

Important Notice

Pictorials

This manual uses the following symbols for easy understanding safety instructions. Always follow these instructions carefully.

 WARNING	Always follow this safety instruction to prevent death or injury.
 CAUTION	Follow this safety instruction to avoid possible injury or damage to your property. Symbol “△” is a CAUTION or WARNING label indicating the safety instruction.
 WARNING	This symbol is an Electrical Shock WARNING label.
	Symbol is an instruction that you must not violate. (This symbol instructs NOT to disassemble the system components)
	Symbol is an operation instruction that you must follow. (This symbol shows the main power OFF instruction.)



WARNING <For System Operators>

Always follow this instruction to prevent death or personal injury.

	Turn power off During abnormality.	If smoke or a small of burning occurs, a fire or an electrical short circuit may result. Turn the power switch OFF and shut down the power supply immediately. Never try to repair the system yourself. Call for service.
	Do not open Cabinet.	High voltage exists in the instrument. Contact with voltage may cause possible injury or death.
	Do not touch back side of the equipment.	Harmful line voltage is present on back side of the equipment. Never try to touch back side while power is turned on.
	Avoid excessive shock to display unit.	The LCD display module contains a liquid. Do not apply any mechanical shock to the display. If the display broken, liquid may leak and injure your skin and eyes.
	Do not use with poor ventilation.	If you cover this unit or use in an enclosed place, it may malfunction or become damaged as a result of overheating. Use only where there is sufficient ventilation.



Installation Cautions <For service Personnel>

Follow installation instructions to avoid personal injury and system malfunction.

Installation in rigid location.	Mount your Smart4/5 series on a rigid frame or base to prevent your unit from working loose.
Use correct Installation materials.	Use the installation materials provided in the standard accessory pack only. If you use hardware of insufficient strength, your system may loosen causing damaged.
Keep away from direct sunlight.	Keep your system out of direct sunlight as it may become damaged by overheating.
Keep away from water.	Take care not to get water on or in your unit as it may be damaged and/or cause an electrical shock.
Keep away from heat source.	Keep your system away from other heat source as it may malfunction, be damaged, or burn.
Use correct power source.	Operate your system within the specified power voltage. An incorrect power supply may cause



Maintenance Cautions<For Maintenance Personnel>

Use the following safety precaution internal inspection.

Discharge capacitors.	High voltage may be retained in the capacitors if the high-tension circuit several minutes after you has turned the power switch off.
Check that power is OFF	To prevent an electrical injury due to erroneous power switching, make sure that the main power supply and the system power switch are both in the off position. Additionally, attach a safety label showing that service is in progress.
Avoid EMI.	Take care not to damage the ESDs (Electrostatic Sensitive Devices) by static electricity from carpet and cloths.
Avoid dust.	Wear a safety mask so as not to breathe in dust during inspection or cleaning inside your system instruments.

Operation Notes <For operators>

Observe the following operation notes, otherwise the system failure or deterioration can result. And periodical inspection and maintenance are required for keeping the system in an optimum condition.

Backup important data.	The waypoint and other registered data may become unreadable by unexpected failure. We recommend recording this data separately.
Use correct transducer only.	If you use incorrect transducer, the transmitter circuit may be damaged due to a matching error. Consult us for system information.
Check transducer Connection before power on	Do not turn the power switch ON if the transducer is disconnected or if it is not inserted into the water. If done, the transducer or transmitter circuit may be damaged.
Always clean the transducer	Since transducer performance can drop due to accumulated bottom growth, keep the transducer clean. Never paint transducer surface.
Transducer must be installed by authorized personnel.	Consult us for transducer installation by authorized personnel.

 WARNING	This product is designed to assist navigation. When you are sailing, use the certified chart from the Government or IMO.
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Smart4/5 System

Welcome

Smart4/5 series opens a new chapter of performance and integration in vessel navigation system display and management. Whether you are a Cruiser or Sport fisherman or both, Smart4/5 gives you the information you need.



CAUTION

Smart4/5 series is Color LCD Charting Systems employs the latest in proven technology to provide accurate navigation information. The Plotter functions of Smart4/5 are totally dependent upon the capability of the navigation source to provide accurate position information. This device is only an aid to navigation. It should be used in conjunction with all other navigation accuracy. For safety, always resolve any uncertainty before continuing navigation.



CAUTION

The performance of LCD displays are degraded by continuous direct exposure to ultraviolet rays. Locate your Smart4/5 series Display away from direct sunlight. When not in use. Keep the display covered.



DISPLAY BREAKAGE WARNING

The LCD display module contains a liquid. If the display is broken and the liquid contacts your skin, wash it off immediately in running water for 15 minutes. If the liquid contacts your eyes, immediately flush your eyes with running water for 15 minutes. Contact a physician if any abnormal symptom is experienced.

Smart4/5 Series System

Welcome

The Smart4/5 series opens a new chapter of performance and integration in vessel navigation system display and management. Whether you are a Cruiser or Sport fisherman or both, Smart4/5 gives you the information you need.



CAUTION

The Smart4/5 series employs the latest in proven technology to provide accurate navigation information. The Plotter functions of Smart4/5 series are totally dependent upon the capability of the navigation source to provide accurate position information. This device is only an aid to navigation. It should be used in conjunction with all other navigation accuracy. For safety, always resolve any uncertainty before continuing navigation.

There is no direct relationship between the color of water areas and their depth. The navigator shall always query the area for depth information and use the official paper chart.



CAUTION

The performance of LCD displays is degraded by continuous direct exposure to ultraviolet rays. Locate your Smart4/5 series Display away from direct sunlight. When not in use. Keep the display covered.

Smart4/5 Series System



DISPLAY BREAKAGE WARNING

The LCD display module contains a liquid. If the display is broken and the liquid contacts your skin, wash it off immediately in running water for 15 minutes. If the liquid contacts your eyes, immediately flush your eyes with running water for 15 minutes. Contact a physician if any abnormal symptom is experienced.



INDICATION NOTICE

*: It is important or warning notice on front of article

[]: Keyboard.

Getting Started

1. The Keyboard

KEY	Description
	use this to select menu items, move the on-screen cursor and Choosing the frequency
	Rotary: use this to select menu items and Adjustment of gain & STC level with turning. Button: push the end of the everything to confirm a selection or entry
	Change the chart of scale and Setting up the depth range
	Open the menu
	Setting up Fishfinder mode
	Setting up Using Frequently key function
	Choose the Active, WPT, setup Nav or capture functions for using one function.
	Show the bar for the depth range.
	Power "on/off", brightness and day/night mode .

1.1. How to use



(Fig.1.1)

1.1.1. Turn on

 Switch on.

1.1.2 Turn off

 Keep pressing to switch off.

1.1.3. Adjust brightness

 Pressing (Fig.1.1) and controlling the brightness with [◀] [▶].

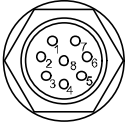
1.1.4. Use day/night mode

 Pressing (Fig.1.1) and changing the day and night with [▲][▼].

2. SPEC of the connectors

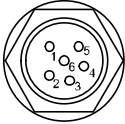
2.1. Metal connectors

TRANSUDCER



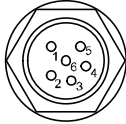
NO	NAME
1	SPD_PULSE
2	SPD_VCC
3	TD1
4	TD_GND
5	TD2
6	TEMP_VCC
7	TEMP_SIG
8	SPD_GND

AIS



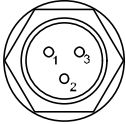
NO	NAME
1	GND
2	TX +
3	GND
4	RX +
5	HX -
6	NC

NMEA0183



NO	NAME
1	GND
2	TX +
3	GND
4	RX +
5	HX -
6	NC

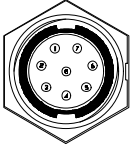
POWER



NO	NAME
1	DC +(12V~36V)
2	DC -
3	NC

2.2. Plastic connectors

TRANSUDCER



NO	COLOR	NAME
1	Black	SPD_PULSE
2	Red	SPD_VCC
3	White	TD1
4	Green	TD_GND
5	Gray	TD2
6	Yellow	TEMP_VCC
7	Brown	TEMP_SIG
8	Blue	SPD_GND

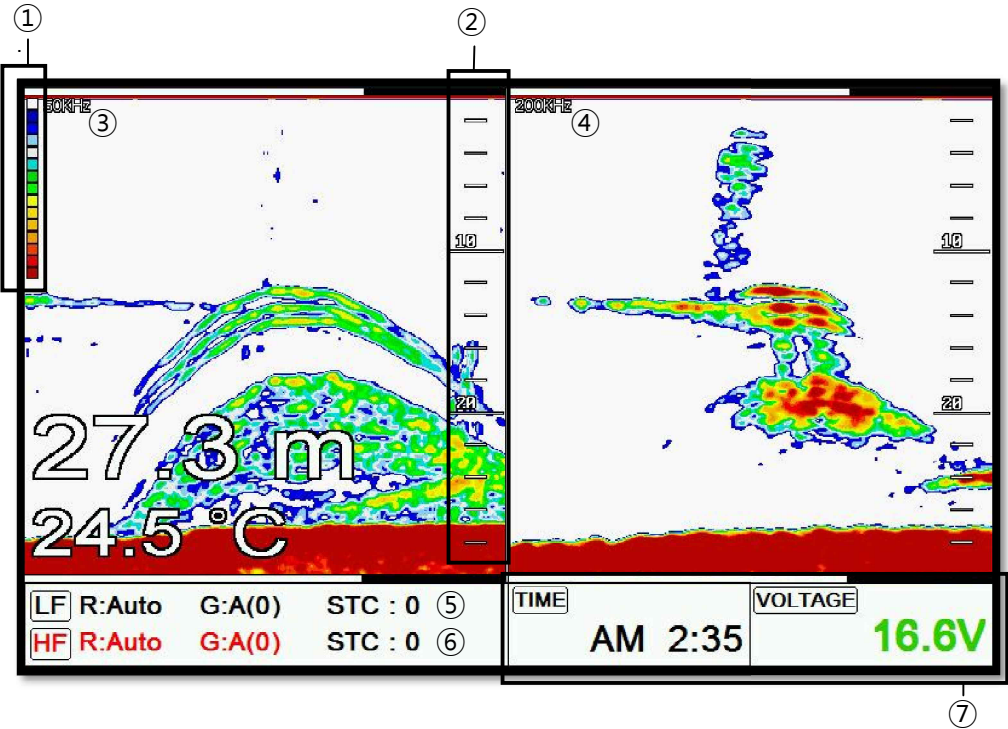
PWR/NMEA



NO	COLOR	NAME
1	Black	GND/COMMON
2	Red	PWR(12~36V)
3	White	INPUT1 +
4	Green	INPUT1 -
5	Gray	OUTPUT2 +(AIS)
6	Yellow	OUTPUT1 +
7	Brown	INPUT2 +(AIS)
8	Blue	NC

3. Screen Overview

3.1. Fishfinder Page



①	Palette	Showing the chosen colors.
②	Depth bar	The current depth.
③	Low Frequency	Showing 50KHz.
④	High Frequency	Showing 200KHz.
⑤	LF INFO	The information of Low Frequency, 50KHz.
⑥	HF INFO	The information of High Frequency, 200KHz.
⑦	Databar	Showing various data on the top or bottom

