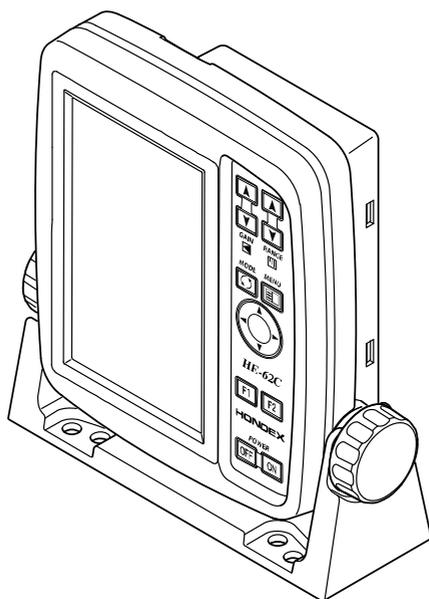


OPERATION MANUAL

(Including Guidelines for Safe Operation)

HE-62C

COLOR LCD SOUNDER



WARNING

To enjoy safe operation, read and fully understand the contents of this Operation Manual before attempting to operate the equipment.



WARNING

Store this Operation Manual in a safe and convenient place where it can be referred to easily when needed.



HONDA ELECTRONICS CO.,LTD.

INTRODUCTION

We thank you very much for your purchasing our product HE-62C.

- Please be sure to read this operation manual carefully and understand what it describes before you operate this unit in order to keep your safety.
- After you read this manual, please keep it at the place where you will not lose or break and so as to read soon when it necessary.
- In case that you resell or transfer this unit, please give it to the new owner.
- We will not be responsible for product liability (PL) law relating to human or physical property resulted from operation which is not described on this manual or wrong operation.

DEFINITION OF SYMBOL MARK OF [CAUTION ON SAFETY



DANGER : Incur the accident resulting in the death or serious wound unless you keep the descriptions.



WARNING : Be in danger of incurring the accident resulting in the death or serious wound unless you keep the descriptions.



CAUTION : Be in danger or incurring the slight wound to human or damage to other physical property unless you keep the descriptions.



: Indicates “PROHIBITION” which should not be done.



: Indicates “COMPULSION” which should be done.

- Do not reproduce a part or all of contents described on this manual without our approval.
- Please understand that the unit may differ from contents described on this manual partially due to change of specifications and so on.
- If you have questions, errors or omission on this manual, may we trouble you to inform us?

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1. Caution on safety (Please make sure to read.)

This section explains the important caution in order to prevent the person who will use our product or other persons from human damage or damage to their property.

1-1. Handling of unit

DANGER

-  ● Do not take off the cover.
It causes to electric shock.
Please ask shop for repair.

WARNING

-  ● Do not install the unit simply.
It causes to accident like human damage.
-  ● Do not use the information displayed on the screen of unit for navigation directly. It causes to marine disaster.
※Please be sure to use the official marine charts for navigation judgment.
-  ● Do not operate the unit when you operate the boat.
It causes to marine disaster.
※Please be sure to operate it after due confirming the surrounding safely.
-  ● Do not put the power on in the presence of flammable materials.
It causes to firing.
-  ● Do not use the power supply besides the specified ones.
It causes to heating or firing.
-  ● Do not disassemble or modify the unit.
It causes to firing, electric shock or injuring.
-  ● Please take off power supply cable or batteries when it is out of order, smoking or igniting. If you continue to use, it causes to firing or electric shock. Please consult with shop.

 CAUTION

-  ●Do not install where it becomes high temperature. It causes to igniting, injuring or electric shock due to inside heating.

1-2. Handling of cables

 WARNING

-  ●Please use specified power supply cable, batteries or fuse.
It causes to heating or firing.
-  ●Do not leave the power plug as it is while it is pulled out of the unit.
If the plug gets wet, it causes to heating or firing due to short circuited.
-  ●Be sure to wire in order to prevent the cables from interfering to operate boat. If feet of crews or operating equipments are caught in cables, it causes to the accident.
※Do not put the heavy objects on cables or do not bend cables excessively.
-  ●Do not disassemble or modify cables.
It causes to firing, electric shock or injuring.
-  ●Do not use the damaged cables.
It causes to firing or electric shock.

 CAUTION

-  ●Do not pull the cable when you pull out the plug.
It causes to firing or electric shock because the cable is broken.
※When you pull out the plug, be sure to have it in your hand and pull it.

1-3. Handling of transducer and water temperature sensor

 DANGER

-  ●Work on the board is too unstable and risky.
Installation and maintenance of transducer or water temperature sensor should be done after you land and fix the boat.

⚠ WARNING

-  Installation inside the hull with adhesive should be done while you ventilate well inside the boat.
Volatile gas from solvent or etc. causes to toxic symptoms.
-  When you work using electric tools, please keep your hands dry.
It causes to electric shock.
-  When you pull out or insert the plug of transducer, please be sure to turn the power switch off.

1-4. TFT LCD Panel

- As TFT LCD panel is made with high precision technology, over 99% is effective pixel but less than 0.1% pixel is lacked or there exists pixel light always. It is not trouble. Please understand it in advance.

1-5. Caution on operation

Put the power switch off when you start to run engine

When the engine starts to run, voltage of battery varies heavily. It may affect to the unit. Put the power switch off when you start to run the engine.

Power supply 11-14V

Please operate the unit at 11-14VDC of power supply voltage.

Prohibited organic solution

Do not clean the unit with organic solution like thinner, alcohol or etc. as some parts of unit and panel are coated or made by plastic. In case it is too dirty, soak the soft cloth in synthetic detergent and clean with it after wringing well.

Careful carrying and handling

Do not apply the strong shock on LCD panel or unit.

Do not put the object on LCD panel.

LCD unit inside the main unit is made by glass. When some shock is applied on LCD panel or unit, it may be broken.

Avoid high temp. place

When temperature of unit exceeds 70°C, it causes to faulty. Please be more careful to operate or store it under direct sun ray in the mid-summer and use it carefully where it is in the shade as possible. Please avoid to keep it in the trunk of car.

If the unit becomes high temperature, it's brightness decreases automatically to protect the LCD. It is not trouble.

Ban for the use of lubricant/anti-rust

Do NOT use any lubricant or anti-rust materials which cause the damage onto chassis and gasket.

Do NOT plug in/out the transducer connector

The unit may be damaged by connect/disconnect the transducer connector while the power is ON.

2. General Information of fish finder

1. Theory of fish finder

Theory of fish finder is same as echo.

Ultrasonic pulses transmitted from the transducer into the water are reflected from fish school or the sea bottom and then they are received by transducer.

Fish finder converts round-trip time between the time and the ultrasonic wave is transmitted and the time the reflected wave is received into distance and measures the depth. It display of fish school, the outline of bottom or nature of bottom on the screen in different colors. Each time when image is sent by one line to the left, ultrasonic wave is transmitted right edge of screen in different colors.

2. How to distinguish the fish school

Importance is comparison between display of fish school and catch

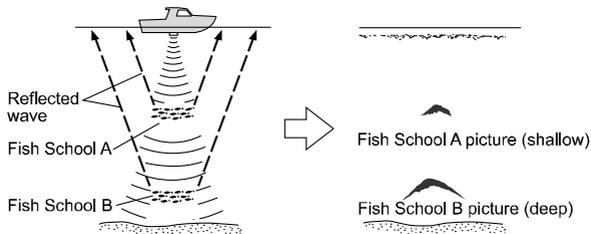
It is possible to distinguish sort by display of fish school to some extent. But even if fish sort is same. Its form making school is different according to difference of fishing ground and difference of time (day and night, four seasons, variation of current).

The important thing to distinguish the fish sort is to know the sort according to their fishing ground or fishing period and to find the useful point on the display by comparing between display of fish school and actual catch.

3. How to distinguish the fish volume

Fish volume can be distinguished by density and size of fish school

As the harder density the transmitted wave is reflected strongly, you can distinguish the density of fish school according to the strength of reflected echo (that is, different color). Normally we tend to think the larger fish school on the screen the most fish volume. But when fish school are located at the shallow depth and the deep depth, fish school at the deep depth is displayed bigger than at the shallow depth. Because the transmitted wave spreads wider as it goes shallower. As this result, the deeper depth becomes the wider the width of fish school becomes on the screen. The important thing to distinguish the fish volume is to judge it according to size of fish school and the strength of reflected echo (color) while you keep “the deeper fish school stays the bigger picture is displayed” in your mind.



