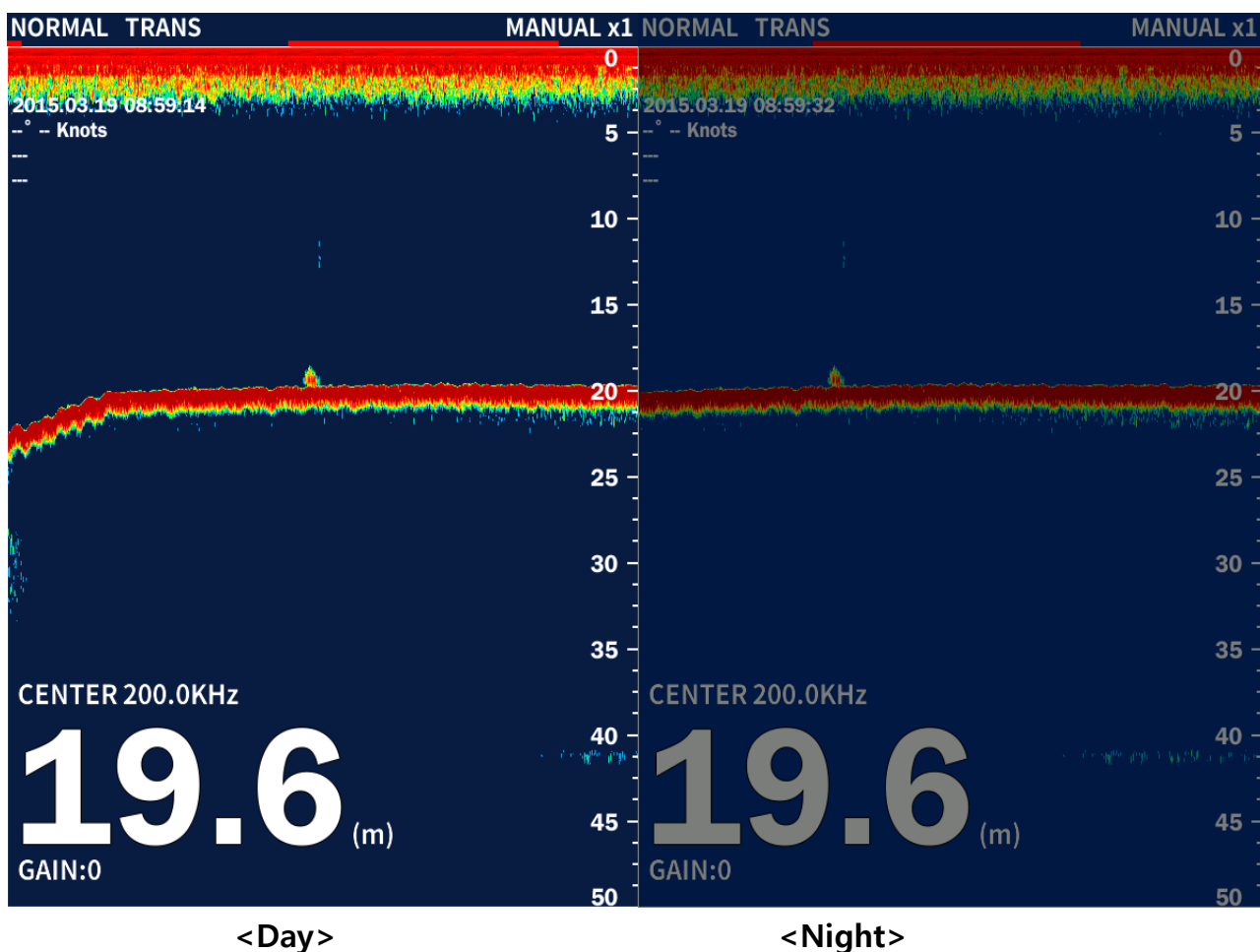
3. COLOR

3.1 Day/Night

It can change the menu and background color of the screen. When you select day, the screen is bright and menu is white. When you select night, the screen is dark and menu is black.

☐ Setting for Day/Night

MENU ➔ [COLOR] ➔ [Day/Night] ➔ Select among 『Day/Night』



3.2 Number of Colors

It can select the number of colors.

☐ Setting for number of Colors

MENU ➔ [COLOR] ➔ [Colors] ➔ Select desired number of colors

3.3 Hue

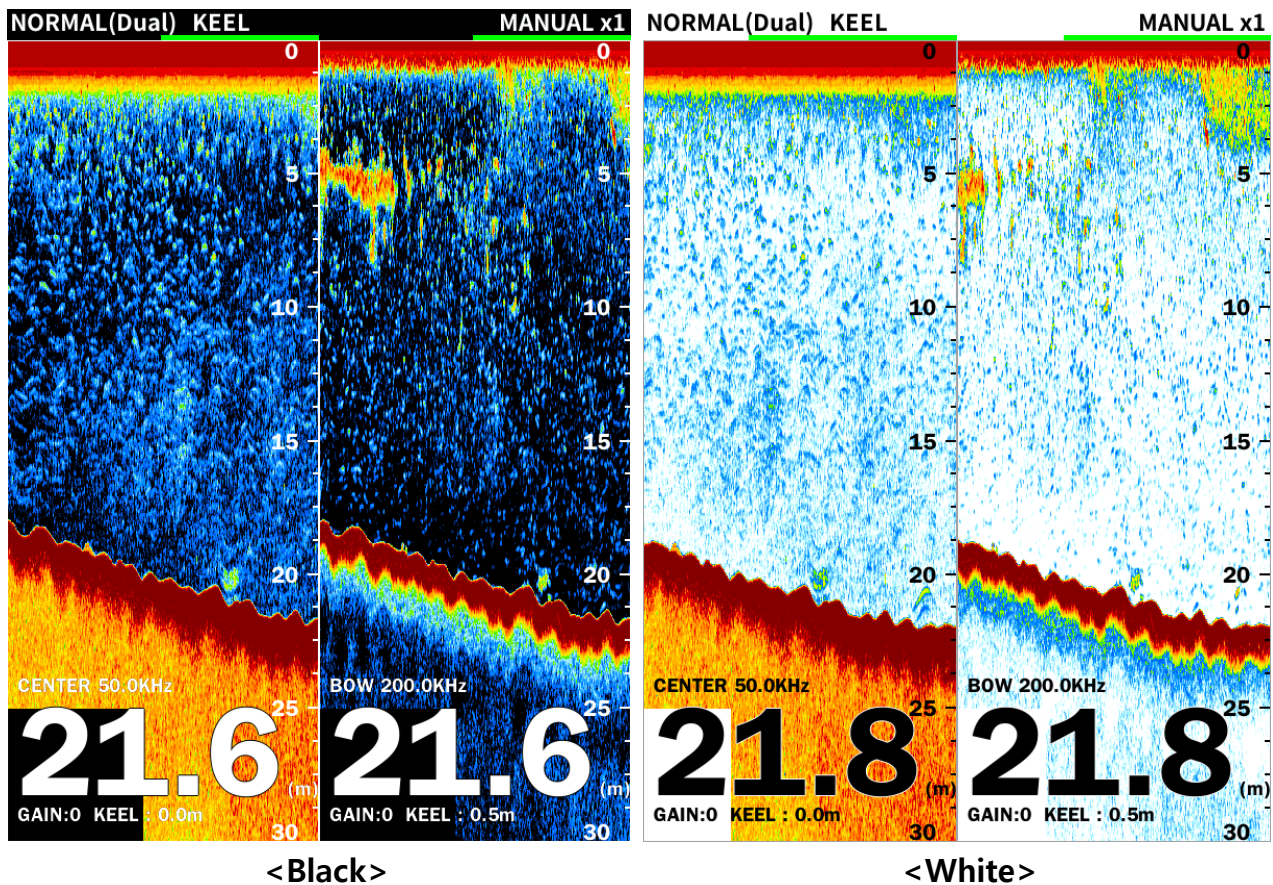
It can select the hue of pictures according to brightness and taste.

☐ Setting for hue

MENU ➔ [COLOR] ➔ [Hue] ➔ Select desired hue

3.4 Background

It can change background color according to the surrounding environment.



