SAMYUNG ENC

SDF-310

10.4" Standalone Digital Fishfinder (1-3kW)

(Installation & operation manual)

Contents

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.
- Turn off the power immediately when equipment is out of order or emit smoke. Otherwise can cause fire or electrical shock.

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.
- Do not use damaged code. It can cause fire or 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: 12-35VDC

This equipment should be used in range of power 12~35VDC.

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.

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 28 / 38 / 50 / 68 / 82 / 88 / 107 / 150 / 200 KHz

■ TX output : 1 / 2 / 3KW , 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

2. Specification of display unit

Specification

    ■ LCD   : 10.4inch

    ■ Resolution   : 600 x 800

    ■ Brightness   : 500 cd/㎡

    ■ Power supply   : 12V to +35V DC Approx. 50W

    ■ Weight & dimension : 5.2Kg , 307mm X 321.5mm X 135.3mm

                    (Width X Length X Height)

Operation environment

    ■ Temperature : Main equipment = -15℃~+55℃

    ■ Humidity : Less than 93% (+30℃~+60℃)

3. Functional specification

Display

- Display color : 8 / 16 / 64 ,

  Background: selectable among 5 colors

- Range : 5~3000m, Shift : 0~2000m

  Extension range : 5~200m of whole range

- Display mode : Single, Dual, Extension Dual, A-scope
- Zoom mode : Bottom lock, Bottom zoom, Marker zoom
- Speed : x4 , x2 , x1 , 1/2 , 1/4 , 1/8 , Stop
- Alarm : Water depth, Fish, Water temperature
- Noise reduction : Off, Light, Medium, Strong or Frequency adjustment

  (Range depends on transducer)

- Auto display : Auto gain (fishing/sailing), Auto depth,

  Water temp. graph, Battery voltage, Water

  temp., Display speed

Interface

- Number of port : NMEA0183 Ver1.5/ 2.0 / 3.0 (I/O) -2 port
- Input data : Will be updated
- Output data : DPT, Will be updated for the rests

4. Component

■ SDF-310 Fish finder

| No.	Description	Part number	Q/ty	Remark
1	Main unit	SDF-310	1EA	
2	DC cable	SCN3-5M-FUSE Cable Ass'y	1EA	
3	Fuse	DC+(24V)/5A , DC-(24V)/7A	1EA/1EA	
4	Spare fuse	24V/5A , 12V/7A	3EA/3EA	
5	DATA connector	SCN-16-7P	1EA	
6	Transducer connector	SCK-25-8P	1EA	When connect with own transducer of vessel
7	Installation accessory		1SET	
8	Operation manual		1EA	
9	Easy manual		1EA	

+

3
Description

This chapter explains about SDF-310 equipment and display.

❑ **Display description**

❑ **Power ON/OFF**

❑ **Menu tree**

❑ **Screen mode**

1 Display description
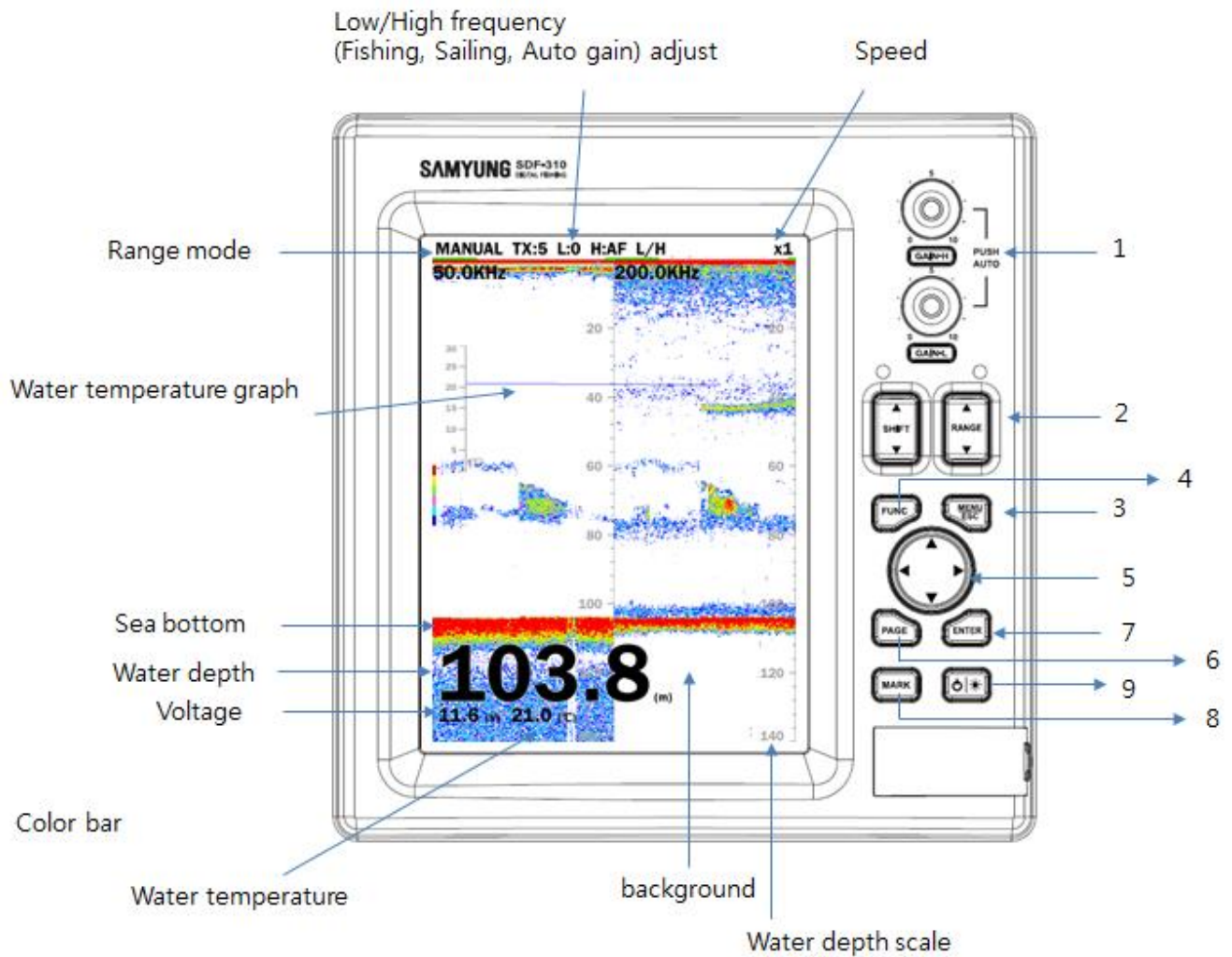
No.	Key/Button	Description
1	Adjust gain	**Gain-High** : Adjust High frequency. **Gain-low** : Adjust low frequency. **Push the button :** change the gain mode auto or manual. In manual mode, rotate the button to **left**: decrease the level , to **right**: increased the level.
2	Shift/Range	Adjust by using ▲ or ▼ . (This function is not available in Auto shift , Auto range mode)
3	Menu/ESC	Open/Close the menu Escape from current operation.
4	Func	Please read **6.3 Func key**.
5	Cursor	Move in the menu list. Set the level of adjustment Move VRM marker.
6	Screen	Choose the screen to display.
7	Enter	Choose and apply the menu. Open the next submenu list. **At Fish finder screen** : Show screenshot image (maximum 10 images)
8	Mark	Input waypoint
9	Power	**Short press** : Turn the power on / Open the Brightness setting menu. **Long press** : Turn the power off.

2 Power ON/OFF

■Power ON

Press the [◐|※] button. About 2 seconds later, Samyung company logo is displayed and fish finder is available.

■ Power OFF

Press and hold [◐|※] button for 5 seconds.

3 Menu tree

1. SONAR
1. TX Power
2. TX Rate
3. Pulse Edge (L)
4. Pulse Edge (H)
5. Pulse Length (L)
6. Pulse Length (H)
7. Freq. Setting (L)
8. Freq. Setting (H)
9. Freq. Adjust (L)
10. Freq. Control (H)
11. TX Fix
12. Bottom Search
13. Trigger Sweep

2. DISP.
1. Mode
2. Range
3. Auto Range
4. Display Speed
5. Interference
6. Noise Reduction
7. Refresh Area
8. TVG
9. STC
10. Gain Offset
11. Auto Gain Offset

3. COLOR
1. Day/Night
2. Color
3. Hue
4. Background
5. Color Erase
6. Clutter
7. White Line
8. White Line Color
9. Temp. Color

4. VIEW
1. Direction
2. Division
3. A-scope
4. Depth Size
5. Depth Scale
6. Help
7. Color Table
8. Temp. Graph
9. Detection Area
10. Header Info
11. Units (Depth)
12. Units (Temp.)

5. Alarm	1. Depth
	2. Water Temp.
	3. Fish School

6.Others	1. Language
	2. Key Beep
	3. Function Key
	4. Push Button
	5. Simulation
	6. Version Info
	7. Factory Reset

7.	1. Magnification Mode
	2. Partial Magnification Start
	3. Partial Magnification End
	4. Bottom Magnification Length

8. Fish school	1. Fish School Display
	2. Fish School Filter
	3. Fish School Sensitivity

9. NMEA	1. NMEA Output
	2. UART1
	3. UART2
	4. UART Monitor

10. Correction	1. Water temperature
	2. Voltage
	3. Beam Angle

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4 Screen Mode

The fish finder provide unique display mode for each mode.
Press Screen button to select a desired screen mode.