3.2. Navigation Data Page

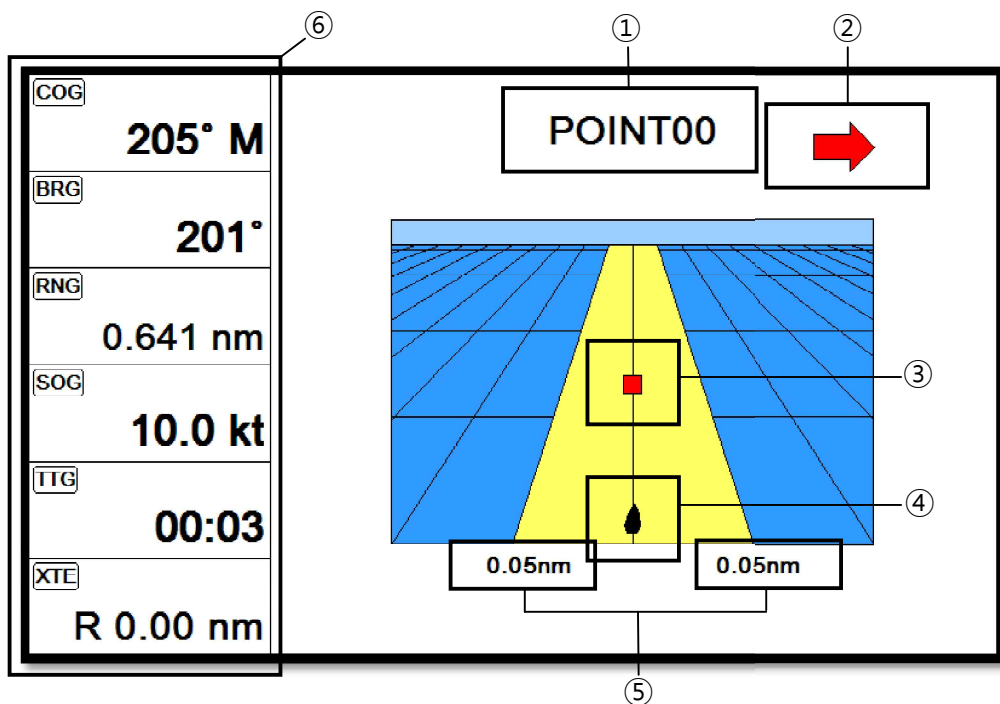
3.2.1. Navigation Data Type1

37° 25. 6046 N			
126° 34. 1458 E			
SOG	COG	WPT	
10.0 kt	205° M	37° 26. 7810 N 126° 34. 7830 E	
DEPTH	TEMP	WPT NAME	XTE
27.4 m	24.5 °C	POINT00	L 0.30 nm

3.2.2. Navigation Data Type2

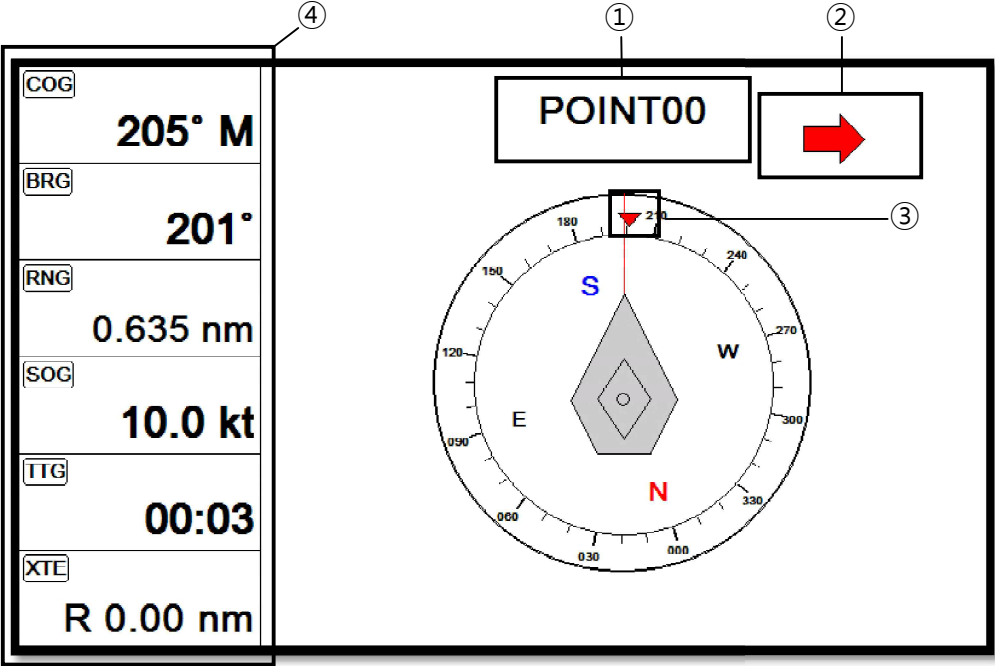
POS		WPT	
37° 25. 1559 N 126° 33. 9535 E		37° 24. 9870 N 126° 33. 8420 E	
TRACK	WPT INFO	WPT NAME	BRG
OFF 00000	+ 00000	POINT00	207°
DATE	TIME	RNG	TTG
Dec 1 2009	AM 04:10	0.190 nm	00:01
DEPTH	TOT TIME	XTE	VOLTAGE
27.4 m	1:37	R 0.00 nm	12.2V

3.3. Highway Page



①	WPT name	The current WPT name.
②	Direction of steer	The best direction of the steering.
③	WPT icon	The remaining distance of the WPT.
④	Vessel	The out of the range from the best.
⑤	XTE Range	The range of the XTE alarm.
⑥	Navigation Data	The information of the various data.

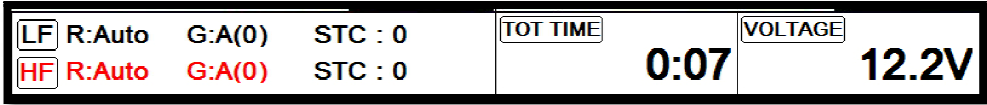
3.4. Steering Page



①	WPT name	Name of the WPT.
②	Direction of steer	The best direction of the steering.
③	WPT icon	Showing the WPT and the bearing
④	Navigation Data	Information of the various data.

4. Databar

Showing various data on the top or bottom.



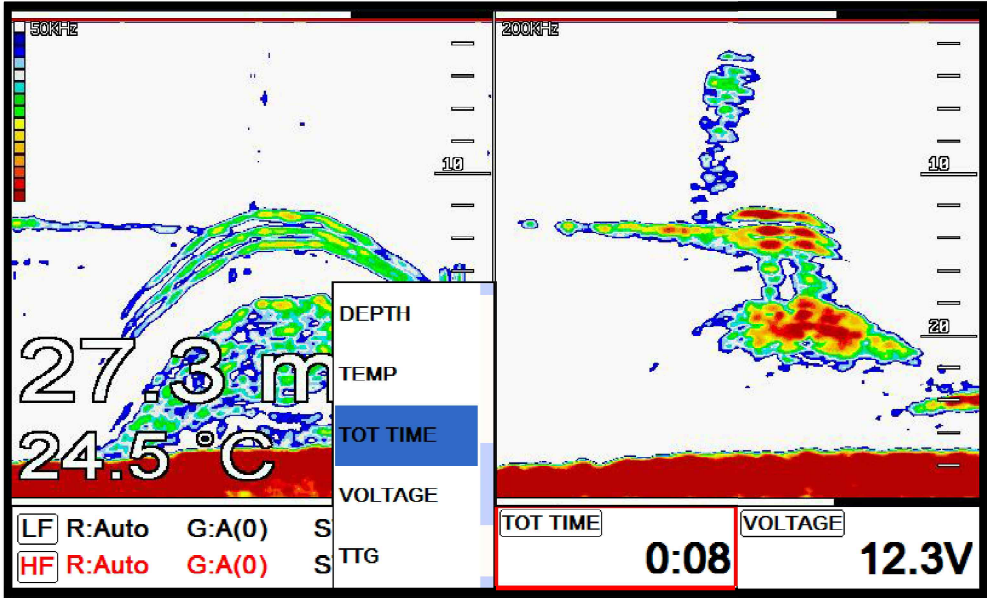
4.1. Position

► [MENU]->Setup->Customizing->Databar->Position

Databar has three meanings as below.

4.2. Edit

► [MENU]->Setup->Customizing->Databar->Edit



When finishing the set up, press **PWR(⏻)** to exit.

(*Please, refer “Customizing” for further question.)

4.3. Position

► [MENU]->Advance->Setup->Customizing->Databar->Position

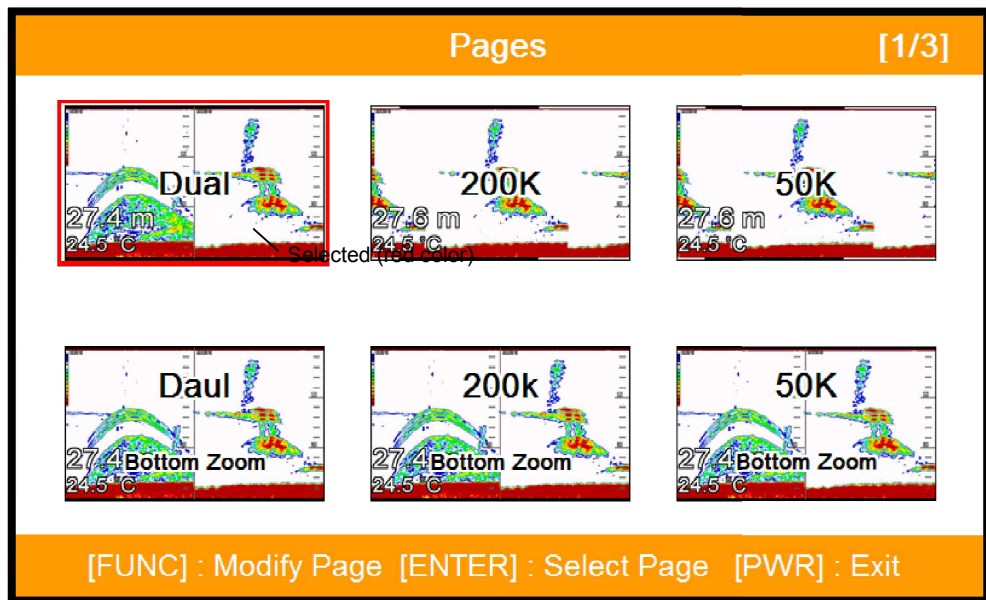
Setting the databar position on the top or bottom.

5. Page

► [MENU]->Others->[PAGE]Key

Choosing the various pages that set up pages or customized.

Move the red box to choose the page.



(Fig.1.2)

5.1. Page mode

Two ways to choose the page.

5.1.1. Standard

With seeing the set up page, choosing the page or modifying.

5.1.2. Flip

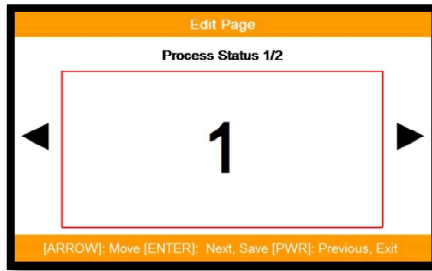
Showing the set up pages in order.

(* In Flip mode, modifying the order is available.)