☐ Setting for background color

MENU ➔ [COLOR] ➔ [Background] ➔ Select desired color

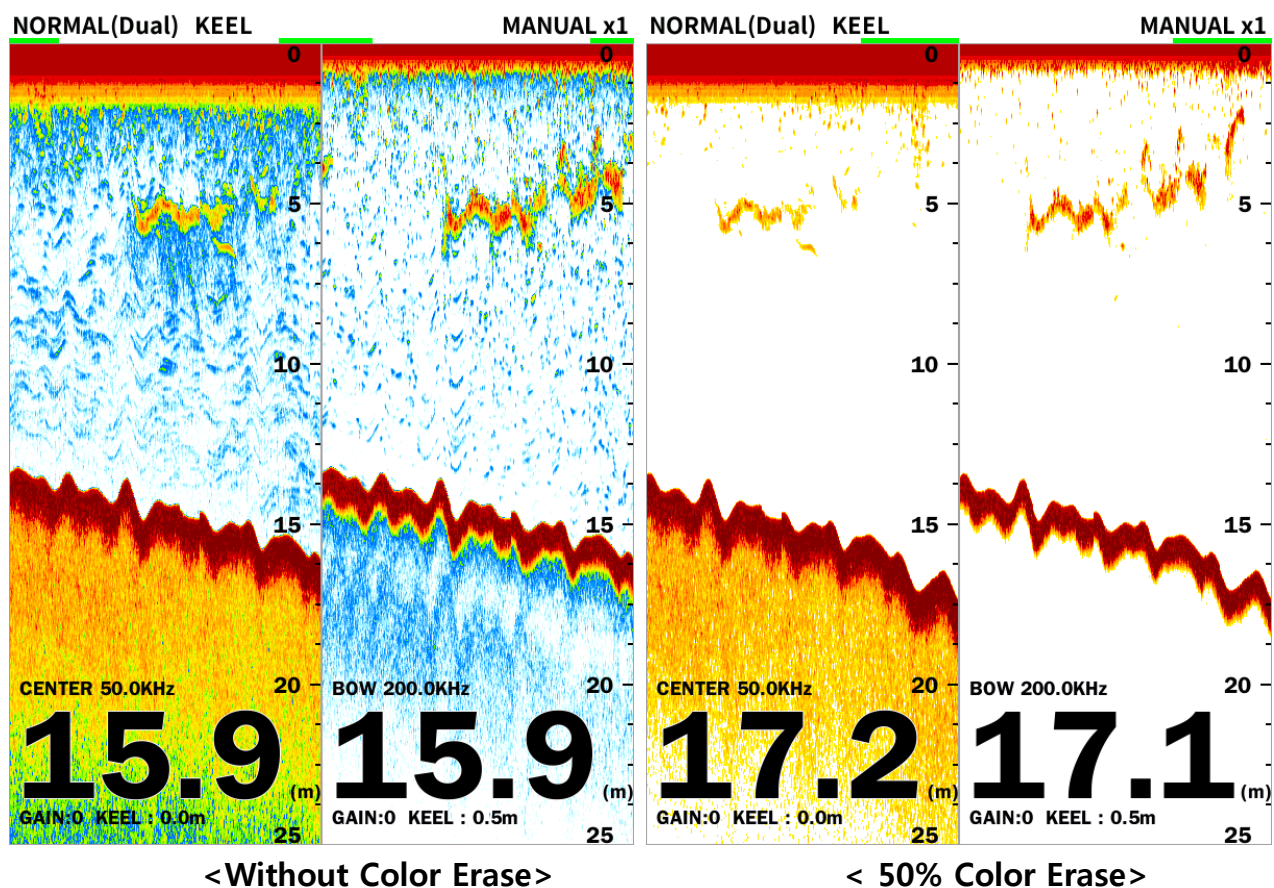
3.5 Color Erase

Needless dim noise can be eliminated by color erase.

Because this function removes unwanted low level echoes off the screen by cutting them off, it is effective when the image is difficult to see because of interference or when you want to see only big fish school.

☐ Setting for color erase

MENU ➔ [COLOR] ➔ [Color Erase] ➔ Select desired values (0 ~ 50 %)

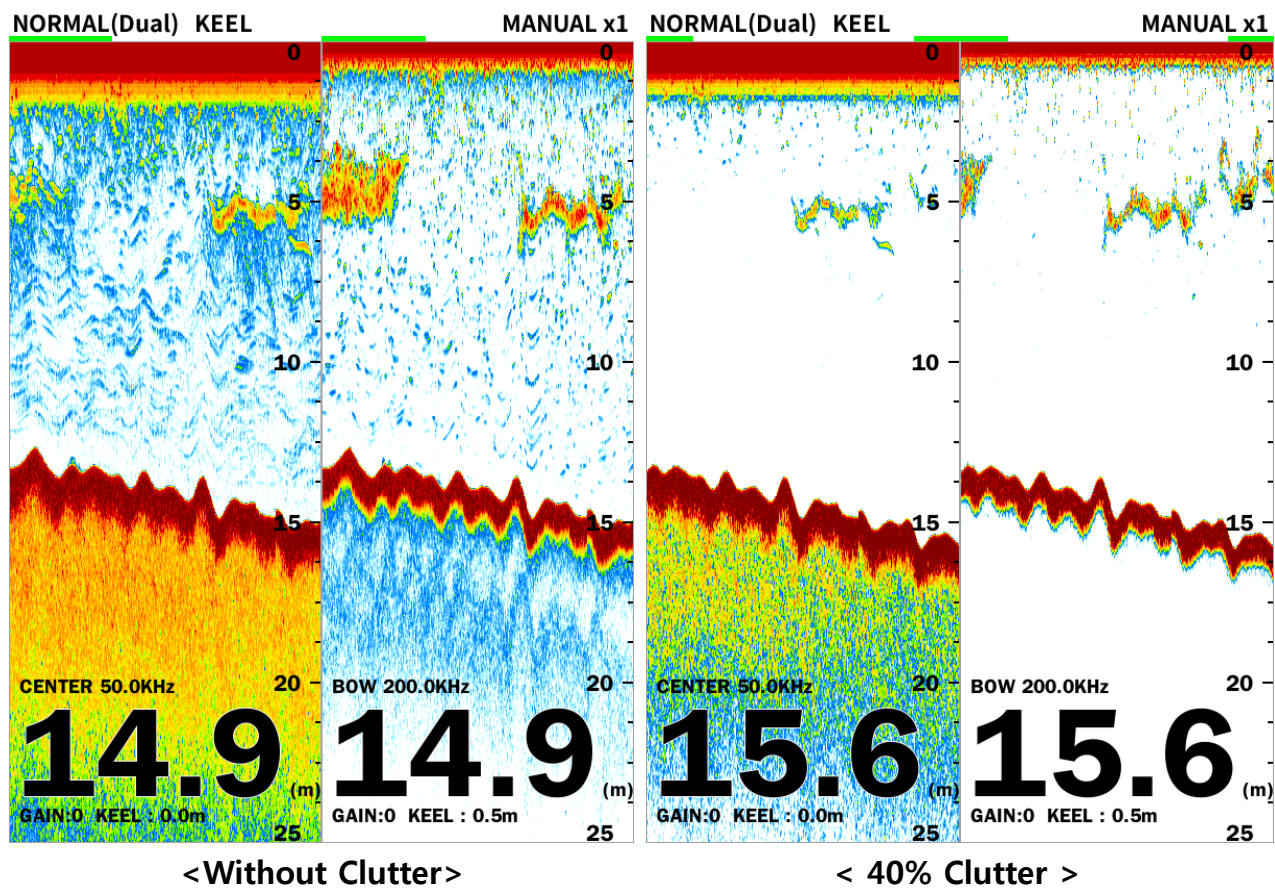


3.6 Clutter

Clutter is used to eliminate low level return echoes because of dirt sea water etc. so one can see clear fish school.

☐ Setting for clutter

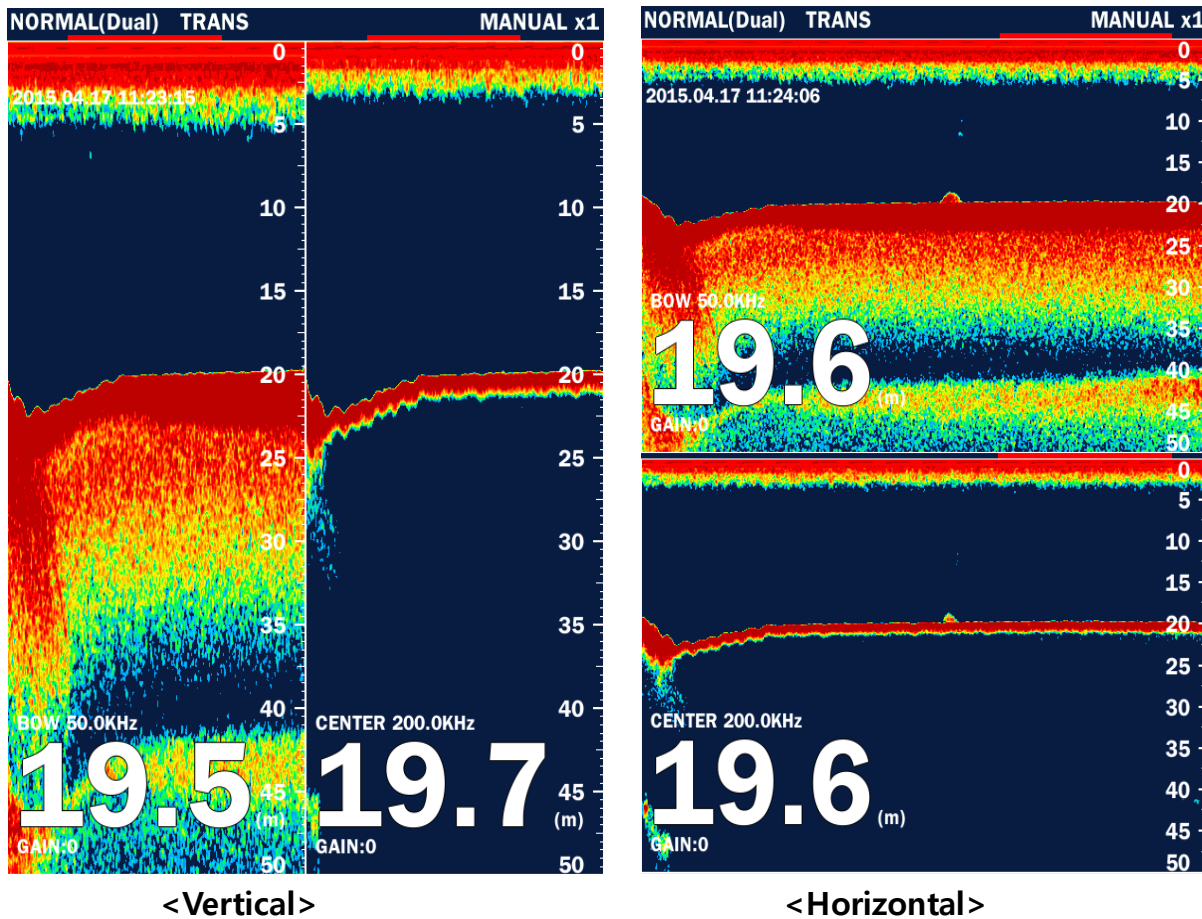
MENU ➔ [COLOR] ➔ [Clutter] ➔ Select desired value (0 ~ 80%)