3. Features of unit

- ★ Wide view-angle and bright display, small size and high resolution TFT LCD is applied. (272×480 pixel)
- ★ Integrated battery box
- ★ Effective for night work
“Lantern mode” using as lighting is incorporated.
- ★ Auto function adjusts sensitivity and depth range automatically.
- ★ High speed soundings, Maximum approx. 3,000 times/minute
- ★ Useful fish mark and fish alarm
- ★ Glass bonding LCD monitor enables clearer visibility for outdoor use.

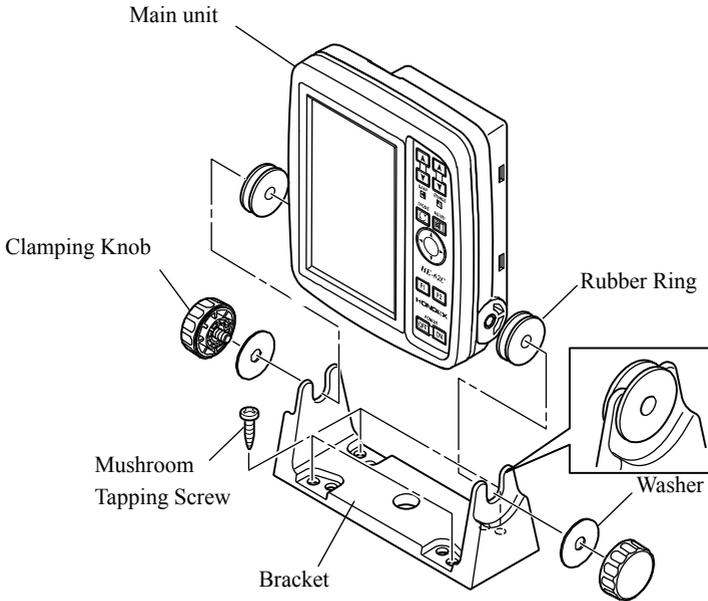
4. Installation

4-1. Installation of unit

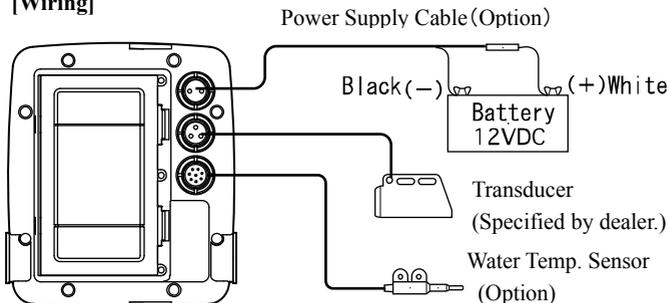
⚠ WARNING

- Do not install simply.
It causes to accident like injuring.
- ※ Be sure to install correctly according to below procedure.

Install the display unit with front protect cover referring to below figure.



[Wiring]



4-2. Installation of transducer

DANGER



- Work on the board is unstable and risky
Installation and maintenance of transducer or water temperature sensor should be done after you land and fix the boat.

WARNING



- Installation inside the hull with adhesive should be done while you ventilate well inside the boat.
Volatile gas from solvent or etc. causes to toxic symptoms.



- When you work using electric tools, please keep your hands dry.
It causes to electric shock.

4-2-1. Where to install the transducer

Performance of fish finder depends on the position where transducer is installed. If the installation of transducer is improper, it's sensitivity decreases. In the worst case, reflected echo from sea bottom or fish school does not appear at all.

Please take care of below points and decide proper position to install.

1) Find position where there is no air bubble or turbulence during voyage.

- Ultrasonic wave transmitted from transducer is obstructed by air bubble and it results to worse display of fish school and sea bottom.
- Please select the place where transducer is kept in sea water when the boat is sailing or is pitching or rolling.

[MEMO] After other boats passed, sea bottom or fish school is hardly displayed because air bubble appears.

2) Select the place where there is less interference noise.

Please separate transducer as far as possible from engine, outboard motor, screw or generator which makes noise. Noise may appear on the screen of fish finder or auto function settings or depth digit readout can not work normally.

Also, as noise sometimes enter into transducer cable, please take care not to bundle with other cables or pass through near source objects of noise.

3) Do not give the shock on transducer.

Sensor made by ceramic is put in transducer. If you hit or drop the transducer, ceramic will be broken or taken off from transmitted side of transducer. As this result, sensitivity will be decreased heavily and the unit can not work normally.

4-2-2. Method to install the transducer

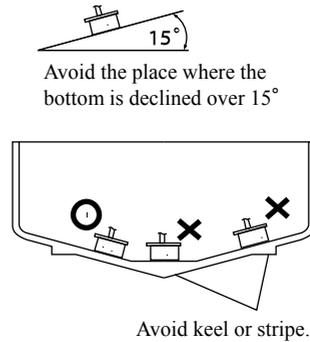
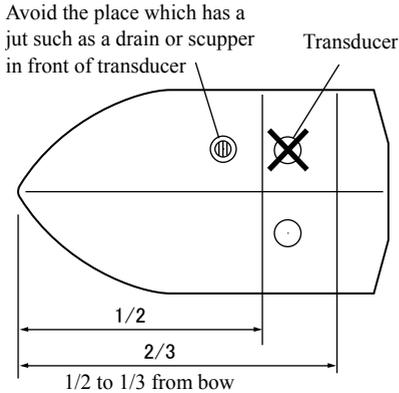
Below method are recommended. Please refer to each section for details.

4-2-3. Inside hull installation

4-2-4. Installation in the fish reserve

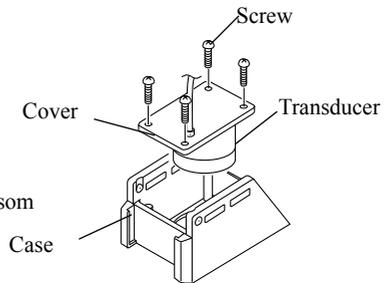
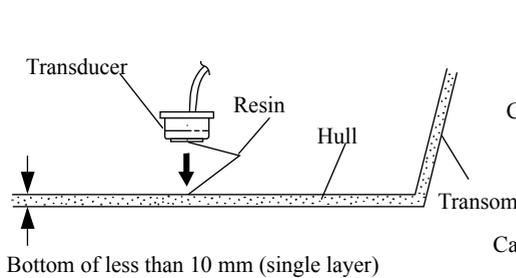
4-2-5. Installation on the transom

4-2-6. Installation on transducer (Thru-Hull)



4-2-3. Inside hull installation

This method is easy to install. But when ultrasonic wave goes through bottom, it is losing power. Thus, it is not suited for detecting the deep water.



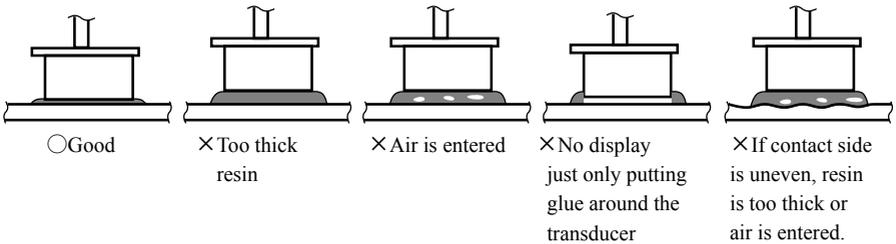
Remove the transducer from case by unscrewing 4 screws.

※It is effective only for bottom is single layer of FRP boat (thickness: less than 10mm). (It can not be used for sandwich structure though single layer.)

- (1) Before you glue the transducer, at the place where it is 2-10m deep moisten with ample water not to enter the air between transducer and hull, and press the transducer to the hull slightly. Then you find the best location to glue the transducer which gives you the best sensitivity.

(In this case, set auto function to “Manual”, set sensitivity to nearly center of bar with Gain key and the depth to 20m with Range key. It is good when the bottom is indicated in the strongest color (red).

- (2) Polish the surface of contact (bottom of transducer and inside hull) with sand paper like No. 240 and drain all oil, water and stain with alcohol and etcetera.
- (3) Put the silicon bond on the surface of contact (bottom of transducer and inside hull) and press the transducer firmly to the hull and gently twist to remove any air bubbles and glue it.
- (4) Please check the display before resin is set. (same as above (1).)
If it is not displayed normally, it is considered glue is poor. Take off the transducer inserting the knife or etcetera between transducer and hull plate and then glue it correctly again. (Please take care not to hurt the transmitted side of transducer.)
- (5) Please fix the transducer for example, with weight not to slip contact until resin is thickened. (It takes approx. 24 hours to thicken the silicon resin.)