• Screen mode switch

Low +high frequency

Low Frequency

High Frequency

Magnification Screen + High Frequency

Magnification Screen + Low Frequency
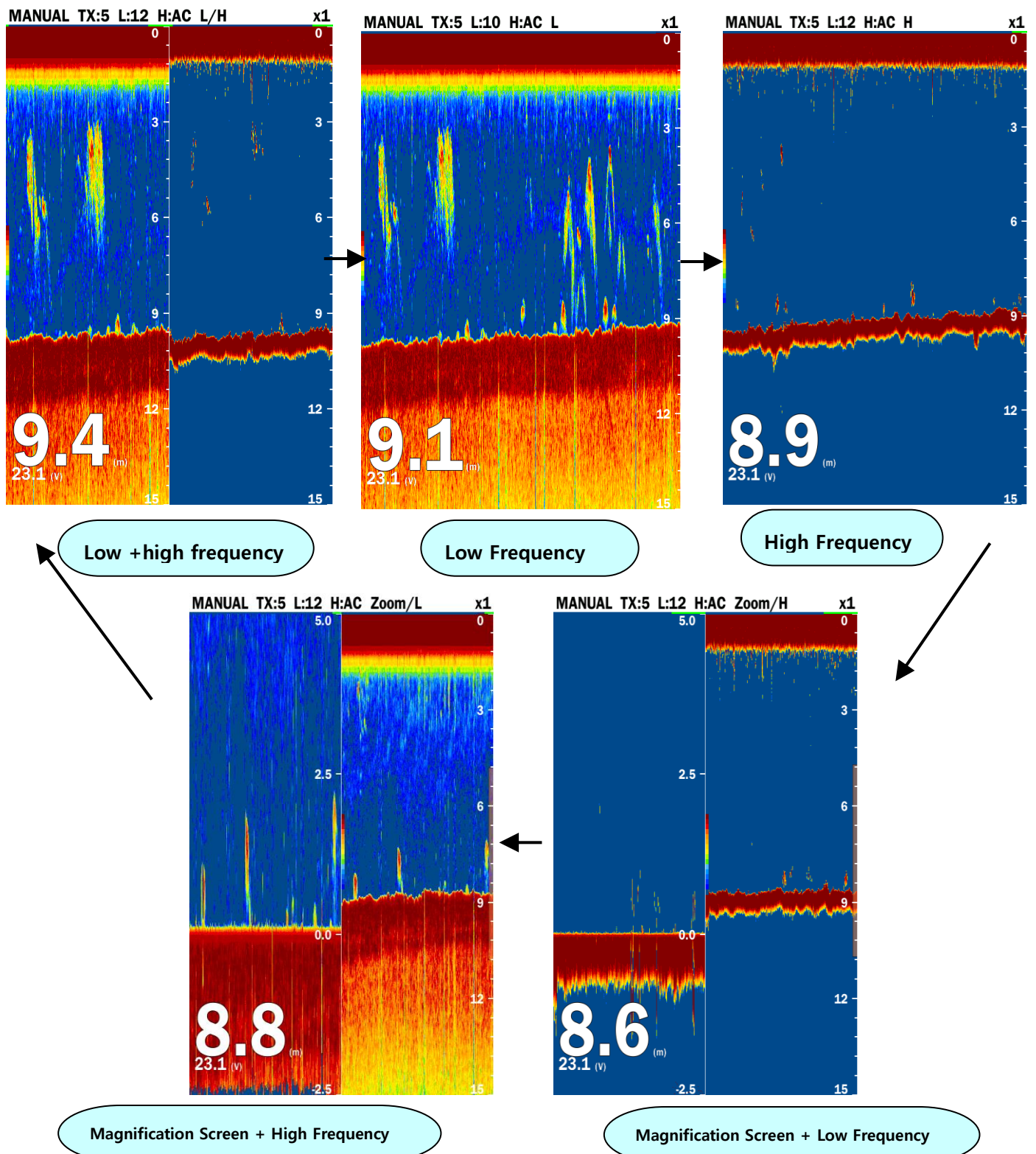
4
Functions

This chapter explains the functions of SDF-310

❑ **Sonar**

❑ **Image**

❑ **Color**

❑ **Display**

❑ **Alarm**

❑ **Others**

❑ **User**

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 fish finder'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.

1. Tx Power	Off
2. Tx Rate	Min
3. Pulse Edge(L)	1
4. Pulse Edge(H)	2
5. Pulse Length(L)	3
6. Pulse Length(H)	4
7. Freq. Setting(L)	5
8. Freq. Setting(H)	6
9. Freq. Adjust(L)	7
10.Freq. Adjust(H)	8
11.Tx Fix	9
12.Bottom Search	10
13.Trigger Sweep	Auto

❑ **Transmitting (Tx) power setup**

`menu` ➡ **Select [Sonar]** ➡ **Select [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.

1. Tx Power	5
2. Tx Rate	1
3. Pulse Edge(L)	2
4. Pulse Edge(H)	3
5. Pulse Length(L)	4
6. Pulse Length(H)	5
7. Freq. Setting(L)	Max
8. Freq. Setting(H)	200KHz
9. Freq. Adjust(L)	50.0KHz
10.Freq. Adjust(H)	200.0KHz
11.Tx Fix	LF
12.Bottom Search	LF
13.Trigger Sweep	Off

❑ **Setting for Transmitting (Tx) Speed**

`menu` ➡ **Select [Sonar]** ➡ **Select [Tx rate]** ➡ **Select desired speed**

1.3 High resolution pulse

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

❑ **Setting for low frequency pulse edge**

menu ➡ **Select [Sonar]** ➡ **Select [pulse edge(L)** (Select 『**On or off**』)

❑ **Setting for high frequency pulse edge**

menu ➡ **Select [Sonar]** ➡ **Select [pulse edge(H)** (Select 『**On or off**』)

1.4 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.

1. Tx Power	5
2. Tx Rate	Max
3. Pulse Edge(L)	Off
4. Pulse Edge(H)	Off
5. Pulse Length(L)	Short1
6. Pulse Length(H)	Short2
7. Freq. Setting(L)	Std.
8. Freq. Setting(H)	Long
9. Freq. Adjust(L)	0.05 ms
10.Freq. Adjust(H)	0.1 ms
11.Tx Fix	0.2 ms
12.Bottom Search	0.4 ms
13.Trigger Sweep	0.6 ms
	0.8 ms
	1.0 ms
	1.5 ms
	2.0 ms
	2.5 ms
	3.0 ms
	3.5 ms
	4.0 ms
	4.5 ms
	5.0 ms

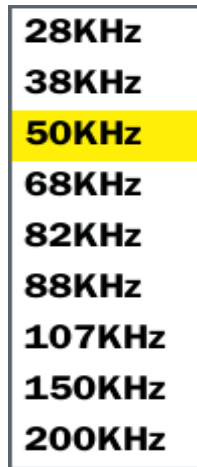❑ **Setting for Low frequency pulse edge**

menu ➡ **Select [Sonar]** ➡ **Select [Pulse edge(L)]** (Select 『**On or off**)

❑ **Setting for high Frequency pulse edge**

menu ➡ **Select [Sonar]** ➡ **Select [Pulse edge(H)]** (Select 『**On or off**)

1.5 Frequency setting

Select a frequency to be displayed in high and low frequency screen.

```
28KHz
38KHz
50KHz
68KHz
82KHz
88KHz
107KHz
150KHz
200KHz
```
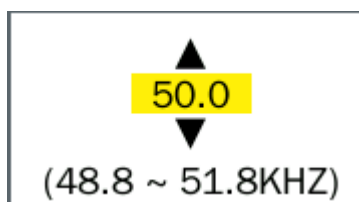
<Frequency selection menu>

❑ **Setting for Low frequency**

menu ➡ **Select [Sonar]** ➡**Select [Freq. Setting(L)]** ➡ **Change to a desired value** ❑

❑ **Setting for high frequency**

menu ➡ **Select [Sonar]** ➡**Select[Freq. Setting(H)** ➡ **Change to a desired value**

1.6 Frequency adjust

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

▲
50.0
▼
(48.8 ~ 51.8KHZ)

▲
200.0
▼
(196.5 ~ 205.0KHZ)
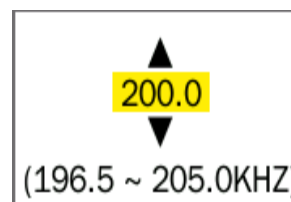
<When select low frequency 88KHz>   < When select high frequency 200KHz >

❑ **Setting for Low frequency**

menu ➡ **Select [Sonar]**➡**Select [Frequency adjust (L)]**➡**Change to a desired value**

❑ **Setting for High frequency**

menu ➡**Select [Sonar]**➡**Select [Frequency adjust (H)]**➡**Change to a desired value**

1.7 Fixed Transmission (Tx Fix)

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

- Low frequency: transmit and receive low frequency & high frequency in order using the low frequency transmitter.
- High frequency: transmit and receive low frequency & high frequency in order using the hig frequency transmitter.
- OFF : Use all low and high frequency transmitter in order. Low frequency use low frequency transmitter and high frequency use high frequency transmitter.

1. Tx Power	5
2. Tx Rate	Max
3. Pulse Edge(L)	Off
4. Pulse Edge(H)	Off
5. Pulse Length(L)	Std.
6. Pulse Length(H)	Std.
7. Freq. Setting(L)	50KHz
8. Freq. Setting(H)	200KHz
9. Freq. Adjust(L)	50.0KHz
10.Freq. Adjust(H)	200.0KHz
11.Tx Fix	Off
12.Bottom Search	LF
13.Trigger Sweep	HF

● Low frequency or high frequency 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 low frequency transducer and high frequency transducer is used separately.

● Above setup need to be set by authorized distributor.

❑ **Setting for Fixed transmitting**

`menu` ➡ **Select [Sonar]**➡ **Select [Tx Fix]** ➡ **Select a desired fixed transmitting frequency**

1.8 Depth Calculation Frequency

Frequency which can display the depth of water in the screen can be selected. If automatic is selected, low frequency's depth is display preferentially

❑ **Setting for Depth Calculation frequency**

`menu` ➡ **Select [Sonar]**➡ **Select [bottom search]** ➡ **Select a desired frequency**

1.9 Trigger Sweep

This can reduce electrical interference noise of other vessel by transiting signal irregularly

25

❏ **Setting for Trigger Sweep**

menu ➡ **Select [Sonar]** ➡ **Select [Trigger Sweep]** ➡ (Select 『**ON/OFF**)
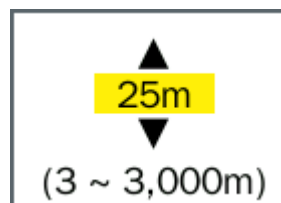
2. Display

2.1 Mode

It can set a screen display mode.

1. Mode	L/H
2. Range	**L**
3. Auto Range	H
4. Display Speed	Zoom/L
5. Interference	Zoom/H
6. Noise Reduction	Off
7. Refresh Area	All
8. TVG	
9. STC	
10.Gain Offset	
11.Auto Gain Offset	

❑ **Setting for Mode selection**

`menu` ➡ **Select [Display]** ➡ **Select [Mode]** ➡ **Select a desired display mode**

2.2 Range

Range value can be changed by shift key and range key.