4. View

4.1 Division

Select the division type for screen.



☐ Setting for screen division

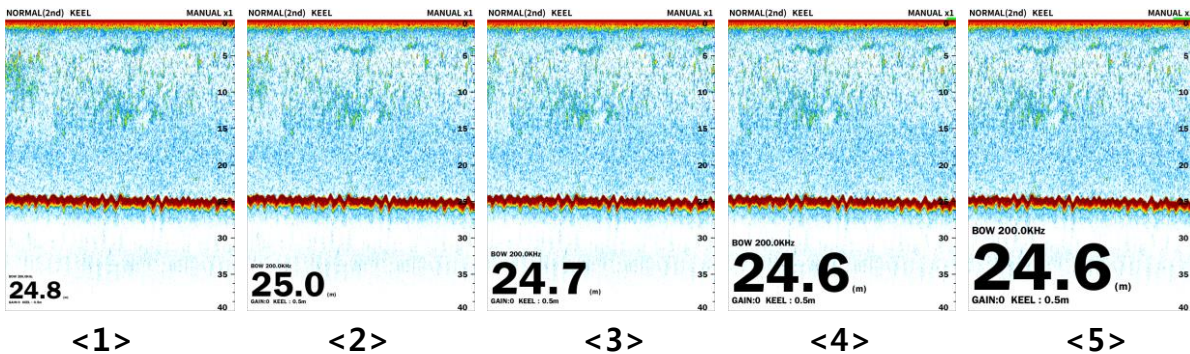
MENU ➔ [VIEW] ➔ [Division] ➔ Select among 『Vertical/Horizontal』

4.2 Depth Size

Change the font size of water depth at the left bottom of the screen.

❑ Setting for depth size

[MENU] ➡ Select [VIEW] ➡ Select [Depth Size] ➡ Select desired size



4.3 Help

It can select whether it will explain the selected item or not.

❑ Setting for help

MENU ➡ [VIEW] ➡ [Help] ➡ Select among 『off/on/end(5 seconds)』

Off : Do not show help.

On : Show help.

Close(5sec) : If there's no key control for 5 seconds, the help will be turned off automatically .

4.4 Color Table

It can select whether it will show the color table on the right in the center of screen or not.

❑ Setting for color table

MENU ➡ [VIEW] ➡ [Color Table] ➡ Select among on/off

4.5 Header Info.

It can select whether it will show the informations on top of the screen or not.

☐ Setting for header information

MENU ➔ [VIEW] ➔ [Header Info] ➔ Select among [on/off]

4.6 Temp. Graph

It can select whether it will show water temperature or not. (*Temp. Sensor required).

☐ Setting for temperature

MENU ➔ [VIEW] ➔ [Temp. Graph] ➔ Select among 『off/on』

4.7 Units(Depth)

Setting for unit of depth or temperature.

☐ Setting for unit of depth

MENU ➔ [VIEW] ➔ [Units(Depth)] ➔ Select among 『ft/m/fa』

☐ Setting for unit of temperature

MENU ➔ [VIEW] ➔ [Units(Temp.)] ➔ Select among 『 °C/ °F 』

4.8 Date/Time

Select displaying internal clock date/time on upper left corner of the screen.

☐ Setting for date and time

MENU ➔ [VIEW] ➔ [Date/Time] ➔ Select among 『Off/On』

4.9 COG/SOG

Select displaying GPS compass/speed on left upper corner of the screen.

(*GPS connection is required)

☐ Setting for COG and SOG

MENU ➔ [VIEW] ➔ [COG/SOG] ➔ Select among 『Off/On』

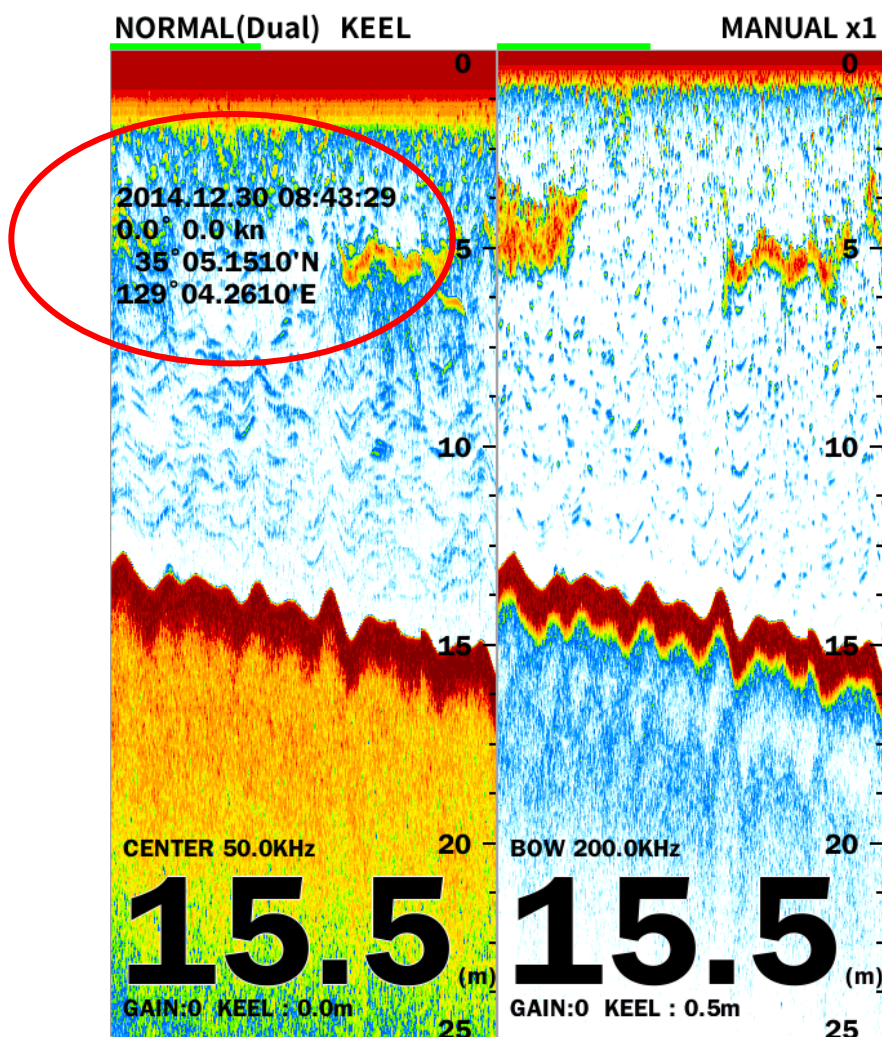
4.10 Lati./Longi.

Select displaying GPS Lati./Longi. on upper left corner of the screen.

(*GPS connection is required)

☐ Setting for latitude and longitude

MENU ➔ [VIEW] ➔ [Lati./Longi.] ➔ Select among 『Off/On』



<Displaying Date/Time, COG/SOG, Lati./Longi. Is on>

5. ALARM

5.1 Alarm Test

Start alarm test. (Press ACK button cancels the alarm test)

☐ Start alarm test

MENU ➔ [ALARM] ➔ [Alarm Test]

5.2 Depth Alarm

When the depth is out of setting range, alarm alerts you and depth alarm mark is displayed at the head information position.



☐ Setting for depth alarm

MENU ➔ [ALARM] ➔ [Depth] ➔ Select among 『Off/On』

☐ Setting for depth

MENU ➔ [ALARM] ➔ [Depth Setting] ➔ Select among 0~900

5.3 Depth Lost

When sea bottom cannot be detected, alarm alerts you and depth lost alarm mark is displayed at the head information position.



☐ Setting for depth lost

MENU ➔ [ALARM] ➔ [Depth Lost] ➔ Select among 『Off/On』

5.4 Printer Alarm

When the printer becomes abnormal, alarm alerts you and printer alarm mark is displayed at the header information position.