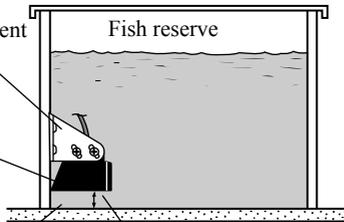
4-2-4. Installation in the fish reserve

Transom Bracket
(Standard Component
of TD03)

Transducer

Single layer less
than 10mm

Lessen clearance as much as possible

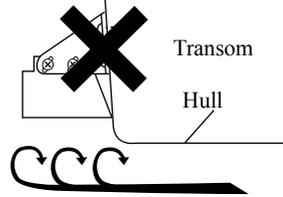
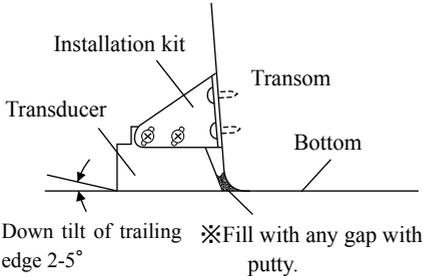
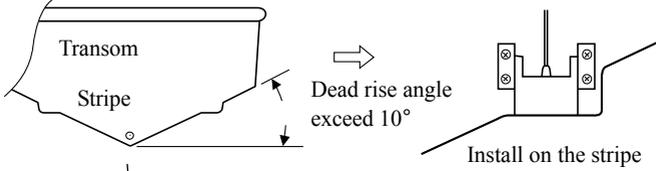
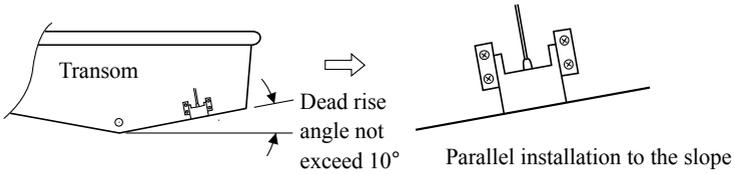


- (1) Drain the water from reserve.
- (2) In case you glue the transducer on the bottom of fish reserve, please refer to “4.2.3. Inside hull installation”.

Note 1) It is effective only for FRP or aluminum boat whose hull is single layer (less than 10mm).

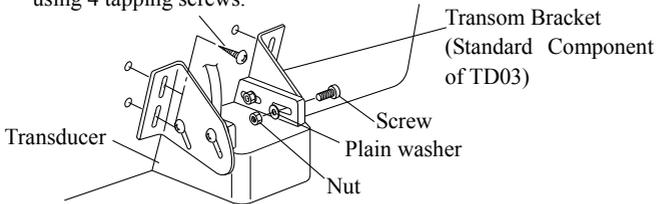
Note 2) Before gluing, put the transducer in fish reserve at the place where the depth is enough and find the best location which gives you the best sensitivity.

4-2-5. Installation on the transom



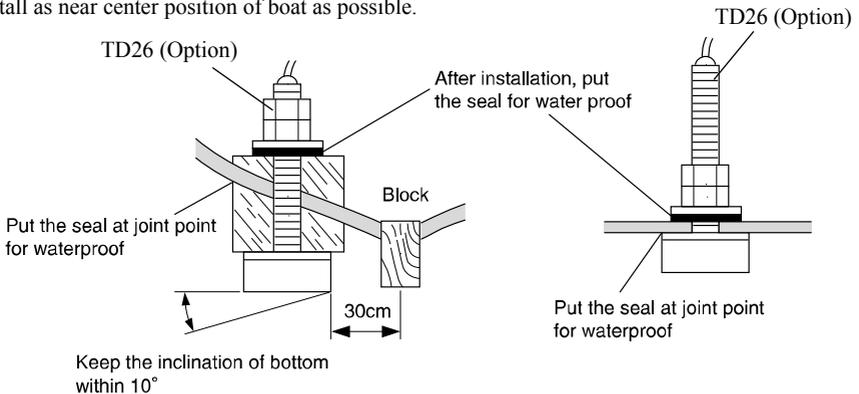
When you install the transducer above the hull of stern, air bubble attach transducer's surface easily and you can not get any echo at high speed.

Install to the boat by using 4 tapping screws.



4-2-6. Installation on transducer (Thru-Hull)

Install as near center position of boat as possible.



4-3. Installation of water temp. sensor (option)

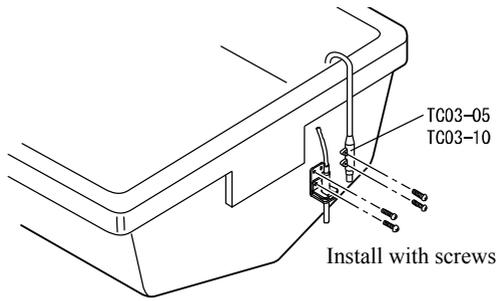
⚠ DANGER

- Work on the board is too unstable and risky.
Installation or maintenance of water temp. sensor should be done after you land and fix the boat.
- When you work using electric tools, please keep your hands dry.
It causes to electric shock.

※ Water temp. sensor is option.

【Installation of water temp. sensor】

Fix water temp. sensor unit (TC03-05, TC03-10) with 2 screws at the place where body of boat is always in water.

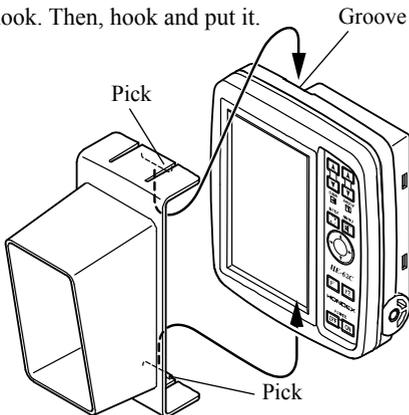


4-4. Putting the sun shield (option)

※ Sun shield is option.

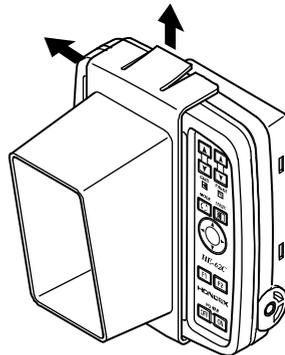
[Method to put]

Fit picks on top and bottom of sun shield to groove of display unit and hook. Then, hook and put it.



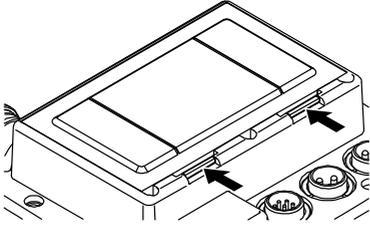
[Method to remove]

Slip sun shield toward arrow while you raise the pick on it's top.

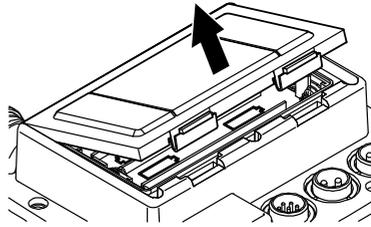


5. Putting the batteries

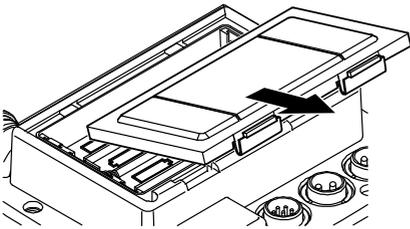
1) Open the battery cover on the rear side of unit and put the batteries.



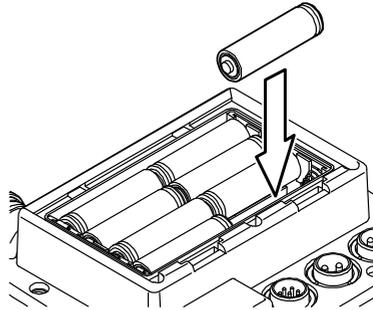
Release two locks pushing them.



Raise the battery cover.

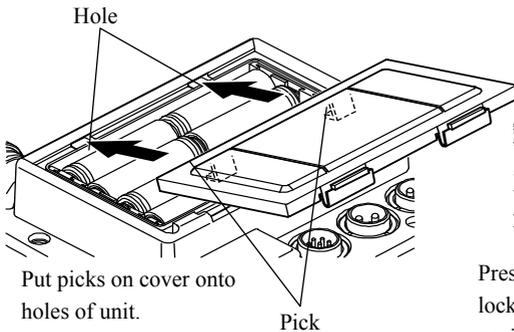


Pull the battery cover toward you and remove it.