▲
25m
▼
(3 ~ 3,000m)

❑ **Setting for Range setup**

`menu` ➡ **Select [Display]** ➡ **Select [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.

1. Mode	L
2. Range	25m
3. Auto Range	**Off**
4. Display Speed	Auto Range
5. Interference	Off
6. Noise Reduction	Off
7. Refresh Area	All
8. TVG	
9. STC	
10.Gain Offset	
11.Auto Gain Offset	

❑ **Setting range**

`menu` ➡ **select [display]** ➡ **select [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 X 8 , Minimum Speed X 1/8

1. Mode	L
2. Range	25m
3. Auto Range	Off
4. Display Speed	x4
5. Interference	x2
6. Noise Reduction	**x1**
7. Refresh Area	x½
8. TVG	x¼
9. STC	x⅛
10.Gain Offset	STOP
11.Auto Gain Offset	

❑ **Setting for display speed**

`menu` ➡ **select [display]** ➡ **select [display speed]** ➡ **select desired speed**

2.5 Interference

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.

1. Mode	L
2. Range	25m
3. Auto Range	Off
4. Display Speed	x1
5. Interference	**Off**
6. Noise Reduction	Low
7. Refresh Area	Meduium
8. TVG	High
9. STC	
10.Gain Offset	
11.Auto Gain Offset	

< Interference>

1. Mode	L
2. Range	25m
3. Auto Range	Off
4. Display Speed	x1
5. Interference	Off
6. Noise Reduction	**Off**
7. Refresh Area	On
8. TVG	
9. STC	
10.Gain Offset	
11.Auto Gain Offset	

< noise reduction>

❑ **Setting for interference**

`menu` ➡ **select [display]** ➡ **select [interference]** ➡ **select desired level**

❑ **Setting for noise reduction**

`menu` ➡ **select [display]** ➡ **select [noise reduction]** ➡ select among 『**off/on**』

2.6 Refresh area

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

1. Mode	L
2. Range	25m
3. Auto Range	Off
4. Display Speed	x1
5. Interference	Off
6. Noise Reduction	Off
7. Refresh Area	**All**
8. TVG	From Now
9. STC	
10.Gain Offset	
11.Auto Gain Offset	

❑ **Setting for refresh area**

`menu` ➡ **select [display]** ➡ **select [refresh area]** ➡ (select among 『**all/from now**』

2.7 TVG

A fish school at a deep depth is displayed in weak colors even if it is equal in strength to one in shallow waters. 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 low frequency TVG**

`menu` ➡ **select [display]** ➡ **select [TVG(L)]** ➡ **select desired level**

❑ **Setting for high frequency TVG**

`menu` ➡ **select [display]** ➡ **select [TVG(H)]** ➡ **select desired level**

2.7.2 TVG거리 Setting for TVG distance

TVG set up for applied distance.
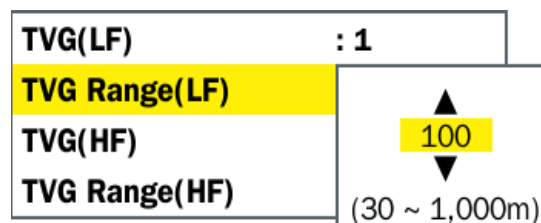
❑ **Setting for low frequency TVG distance**

`menu` ➡ **select [display]** ➡ **select [TVG distance(low)]** ➡ **select desired distance**

❑ **Setting for high frequency TVG distance**

`menu` ➡ **select [display]** ➡ **select [TVG distance(high)]** ➡ **select desired distance**

TVG(LF)	
TVG Range(LF)	
TVG(HF)	
TVG Range(HF)	: 100

▲ 1 ▼ (1 ~ 8)

TVG(LF)	: 1
TVG Range(LF)	
TVG(HF)	
TVG Range(HF)	

▲ 100 ▼ (30 ~ 1,000m)

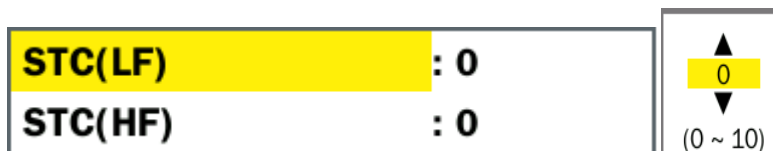< TVG level >   < TVG distance >

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.
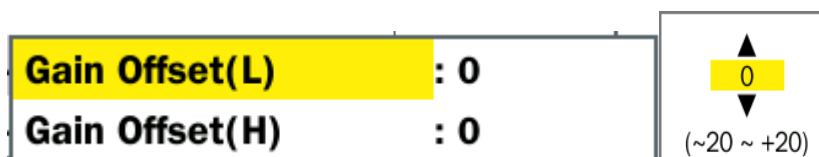
STC(LF)	: 0	▲
STC(HF)	: 0	0 ▼ (0 ~ 10)

❑ **Setting for low frequency STC**

`menu` ➡ select [display] ➡ select [STC(low)] ➡ select desired value

❑ **Setting for high frequency STC**

`menu` ➡ select [display] ➡ select [STC(high)] ➡ 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.

Gain Offset(L)	: 0	▲
Gain Offset(H)	: 0	0 ▼ (~20 ~ +20)

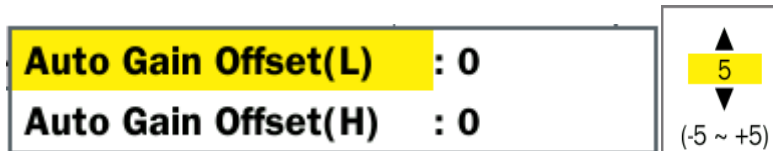❑ **Setting for low frequency gain offset**

`menu` ➡ select [display] ➡ select [gain offset(L)] ➡ select desired value

❑ **Setting for high frequency gain offset**

`menu` ➡ select [display] ➡ select [gain offset(H)] ➡ select desired value

2.10 Automatic 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 of low frequency**

menu ➡ **select [display] ➡ [auto gain offset(L)] ➡ select desired value**

❑ **Setting for auto gain offset of high frequency**

menu ➡ **select [display] ➡ [auto gain offset(H)] ➡ 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.
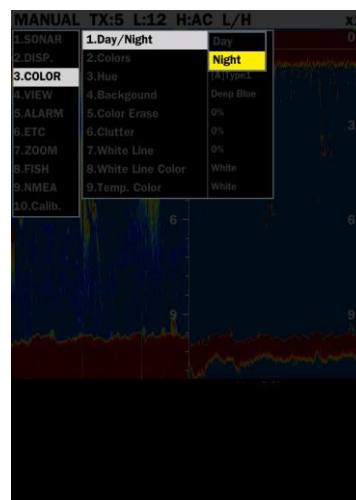
> ❑ **Setting for day/night**
>
> **menu** ➡ **select [color]** ➡ **select [day/night]** ➡ select among 『**day/night**』

| <day/night > | <day> | <night> |
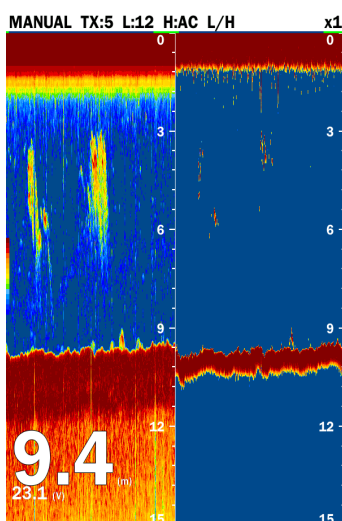
3.2 number of colors

It can select the number of colors
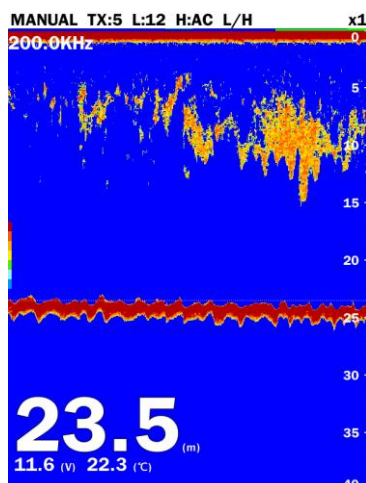
> ❑ **Setting for number of colors**
>
> **menu** ➡ **select [color]** ➡ **select [number of colors]** ➡ **desired number of colors**

| <number of colors> | <screen of 8 colors> | <screen of 64 colors> |
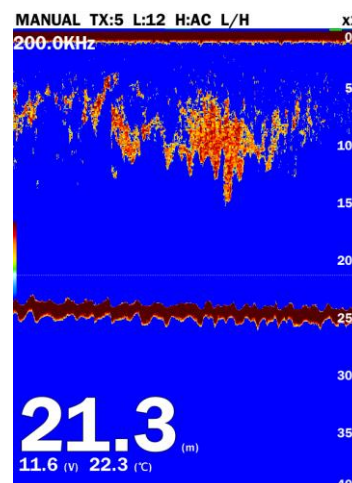
3.3 hue

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

❑ **tone**

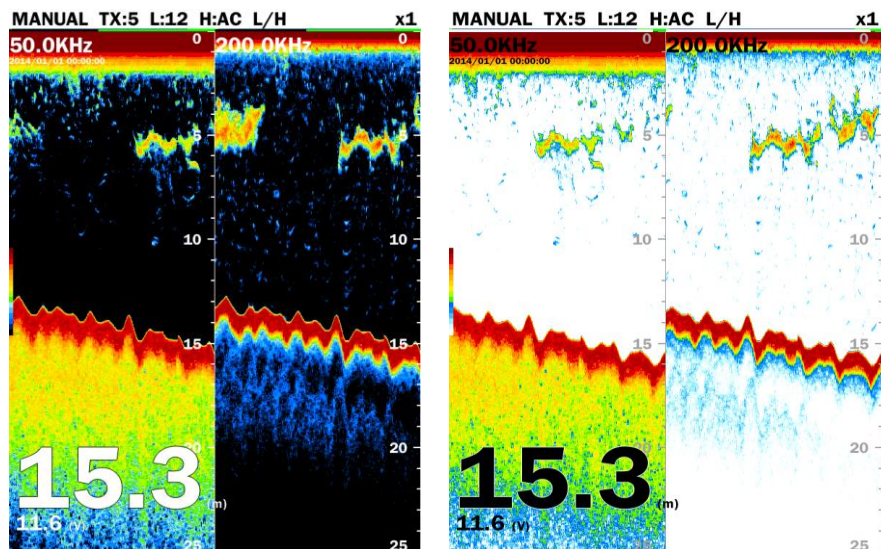`menu` ➡ **select [color] ➡ select [hue] ➡ select desired hue**