☐ Setting for printer alarm

MENU ➔ [ALARM] ➔ [Printer Alarm] ➔ Select among 『Off/On』

5.5 DC Power Alarm

When DC power failed alarm alerts you and DC power alarm mark is displayed at the head information position.



☐ Setting for DC power alarm

MENU ➔ [ALARM] ➔ [DC Power Alarm] ➔ Select among 『Off/On』

5.6 AC Power Alarm

When AC power failed alarm alerts you and AC power alarm mark is displayed at the head Information position.



☐ Setting for AC power alarm

MENU ➔ [ALARM] ➔ [AC Power Alarm] ➔ Select among 『Off/On』

5.7 Alarm Log View

Last 99 memorized alarm log are displayed.

When "PRINT" key pressed last 20 memorized alarm log printed.

☐ View alarm log

MENU ➔ [ALARM] ➔ [Alarm Log View] ➔ To return press **MENU**

6. NMEA

6.1 NMEA Output

It will transmit DPT etc (ex depth).among the standard of NMEA0183 through RS-232C port. It will transmit RS-232C once it is off.

☐ Setting for NMEA output

MENU ➔ [NMEA] ➔ [NMEA Output] ➔ Select 『Off/UART1/UART2』

6.2 NMEA Output Data

NMEA output date setting.

☐ Select NMEA output date

MENU ➔ [NMEA] ➔ [NMEA Ouput Date] ➔ NMEA select (multiple selection)

6.3 NMEA Input

NMEA input port configuration.

☐ Setting for NMEA Input

MENU ➔ [NMEA] ➔ [NMEA Input] ➔ Select 『Off/UART1/UART2』

6.4 UART1

Among RS-232C port from the main unit, it will transmit DPT to NMEA1 port and receive GPS data. Speed can be set up with 4800, 9600 or 38400.

☐ Setting for UART1

MENU ➔ [NMEA] ➔ [UART1] ➔ Select among 『4800/9600/38400』

6.5 UART2

Among RS-232C port from the main unit, it will transmit DPT to NMEA1 port and receive GPS data. Speed can be set up with 4800, 9600 or 38400.

☐ Setting for UART2

MENU ➡ [NMEA] ➡ [UART2] ➡ Select among 『4800/9600/38400』

6.6 UART Monitor

Both of RS-232c port can be monitored.

☐ Run UART Monitor

MENU ➡ [NMEA] ➡ [UART Monitor] ➡ To return press **MENU**

6.7 Depth Indicator

Setting for Depth Indicator(SD-3000) output port.

☐ Setting for Depth Indicator

MENU ➡ [NMEA] ➡ [Depth Indicator] ➡ Select 『Off/UART1/UART2』

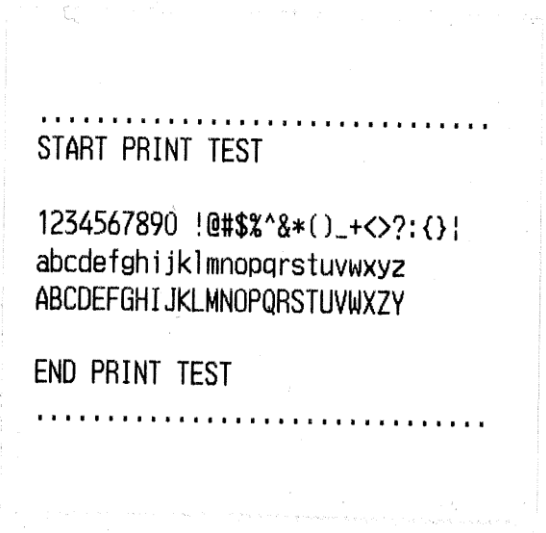
7. PRINTER

7.1 Print Test

Start printer test.

☐ Start printer test

MENU ➔ [PRINTER] ➔ [Print Test]



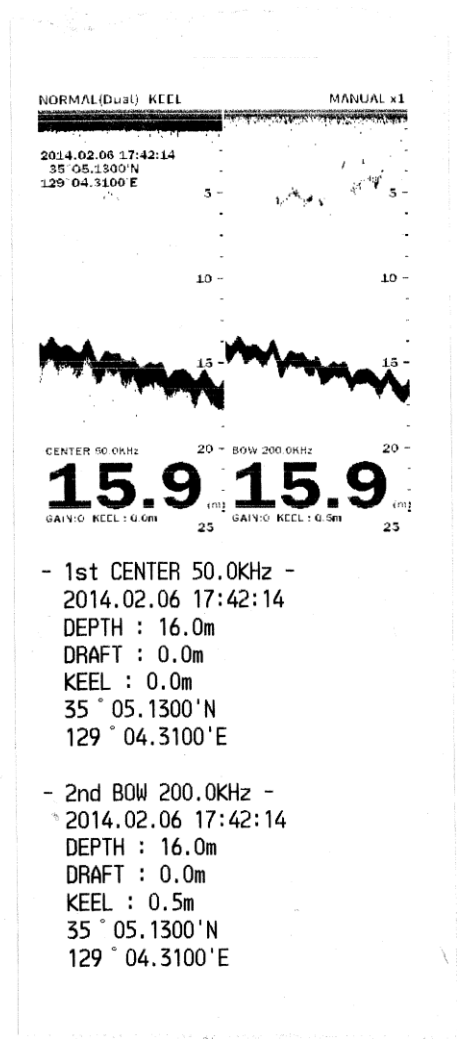
```
.....  
START PRINT TEST  
  
1234567890 !@#$%^&*()_+<>?:{}|  
abcdefghijklmnopqrstuvwxyz  
ABCDEFGHIJKLMNOPQRSTUVWXYZ  
  
END PRINT TEST  
.....
```

7.2 Print

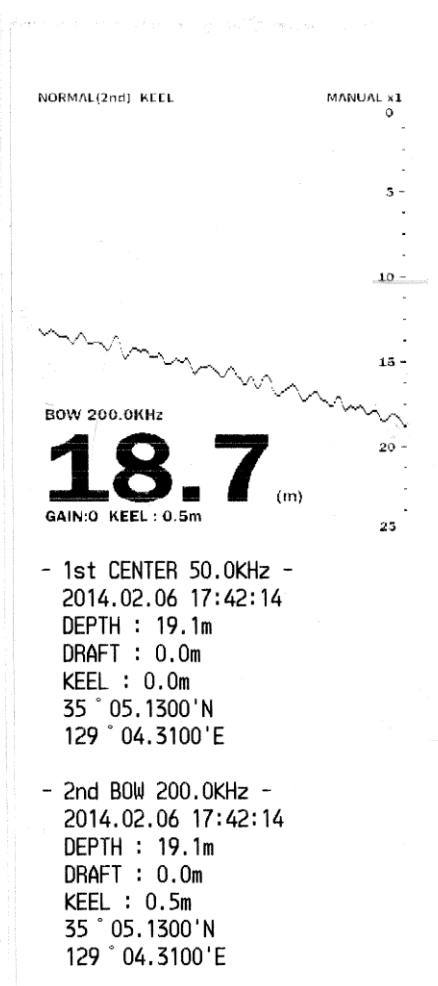
Print the date displayed on the current screen.

☐ Start print

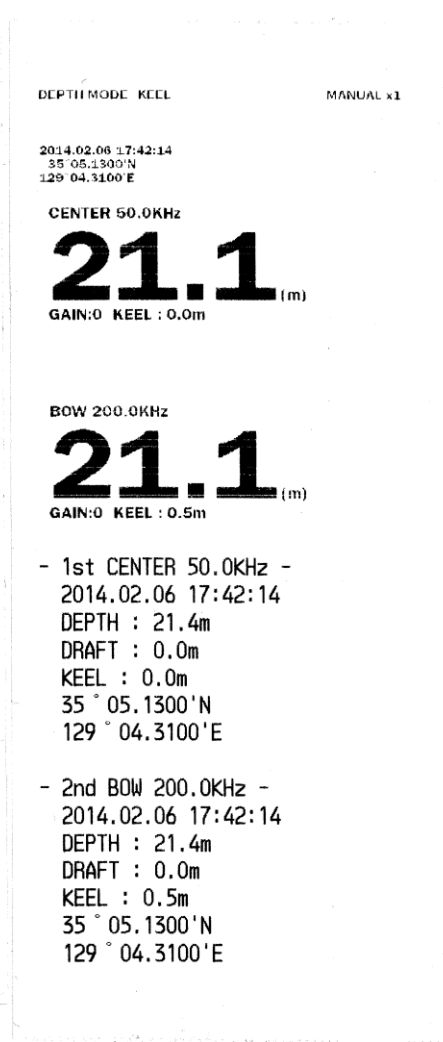
MENU ➔ [PRINTER] ➔ [Print] ➔ Print of current screen



<NORMAL MODE>



<HISTORY MODE>



<DEPTH MODE>

8. ETC

8.1 Language

The Language menu selects the language to use.

☐ Setting for language

MENU ➔ [ETC] ➔ [Language] ➔ Select among various languages

8.2 Key Beep

It can select whether it will ring or not.