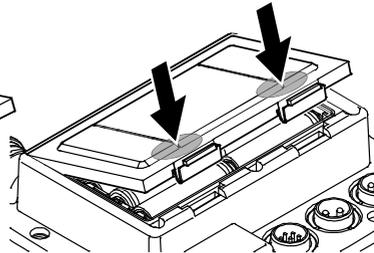
Put 8 pcs. size AA batteries with correct polarity.

2) After putting batteries, hook picks of battery cover with square holes of unit and fit the cover. Please confirm if two locks fit correctly.



Put picks on cover onto holes of unit.

Pick



Press two locks firmly until small sound to lock comes out and close the cover. Press positions indicated by arrows with fingers.

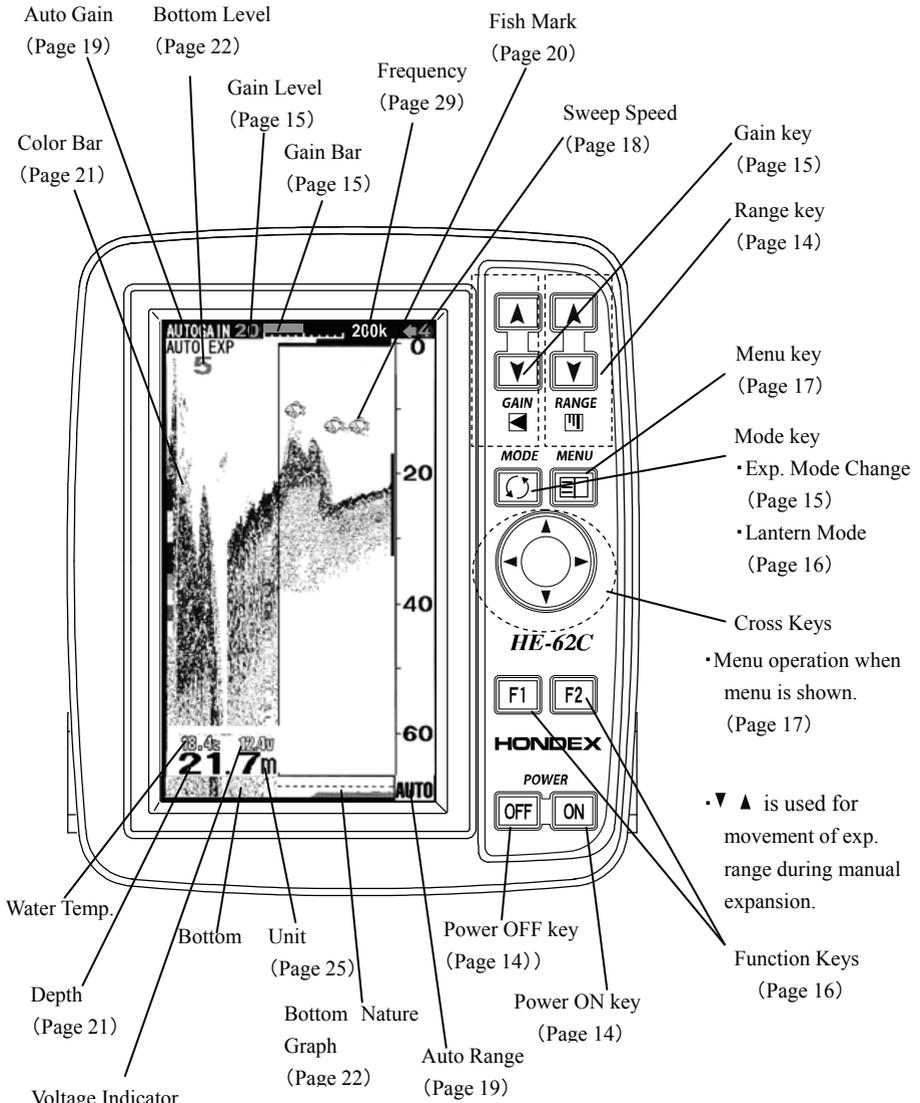
Note 1) Unless two locks fit correctly, water enters in.

Note 2) In case the unit is wet, wipe out water well and then put batteries. Especially when the cover is opened while around the cover gets wet, it causes to trouble that water enters in.

Note 3) Do NOT insert the batteries to wrong direction +/- which may lead to liquid leakage.

Note 4) The power may be shut off by vibration or shock when using the power from the batteries.

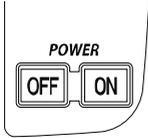
6. Operation keys and how to see the display



7. Operation of unit

7-1. Basic Operation

7-1-1. Power ON/OFF

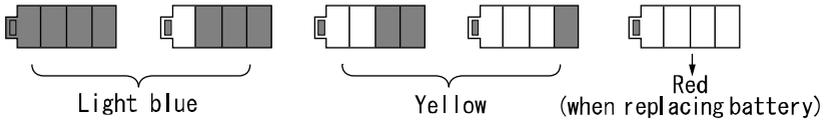


1 If you press **ON** key for a long time, sound like “pipo pipo pi” comes out and power is turned on.

2 If you press **OFF** key for a long time, power is turned off.

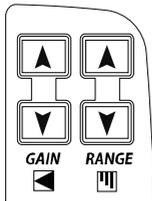
Note 1) When boat's battery is used, do not turn the starter motor while power of battery keeps ON.

Note 2) Battery indicator indicates remainder of battery. When remainder of battery decreases and voltage becomes lower, it indicates in red and battery rarely gets dead during operation. Please replace with new batteries.



7-1-2. To adjust the depth

You can adjust the depth manually. It adjusts the depth (display range) when you want.



1 Each time when you press **▲** key, depth (display range) decreases.

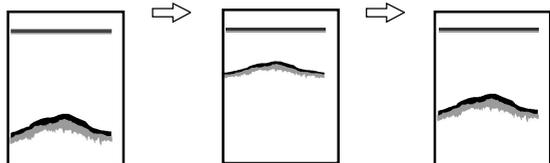
Each time when you press **▼** key, depth (display range) increases.

※ You can change the depth unit.(→25page)

Range			
m	Ft	Fa	Br
3m	10 ft	2 fa	2br
5m	15 ft	3 fa	3br
8m	20 ft	4 fa	5br
10m	30 ft	5 fa	8br
15m	50 ft	8 fa	10br
20m	80 ft	10 fa	15br
30m	100 ft	15 fa	20br
40m	125 ft	20 fa	25br
50m	150 ft	25 fa	30br
60m	200 ft	30 fa	40br
80m	250 ft	40 fa	50br
100m	300 ft	50 fa	60br
125m	400 ft	60 fa	70br
150m	500 ft	70 fa	80br
180m	600 ft	80 fa	100br
200m	700 ft	100 fa	125br
250m	800 ft	125 fa	150br
300m	900 ft	150 fa	180br

When you press **▼** key, depth increases.

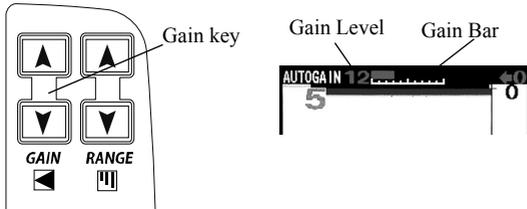
When you press **▲** key, depth decreases.



7-1-3. To adjust the sensitivity

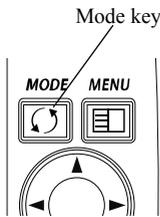
You can adjust the sensitivity manually. It adjusts sensitivity when you want.

- Each time when you press ▲ key, sensitivity increases and gain bar becomes long.
Each time when you press ▼ key, sensitivity decreases and gain bar becomes short.



7-1-4. To change the expansion mode

Expansion mode is changed (Bottom Lock Expansion → Auto Expansion → Manual Expansion) pressing  key.

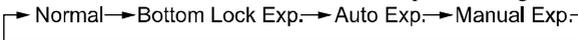


No indication(Normal) : Normal display

B/L (Bottom Lock Expansion) : Bottom contour is indicated as a straight line and expansion view of certain area from it's contour is shown.