1.Day/Night	Day
2.Colors	16
3.Hue	[A]Type1
4.Backgound	[B]Type1
5.Color Erase	[S]Type1
6.Clutter	[S]Mono
7.White Line	[S]Blue
8.White Line Color	[S]Yellow
9.Temp. Color	[S]Green
	[C]Type1
	[C]Type2
	[C]Type3

\<hue>

3.4 background color

It can change background color according to the surrounding environment

1.Day/Night	Day
2.Colors	16
3.Hue	[A]Type1
4.Backgound	White
5.Color Erase	Light Blue
6.Clutter	Blue
7.White Line	Deep Blue
8.White Line Color	Black
9.Temp. Color	White

\<background color>   \<black>   \<white>

❑ **Setting for background color**

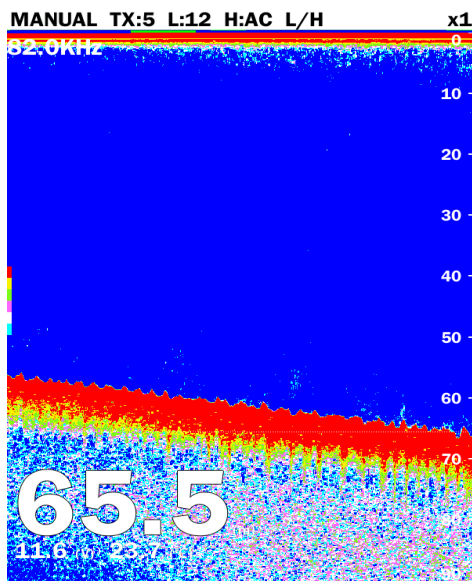`menu` ➡ **select [color] ➡ select [background] ➡ select desired color**

3.5 Color erase

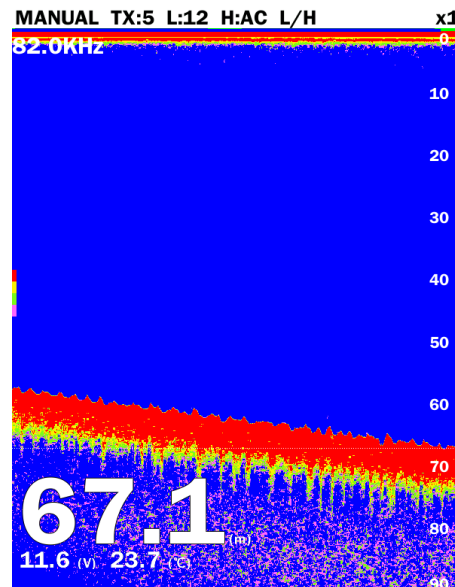 Needless dim noise can be eliminated by color erase

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` ➡ **select [color]** ➡ **select [color erase]** ➡ **select desired values (0 ~ 50 %)**
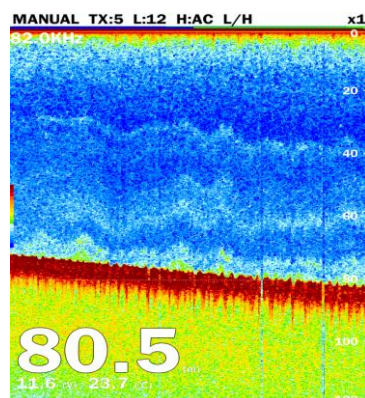

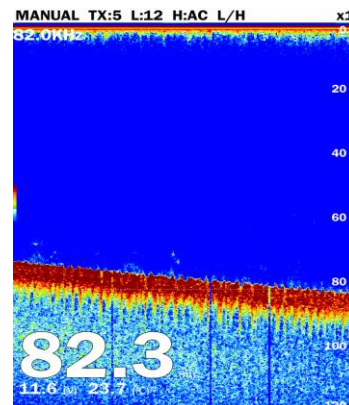<without color erase>

<removal of 50% color>

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` ➡ **select [color]** ➡ **select [clutter]** ➡ **select desired value (0 ~ 80%)**

<without elimination of clutter>

3.7 White line

White line allows you to identify easily between fish school on the bottom and seabed. The strong colors (seabed, big fish school, high density fish school) are displayed as white band, so it is not only helpful to identify seabed and fish school on the bottom but also in determining the density of fish. The setting range is from 0% to 100%.

> ❑ **Setting for white line**
>
> `menu` ➡ select [color] ➡ select [white line] ➡ select desired color(0 ~ 100%)
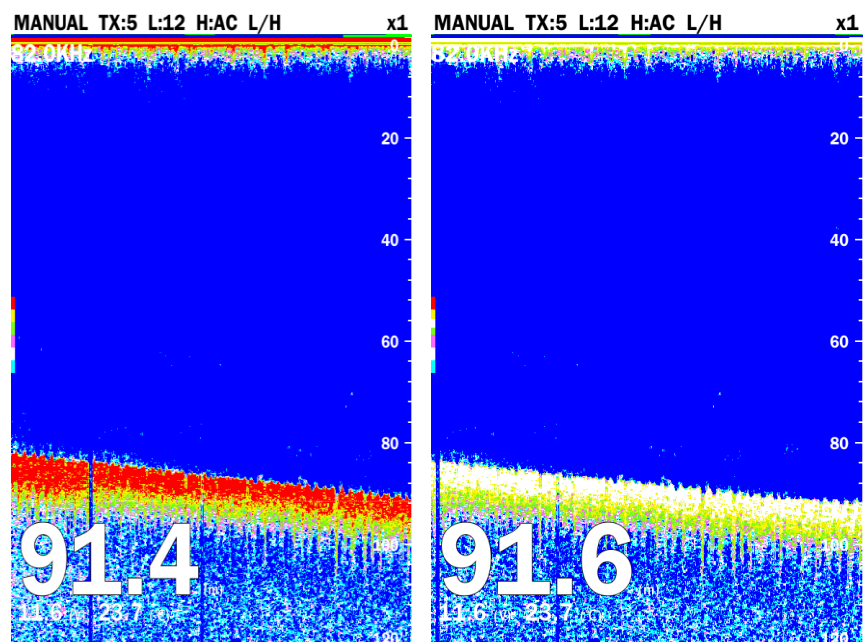
3.8 Color of white line

It can change the color of white line.

> ❑ **Setting for white line**
>
> `menu` ➡ select [color] ➡ select [white line] ➡ select desired color

| 1.Day/Night	Day
2.Colors	16
3.Hue	[A]Type1
4.Backgound	White
5.Color Erase	0%
6.Clutter	0%
7.White Line	0%
8.White Line Color	White
9.Temp. Color	Blue
	Green
	Yellow-Green
	Yellow
	Orrange
	Red
	Black

<color of white line >   <without white line >   <white line 100%>

3.9 color of water temperature

Water temperature graph can be modified.

❑ **Setting for water temperature**

`menu` ➡ **select [color]** ➡ **select [temp. color]** ➡ **select desired color**

1.Day/Night	Day
2.Colors	16
3.Hue	[A]Type1
4.Backgound	White
5.Color Erase	0%
6.Clutter	0%
7.White Line	0%
8.White Line Color	White
9.Temp. Color	**White**
	Blue
	Green
	Yellow-Green
	Yellow
	Orrange
	Red
	Black

<Setting for color of temperature >
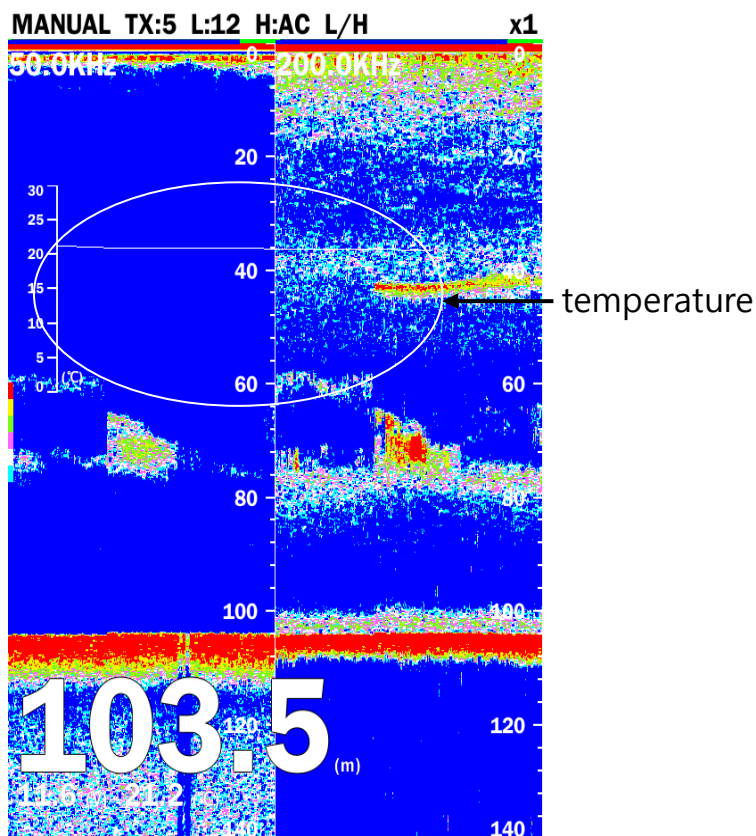
4. View

4.1 display direction

Select the display direction.

left : from right to left

right : from left to right

center : from center to two way left-right

| 1. Direction | Left |
2. Division	Center
3. A-Scope	Right
4. Depth Size	3
5. Depth Scale	Right
6. Help	Off
7. Color Table	On
8. Temp. Graph	Off
9. Detection Area	Off
10.Header Info	Off
11.Units(Depth)	m
12.Units(Temp.)	℃
13.View Volt.	On
14.Date/Time	Off
15.COG/SOG	Off
16.Lati./Longi.	Off

❑ **Setting for direction of display**

`menu` ➡ **select [view]** ➡ **select [direction]** ➡ **Select desired direction**