5.2. Modify

After choosing the page in (Fig1.2), keep pressing **PAGE** until the window comes out as

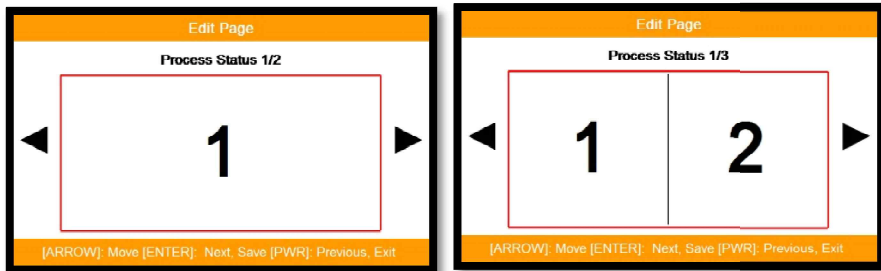
(Fig.1.2.1).



(Fig.1.2.1)

Choosing the frame with [◀][▶].

Two frames as (Fig 1.2.2).



(Fig.1.2.2)

After choosing the box, choose the page as (Fig.1.2.3).



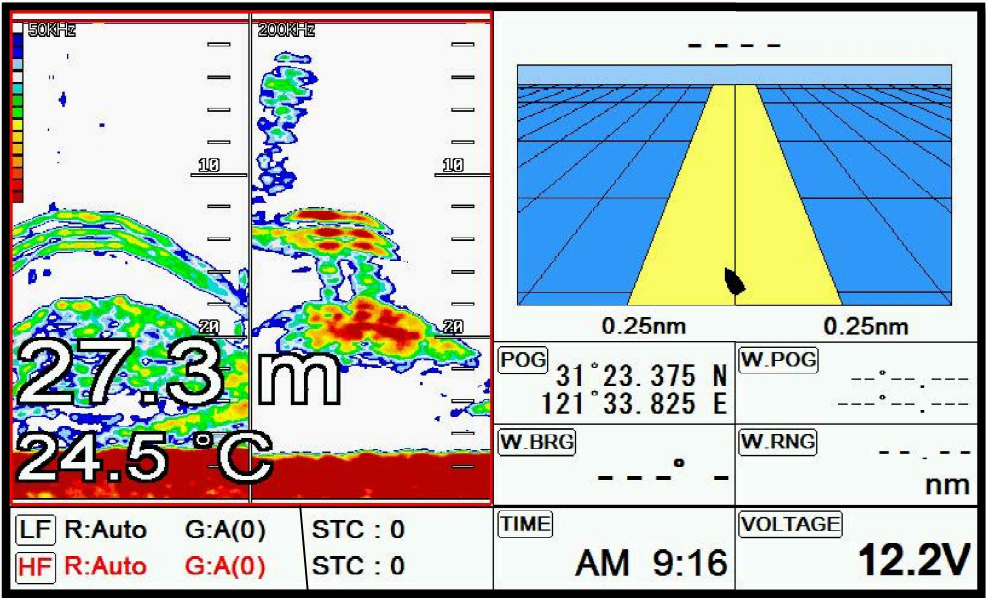
(Fig.1.2.3)

When finishing, press **PWR** (⏻) to exit.

6. Active

►[MENU]->Others->[ACTIVE]Key

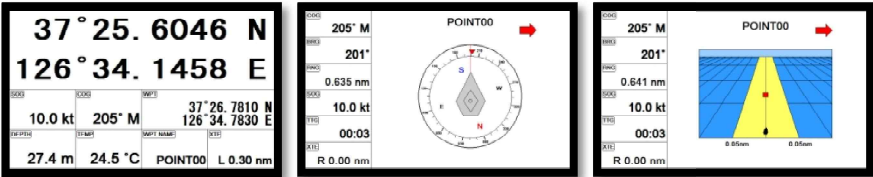
When pressing [ACTIVE], the red box moves to to chartplotter or fishfinder.



Selected (red color)

7.Navigation Data

Navigation data is available in Navigation data page, Steering page, Highway page as (Fig.1.3).



(Fig.1.3)

7.1. Type

►[MENU]->Advance->Setup->Customizing->Navigation data->Type

Two types of Navigation data page.

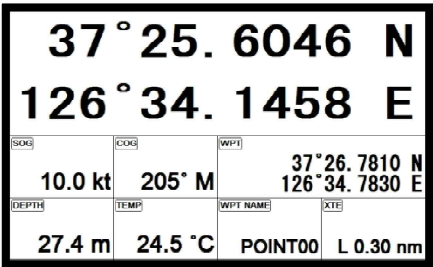
7.1.1.Type1

Large LAT/LOT as (Fig.1.3.1).

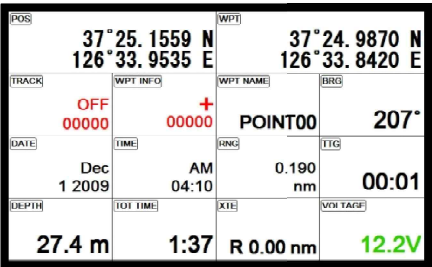
(*Editing the LAT/LOT is unavailable)

7.1.2. Type2

Various data as (Fig.1.3.2).



(Fig.1.3.1)



(Fig.1.3.2)

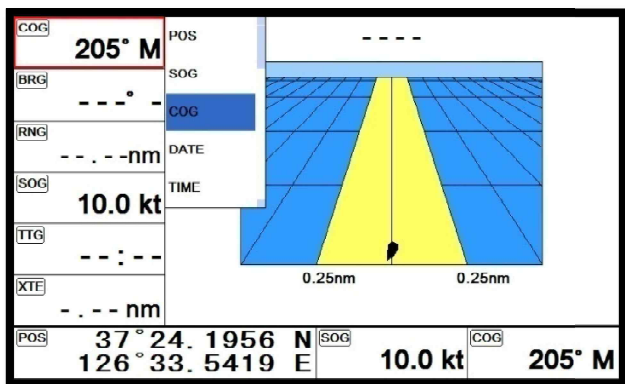
7.2. Edit

(*If there is no navigation data on the page, editing the navigation data is unavailable)

►[MENU]->Advance->Setup->Customizing->Navigation data->Edit

After finishing as (Fig.1.3.3), press **PWR** to exit.

(*Please, refer “Customizing” for further question)



(Fig.1.3.3)

8. Save WPT

► [MENU]->Others->WPT->Save WPT

WPT is stored in the external Micro SD. So if you want to save the userdata, a micro SD must be inserted in the slot.

(*Userdata is in “..\HY\UserData”)

9. Load WPT

► [MENU]->Others->WPT->Load WPT

WPT loads from the stored micro SD.

All of WPT in the micro SD show on the list. Choose one of them and it will show.

There are two ways to load WPT.

First, showing the stored WPT as well as the existing on the screen. After loading the stored, you will see the window and press **MENU**.

Second, showing only stored WPT. After loading the stored, press [ENTER].

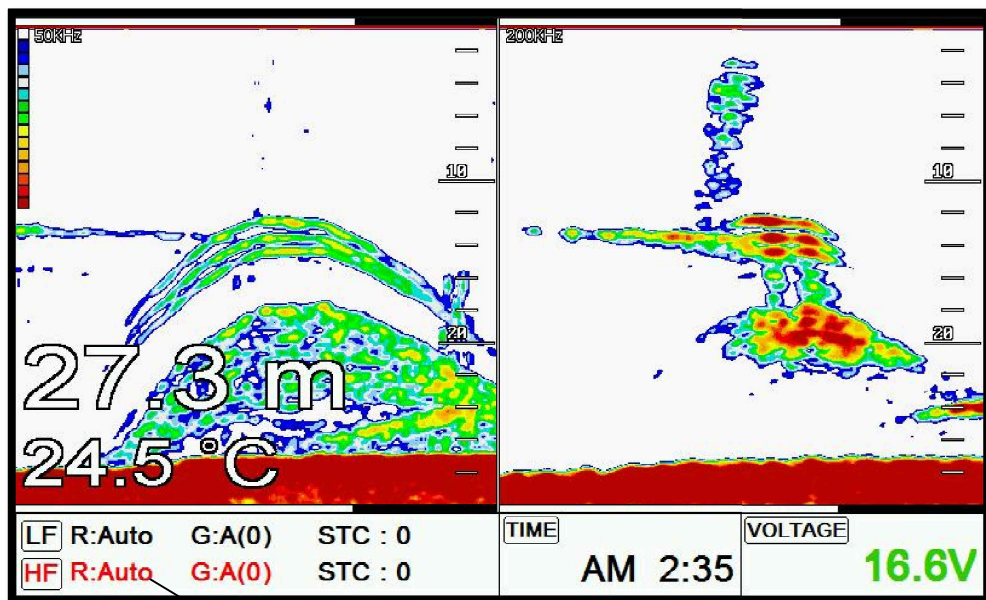
(*Userdata is in “..\HY\UserData”)

|| Fishfinder getting started

1. Choosing the frequency

In dual frequency mode, choosing the frequency with [▲][▼].

(*The chosen frequency shows in red)



Selected

2. Auto/Manual Gain

Press [ENTER] to choose "AUTO/Manual" of Gain.

3. Gain/STC

Choose "Gain" and "STC" with [◀][▶].

4. Controlling Gain

1. Choose the frequency.
2. Choose the gain.
3. Twisting the rotary key to control the gain.

5. Controlling STC

1. Choose the frequency.
2. Choose the STC.
3. Twisting the rotary key to control the STC.

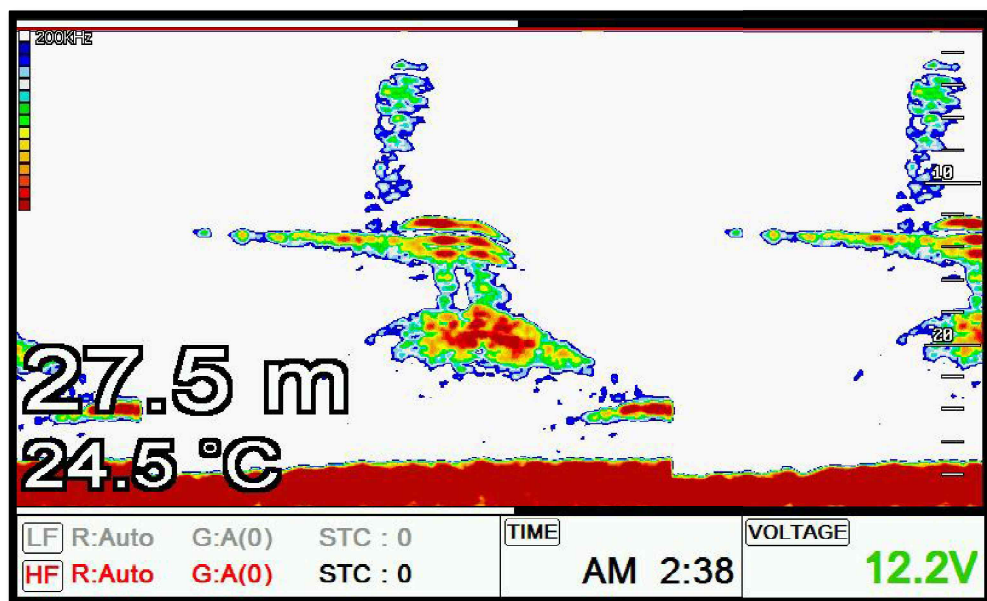
6. Mode

► [MENU]->Mode

Three kinds in Fishfinder.