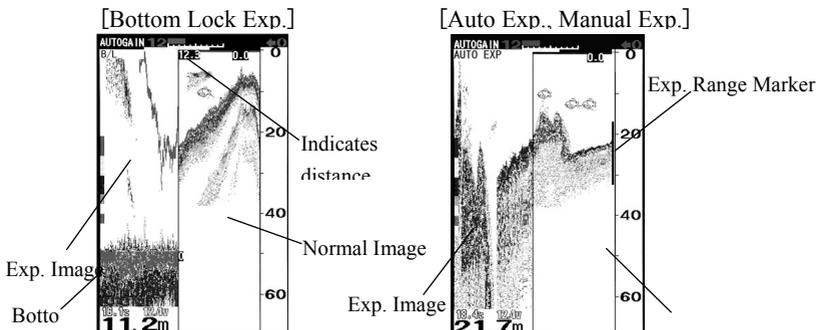
AUTO EXP (Auto Expansion) : The bottom is enlarged and shown. Even if the depth varies, the bottom is traced

MANU EXP (Manual Expansion) : Certain area is enlarged and shown. Move expansion range marker to the area which you want to expand by ▼ ▲ of cross key and set the expansion range.



Note) Sometimes each expansion mode does not work correctly in the following case;

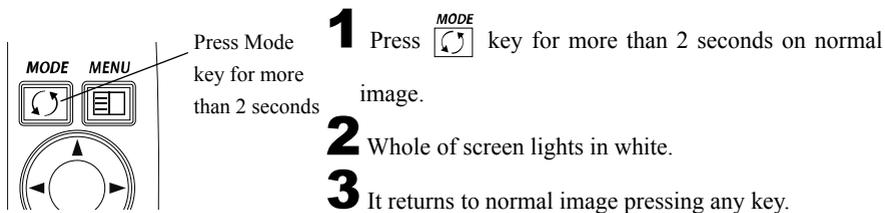
- When reflection is weak, bottom is not shown, there is sharp undulation on bottom.
- When boat is rolling or pitching, sea is billowing.



※ You can select 2 times, 4 times or 8 times expansion rate. (→page 22)

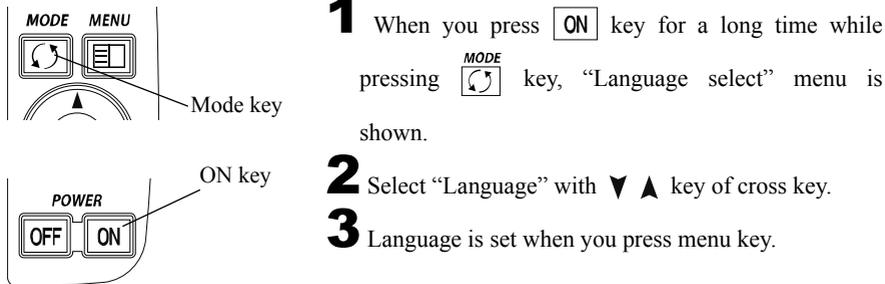
7-1-5. To use as lantern (Lantern mode)

You can use display (back light) as lighting.

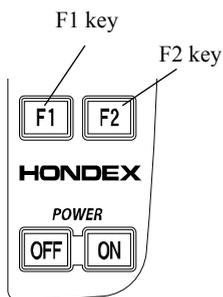


7-1-6. Language select

You can select language. Please proceed to select.



7-1-7. F1/F2 Function key



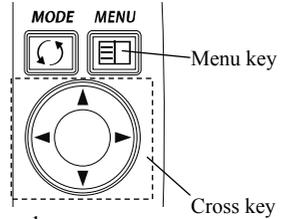
- Press  key to change frequency.
- Press  key to change the brightness of screen.

7-2. To set functions on menu

7-2-1. To use menu

You can change setting of menu item with  key and

▲ ▼ ◀ ▶ key.

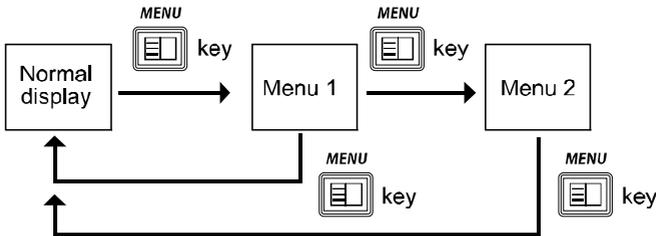


1 Menu 1 is shown pressing  key.

2 Menu is finished pressing  key while Menu 1 is pressed.

While Menu 1 is shown, menu 2 is shown pressing  key for more than 2 seconds.

Menu is finished pressing  key more.

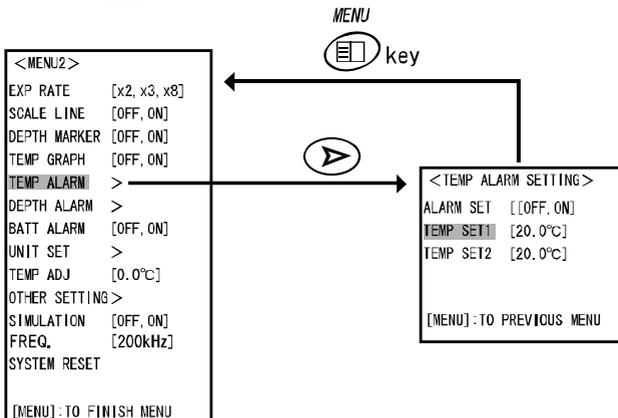


3 When menu 1 is shown, you select item with ▲ ▼ of cross key.

Selected item is indicated in yellow. Change the setting with ◀ ▶ key.

4 Any items with ">" , sub-menu appears by pressing ▶ key.

When you press  key while sub-menu is shown, it returns to previous menu.



7-2-2. MENU 1

Brightness

It adjusts brightness of screen.

LIGHT : D, ., ., ., ., B

1 Press  key. [MENU 1] is shown.
Select "LIGHT" with ▲ ▼ key.

2 Select brightness of screen with ◀ ▶ key.

Note 1) When you use the unit at Maximum brightness using internal batteries, operating time will be decreased about 10-20 percent even if new batteries are used.

Note 2) If the unit becomes high temperature, it's brightness decreases automatically to protect the LCD. It is not trouble.

Sweep Speed

On fish finder, the newest display (display just under the boat) is shown on the right edge of screen. At the same time, previous display moves leftward. Display of fish finder is formed by repeating such movement. Sweep speed is speed that display forwards. Display varies depending on it's setting. If you set the sweep speed to "Fast", you can recognize the undulated bottom easily. If you set it to "Slow", you can see long-time image.

[Relation of sounding rate and sweeping speed]

6 ranks of sweeping speed can be selected on menu. Ratio of sweeping speed vs. sounding rates at each set value is shown on below table. At S setting, sweeping speed is high, 3000 times/min. at maximum. It enables to show the bottom in details.

It sets sweeping speed.

SWEEP: STOP, 1, 2, 3, 4, S

Set Value	S.S./S.R.	Max. S.R.per miunute	
		AA Battery	Ext. Battery
S	1/1	3000	3000
4	1/1	1200	1700
3	1/2	1200	1700
2	1/4	1200	1700
1	1/8	1200	1700
STOP	--	--	--

1 Press  key. "MENU 1" is shown. Select "SWEEP" with ▲ ▼ of cross key.

2 Set Sweep Speed with ◀ ▶ key.



If Sweep Speed is set to "Freeze", fish finder' image displayed at that time remains. If you continue to operate boat, different information from actual situation is shown. It is very risky.

Note 1) Maximum sounding rates per minute extremely varies depending other settings which you are using (Depth setting, MENU setting and Expansion mode).

Note 2) At S setting, bottom nature distinction does not work even if it sets to ON.

Note 3) When you use the unit at S setting using internal batteries, operating time will be decreased about 10-20 percent even if new batteries are used.

Pixel Size

It changes size of one pixel (dot) which is shown.

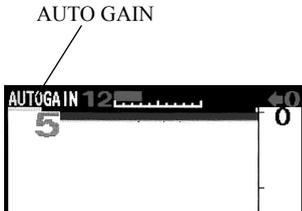
PIXEL SIZE : S, L

- 1 Press  key. [MENU 1] is shown.
Select "PIXEL SIZE" with ▲ ▼ of cross key.
- 2 Select size of pixel with ◀ ▶ key.
S : Fine image is shown.
L : Image is shown with emphasis.

Auto Gain

Sensitivity is automatically adjusted so that response from sea bottom is even.

AUTO GAIN: OFF, L, M, H

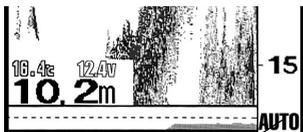


- 1 Press  key. [MENU 1] is shown.
Select "AUTO GAIN" with ▲ ▼ of cross key.
Select with ◀ ▶ key.
- 2 L: Sensitivity decreases. When you judge status of bottom, it helps you to confirm second or third reflection
M: Sensitivity medium. It helps you to watch the display as general fish finder.
H: Sensitivity increased. It helps you find the small fish.