4.2 Division

Select the division type for zoom and low/high frequency of screen

<menu of split screen>   <vertical>   <horizontal>
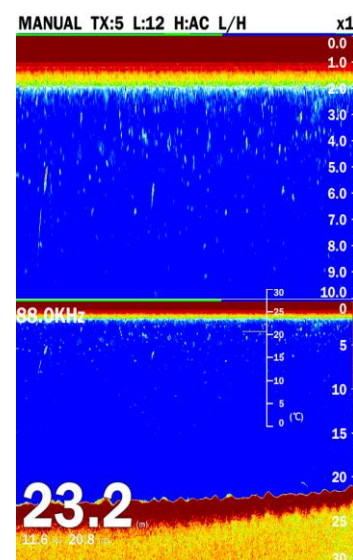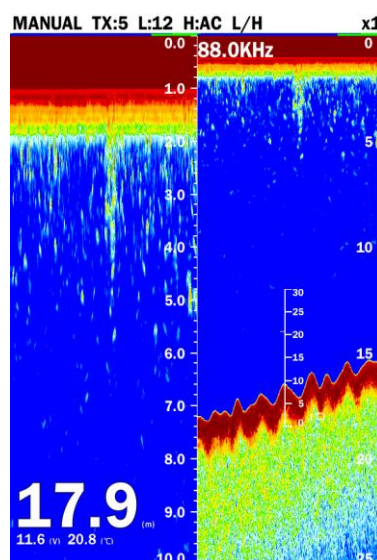
❑ **Setting for division**

`menu` ➡ **select [view]** ➡ **select [division]** ➡ (select among 『**vertical/horizontal**』)

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4.3 A-SCOPE

A-scope is the picture to show the strength of echo amplitude on the right side of the screen. As A-scope display big amplitude by big echo and small amplitude by small echo, it allows to identify easily small fish school, sea bottom and geology.

❑ **Setting for A-Scope**

`menu` ➡ **select [view]** ➡ **select [A-Scope]** ➡ (Select among 『**Off/on**』)

4.4 depth size

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

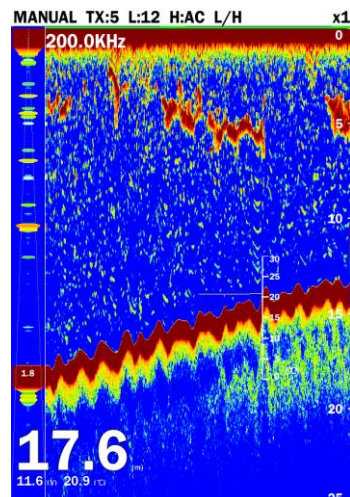| 1. Direction	Left
2. Division	Vertical
3. A-Scope	Off
4. Depth Size	Off
	1
5. Depth Scale	2
6. Help	3
7. Color Table	4
8. Temp. Graph	5
9. Detection Area	
10.Header Info	Off
11.Units(Depth)	m
12.Units(Temp.)	℃
13.View Volt.	On
14.Date/Time	Off
15.COG/SOG	Off
16.Lati./Longi.	Off

❑ **Setting for depth size**

`menu` ➡ **select[view]** ➡ **select [depth size]** ➡ **select desired size**

<small>   <middle>   <big>
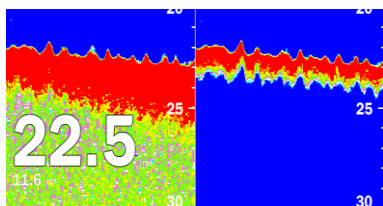
4.5 depth scale

It can modify depth scale

> ❏ **Setting for depth scale**
>
> `menu` ➡ **select [view]** ➡ **select [depth scale]** ➡ **select desired direction**

1. Direction	Left
2. Division	Vertical
3. A-Scope	Off
4. Depth Size	3
5. Depth Scale	**Right**
6. Help	**Center**
7. Color Table	On
8. Temp. Graph	Off
9. Detection Area	Off
10.Header Info	Off
11.Units(Depth)	m
12.Units(Temp.)	℃
13.View Volt.	On
14.Date/Time	Off
15.COG/SOG	Off
16.Lati./Longi.	Off

4.6 help

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

1. Direction	Left
2. Division	Vertical
3. A-Scope	Off
4. Depth Size	3
5. Depth Scale	Right
6. Help	**Off**
	View
	Close(5")
7. Color Table	Off
8. Temp. Graph	Off
9. Detection Area	Off
10.Header Info	Off
11.Units(Depth)	m
12.Units(Temp.)	℃
13.View Volt.	On
14.Date/Time	Off
15.COG/SOG	Off
16.Lati./Longi.	Off

help

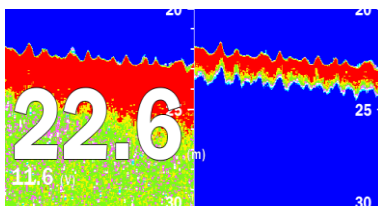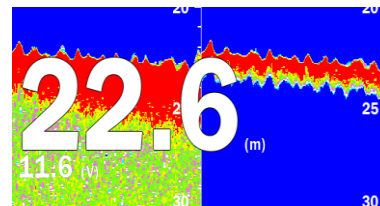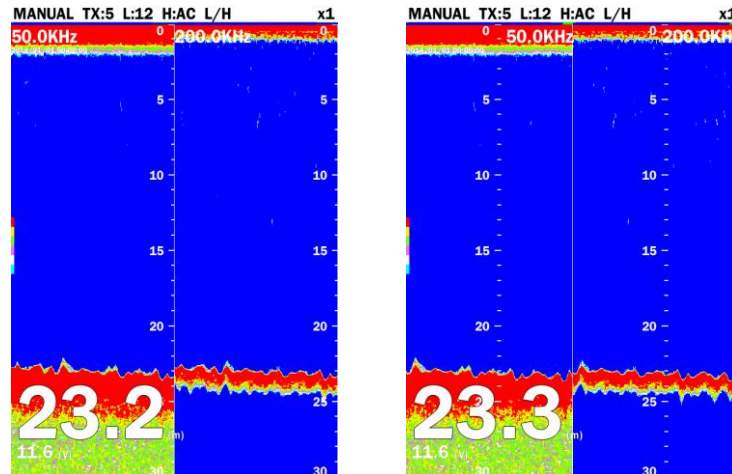| 1.SONAR	1. Direction	Left
2.DISP.	2. Division	Vertical
3.COLOR	3. A-Scope	Off
4.VIEW	4. Depth Size	3
5.ALARM	5. Depth Scale	Right
6.ETC	6. Help	View
7.ZOOM	7.Color Table	On
8.FISH	8. Temp. Graph	Off
9.NMEA	9. Detection Area	Off
10.Calib.	10.Header Info	Off
	11.Units(Depth)	m
	12.Units(Temp.)	℃
	13.View Volt.	On
	14.Date/Time	Off
	15.COG/SOG	Off
	16.Lati./Longi.	Off

▲/▼ : Move
▶/ENT : Ok
◀/MENU : Previous

> ❏ **Setting for help**
>
> `menu` ➡**select [view]** ➡ **select [help]** ➡ (select among『**off/on/end(5 seconds)**』

- Off : Do not show help
- On : Show help
- End(5 seconds) : If there's no key control for 5 seconds, the help will be turned off automatically.

4.7 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` ➡ **select [view]** ➡ **select [color table]** ➡ **Select among on/off**

<on>   <off>
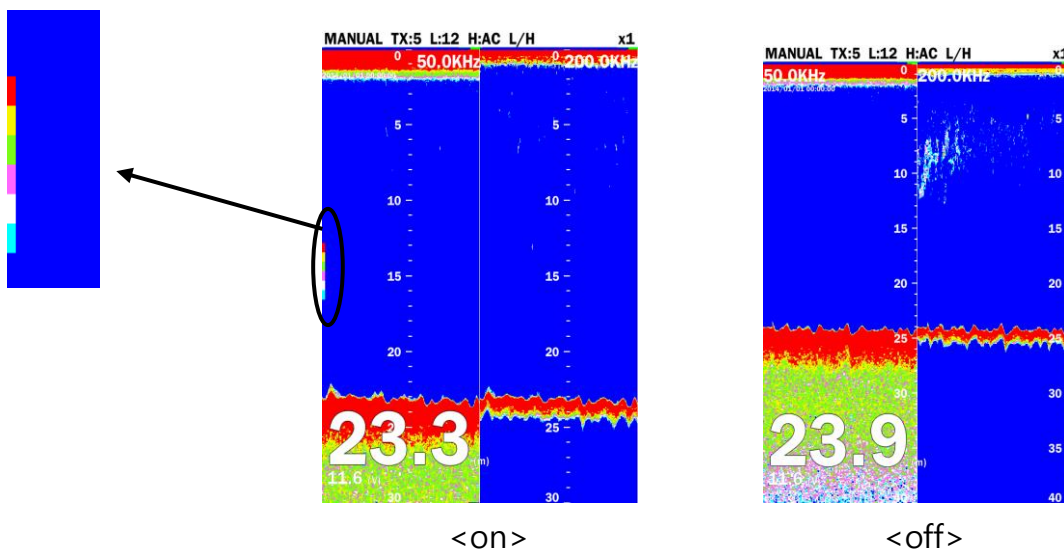
4.8 temperatures

It can select whether it will show water temperature or not. When displaying the temperature graph, choose the width of the scale in step 2. (narrow : 8℃, wide : 16℃). And it needs temperature sensor.