☐ Setting for key beep

MENU ➔ [ETC] ➔ [Key Beep] ➔ Select among 『Off/On』

8.3 Func Key

There are Tx power, Tx Rate, Auto Gain, Display speed, Interference, Noise reduction, TVG, STC, Gain offset, Auto Gain offset, Hue, background, Zoom mode, Capture in the function keys. If the user register frequently used functions, the operation is simple. Function key is set to a Capture.

☐ Setting for function key

MENU ➔ [ETC] ➔ [Func Key] ➔ Selection desired function

8.4 Simulation

Select for simulation data.

☐ Setting for simulation

MENU ➔ [ETC] ➔ [Simulation] ➔ Select among 『Off/Demo1/Demo2』

8.5 Version

Show window for version information and can be update.

☐ Show for version information

MENU ➔ [ETC] ➔ [Version]

8.6 Reset

Factory reset of all settings.

(History date and alarm log files are deleted)

☐ Reset

MENU ➔ [ETC] ➔ [Reset]

8.7 Temp. Calibration

Water temperature can be modified from -20 to +20.

☐ Setting for Temp. Calibration

MENU ➔ [ETC] ➔ [Temp. Calibration] ➔ Select from -20 to +20

9. Date/Time

9.1 Setting for date

Setting for internal clock date. (year/month/day)

☐ Setting for years

MENU ➔ [Date/Time] ➔ [Year] ➔ Change to a desired value

☐ Setting for months

MENU ➔ [Date/Time] ➔ [Month] ➔ Change to a desired value

☐ Setting for days

MENU ➔ [Date/Time] ➔ [Day] ➔ Change to a desired value

9.2 Setting for time

Setting for internal clock time. (hour/min/sec)

☐ Setting for hours

MENU ➔ [Date/Time] ➔ [Hour] ➔ Change to a desired value

☐ Setting for minutes

MENU ➔ [Date/Time] ➔ [Minute] ➔ Change to a desired value

☐ Setting for seconds

MENU ➔ [Date/Time] ➔ [Second] ➔ Change to a desired value

9.3 GPS Sync

The internal clock and GPS UTC is synchronized every 30 seconds.

(*GPS connection is required)

☐ Setting for GPS sync

MENU ➔ [Date/Time] ➔ [GPS Sync] ➔ Select among 『Off/On』

9.4 Local offset

Provided time information from GPS is GMT, user can set appropriate time zone.

☐ Setting for local time

MENU ➡ [NMEA] ➡ [Local Offset] ➡ Time zone select

9.5 Time format

Set a format of local time display.

☐ Setting for time format

MENU ➡ [NMEA] ➡ [Time Format] ➡ Select 『12Hours/24Hours』

9.6 Date format

Set a format of date display.

☐ Setting for date format

MENU ➡ [NMEA] ➡ [Date format] ➡ Select among format of date

5

Connecting other devices

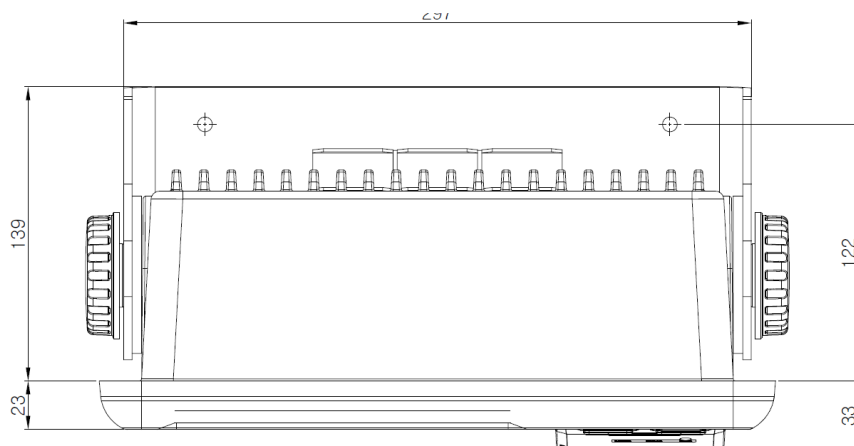
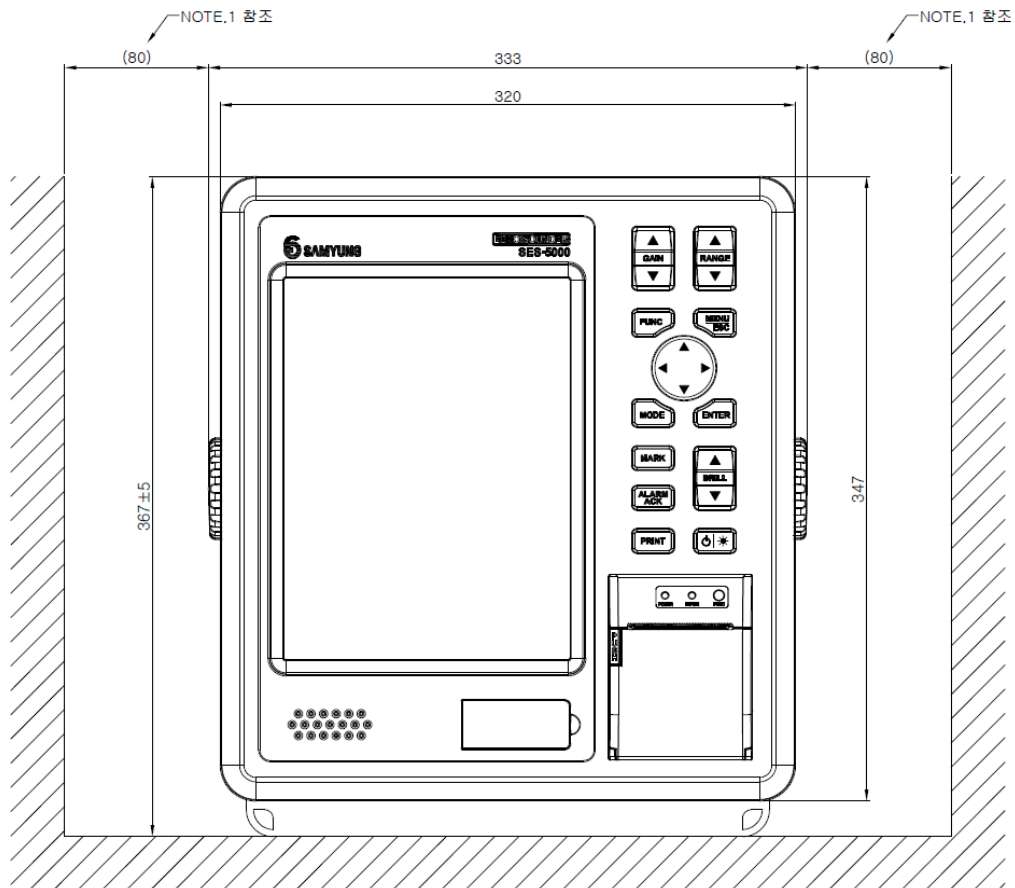


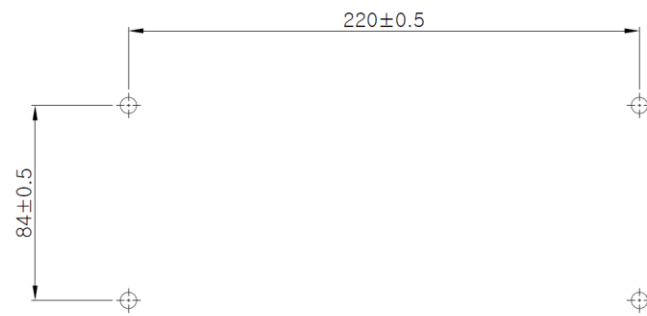
This chapter will explain the maintenance and defectiveness.

- ☐ **Installation**
- ☐ **Cable connection by the display**
- ☐ **Connector pin arrangement from the back panel**
- ☐ **SD-3000 Depth Indicator**