AUTO RANGE

It sets ON/OFF of Auto Range (Automatic displayed range change).

AUTO RANGE : OFF ON



- 1 Press  key. "MENU 1" is shown. Select "AUTO RANGE" with ▲ ▼ of cross key.
- 2 Select with ◀ ▶ key.

Depth range (displayed range) is automatically changed so that sea bottom (the first reflection) is always shown. [AUTO] mark is shown on right lower of screen.

FISH ALARM

It catches the response from fish school (fish) and comes out alarm.

FISH ALARM : OFF ON

1 Press  key. "MENU 1" is shown. Select "FISH ALARM" with ▼ ▲ of cross key.

2 Select with ◀ ▶ key.

OFF : It cancels FISH ALARM.

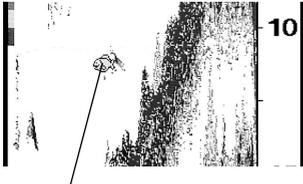
ON : It sets FISH ALARM.

Note) It may catch the response from other objects than fish, for example, floating matter, stain, plankton or etc.

FISH MARK

It selects indication or non-indication of fish mark.

FISH MARK : OFF ON



Fish Mark

1 Press  key. "MENU 1" is shown. Select "FISH MARK" with ▼ ▲ of cross key.

2 Select with ◀ ▶ key.

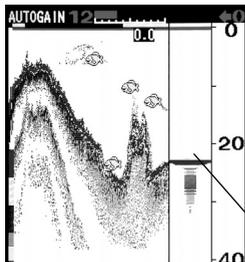
OFF : It does not indicate Fish Mark.

ON : It indicates Fish Mark.

A-MODE

It is displayed on the right side of screen and it's width changes according to strength of reflected signal. Strong signal is indicated widely and weak signal is indicated narrowly.

As you can know the strength of signal at a glance, it is easy to recognize the fish school or bottom. A MODE: OFF ON



A-Mode

1 Press  key. "MENU 1" is shown. Select "A MODE" with ▼ ▲ of cross key.

2 Select with ◀ ▶ key.

OFF : It does not indicate A-Mode.

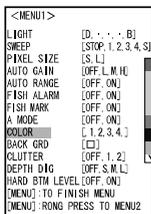
ON : It indicates A-Mode.

Color Configuration

Reflected signal of sound wave is converted into 11 ranks of digital signal according to the strength of response. Color configuration is 10 ranks of color except back ground color are set.

As image of fish finder is displayed in color with this “Color Configuration”, you can know the strength of response with displayed color. As display of response varies by changing color configuration, it enables to display defined color specially.

COLOR : 1, 2, 3, 4



Color Bar

Strong

Response

Weak

Background Color

1 Press  key. “MENU 1” is shown. Select “COLOR” with ▼ ▲ of cross key.

2 Select with ◀ ▶ key.

Background Color

Background color of fish finder is selected among three colors according to your taste.

BACK GRD : (White) (Black) (Blue)

1 Press  key. “MENU 1” is shown. Select “BACK GRD” with ▼ ▲ of cross key.

2 Select with ◀ ▶ key.

Clutter

Sometimes spots appear on whole screen due to stain in water. It results in making difficulty see the display. This function deletes unnecessary spots and you can see the display clearly. CLUTTER : OFF,1, 2

1 Press  key. “MENU 1” is shown. Select “CLUTTER” with ▼ ▲ of cross key.

2 Select with ◀ ▶ key.

OFF :It cancels Clutter function.

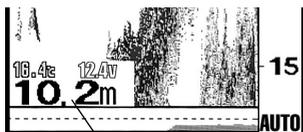
1 :It effects Clutter function strongly.

2 :It effects Clutter function weakly.

Depth Digit Readout

It selects size of depth digital readout.

DEPTH DIG : OFF, S, M, L



Depth

1 Press  key. “MENU 1” is shown. Select “DEPTH DIG” with ▼ ▲ of cross key.

2 Select with ◀ ▶ key

OFF : It does not indicate the depth digit.

S : Depth is indicated with small letter.

M : Depth is indicated with medium size of letter.

L : Depth is indicated with large letter.

Bottom Nature Distinction

Besides strength of second reflection is indicated in digits 0 – 20, it's graph is shown on the lower of fish finder image. Bigger it's value the stronger strength of second reflection. It is considered as Hard Bottom. You can also recognize the variation of bottom status roughly by graph indication. This function activates if second reflection is not shown on the image.

HARD BTM LEVEL : OFF ON



Bottom Nature Level

1 Press  key. "MENU 1" is shown. Select "HARD BTM LEVEL" with ▼ ▲ of cross key.

2 Select with ◀ ▶ key
OFF :It does not indicate bottom nature graph and bottom nature level.

ON :It indicates bottom nature graph and bottom nature level.



Bottom Nature Graph.

It links with image of fish finder and continues from right to left.

Note 1) At the same place, the higher the sensitivity setting the bigger digit.

Note 2) At the places where there is sharp undulation or tetra pod is sunk, depth may be indicated in error. In such place, this function is not operated normally.

Note 3) In case sensitivity is set to Low or second reflection is not received at deep water, second reflection level is indicated as "0".

Note 4) It does not activate when Sweep Speed is set to "S".

7-2-3 MENU 2

Expansion Rate

It sets expansion rate on expanded display.

EXP RATE : x2, x4, x8

1 Press  key. "MENU 1" is shown.

Press  key for more than 2 seconds. "MENU 2" is shown.

Select "EXP RATE" with ▼ ▲ of cross key.

2 Select with ◀ ▶ key.

×2 : It indicates two times expanded display.

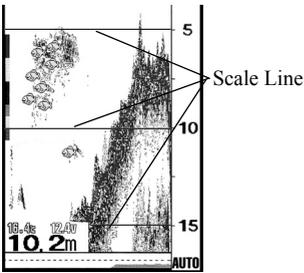
×4 : It indicates four times expanded display.

×8 : It indicates eight times expanded display.

Scale Line

Horizontal lines are shown at the position of depth scale on the screen.

SCALE LINE : OFF ON



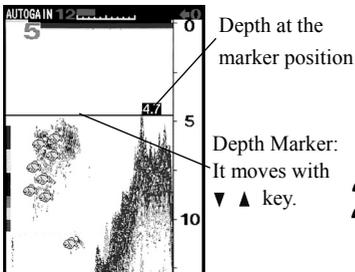
- 1 Press  key. "MENU 1" is shown.
Press  key for more than 2 seconds. "MENU 2" is shown. Select "SCALE LINE" with ▼ ▲ of cross key.

- 2 Select with ◀ ▶ key.
OFF : It does not indicate SCALE LINE.
ON : It indicates SCALE LINE.

Depth Marker

It selects indication or non-indication of depth marker.

DEPTH MARKER : OFF ON



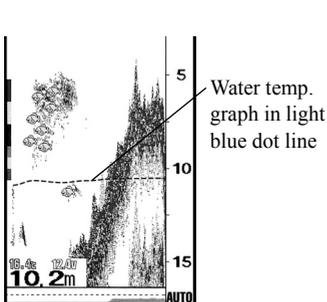
- 1 Press  key. "MENU 1" is shown.
Press  key for more than 2 seconds. "MENU 2" is shown. Select "DEPTH MARKER" with ▼ ▲ of cross key.

- 2 Select with ◀ ▶ key.

OFF : It does not indicate DEPTH MARKER.
ON : It indicates DEPTH MARKER.

Water Temp. Graph

It can indicate water temp. graph on the screen. You can know the variation of water temp. by graph. Then, as you can also know the turning of tide, it is effective for finding fishing points. TEMP GRAPH : OFF ON



- 1 Press  key. "MENU 1" is shown.
Press  key for more than 2 seconds. "MENU 2" is shown. Select "TEMP GRAPH" with ▼ ▲ of cross key.

- 2 Select with ◀ ▶ key.

OFF : It does not indicate water temp. graph.
ON : It indicates water temp. graph..

Water Temp. Alarm

Alarm goes off within or out of two set values (TEMP SET 1, TEMP SET 2).

ALARM SET : OFF, IN RANGE, OUT RANGE

TEMP SET1 : 0~40°C TEMP SET 2 : 0~40°C

- 1** Press  key. "MENU 1" is shown.
Press  key for more than 2 seconds. "MENU 2" is shown. Select "TEMP ALARM" with ▼ ▲ of cross key.
- 2** Press ► key. [TEMP ALARM SETTING] is shown.
- 3** Select "OFF", "IN RANGE" or "OUT RANGE" with ◀ ▶ key.
OFF: Water temp. alarm is canceled.
IN RANGE: Alarm goes off when water temp. comes between TEMP SET 1 and TEMP SET 2.
OUT RANGE: Alarm goes off when water temp. goes out of TEMP SET 1 and TEMP SET 2.
- 4** Select "TEMP SET 1" or "TEMP SET 2" with ▼ ▲ of cross key.
- 5** Set Water Temp. with ◀ ▶ key.