❑ **Setting for temperature**

`menu` ➡ **select [view]** ➡ **select [temperature]** ➡ (select among 『**off/on**』)

Water temperature
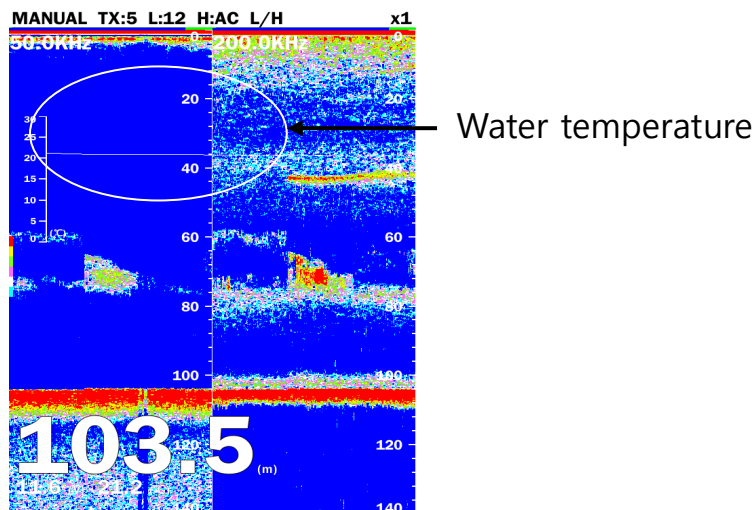
4.9 detection area

It can select whether it will show the detection range or not

❑ **Setting for detection area**

menu ➡ **select [view]** ➡ **select [detection area]** ➡ (**Select among on/off**)

<on>   <off>
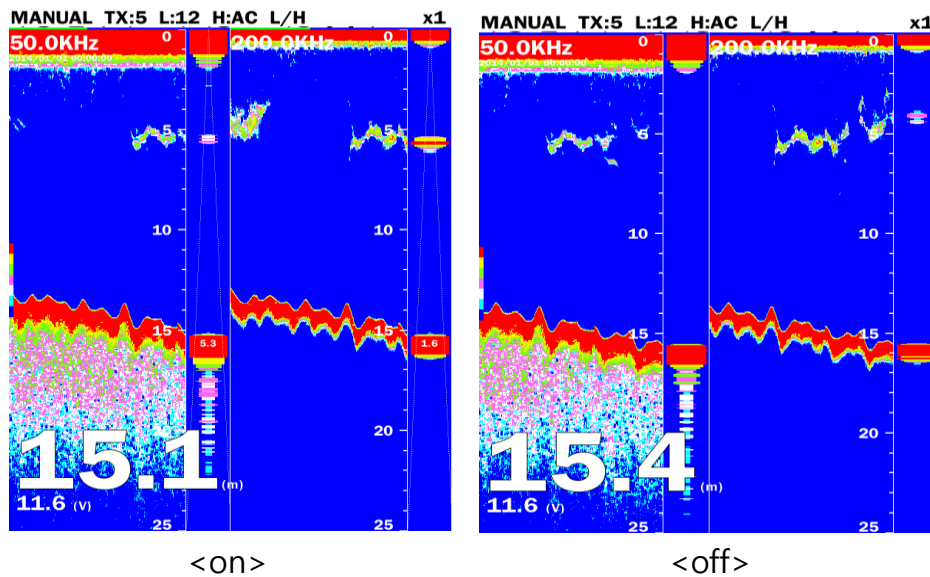
4.10 header info

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

❑ **Setting for information**

menu ➡ **select [view]** ➡ **select [header info]** ➡ (**Select among [on/off]**)

<on>   <off>

4.11 Setting for unit

Depth : select depth unit   **temperature** : select temperature unit.

1. Direction	Left	
2. Division	Vertical	
3. A-Scope	Off	
4. Depth Size	3	
5. Depth Scale	Right	
6. Help	View	
7. Color Table	On	
8. Temp. Graph	Off	
9. Detection Area	Off	
10.Header Info	Off	
11.Units(Depth)	**ft**	
12.Units(Temp.)	**m**	
13.View Volt.	**fa**	
14.Date/Time	Off	
15.COG/SOG	Off	
16.Lati./Longi.	Off	

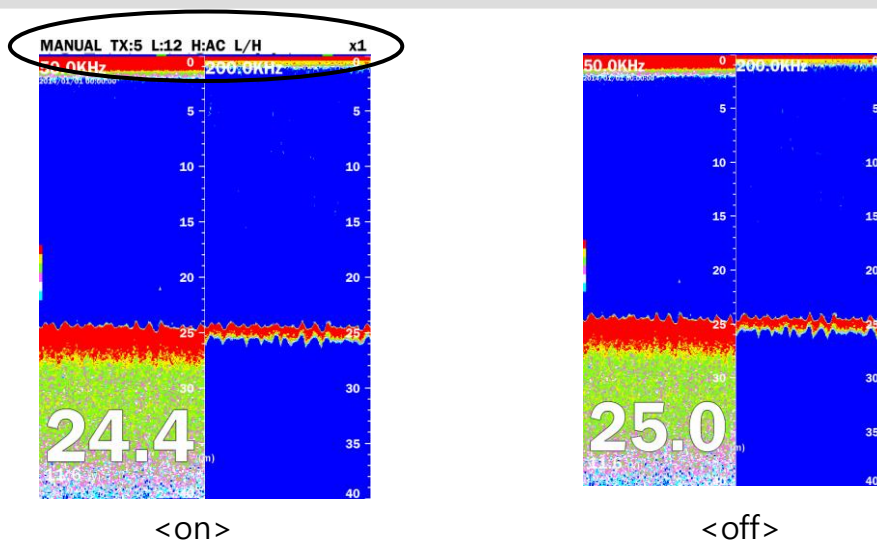|	
1. Direction	Left
2. Division	Vertical
3. A-Scope	Off
4. Depth Size	3
5. Depth Scale	Right
6. Help	View
7. Color Table	On
8. Temp. Graph	Off
9. Detection Area	Off
10.Header Info	Off
11.Units(Depth)	m
12.Units(Temp.)	℃
13.View Volt.	℉
14.Date/Time	Off
15.COG/SOG	Off
16.Lati./Longi.	Off

❑ **Setting for depth unit**

menu ➡ **select [view]** ➡ **select [unit(depth)]** ➡ (Select among『**ft/m/fa**』)

❑ **Setting for temperature unit**

menu ➡ **select [view]** ➡ **select [unit(temp.)]** ➡ (Select among 『**℃/ ℉**』)

5. Alarm

5.1 Setting for alarm

depth : when the depth is out of setting range, alarm alerts you.

temperature : when the water temperature is out of setting range, alarm alerts you.

Fish school :

When the fish school appear in setting range or all range from the surface of transducer to sea floor, alarm alerts you.

1. Depth	Off
Min	0
Max	1000
2. Temp.	Off
Min	0
Max	30
3. Fish	Off

❑ **Setting for depth alarm**

`menu` ➡ **select [alarm]** ➡ **select [depth]** ➡ (Select among 『**off/on**』)

setting for minimum depth

`menu` ➡ **select [alarm]** ➡ **select [minimum]** ➡ **Select among 3~3000**

setting for maximum depth

`menu` ➡ **select [alarm]** ➡ **select [maximum]** ➡ **Select among 3~3000**

❑ **Setting for temperature**

`menu` ➡ **select [alarm]** ➡ **select [temperature]** ➡ (Select among 『**off/on**』)

setting for minimum temperature

`menu` ➡ **select [alarm]** ➡ **select [minimum]** ➡ **Select among 3~3000**

setting for maximum temperature

`menu` ➡ **select [alarm]** ➡ **select [maximum]** ➡ **Select among 3~3000**

❑ **Setting for fish school**

`menu` ➡ **select [alarm]** ➡ **select [fish school]** ➡ (Select among 『**off/on**』)

6. ETC

6.1 Language

The Language menu selects the language to use

> ❑ **Setting for language**
>
> menu ➡ **select [ETC]** ➡ **select [language]** ➡ (Select among various languages)

6.2 sound of key beep

It can select whether it will ring or not.

> ❑ **Setting for key beep**
>
> menu ➡ **select [ETC]** ➡ **select [key beep]** ➡ select among『**off/on**』

6.3 function 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 TVG.

> ❑ **Setting for function key**
>
> menu ➡ **select [ETC]** ➡ **select [func key]** ➡ **Select desired operation**

6.4 Push Button

When the push button is off, Sensitivity will not be changed to automatic mode or manual mode regardless the user push the button for sensitivity adjustment.

> ❑ **Setting for Push button**
>
> `menu` ➡ **select [ETC] ➡Select [Push Button]** ➡ (Select among『**on/off**』)

6.5 Simulation

It can select whether it will activate the simulation mode or not

1. Language	English
2. Key Beep	Off
3. Func Key	Capture
4. Push Button	On
5. Simulation	**Off**
6. Version	Demo1
7. Reset	Demo2

> ❑ **Setting for simulation**
>
> `menu` ➡ **select [ETC] ➡Select [Simulation]** ➡ (Select among 『Off/Demo1/Demo2』)

7. Zoom

7.1 Zoom mode

Select your desired zooming mode as belows;

1.Zoom Mode	Part
2.Zoom Start	Fix Bottom
3.Zoom End	Bottom Sedi.
4.Zoom Length	5m

❑ **Setting for Zoom mode**

menu ➡ **select [user]** ➡ **Select [Zoom mode]** ➡ **Select your desired mode**

7.2 Setting for zoom start

Select the starting point for partial zoom

❑ **Setting for starting point of partial zoom up**

menu ➡ **select [user]** ➡**select [zoom start]** ➡ **select between 3 and 3000m**

7.3 Setting for zoom end

Select the ending point for partial zoom

❑ **Setting for ending point of partial zoom up**

menu ➡**select [user]** ➡ **Select [zoom end]** ➡ **select between 3 and 3000m**

7.4 Setting for zoom length

Select the size of zoom length

❑ **Setting for zoom length**

menu ➡ **select [User]** ➡ **Select[zoom length]** ➡ **Select between 3 ~ 3000m(『3~ 3000m』**

8. Fish Schools

8.1 Display of fish schools

Display fish schools.

1.View Fish	Off
2.Fish Filter	Fish1
3.Fish Gain	Fish2
	Fish3

❑ **Setting for display of fish schools**

menu ➡ **select [Fish] ➡ Select [view fish] ➡ Select your desired display mode**

8.2 Fish Schools filter

Setting for fish schools filter.

1.View Fish	Off
2.Fish Filter	Low
3.Fish Gain	**Meduium**
	High

❑ **Setting for fish schools filter**

menu ➡ **select [Fish] ➡Select [fish filter] ➡ Select your desired filter level**

8.3 Fish Schools sensitivity

Setting fish schools sensitivity.