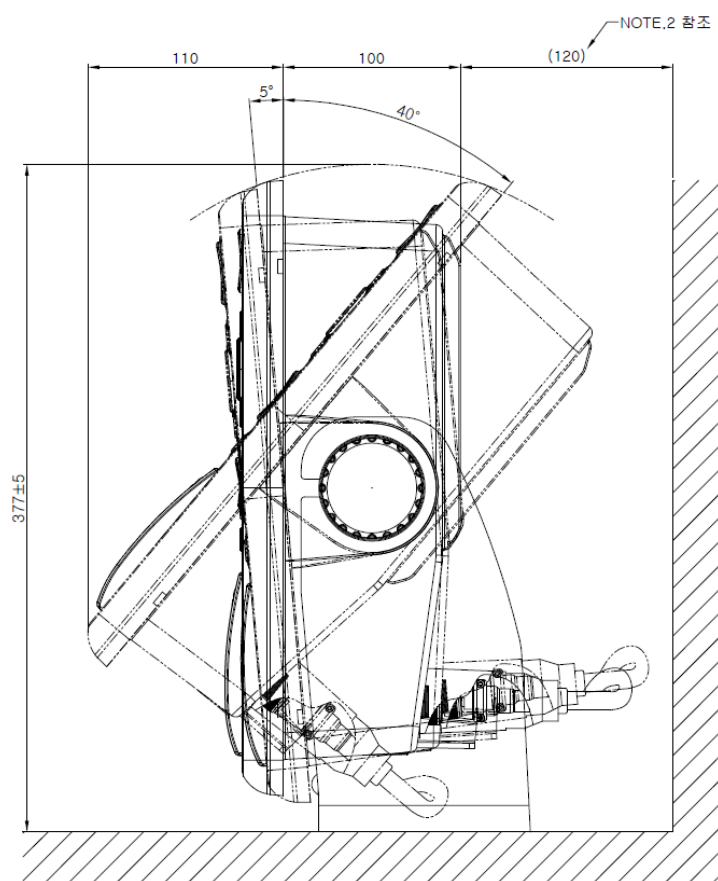
1. Installation

Table top Mount

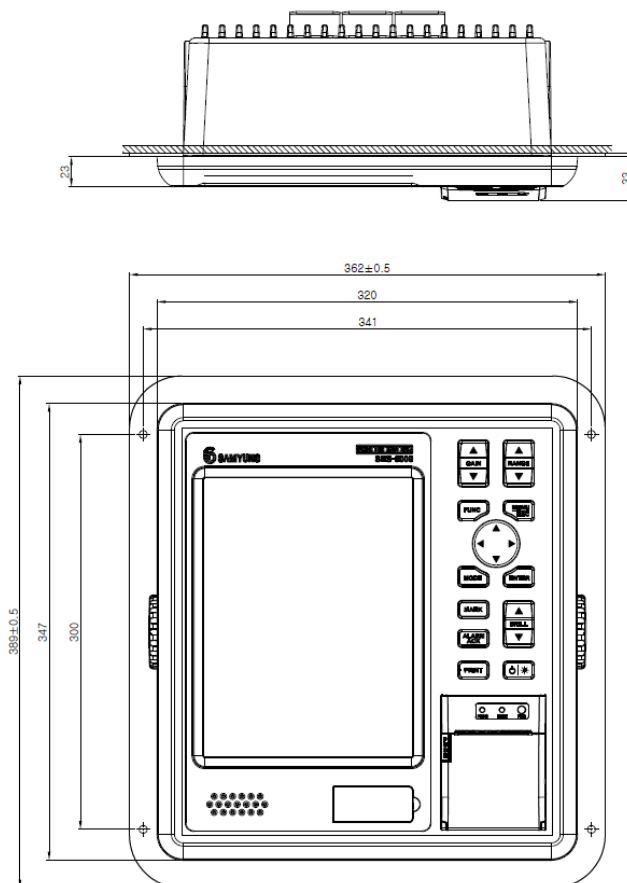


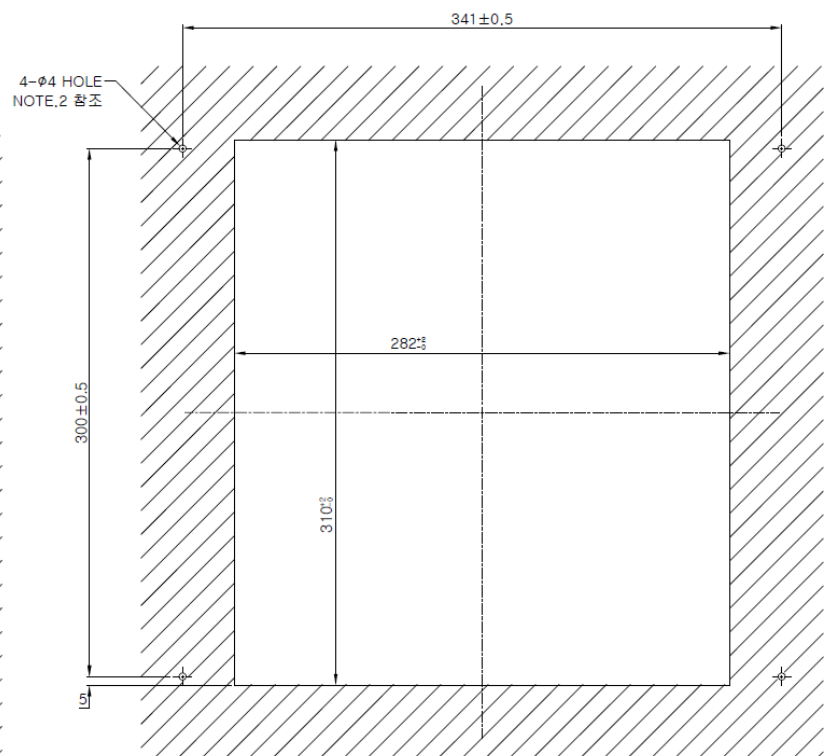
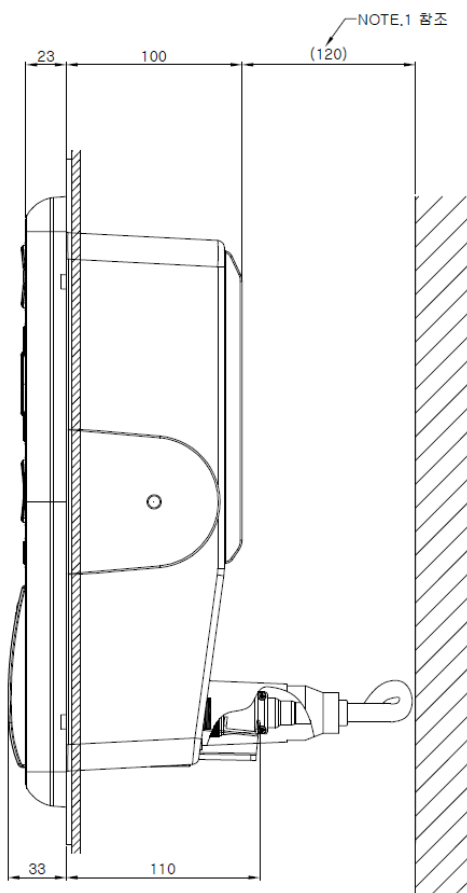
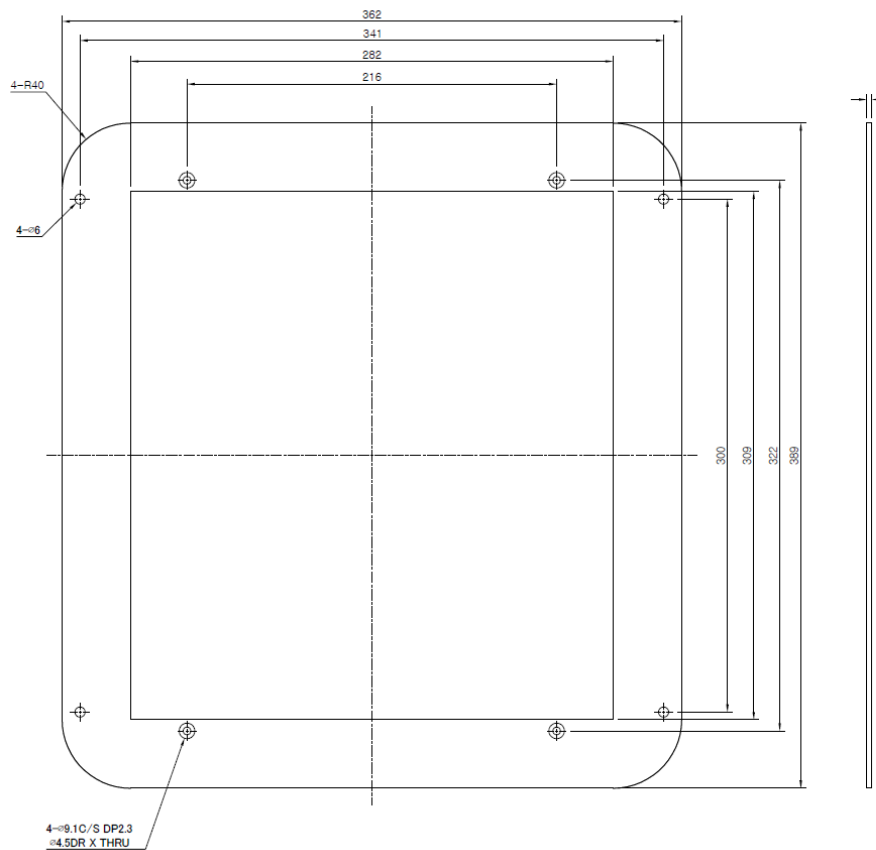