Depth Alarm

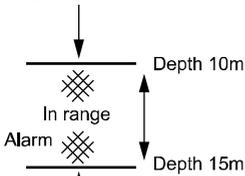
Alarm goes off within or out of two set values (DEPTH SET 1, DEPTH SET 2).

ALARM SET : OFF, IN RANGE, OUT RANGE

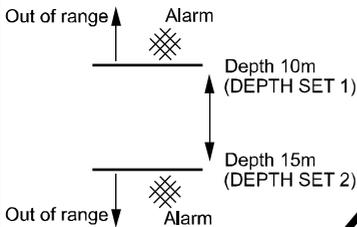
DEPTH SET 1 : 1m~300m

DEPTH SET 2 : 1m~300m

Example



Example



- 1** Press  key. "MENU 1" is shown.
Press  key for more than 2 seconds. "MENU 2" is shown. Select "DEPTH ALARM" with ▼ ▲ of cross key.
- 2** Press ► key. [DEPTH ALARM SETTING] is shown.
- 3** Select "OFF", "IN RANGE" or "OUT RANGE" with ◀ ▶ key.
OFF: Water temp. alarm is canceled.
IN RANGE: Alarm goes off when depth. comes between DEPTH SET 1 and DEPTH SET 2.
OUT RANGE: Alarm goes off when depth goes out of DEPTH SET 1 and DEPTH SET 2.
- 4** Select "DEPTH SET 1" or "DEPTH SET 2" with ▼ ▲ of cross key.
- 5** Set Depth. with ◀ ▶ key.

Battery Alarm

Alarm goes off when voltage becomes less than 10V and voltage indication flashes.

BATT ALARM : OFF ON

- 1** Press  key. "MENU 1" is shown.
Press  key for more than 2 seconds. "MENU 2" is shown. Select "BATT ALARM" with ▼ ▲ of cross key.
- 2** Select with ◀ ▶ key.
OFF : It does not go off Battery Alarm.
ON : It goes off Battery Alarm.

Note) It does not activate when it is operated with internal batteries.

Unit Set : Temp Unit

You can change the water temperature unit.

TEMP UNIT : °C, °F

- 1** Press  key. "MENU 1" is shown. Press  key for more than 2 seconds. "MENU 2" is shown.
Select "UNIT SET" with ▼ ▲ of cross key.
- 2** Press ▶ key. "UNIT SETTING" is shown.
- 3** Select "TEMP UNIT" with ▼ ▲ of cross key.
- 4** Select with ◀ ▶key.

Unit Set : Depth Unit

You can change the depth unit.

SCALE UNIT : m, Ft, Fa, Br

- 1** Press  key. "MENU 1" is shown. Press  key for more than 2 seconds. "MENU 2" is shown.
Select "UNIT SET" with ▼ ▲ of cross key.
- 2** Press ▶ key. "UNIT SETTING" is shown.
- 3** Select "SCALE UNIT" with ▼ ▲ of cross key.
- 4** Select with ◀ ▶key.

Water Temp, Correction

You can correct water temperature at 0.1°C step from range of -5.0°C ~ +5.0°C connecting optional water temp. sensor.

Please set corrected value so that water temperature digit shown on bottom of screen is equal to real temperature.

TEMP ADJ : 0.0°C

1 Press  key. "MENU 1" is shown. Press  key for more than 2 seconds. "MENU 2" is shown. Select "TEMP ADJ" with ▼ ▲ of cross key.

2 Set corrected value of water temperature with ◀ ▶ key.

Other Setting : Auto Range Max. Depth

It sets the depth which sea bottom is searched when auto range is set.

When auto range maximum depth is set to deep, it takes long time to indicate the depth digit and depth range sometimes becomes deep range due to malfunction. In this case, please set auto range Max. depth to meet with the depth of sea where you operate.

AUTO R MAX DEP : 30m,50m,100m,150m

1 Press  key. "MENU 1" is shown. Press  key for more than 2 seconds. "MENU 2" is shown. Select "OTHER SETTING" with ▼ ▲ of cross key.

2 Press ▶ key. "OTHER SETTING" is shown.

3 Select "AUTO R MAX DEP" with ▼ ▲ of cross key.

4 Set Auto range Max. depth with ◀ ▶ key.

※Auto Range does not activate at the deeper than this setting.

Other Setting: Clean Echo

Non-synchronized noise like interference with other boat's fish finder, air bubbles, electric noise, mechanical noise, etc. is eliminated and clear display less noise is shown.

CLEAN ECHO : OFF, L, H

- 1** Press  key. "MENU 1" is shown. Press  key for more than 2 seconds. "MENU 2" is shown. Select "OTHER SETTING" with ▼ ▲ of cross key.
- 2** Press ► key. "OTHER SETTING" is shown.
- 3** Select "CLEAN ECHO" with ▼ ▲ of cross key.
- 4** Select with ◀ ▶ key.
 - OFF** : Clean Echo is canceled.
 - L** : Clean Echo is set to Low.
 - H** : Clean Echo is set to High.

※When there is less noise, minute response can be displayed if you set "CLEAN ECHO" to OFF.

Other Setting: Pulse Length

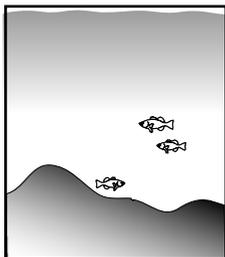
It selects pulse length.

Theory of fish finder is same as echo in water. Length of transmitted ultrasonic wave is called pulse length. Selection of pulse length (long, medium or short) enables you to change vertical resolution.

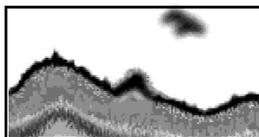
PULSE LENGTH: S, M, L

- 1** Press  key. "MENU 1" is shown. Press  key for more than 2 seconds. "MENU 2" is shown. Select "OTHER SETTING" with ▼ ▲ of cross key.
- 2** Press ► key. "OTHER SETTING" is shown.
- 3** Select "PULSE LENGTH" with ▼ ▲ of cross key.
- 4** Select with ◀ ▶ key.
 - S** : It can not detect to deep but nice resolution and low power consumption.
 - M** : It can detect to deep but resolution becomes a little bit bad.
 - L** : It can detect to deeper but resolution becomes worse.

For example, this case



[Long pulse length]
Closed objects look like one object.



[Short pulse length]
Closed objects can be distinguished.



Special Setting : Keel Offset

It enables to set with the draft value of boat when you want to indicate the depth from sea surface. You can set draft value at 0.1m step from range of 0~+5.0m.

KEEL OFFSET : 0.0m ~ 5.0m

- 1** Press  key. "MENU 1" is shown.
Press  key for more than 2 seconds.
"MENU 2" is shown.
Select "OTHER SETTING" with ▼ ▲ of cross key.
- 2** Press ► key. "OTHER SETTING" is shown.
- 3** Select "KEEL OFFSET" with ▼ ▲ of cross key.
- 4** Set value of keel offset with ◀ ▶ key.

Simulation

Simulation display is shown.

When simulation display is shown, DEMO is indicated on lower left of screen.

SIMULATION : OFF ON

- 1** Press  key. "MENU 1" is shown.
Press  key for more than 2 seconds.
"MENU 2" is shown.
Select "SIMULATION" with ▼ ▲ of cross key.
- 2** Select with ◀ ▶ key.
OFF : Simulation display is canceled.
ON : Simulation display is shown.

FREQ.

It changes the frequency.

Select either 50kHz or 200kHz

- 1** Press  key. "MENU 1" is shown.
Press  key for more than 2 seconds.
"MENU 2" is shown.
Select "FREQ." with \blacktriangledown \blacktriangle of cross key.

- 2** Select with \blacktriangleleft \blacktriangleright key.