1.View Fish	Off
2.Fish Filter	Medium
3.Fish Gain	Low
	Meduium
	High

❑ **Setting for fish gain**

menu ➡ **select [Fish] ➡ Select [fish gain] ➡ Select desired sensitivity level**

9. NEMA

1.NMEA Output	Off
2.NMEA Output Data	UART1
3.NMEA Input	**UART2**
4.UART1	4800
4.UART2	4800
6.Local offset	+9
7.Time format	24 hours
8.Date format	yyyy.MM.dd
9.UART Monitor	

9.1 NEMA Output

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

❑ **Setting for NMEA output**

menu ➡ **select [NEMA]** ➡ **Select [NMEA output]** ➡Select among OFF/UART1/UART2

9.2 UART1

1.NMEA Output	UART2
2.NMEA Output Data	
3.NMEA Input	UART1
4.UART1	**4800**
4.UART2	9600
6.Local offset	38400
7.Time format	24 hours
8.Date format	yyyy.MM.dd
9.UART Monitor	

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 ➡ **select [NEMA]** ➡ **Select [UART1]** ➡**Select among 『4800/9600/38400』**

9.3 UART2

Among RS-232C port from the main unit, it will transmit DPT to NMEA2 port and receive GPS data. Speed can be set up with 4800, 9600 or 38400

❑ **Setting for UART2**

menu ➡ **select [NEMA]** ➡ **select [UART2]** ➡ (select among『**4800/9600/38400**』)

9.4 Monitor UART

Both of RS-232c port can be monitored

❑ **Access UART monitor**

menu ➡select [NEMA] ➡Select [UART monitor] ➡ **To return press [menu]**

10. Modification

10.1 Temperature

Water temperature can be modified from -3 to +3

> ❑ **Setting for temp modification**
>
> `menu` ➡ **select [calib.]** ➡ **Select [temp.]** ➡ **Select from -3 to +3**

10.2 Voltage

Voltage can be modified from -3 to +3

> ❑ **Setting for voltage modification**
>
> `menu` ➡ **select [calib.]** ➡ **select [voltage]** ➡ (select among 『**-3~ +3**』)

10.3 Beam angle

Bean angle is frequency angle from transducer. Low frequency can detect wide area and higher frequency can detect lower area. Bean angle can be modified from 4˚ to 26˚

Depending on beam angle, receiving radius of bottom can be displayed on A-Scope and receiving radius can be changed depending on type of beam angle.

> ❑ **Setting for low frequency beam angle**
>
> `menu` ➡ **select [calib.]** ➡ **select [beam angle(LF)]** ➡ **select among**『**4˚~ 26˚**』
>
> ❑ **Setting for high frequency beam angle modification**
>
> `menu` ➡ **select [calib.]** ➡ **select [beam angle(HF)]** ➡ **select among** 『**4˚~ 26˚**』

5

Connecting other devices

This chapter will explain the maintenance and defectiveness of SDF-310

❑ **Installation**

❑ **Cable connection by the display**

❑ **Connector pin arrangement from the back panel**

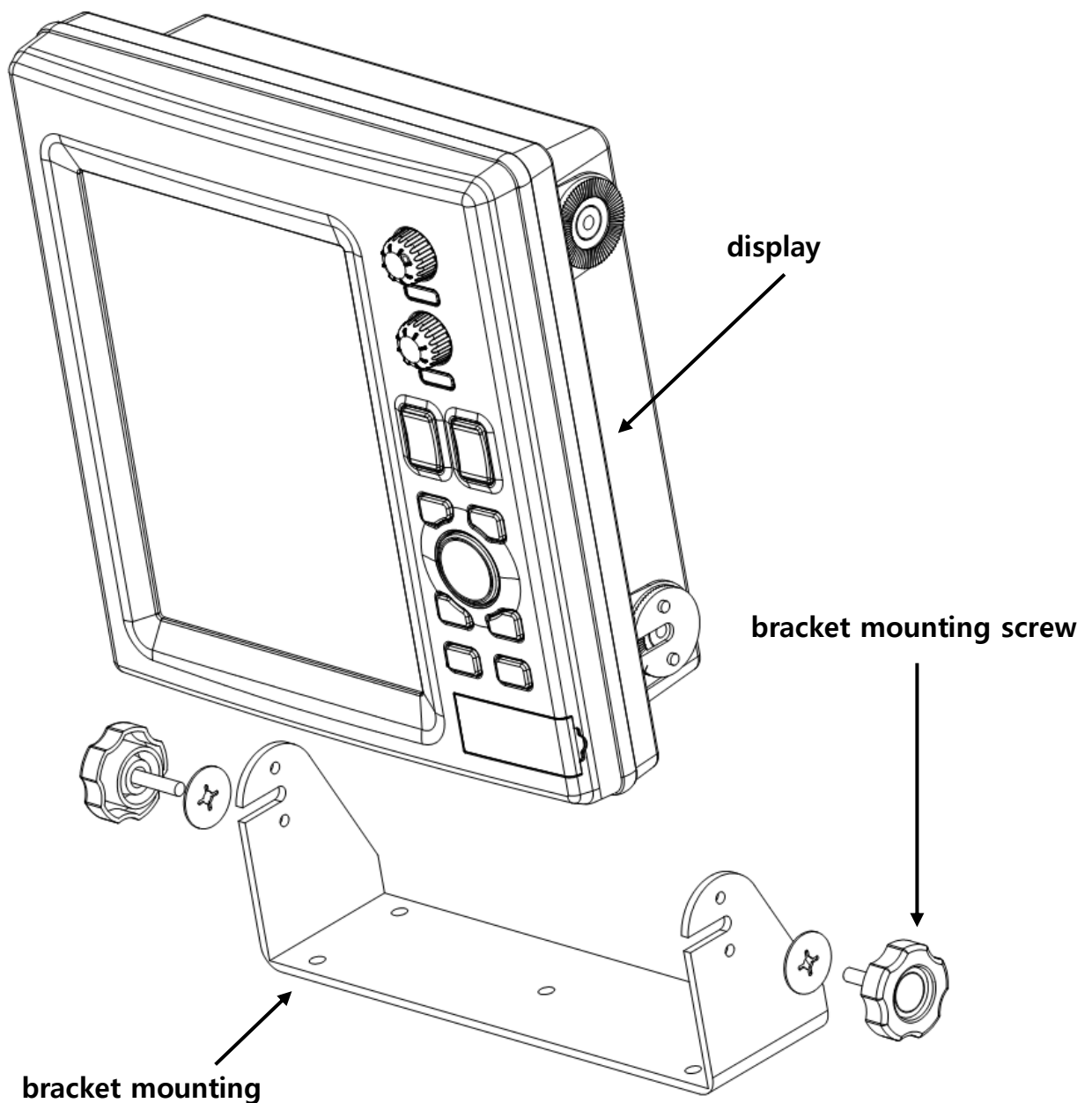❑ **Power supply connection**

1. Installation

Installation of display bracket

1 Locate the bracket mounting on a proper location.

2 Hold the display unit and fix it with bolts
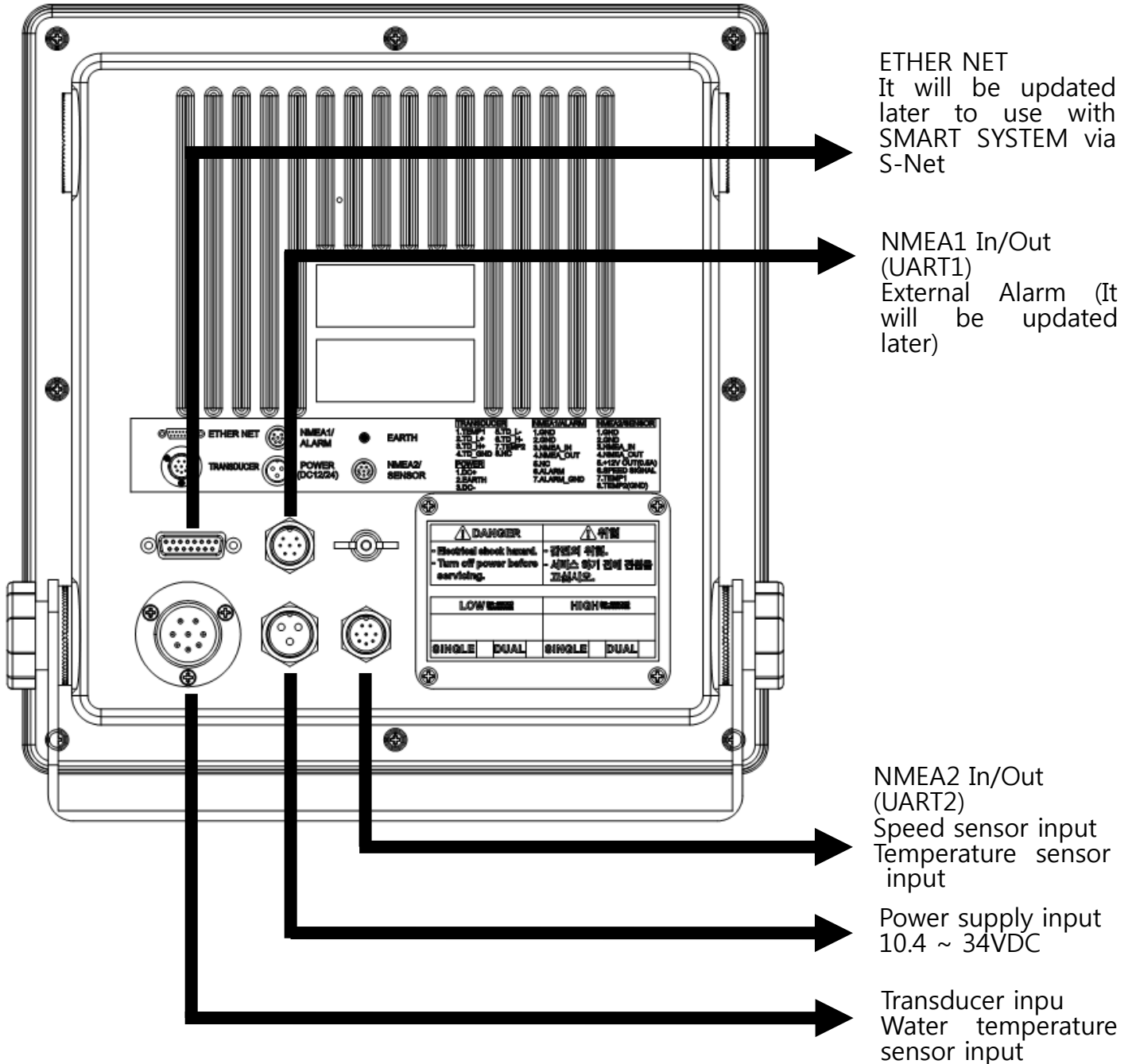
3 Insert bracket mounting bolts gently.