TABLETOP MOUNT HOLE



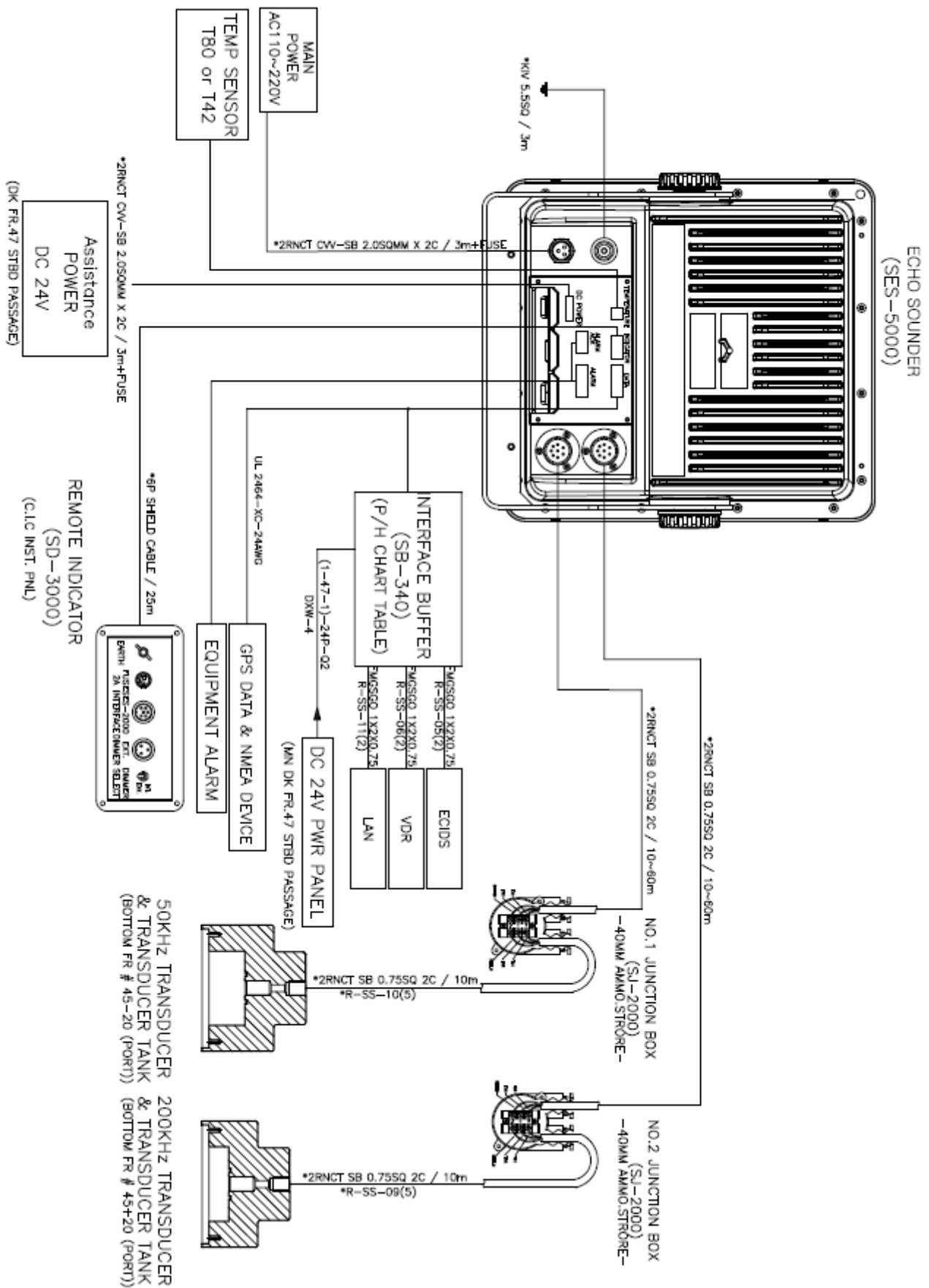
Flush Mount



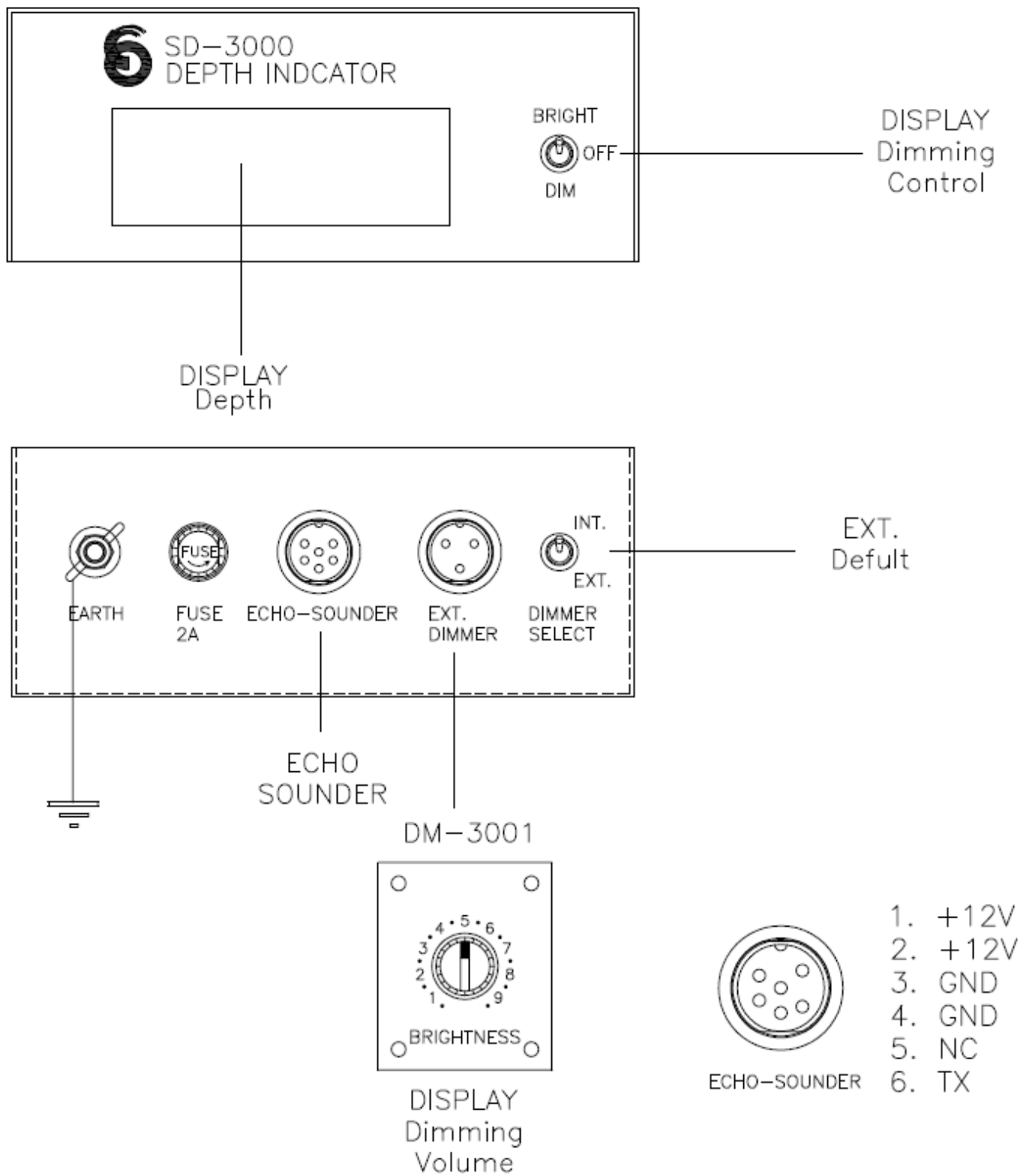


FLUSH MOUNT CUTTING & HOLE

2. Cable Connection by the display



4. SD-3000 Depth Indicator



6

Maintenance/troubleshooting



This section describe the maintenance and trouble-shooting.

- ☐ **System maintenance and repair**
- ☐ **Replacing printer paper**
- ☐ **Trouble-shooting**

1. System maintenance and repair

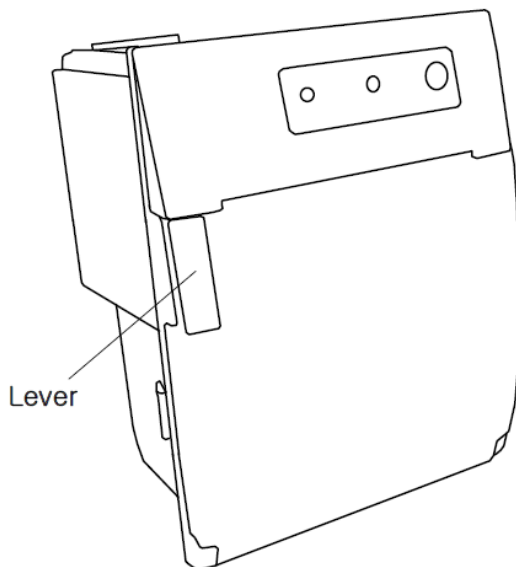
Regular maintenance and repair is essential for good performance.