6.1. Normal

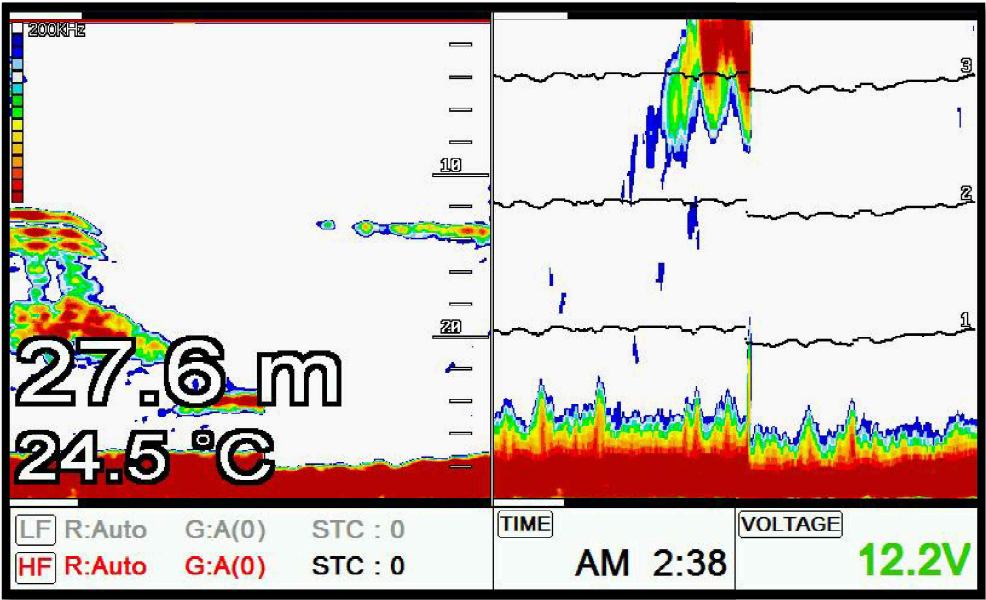
Normal mode (with Auto Range active) displays the sounder image with the surface at the top of the screen and the sea bottom in the lower part of the screen. The depth scale indicates the depth range appearing in the display. Bottom contours and fish echoes are displayed at the depths where they are detected. If the depth Range is set manually to a value less than actual water depth, sea bottom echoes are not displayed, but all other echoes within the Range setting are displayed.



6.2. Bottom Zoom

Bottom Zoom magnifies the sounder display from the sea bottom toward the surface for a short distance. The sea bottom contour is displayed and additional contour lines are added at intervals

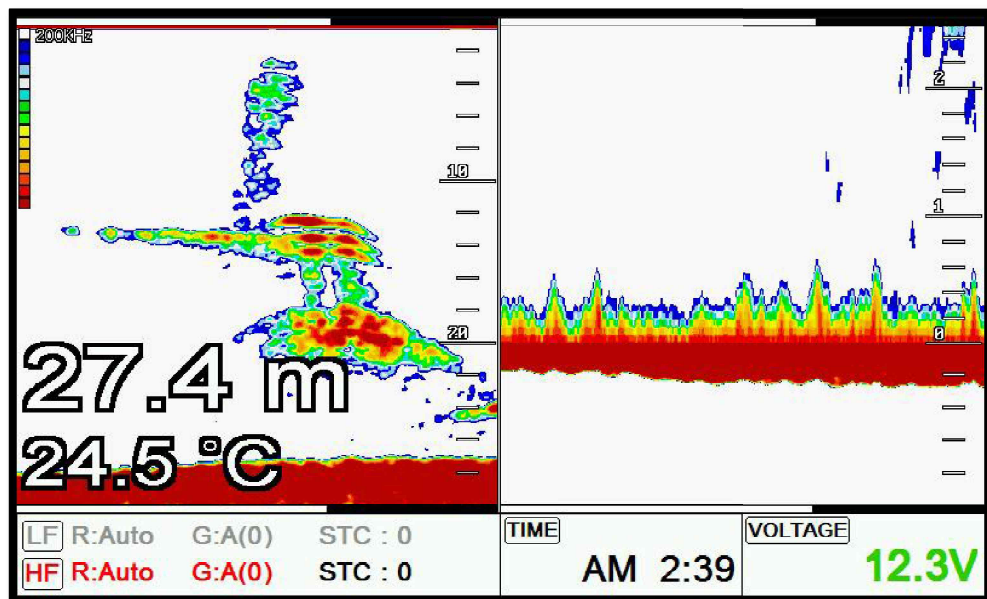
above the sea bottom to aid in determining distances of echoes near the bottom. Use the Sounder Menu to set the magnified Bottom Range from 2.5 to 20m (10 to 60ft.). Default setting is 10m (40ft.). If the depth Range is set manually, the setting must place the sea bottom echo in the lower portion of the screen for Bottom Zoom to be effective.



6.3. Bottom Lock

Bottom Lock divides the Fishfinder main screen image for the selected Fishfinder into two sections. The left hand section displays a Normal Mode image. The right hand section of the screen displays the Fishfinder image relative to the sea bottom. The sea bottom appears as a straight line with the Fishfinder image magnified for a short distance toward the surface. A scale appears on the right for estimating distances of echoes near the bottom. Use the Fishfinder Menu to set the magnified Bottom range from 2.5 to 20m (10 to 60ft.). Default setting is 10m (40ft.). If the depth Range is set manually, the setting must place the sea bottom echo in the lower portion of the screen for Bottom Lock to be effective.

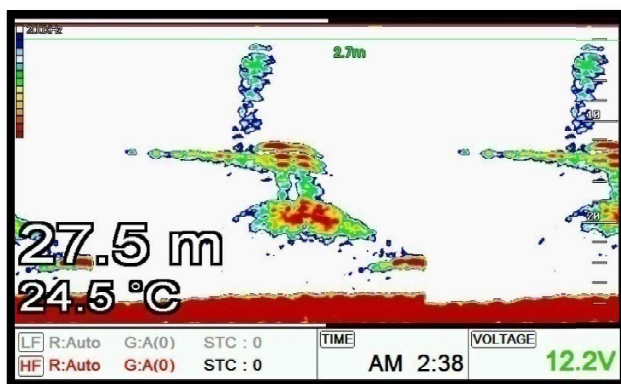
Fishfinder modes are selectable for single frequency or dual and some functions, for example bottom zoom or lock.



7. VRM

► [VRM]

The VRM (movable marker) shown by the green line can be moved up and down. It is convenient to measure the depth by aligning with the target such as school of fish.



Operation

1. Deep Depth Range

Smart4/5 selects the best condition for measuring the depth automatically in the environment of the sea.

( The default setting is Auto.)

2. Shift

A user selects this function to see more detailed bottom of the sea. When you turn up the shift, the range of Fish finder shall go up from the shift range. For example, if you raise 5m of shift at 20m range, the surface shall start 5m and the bottom range shall be 25m.

( The default setting is 0m.)

3. Display

3.1. A-scope

A-scope shows the research under the water by a scope to see the environment under the water.

( The default setting is OFF.)

3.2. Image Speed:

Select the speed of Fish finder image from 4X until 1/32X.

( The default setting is 1X.)

3.3. White Line

It is necessary to research a detailed fish on the bottom or a seaweed under the sea. The color of the bottom changes into white or black to see the bottom easier than red.

( The default setting is OFF.)

3.4.Depth

3.4.1. Display

Shown/Hidden the depth range on the screen.

( The default setting is shown.)

3.4.2. Font Size

Select the depth range font size on the screen.

( The default setting is Large.)

3.5. TEMP

3.5.1. Display

Shown/Hidden the temperature on the screen.

( The default setting is shown.)

3.5.2. Font Size

Select the temperature font size on the screen.

( The default setting is Large.)

3.6. Speed

3.6.1. Display

Shown/Hidden the speed on the screen.

( The default setting is hidden.)

3.6.2. Font Size

Select the temperature font size on the screen.

( The default setting is Large.)

3.7. Fish

3.7.1. Fish symbol

Fish symbol with sizes and levels show for targets.

(*Fish symbol is only for reference. This could be different from the real.)

3.7.2. Fish size

Setup to display of the size of fish.

( The default setting is Off.)

3.8. Image filtering

This function is reduction of the noise.

( The default setting is On.)

4. Rejection

4.1. Interference Rejection

When there are another boats around you on sailing, your Fish finder could be disturbed to work. The step of the function is from off to level 2. The bigger number, the more rejection.

( The default setting is OFF.)

4.2. Noise Rejection

Your Fish finder could be disturbed by the engine noise. This function can reject the noise from the engine or other machinery instruments.

( The default setting is OFF.)

5. Color

5.1. Bottom enhance

This function adjusts the colors. Make it upper level, the color becomes darker.

( The default setting is OFF.)

5.2. Color Rejection

There are 16 color levels for Fish finder. The color bar is on the left of the Fish finder. If the level is higher, the color of the bar is deleted one by one.

5.3. Screen Color

Select the back ground color of the Fish finder for your convenience.

6. Pulse

Select the pulse of the output from the transducer. Levels are among Low, Medium and High, which depends upon the depth. Low is proper to research precise a fish school but it is not suitable to measure a deep depth. High is opposite from Low.

( The default setting is Medium.)

7. Output Power

Select the output from the installed transducer. Levels are from off to 3. It should be careful about the depth. If you set high level in a shallow depth, the Fish finder screen turns to red. You see nothing expect red on the screen.

( The default setting is 3.)

8. Alarm

8.1. Depth

8.1.1. Deep Depth Alarm

It alarms when the set deep depth is out of the range.

( The default setting is OFF.)

8.1.2. Deep Depth Range

Setup the range of deep depth alarm

( The default setting is 0M.)

8.1.3. Shallow Alarm

It alarms when the set shallow depth is out of the range.

( The default setting is OFF.)

8.1.4. Shallow Range

Setup the range of shallow depth alarm

( The default setting is 0M.)

8.2. TEMP(Temperature)

8.2.1. High alarm

It alarms when the set high temperature is out of the range.

( The default setting is OFF.)

8.2.2. High Range

It alarms when the set high temperature is out of the range.

( The default setting is 0.)

8.2.3. Low alarm

It alarms when the set low temperature is out of the range.

( The default setting is OFF.)

8.2.4. Low range

It alarms when the set low temperature is out of the range.

( The default setting is 0.)

8.3. Fish-School

8.3.1. Alarm

It alarms when it detects school of fish.

It will detect school of fish depend on set depth, range and level of the Echo sounder.

( The default setting is OFF.)

8.3.2. Fish-school Depth

If the alarm is on, It is available to setup the depth of the Fish-school

( The default setting is 10m.)

8.3.3. Alarm range

If the alarm is on, It is available to setup the Range(height) of the Fish-school.(The bar, next of display is shown)

( The default setting is 50m.)

8.3.4. Alarm Interval

If the alarm is on, It is available to setup the alarm interval.

( The default setting is middle)

8.3.5. Color Level

If the alarm is on, It is available to setup the color level.

It is available to setup the color level

9. Setup

9.1. System

It contains ID and the program version, and it has important information for maintenance and upgrade.

9.2. Unit

9.2.1. Distance/Speed

Select desired unit of measure for distance and speed. Choose from: nautical mile/knots (nm/kt), kilometer/kilometers per hour(km/kmh), yard/knot(yd/kt).

cf) 1nm = 1.852km, 1kt /h= 1.852km/h, less than 1nm display in yard and over 1nm display in mile

( The default setting is Nm/Kt.)

9.2.2. Depth

Select desired unit of measure for depth of water. Choose from: meter(M), foot(ft), fathom(fm), Italian Fathom(lfm), Japanese fathom(Jfm).

cf) 1m = 3.281ft = 0.549fm = 0.609lfm = 0.660jfm

( The default setting is Meter.)