Separate display from bracket.
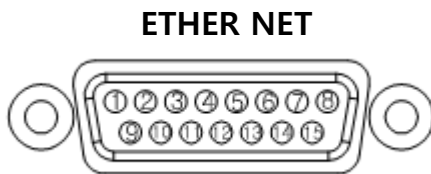
1 Switch off the device

2 Unwind bracket mounting bolts.

display

bracket mounting screw

bracket mounting

2. Cable connection

Connect power supply and transducer to the proper connector.

ETHER NET
It will be updated later to use with SMART SYSTEM via S-Net

NMEA1 In/Out (UART1)
External Alarm (It will be updated later)

NMEA2 In/Out (UART2)
Speed sensor input
Temperature sensor input

Power supply input 10.4 ~ 34VDC

Transducer inpu
Water temperature sensor input

3. Rear connector pinout

Pin position at the back of the transmission indicator.

② COMMON_1
③ TD+
④ GND
⑤ EXT_ON/OFF
⑥ NC
⑦ NC
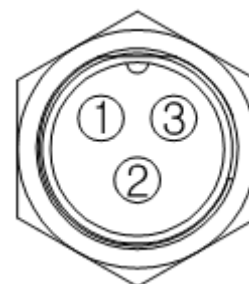⑧ NC
⑨ RD-
⑩ COMMON_2
⑪ TD-
⑫ GND
⑬ NC
⑭ NC
⑮ NC

ETHER NET

NAME1/ALARM

① GND
② GND
③ NMEA_IN
④ NMEA_OUT
⑤ NC
⑥ ALARM
⑦ ALARM_GND

TRANSDUCER
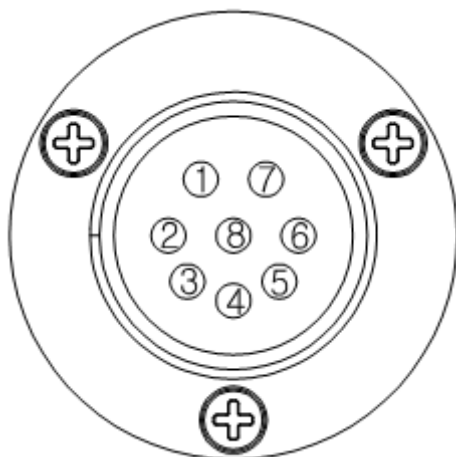
① TEMP1
② TD_L+
③ TD_H+
④ TD_GND
⑤ TD_L-
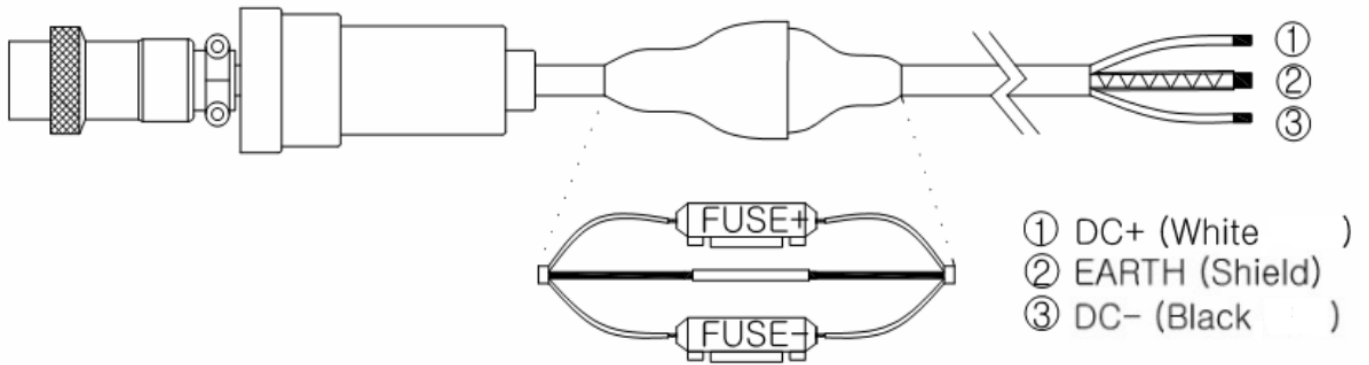⑥ TD_H-
⑦ TEMP2
⑧ NC

POWER (DC12/24)

① PWR+
② EARTH
③ PWR-

NAME2/SENSOR

① GND
② GND
③ NMEA_IN
④ NMEA_OUT
⑤ SPEED SUPPLY
⑥ SPEED
⑦ TEMP
⑧ GND

. Connecting power cable

POWER connector on the back of the display is connected to the power cable.

① DC+ (White   )
② EARTH (Shield)
③ DC- (Black   )

EARTH

①　Please use a thick cable of earth

②　Please let the ground and earth in a shortest distance

6

Maintenance/troubleshooting

This section describe the maintenance and trouble-shooting of SDF-310.

❑ **System maintenance and repair**

❑ **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 of 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.

2. 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.
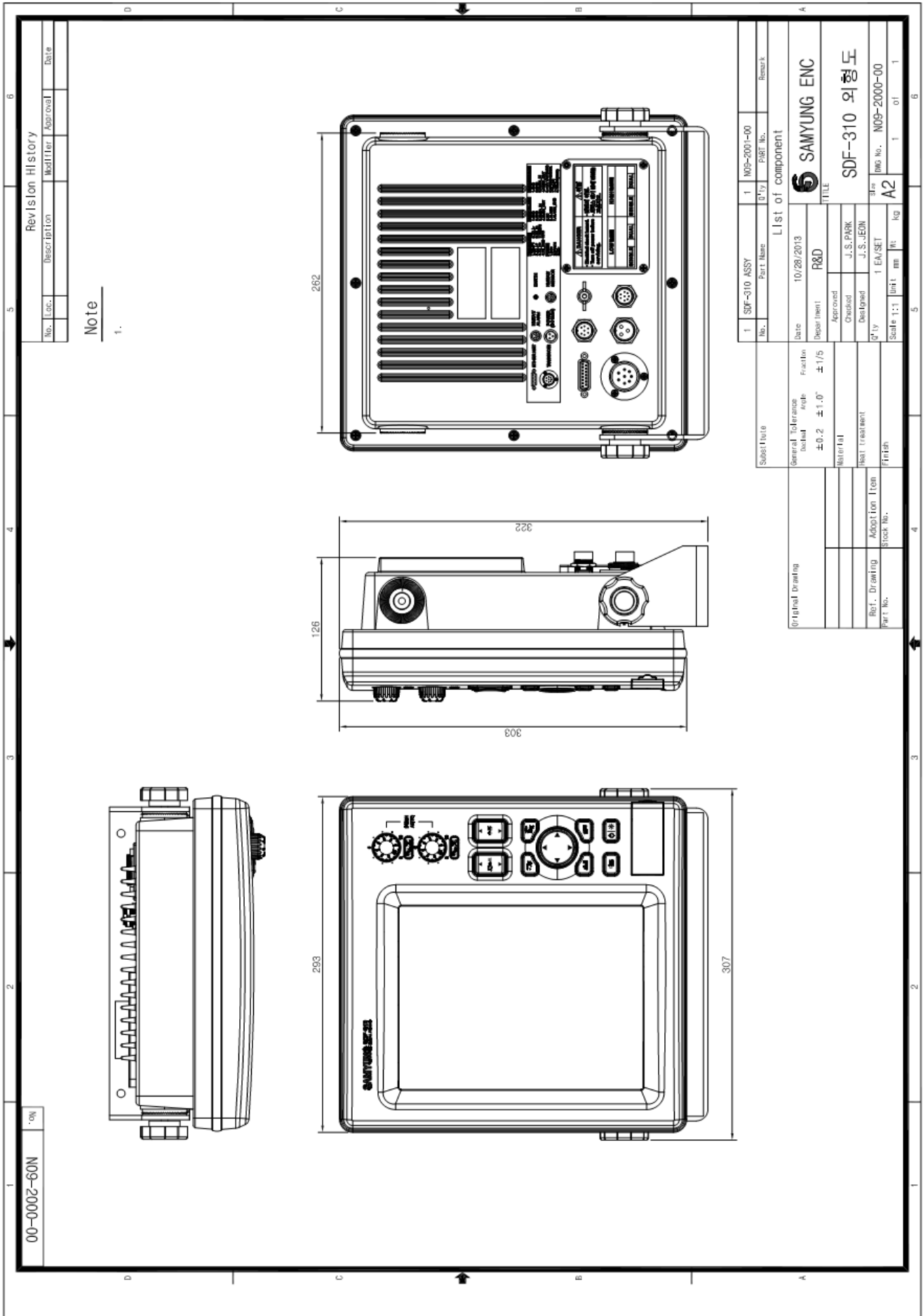
A/S Technician ☎ : 1577~0198

Symtom	Remedy
The power does not turn-on	✓Power connector ✓Power supply and Fuse ✓Voltage of battery (under DC 12V) ✓Polarity of the power, + -
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
Fish school 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 Fish school and sea bottom isn't stable	✓Because of vessel's rolling, pitching, bubbles by vessel's screw and front vessel can induce them
No oscillation line	✓Set-up shift '0'

Appendix

This section describe the appendix related to the equipment operation of SDF-310

❑ **Product outline drawing**

SAMYUNG ENC

List of component

SDF-310 외형도

No.	LOC.	Part Name	Q'ty	PART No.	Remark
1		SDF-310 ASSY	1	N09-2001-00	

TITLE
SDF-310 외형도

Date	10/28/2013			
Department	R&D			
Approved		J.S.PARK		
Checked		J.S.JEON		
Designed				
Q'ty	1 EA/SET	Unit	mm	Wt	kg
Scale	1:1	Size	A2	DWG No.	N09-2000-00

General Tolerance
Decimal ±0.2 Angle ±1.0° Fraction ±1/5

Material
Heat treatment
Finish

Original Drawing
Subsititute
Ref. Drawing
Part No.
Adoption Item
Stock No.

Revision History

No.	Loc.	Description	Modifier	Approval	Date

Note
1.

262
322
126
303
293
307

N09-2000-00

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