Maintenance of equipment refers to the regular inspection of equipment and the software upgrade and the following items should be included

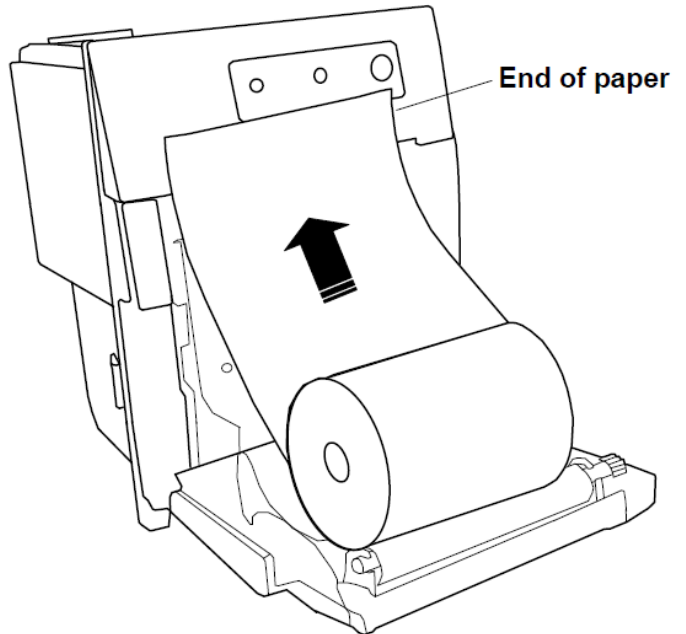
Item	Action
Connector and terminal	✓ Please check the connector and terminal on the back of the display for proper connection..
Cable	✓ Check each cable and if the cable is damaged or blown, replace it immediately.
Earth terminal and Earth line	✓ Check earth terminal. If the ground terminal is rust or rot, replace or clean state And check the connection of earth line also.
Maintain cleanliness	✓ Dust or dirt on the LCD can be removed with a tissue or LCD cleaner, and wipe carefully to prevent scratching. Do not use solvents such as thinner, acetone or benzene to clean the unit. They can remove paint and marking.
Coin Battery Management	✓ RTC battery (CR2032) Replacement ① Open the Connector cover on the back of the case. ② replace the Coin Battery is located in the middle when you open the cover. ③ The time set again to close the rear of the case from the menu.

2. Replacing printer paper

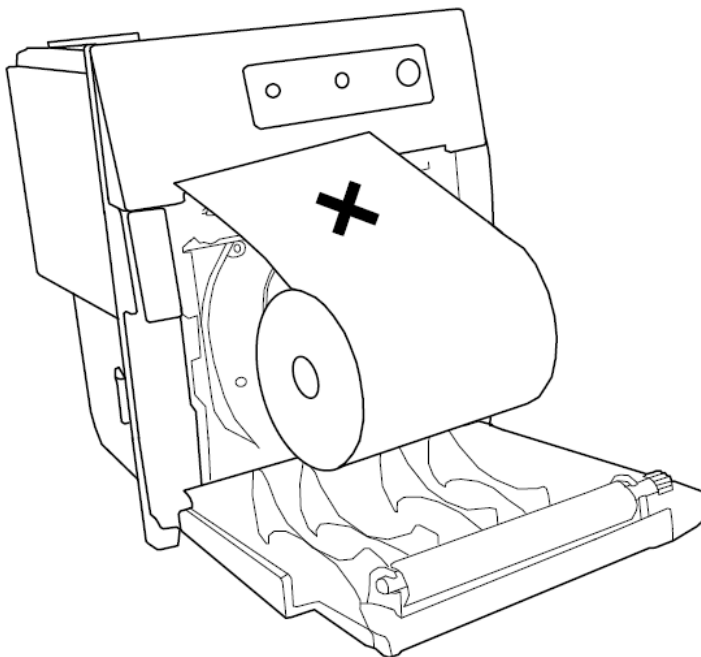
① Press the 'lever' to open.



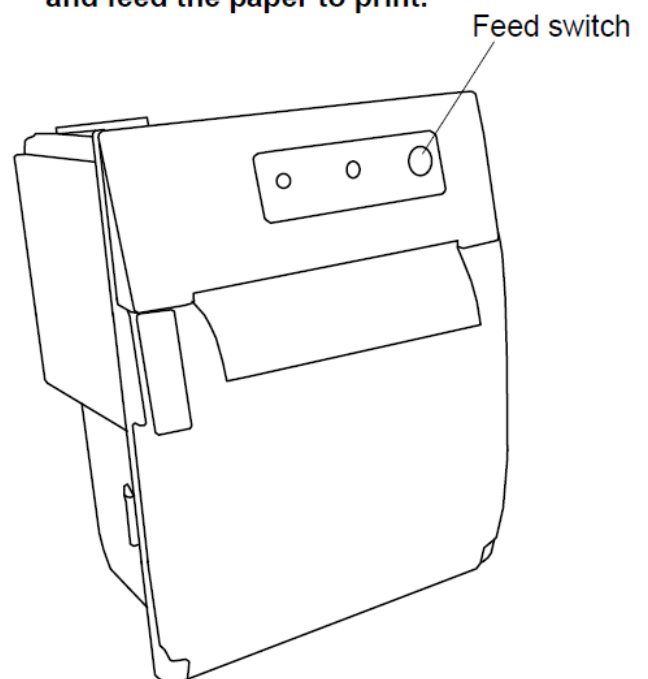
② Please set the end of paper comes out enough.



③ Please do not the reverse the paper direction as image.



④ Please close the cover, and feed the paper to print.



3. Troubleshooting

The table describe the symptom of trouble and their trouble-shooting. If the repair isn't possible by general remedy, do not attempt to check inside of equipment. If the inspection and maintenance is wrong, it can degrade the performance of equipment. So all repair works should be left to AS technician.

A/S Technician ☎ : 1577~0198

Symtom	Remedy
The power does not turn-on	✓ Power connector ✓ Power supply and Fuse ✓ Check if the voltage of the battery is the specified value (AC 100 ~ 230V).
Screen is not turned on or too dark	✓ Screen brightness is 1 ✓ Display is night mode.
Screen flicker or white lines Change of screen color	✓ Contact of LCD connector ✓ Cleanness around LCD connector.
Bottom isn't display on the screen.	✓ Poor contact of transducer connector and corrosion ✓ Transducer is under water.
Sensitivity is low	✓ If TVG, STC set-up is too high, you can increase the gain and then decrease TVG, STC. ✓ If the the value of clutter and color erase are too high, decrease them.
Several seabed	✓ If the depth is too low or sensitivity is too high, you can control the gain by repeat of sound wave ✓ Low Tx Speed.
Record of sea bottom isn't stable	✓ Because of vessel's rolling, pitching, bubbles by vessel's screw and front vessel can induce them.
The water surface is not displayed.	If it is not set to shift "0", is adjusted to "0".
Time of the equipment is not right.	Open the rear connector cover, replace the RTC BATTERY (CR2032) must re-set the time.
Printer output is not.	Ensure that the paper or the paper is properly replaced. Ensure that the printer is turned on, the red LED Error.

Appendix



This section describe the appendix related to the equipment operation.

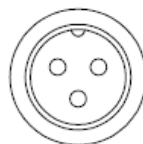
- ☐ **Product outline drawing**
- ☐ **Connector pin description**

1	2	3	4	5	6	7	8
No.				Revision History			
				No.	Loc.	Description	Modifier
				Date	Approval	Date	
Note 1.							
Substitute No. Part Name Qty Part No. Remark				List of component No. Part Name Qty Part No. Remark			
General Dimension Detail Angle Fraction ± 0.2 $\pm 1.0^\circ$ $\pm 1/5$				Date 12/16/2014 Design R&D Approved J.S. PARK Checked J.S. JEON Drawn 1 EA/SET Scale 1:1 Unit mm Weight kg			
Ref. Drawing Stock No. Adopt. Unit Item Finish				Title SES-5000 외형도 Size A2 Draw No. 1 of 1			

J1



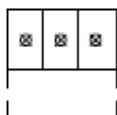
1	NMEA_IN+
2	NMEA_IN-
3	NMEA_OUT-
4	NMEA_OUT+
5	AUX_IN+
6	AUX_IN-



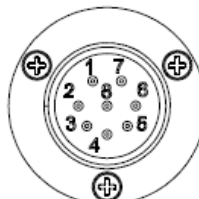
POWER
AC(110V/220V)

POWER	
1.AC-L	
2.EARTH	
3.AC-N	

J2

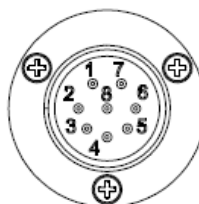


1	INDICATOR_TX
2	GND
3	INDICATOR_PWR



TRANSDUCER - 1st

TRANSDUCER-L	
1.NC	5.TD_L-
2.TD_L+	6.NC
3.NC	7.NC
4.TD_GND	8.NC



TRANSDUCER - 2nd

TRANSDUCER-H	
1.NC	5.NC
2.NC	6.TD_H-
3.TD_H+	7.NC
4.TD_GND	8.NC

J3



1	PWR_FAIL_OPEN
2	PWR_FAIL_COMMON
3	PWR_FAIL_CLOSE
4	DEPTH_OPEN
5	DEPTH_COMMON
6	DEPTH_CLOSE

CN4



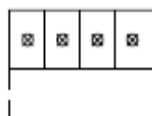
1	DCV+
2	EARTH
3	DCV-

J5



1	TEMP
2	GND

J6



1	PWR_FAIL_ACK-
2	PWR_FAIL_ACK+
3	DEPTH_ACK+
4	DEPTH_ACK-