9.2.3. Temperature

Select desired unit of measure for temperature of water. Choose from: Celsius(°C), or Fahrenheit(°F).

cf) 1°C = +32°F

9.3. Time/Date

9.3.1. Reference

Available to adjust the collect local time by the UTC time from the GPS.

( The default setting is incorrect every the country.)

9.3.2. Time format

Sets you preferred time between 12 hour and 24 hour.

( The default setting is 12 hour.)

9.3.3. Date Format

Sets you preferred date among YY-MM-DD, MM-DD-YY or DD-MM-YY.

( The default setting is YY-MM-DD.)

9.3.4. Month format

Setup the character of month(Ex: 1, 2, 3...or JAN, FEB, MAR...)

9.4. Input/Output

9.4.1. Output Sentences

The Smart4/5 series allows customizing the NMEA.0183 sentence.

NMEA	Description	Default
\$GPDBT	Depth below transducer	On
\$GPDPT	Depth	On
\$GPMTW	Water temperature	Off
\$GPTLL	Target latitude and longitude	On
\$GPVHW	Water speed and heading	Off
\$GPGGA	Global positioning system fix data	Off
\$GPVTG	Course over ground and ground speed	Off
\$GPRMC	Recommended minimum specific GNSS data	Off

9.4.2. Transmit

Available to adjust transmit speed of input/output in each ports.

9.5. Speed source

Switch the Sensor/NMEA.

- InsideSensor: Use the built-in speed meter for sensor.

- NMEA: Use the external input value for NMEA.

( The default setting is NEMA.)

9.5. Correction

9.5.1. Boat Speed

The tolerance of boat speed value can be corrected. When the [Speed source] is set to the [Sensor], it is corrected by %. (setting:-50 ~ 50%) When the [Speed source] is set to the [NMEA], it is corrected by

numeral. (setting:-10.0 ~ 10.0)

( The default setting is 0.)

9.5.2. Water Temp

The error of water temp value can be corrected.

(setting:-10.0 ~ 10.0 °C, -10 ~ 10 °F)

( The default setting is 0.)

9.6. TD setup

Choosing the frequency of the TD.

9.7. Buzzer

It is can be sound on/off.

( The default setting is on.)

9.8. Simulator:

It is necessary for an indoor demonstration. The simulations of Fish finder in the memory..

9.9. Customizing

9.9.1. Databar

9.9.1.1. Position

Setting up up/down the position of databar on the display.

( The default setting is Down.)

9.9.1.2. Edit

It customizes the data bar information.

9.9.2. Navigation Data

9.9.2.1. Type

It is a select the navigation data type.

( The default setting is Type1.)

9.9.2.2. Edit

It customizes the Navigation data section except activated the echo sounder section.

9.9.3. Page mode

It is a select the page mode.

- Standard: Choosing Page and customizing is available.

- Flip: Showing the chosen pages in order.

( The default setting is Standard.)

9.10. Language:

Select the language.

9.11. Initialization

9.11.1. User Initialization

The stored setting is initialized in the user setting.

9.11.2. Setup Initialization

reset without deleting user data.

9.11.3. Factory Initialization

returning to the initial system from the releasing of factory.

(*All user data will be deleted)

10. Others

10.1. Key Setup

It is available to set up [FUNC] key and [EVENT] key on the JFC.7050.

10.1.1. [FUNC] key:

Set the function frequently used for your convenience.

( The default setting is Page.)

[FUNC]KEY SETUP
1.Page
2.Image Speed
3.Color Rejection
4.Noise Rejection
5.Shift
6.Bottom Zoom Range
7.White Line
8.Recording
9.Reset

10.1.2. [EVENT] key:

Change the key of the Waypoint input, Setup Nav or capture.

( The default setting is Active.)

- Active: Select the activated section.
- WPT: Input the mark on the current position.
- GOTO: Start navigating toward the mark.
- Capture: Store the current screen.

10.2. WPT

Setting up the WPT List, Edit, and Alarm.

10.2.1. List

Shown the WPT list and it is available to set up or edit the WPT on the list.

WPT LIST

Page 1 ① Selected(blue color)

Latitude/Longitude ⑤

00001	-----	-----
00002	-----	-----
00003	-----	-----
-----	-----	-----
-----	-----	-----

37°27.6180 N
126°34.8920 E

⑥ Depth

0m

⑦ BRG

14°

⑧ RNG

1nm

② WPT Name

00001

③ Symbol



④ Color



Date & Time ⑨

12.01.2009 AM 02:33

[ENTER]=Edit [+]=Add [-]=Erase [MENU]=Sort
[GOTO]=Goto [PAGE]=All Erase [◀][▶]=Move

①	List	Showing all of the stored WPT.
②	Name	Name of the WPT.
③	Symbol	Symbol of the WPT.
④	Color	Color of the WPT.
⑤	Latitude/Longitude	LAT/LOT of the WPT.
⑥	Depth	Depth of the WPT.
⑦	Bearing	Bearing between the WPT and the present position.
⑧	Range	Distance between the WPT and the present position.
⑨	Date & Time	Date and time of the WPT when stored

10.2.2. Alarm

10.2.2.1. Arrival Alarm:

When you approach into the waypoint range, it gives you a notice with alarm.

(The default setting is OFF.)

10.2.2.2. Arrival Radius:

It is to adjust the range of arrival from your waypoint. If you have a route, it changes to the next

waypoint automatically.

( The default setting is 0.05nm.)

10.2.2.3. XTE Alarm:

If you are out of the course, it gives you a notice with alarm.

( The default setting is OFF.)

10.2.2.4. XTE Radius:

It is to adjust the range of the off course.

( The default setting is 0.05nm.)

10.2.3. Navigating Stop

Stops the present navigation.

10.2.4. Save WPT

You can save the WPT in SD card.

10.2.5. Load WPT

You can load the WPT from SD card.

10.3. Capture

This is the function of Screen Capture.

(*The capture file is stored in external memory cards)

10.4. Capture List

Available to display and delete the capture file

10.5. [ACTIVE] Key

Select the activated section.

10.6. [PAGE] Key

Select the configuration you wish.

HD-50F

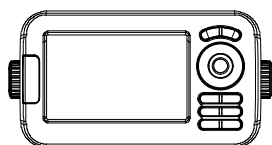
GENERAL SPECIFICATION

- | | |
|---------------------------|------------------------------------|
| 1. Display Screen: | 5inch Color LCD with LED backlight |
| 2. Resolution: | WVAG (800 X 480 pixels) |
| 3. Power Supply: | DC 12V~36V(+/-10%) 5W |
| 4. Operating Temperature: | -15°C~+50°C |
| 5. Performance Standard: | IMO Resolution MSC.112(73) |
| 6. Option: | MicroSD, Transducer |

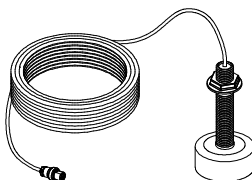
FISHFINDER SPECIFICATION

- | | |
|------------------|--|
| 1. Display Mode: | Normal (single/dual-frequency), Bottom-lock, Bottom-zoom, A-scope |
| 2. Frequency: | 50 and 200 KHz (single or dual) |
| 3. Output Power: | 300W/ 600W |
| 4. Range speed: | 300W : 2.5m ~ 300m / 600W : 2.5m ~ 600m |
| 5. Image speed: | Fixed 8 speeds (4/1, 2/1, 1/1, 1/2, 1/4, 1/8, 1/16, 1/32) and stop |
| 6. Rejection: | Interferences rejection:3 levels, Noise rejection:4 levels |
| 7. Function: | Gain(auto/manual), Range(auto/manual),
Depth with shift(auto/manual)
Pulse length selection, White/Black line
Water temperature, Support speed sensor |

Standard Equipment Configuration List



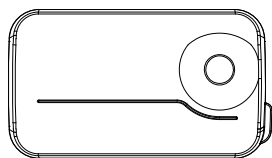
Display unit



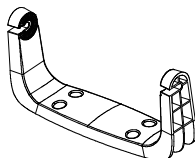
Transducer(option)



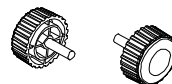
Manual



Protector



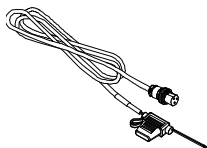
Mounting Bracket



Knobs

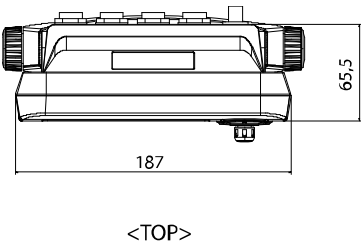
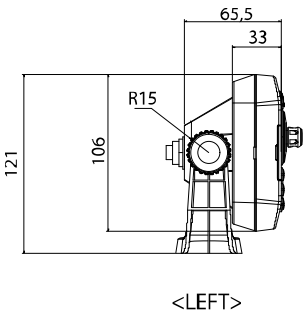
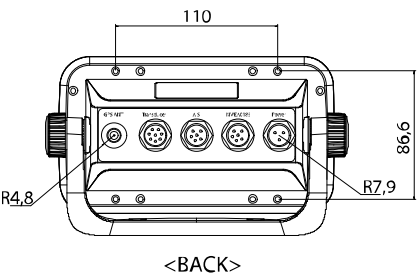
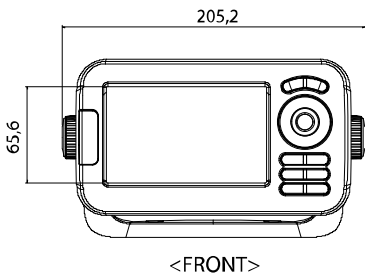


Fuse & Bolt



Power cable

Dimension



HD-43F

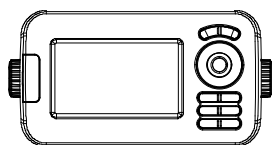
GENERAL SPECIFICATION

- | | |
|---------------------------|--------------------------------------|
| 1. Display Screen: | 4.3inch Color LCD with LED backlight |
| 2. Resolution: | WVAG (480 X 272 pixels) |
| 3. Power Supply: | DC 12V~36V(+/-10%) 4W |
| 4. Operating Temperature: | -15°C~+50°C |
| 5. Performance Standard: | IMO Resolution MSC.112(73) |
| 6. Option: | MicroSD, Transducer |

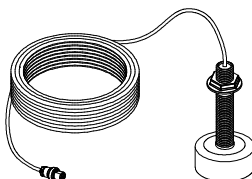
FISHFINDER SPECIFICATION

- | | |
|------------------|--|
| 1. Display Mode: | Normal (single/dual-frequency), Bottom-lock, Bottom-zoom, A-scope |
| 2. Frequency: | 50 and 200 KHz (single or dual) |
| 3. Output Power: | 300W/ 600W |
| 4. Range speed: | 300W : 2.5m ~ 300m / 600W : 2.5m ~ 600m |
| 5. Image speed: | Fixed 8 speeds (4/1, 2/1, 1/1, 1/2, 1/4, 1/8, 1/16, 1/32) and stop |
| 6. Rejection: | Interferences rejection:3 levels, Noise rejection:4 levels |
| 7. Function: | Gain(auto/manual), Range(auto/manual),
Depth with shift(auto/manual)
Pulse length selection, White/Black line
Water temperature, Support speed sensor |

Standard Equipment Configuration List



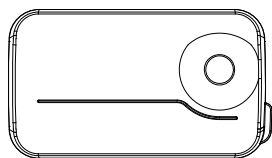
Display unit



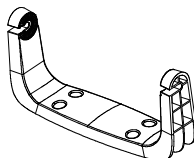
Transducer(option)



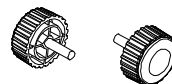
Manual



Protector



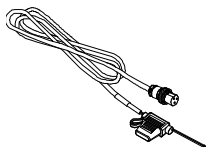
Mounting Bracket



Knobs

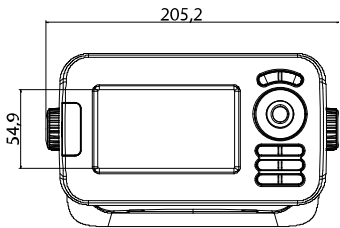


Fuse & Bolt

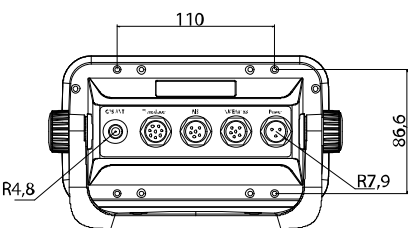


Power cable

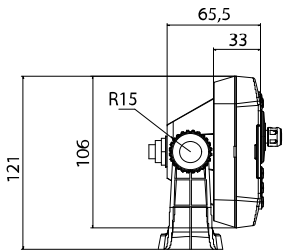
Dimension



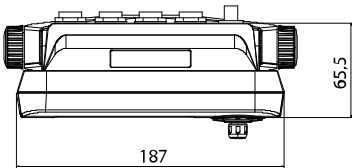
<FRONT>



<BACK>



<LEFT>



<TOP>

I Customizing items

POG	LAT/LOT of the present position. (Red: out of GPS service/Black: GPS on service/Blue: SBAS or DGPS on service)
SOG	(Speed Of Ground) Boat speed.
COG	(Course Of Ground) Boat direction.
DATE	Date of today.
TIME	Present time.
HDOP	Horizontal Dilution Of Precision.
PDOP	Position Dilution Of Precision.
W.POG	WPT Position Of Ground
W.NAME	(WPT Name) the present WPT of the destination
#DEPTH	Present depth.
#TEMP	(Temperature) Present water temperature.
TOT TIME	(Total Time) Total using time
VOLTAGE	Present voltage. (unstable voltage shows in red)
TTG	(Time To Goal) Remaining time to the destination.
ETA	Estimated time of arrival.
XTE	Cross track error.
W.RNG	Distance from the present position to the WPT.
W.BRG	Bearing between the present position and the WPT.
W.INFO	The total number of WPT and shows the WPT symbol/color.
TRACK	The total number of track and shows the track color.
DATE&TIME	The current date and time.
C.POG	LAT/LOT of the cursor.
C.BRG	Bearing between the present position and the cursor.
C.RNG	Distance between the present position and the cursor.

|| Display Unit Installation

Smart series brings expandable display technology to your bridge or navigation station. A careful installation will assure maximum benefit from Smart series integrated features.

Display Unit Location

Select a location for your smart series display unit that provides easy viewing from all likely operator's positions. The display unit is designed to be mounted on either a console or from an overhead surface. The smart series display is also designed for flush mounting using six threaded holes on the rear panel. Locate the display in an area with protection from the elements and avoid direct sunlight on the viewing window. Also, consider access to the rear panel of the unit for connecting power and cables to the various remote sensors. The mounting surface must be flat and solid to support the unit and prevent vibration. There should be access to the inside of the surface to permit through bolt fastening for the mounting bracket.

Display Unit Installation

Temporarily install the mounting bracket on the Genesis display unit and place the unit at the selected location.



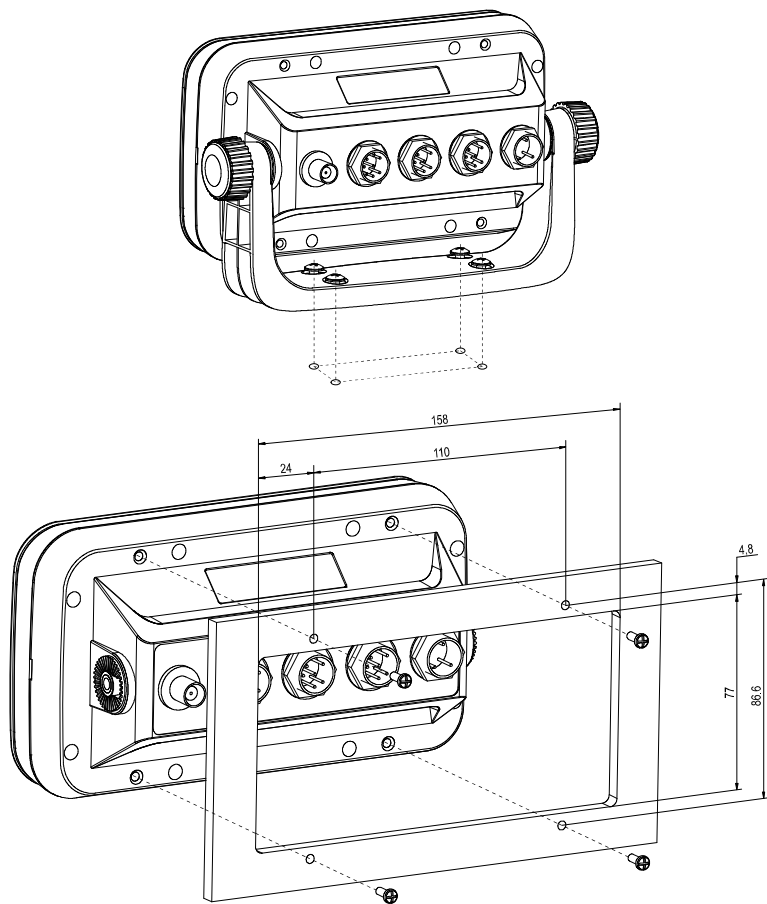
CAUTION

The Smart4/5 series display unit is unstable when the mounting bracket is not secured. Hold the unit in place at all times.

Check the suitability of the location and make any adjustments. When all is satisfactory, use the holes in the mounting bracket as a guide and mark the holes locations on the mounting surface.

Drill a 1/4 in. diameter hole at each marked location. Mount the Smart4/5 series display bracket using bolts through the mounting surface. Place large flat washers on the opposite side of the mounting surface from the bracket and then install lock washers and nuts. Tighten securely.

Install the display unit into the mounting bracket. Check alignment and operation of the pivots and security of the mounting. Make any adjustments necessary to prevent binding and assure even meshing of the pivot locking washers. It is advised to remove the display unit and store it in a safe place to prevent damage during the rest of the installation process.



- Power Connection

Power is supplied to the smart series Charting System through a connector on the rear panel of the display unit.

Route the power cable from the smart series location to the ship's power distribution panel.

Connect the black wire to a battery negative (-) terminal of the power panel.

Connect the white wire to a fused battery positive (+) terminal of the power panel (12 to 24 Vdc nominal). If a fused terminal is not available, install an in-line fuse holder.

- Care and Cleaning

Smart series is made to withstand marine elements but a little care ensures a trouble free life.

Accumulations of salt and sand, if not removed, will eventually mar the finish. No solvents or harsh cleaners should be used. The display unit may be wiped down with a damp cloth while avoiding the display window. Be careful not to scratch the display window surface. Gently remove any sand or other grit particles before cleaning the display window. The display window should be cleaned only with water and a clean soft cloth using very light pressure.

II Transducer Installation

An input designation means, in put to Fishfinder unit and an output designation means, output from Smart series. Sensors will have similar designations, but from the sensors point of view. Therefore, a sensor output will connect to an smart series input and a sensor input will connect to an Fishfinder unit output.

Transducer Installation

If you have chosen a Sonar option for your fishfinder a transducer must be installed on your vessel unless an exiting compatible transducer is installed. The installation of sonar transducers requires some planning and skill to achieve the best result. It is strongly advised hat you read the installation instructions completely before starting. The two basic types of transducers are transom mount and through-hull mount. There are variations within each type to provide for options such as temperature sensors, speed sensors and for different beam angels and sonar frequencies. Several different transducers may be used with the Smart series. Refer to the optional Equipment list for the variations available.

CAUTION

Mounting a sonar transducer for your digital fishfinder requires drilling holes into the hull of your boat which could affect its water integrity. Therefore, installation should be attempted only by qualified individuals. If you have any doubt about your ability to complete the process successfully, we recommend you obtain the services of a HAIYANG dealer or marine service center with knowledge and experience in transducer installation.

Since your digital fishfinder performance depends upon how well the transducer is installed, please carefully observe the following mounting procedures.

For proper performance, the transducer's mounting location must be chosen carefully. The transducer must be mounted in a location that is free from turbulence and air bubbles created by movement of the boat through water. Air bubbles greatly reduce the efficiency of the transducer. It is also strongly

recommended, for transom mounted transducers, the transducer be mounted in an area with the least amount of disturbed water passing under the transom. To determine the best mounting location, operate the boat at several different speeds and observe the water as it passes under the transom. Turbulence caused by the trim tabs, motor mounting, the keel, and lifting strakes.

Transom Mounting

Transducers designed for transom mounting give good performance when installed on most boat types, however, the transom transducer style should not be used on boats with inboard engines. For boats with poor water flow under the transom or on in-boards, consider selecting a through-hull transducer. HAIYANG offers many styles of transducers.

Determine the transducer mounting place by referring to the steps mentioned above. For best result, the transducer face should be level. Also, the transducer face should be mounted from flush to 1/4 inch below the under surface of the hull. The trailing edge of the housing should be about 1/8 inch below the leading edge. The adjustable stainless steel bracket is designed to allow fine tuning of the transducer position once the installation is completed.

Route the transducer cable as far as possible away from the boat's power cables, engine controls and other electrical cables. Do not route transducer cables near your VHF radio power or antenna cables. Assemble the transducer using the brackets and hardware supplied. Actual fastening to the hull of your boat depends upon the hull construction and hull material. If additional items must be used, be sure to obtain marine stainless steel hardware. Also, be sure to use marine waterproof sealant on all through hull fastenings. Do not use silicone RTV, since it does not have long life underwater.

Transom Transducer Maintenance

If your boat is kept in the water, sea growth can quickly accumulate on the face of the transducer. In just two weeks in some locations, your Sonar performance could be affected. It is recommended that at least the face of the transducer be coated with special transducer antifouling paint. Alternatively, the entire transducer can be painted and is easier to keep clean. **Do not use regular antifouling paint.** All copper base antifouling paints are unsatisfactory and will prevent normal operation. If fouling does occur, use a stiff brush or putty knife to remove growth. Be careful not to gouge the face of the Transducer. Occasional wet sanding of the transducer face is permissible with #220 grit or finer wet or

dry paper.

Do not use solvents to clean your transducer. The high impact polycarbonate housing is very durable but solvents will destroy it. Keep acetone, MEK, lacquer thinner and most other thinner/solvents away from your transducer.

Through-hull Transducers

Through-hull transducers are recommended for in-boards and other vessels with disturbed water flow under the transom. HAIYANG offers several models of bronze through-hull transducers. To enjoy the full capability of your Sonar, select a dual frequency model with temperature sensor. Sturdy bronze construction assures a secure installation and provides a strong base for fairing blocks, if needed, to compensate for hull shape.

The transducer should be installed in a location free of bubbles and away from disturbed water flow. Smooth water flow around the transducer and along its surface is very important for consistent operation.

Areas in the center third of water line length at cruising speed are usually satisfactory.

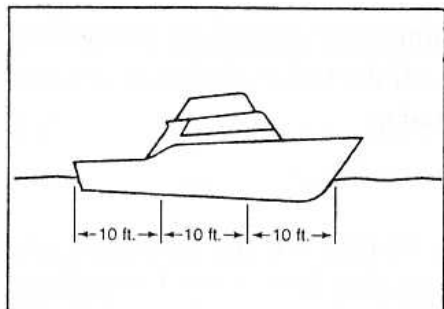
Locations forward of the engine and in a flat area near the center line of the boat are preferred. Do not install the transducer behind water intakes, other through-hull fittings or irregularities in the hull.

Dead-rise

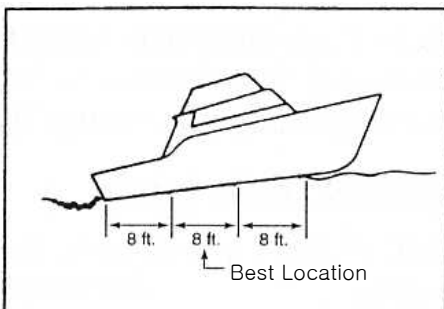
On hulls with dead-rise of 5 or less, the transducer may be mounted directly through the hull. Where dead-rise is greater than 5, fairing blocks must be used to orient the face of the transducer parallel with the water surface.

In this case, no fairing block is necessary. To prevent leakage, any gaps between the stem threads and holes drilled in the hull should be completely filled with waterproof marine sealant.

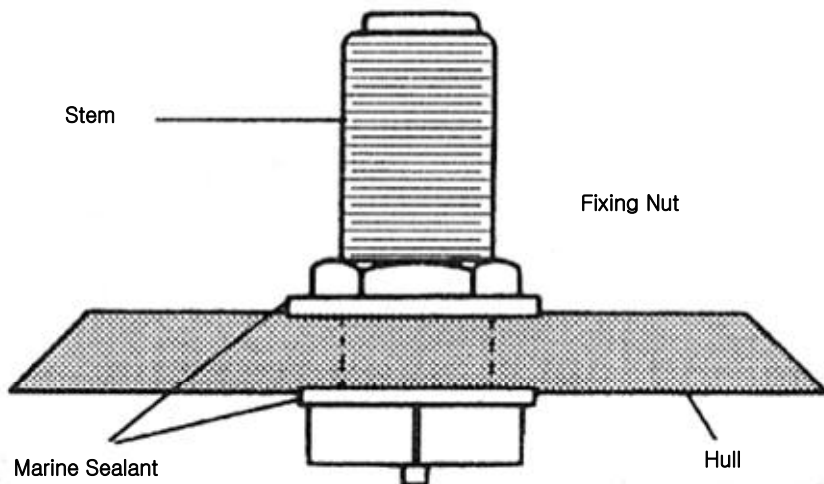
Tighten the stem nuts securely but do not over tighten. In this situation, install fairing blocks both inside and outside the hull. Install the transducer with the face aiming straight down. To prevent leakage, any gaps between the stem threads and holes drilled in the hull should be completely filled with waterproof marine sealant. Tighten the stem nuts securely but do not over tighten.



Water Line Drifting



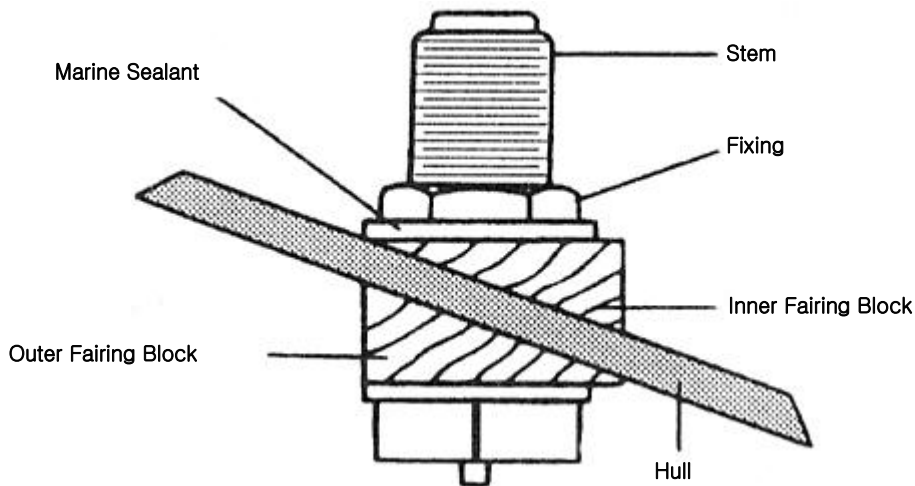
Water Line Cruising

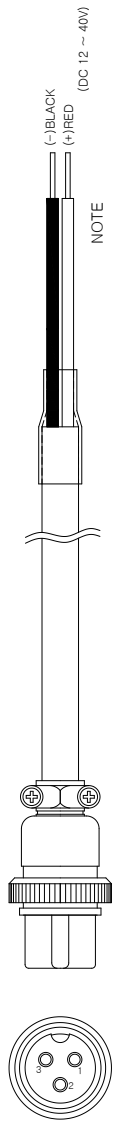
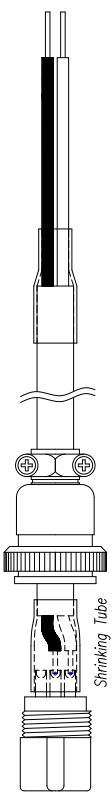
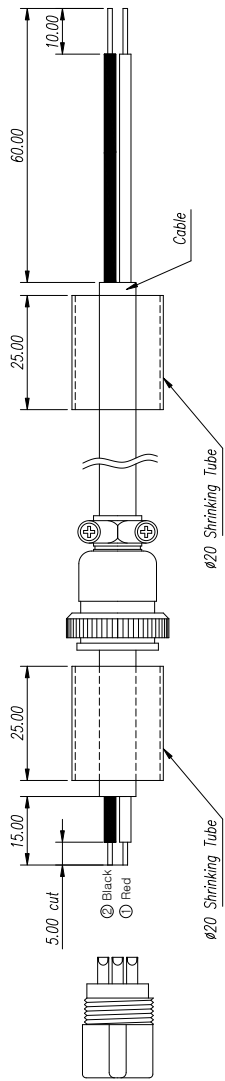


Through-hull Transducer Maintenance

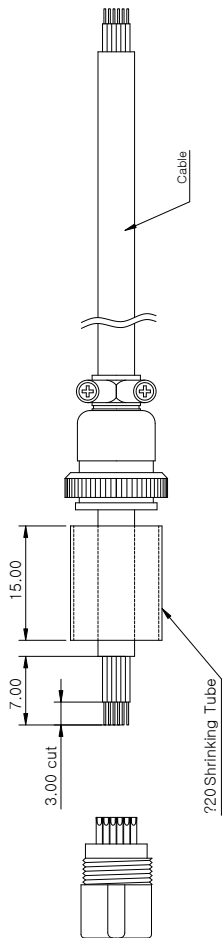
If your boat is kept in the water, performance of your digital fishfinder will be adversely affected by accumulations of sea growth on the face of the transducer. To prevent sea growth effects, the face of the transducer may be coated with antifouling paint specially formulated for transducers. Do not use

regular antifouling paint on the face of the transducer. The bronze housing may be coated with any antifouling paint. If fairing blocks are used, especially if made of wood, complete sealing prior to painting is important.

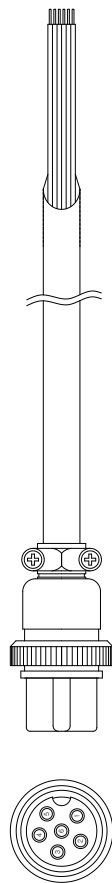
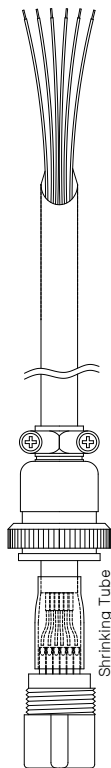




MATERIAL		DESCRIPTION	
SCALE	MODEL	Smart Series	
PERN	CHK. BY	DES. BY	DATE
Y.S.KIM	Y.S.KIM	Y.S.KIM	05.07.2012
		DWG. NO.	Power Cable
			S7-DC10303M
		HAIYANO OLIX CO.,LTD	

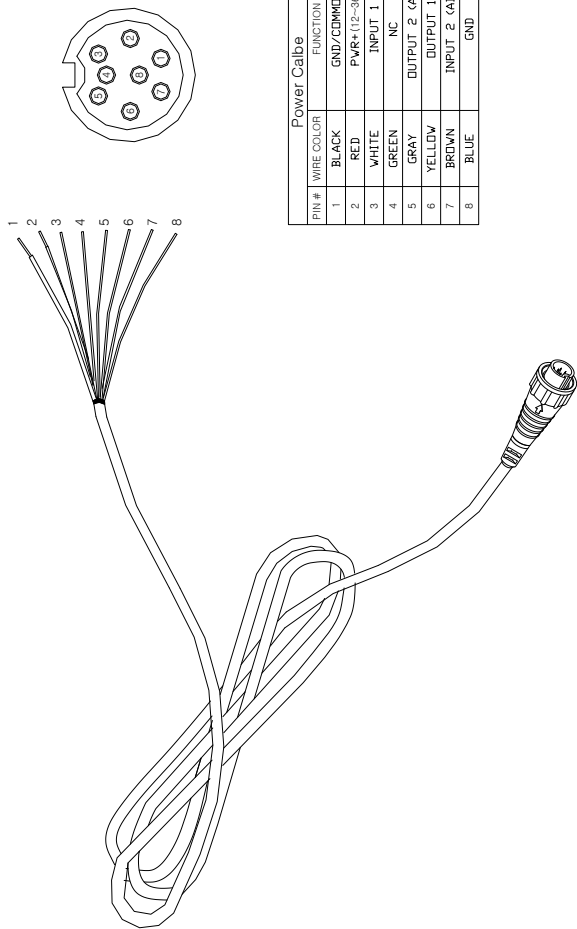


Data Cable	
Pin #	FUNCTION
1	GND
2	TX+
3	GND
4	RX+
5	RX-
6	NC



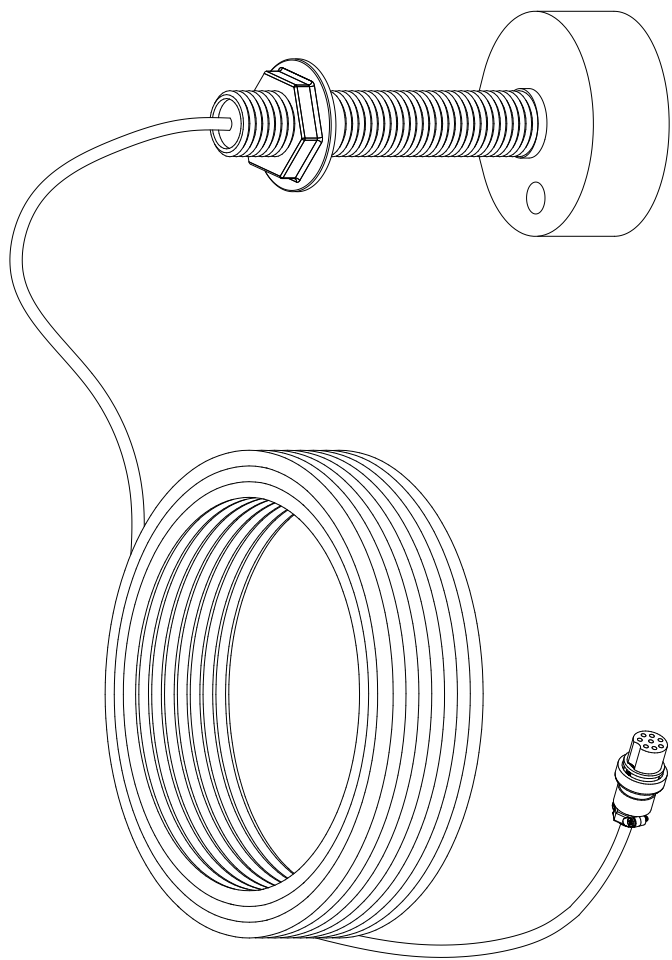
16-06P
To HD-70 series (J2/J3)

MATERIAL		DESCRIPTION	
SCALE	NONE	MODEL	Smart Sereils
PERIN	Y.S.KIM	CHK. BY	Y.S.KIM
		DES. BY	Y.S.KIM
		DRA. BY	Y.S.KIM
		DATE	05.07.2012
		DWG. NO.	S7-DC10103M
		HAIYANO OLUX CO.,LTD	



Power Cable	
PIN #	WIRE COLOR
1	BLACK
2	RED
3	WHITE
4	GREEN
5	GRAY
6	YELLOW
7	BROWN
8	BLUE
FUNCTION	
	GND/COMMON
	PWR+ (12~36)
	INPUT 1
	NC
	OUTPUT 2 (AIS)
	OUTPUT 1
	INPUT 2 (AIS)
	GND

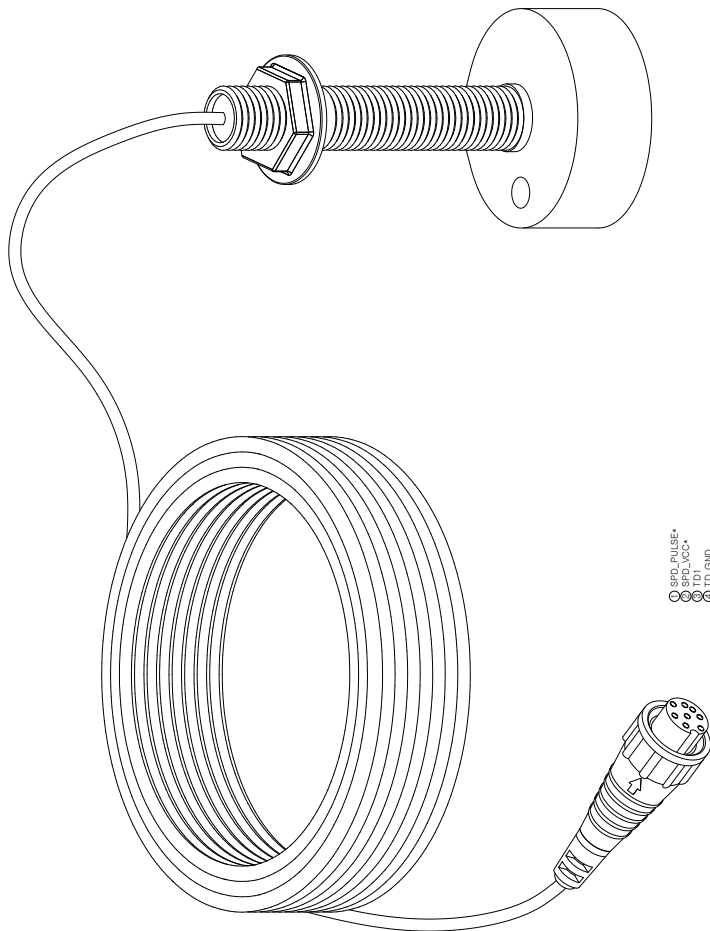
MATERIAL		DESCRIPTION	
SCALE	1/2	MODEL	Smart Series
PERN	Kim Y.S.	CHK. BY	Kim Y.S.
		DES. BY	Park D.J.
		DATE	2012.05.07
		Power Cable & I/O	
		DWG. NO.	
		S7-DC10301P	
		HAIYANG OLIX CO.,LTD	



- ① SPD_PULSE+
- ② SPD_VCC+
- ③ V+
- ④ TD_GND
- ⑤ TD2
- ⑥ TEMP_VCC
- ⑦ TEMP_PULSE+
- ⑧ SPD_GND+
- */ mark option

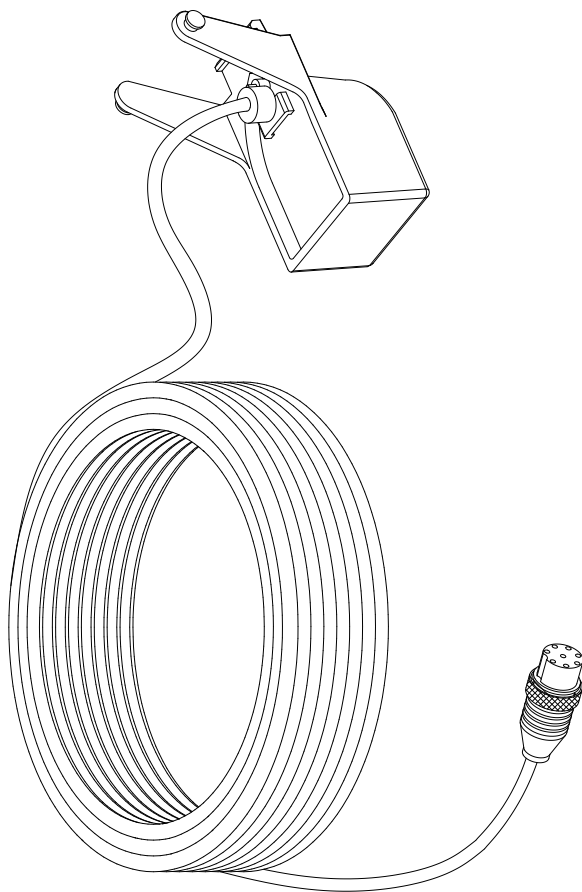
MATERIAL		DESCRIPTION	
MODEL		Transducer	
SCALE		DWG. NO.	
NONE		TDS502M	
Smart Series			
PERN	CHK. BY	DES. BY	DATE
Kim Y. S.	Kim Y. S.	Kim Y. S.	2014.02.05.
HAIYANO OLIX CO., LTD			

HAIYANG OILIX CO.,LTD



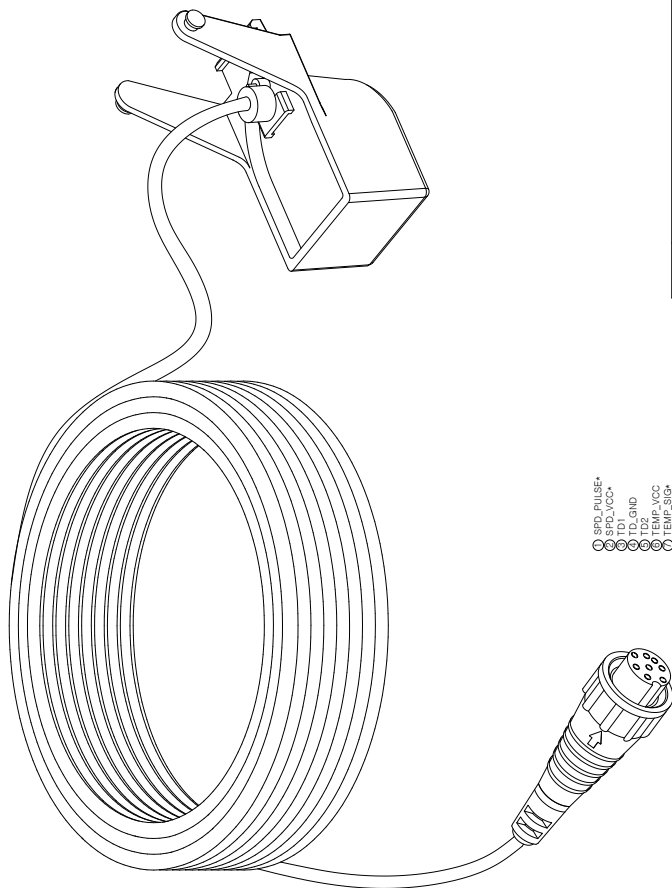
○ SPD_PULSE*
 ○ TEMP_VCC*
 ○ TD_I*
 ○ TD_GND
 ○ TEMP_VCC
 ○ TEMP_SIG
 ○ SPD_GND*
 *, mark option

	MATERIAL		DESCRIPTION	
	SCALE	MODEL	Smart Series	Transducer
NONE				
PERN	CHK. BY	DES. BY	DRA. BY	DWG. NO.
Kim Y.S.	Kim Y.S.	Kim Y.S.	Souk.J.E.	TDSS502P
			DATE	
			201.02.05	HAIVANG CO.,LTD



- ① SFD_PULSE*
- ② SFD_VCC*
- ③ TDI
- ④ TDO
- ⑤ GND
- ⑥ TEMP_VCC
- ⑦ TEMP_VDD
- ⑧ SFD_SIO*
- * mark option

MATERIAL		DESCRIPTION	
SCALE	MODEL	P23_Transduser	
NONE		DWG. NO.	
Smart Series		TDP23901M	
PER/N	CHK. BY	DES. BY	DATE
Kim Y.S.	Kim Y.S.	Kim Y.S.	03.20.2014
HAUYANG OLIX CO.,LTD			



- ① SPD_PULSE*
- ② SPD_VCC*
- ③ TD
- ④ GND
- ⑤ T22
- ⑥ TEMP_VCC
- ⑦ TEMP_SSP
- ⑧ SPD_GND

* mark: option

		MATERIAL		Smart series		DESCRIPTION	
SCALE NONE		MODEL		DATE		P23_Transducer	
				PERN Kim Y.S.		DWG. NO. TDP23901P	
				CHK. BY Kim Y.S.		2014.03.20	
				DES. BY Souk-J.E.			
						HAIFYANG OULIX CO.,LTD	

Declaration of Warranty

Declares of under his sole responsibility that the produced Plotter with Fish Finder manufactured by

HAIYANG OLIX Co., LTD.

103-903 BucheonTechnopark 364 Samcheongdong

Ojeonggu Bucheon Gyeonggi, Korea

TEL +82 32 4712 FAX +82 32 327 4713

Web-site: <http://www.haiyang.co.kr>

Guarantee for One Year

Haiyang Electronic Equipment Co., LTD warrants the produced equipment, Equipment for One (1) year for guarantee as bellows.

1. Main Unit: One (1) year guarantee after a user purchases the product within one (1) year
2. Accessories: One (1) year for consumed accessories (including TD) after a user purchases them.

Service in Charge

1. Over the term from the guarantee
2. Damage from user's carelessness (inundation, impact)
3. Intentional dismantle, modification or remodeling of the unit.
4. Unauthorized parts, components or accessories are used in the unit.
5. Installed or maintained by unauthorized person
6. Consumed parts and components (batteries, LCD, etc) run out.
7. Faults or damages from other reasons.

Model		Serial No.	
Date of Purchase		Customer Name	
Name of Dealer		Price	

※ Caution – Keep this warranty card with the receipt for fast and good service