System Reset

When you want to return to factory setting, please execute "system reset".

```
<MENU2>
EXP RATE [x2, x3, x8]
SCALE LINE [OFF, ON]
DEPTH MARKER [OFF, ON]
TEMP GRAPH [OFF, ON]
TEMP ALARM >
DEPTH ALARM >
BATT ALARM [OFF, ON]
UNIT SET >
TEMP ADJ [0.0°C]
OTHER SETTING >
SIMULATION [OFF, ON]
FREQ. [200kHz]
SYSTEM RESET
  SETTING BY [→]KEY
[MENU]: TO FINISH MENU
```



```
UNIT SET >
TEMP ADJ [0.0°C]
OTHER SETTING >
SIMULATION [OFF, ON]
FREQ. [200kHz]
SYSTEM RESET
  SYSTEM RESET ON BY [←]
  CANCEL BY [MODE]KEY
[MENU]: TO FINISH MENU
```

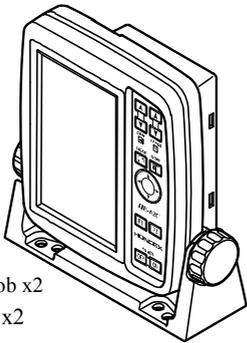
- 1** Press  key. "MENU 1" is shown.
Press  key for more than 2 seconds.
"MENU 2" is shown.
Select "SYSTEM RESET" with \blacktriangledown \blacktriangle of cross key.
- 2** Press \blacktriangleright key.
- 3** If it is OK to execute "system reset", press \blacktriangleright key.
Then, system reset is executed.

When you want to cancel "system reset", press

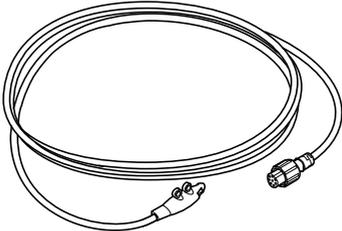
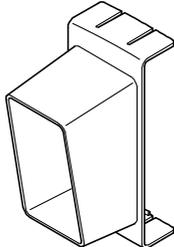
 key.

Note) When you execute "system reset", all settings are returned to factory setting. Please set each functions according to your necessity.

8. Standard composition

<p>Display Unit</p>  <p>Mushroom Tapping Screw</p>  <p>Clamping Knob x2 Rubber Ring x2 Washer x2 Bracket</p>	<p>Transducer (Specified by dealer.)</p> <p>Power Supply Cable (DC06)</p> 
--	---

9. Options

<p>Water Temp. Sensor TC03-05 TC03-10</p> 
<p>Sun Shielded (SF10)</p> 

10. Specifications

Display	Display	5 inch TFT Color LCD
	Numbers of pixel	272 x 480
	Numbers of color indicated	Max. 10 colors
	Power Supply	Size AA battery 8 pcs.(option)
	Power Consumption	11-14VDC
		Approx. 3W
	Dimension (Display unit)	170 (H) x 178 (W) x 63 (D) mm
	Weight (Display unit)	Approx. 0.7kgs
	Frequency	50kHz / 200kHz (Selectable)
	Output Power	100W
	Display Range	0-3m ~ 0-500m

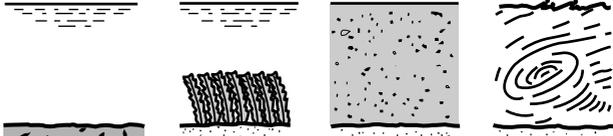
Functions	Auto Range	OFF / ON
	Auto Gain	OFF / LOW / MID / HIGH
	Expansion	Expansion(OFF / Bottom Lock / Auto Exp / Manual Exp)
	Expansion Rate	x2 / x4 / x8
	A-Mode	OFF / ON
	Fish Alarm	OFF / ON
	Fish Mark	OFF / ON
	Depth Alarm	OFF / In Range / Out Range
	Water Temp. Alarm	OFF / In Range / Out Range
	Sweep Speed	5 speeds (S, 1, 2, 3, 4) + STOP
	Background Color	3 Colors (Blue, White and Black)
	Color Configuration	4 kinds
	Back Light	5 ranks
	Voltage Indication	○
	Water Temp. Indication	○
	Depth Unit	M / Ft / Fa / Br
	Bottom Nature Distinction	OFF / ON
	Clean Echo	OFF / LOW / HIGH
	Pulse Length	Short / Medium / Long
Lantern Mode	○	

※Specifications and appearance are subject to change without prior notice due to improvement.

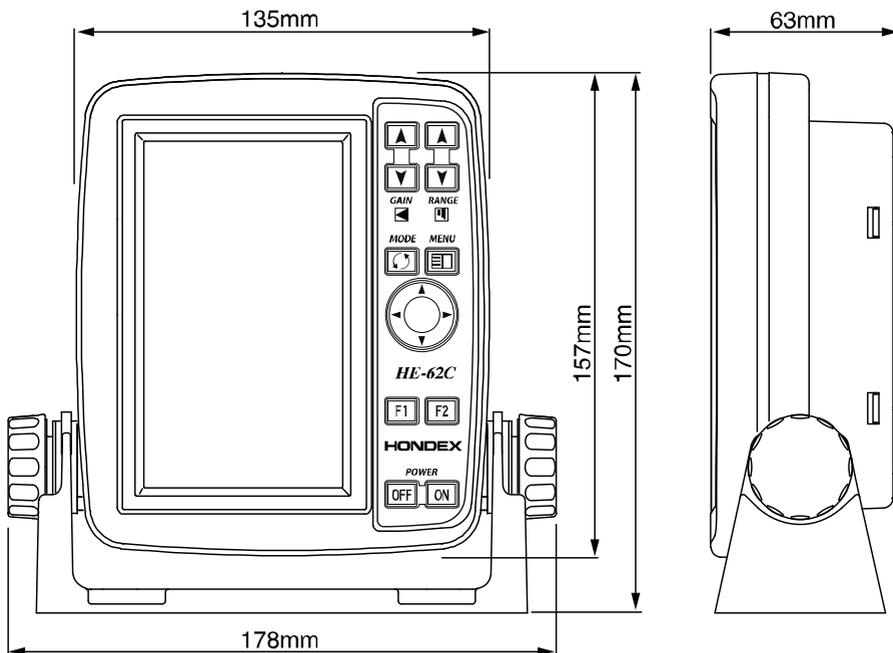
11. Trouble Shooting

- When the condition of this unit is bad, please check the following points before asking to repair.

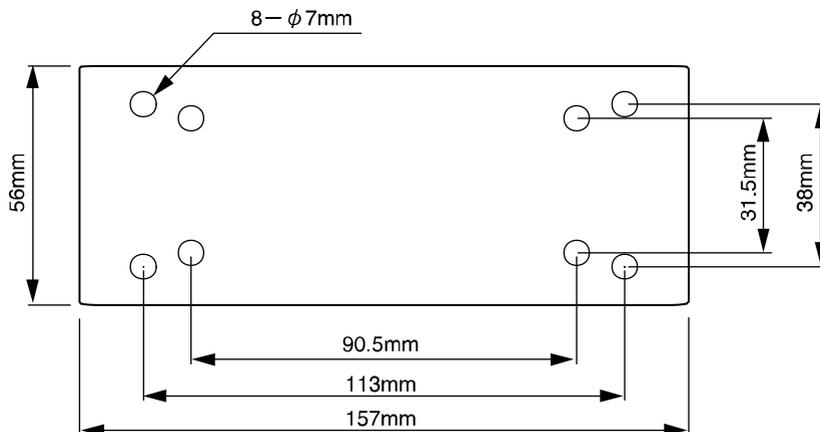
Symptoms		Causes	Remedy
Power can not be turned on.	Internal Battery	Dry cells are not put correctly.	Put correctly.
		Dry cells are run down.	Replace with new ones.
	External Battery	Voltage of battery is lower.	Recharge the battery.
		Contact of power connector is poor.	Tighten firmly. Clean and remove the rust, dust, etc. In case of corrosion, please replace. <ul style="list-style-type: none"> • Replace power supply cable. • Replace the connector.
		Incorrect connection of power cable to boat battery.	Check the polarity and connect correctly.
		Wire inside power cable is broken.	Replace with new one.
		Blow fuse.	Replace fuse (2A).
Bottom or fish school can not be displayed at all.	Contact of transducer connector is bad.	Tighten firmly. Clean and remove the rust, dust, etc. In case of corrosion, please replace. <ul style="list-style-type: none"> • Replace transducer. 	
	<Faulty of transducer> Please check the followings. If you find abnormal symptoms, 1. If you hear sound like “Bo Bo” from surface of transducer, it is normal. 2. When you rub the surface of transducer after setting sensitivity and depth to maximum, if dots like rain appears on the screen, it is normal.		
	Transducer is not immersed into water well.	Install it where it is always immersed under the water line.	
	Setting of each functions is not adequate.	Execute the system reset. (page 29)	
	Image does not sometimes appear.	Transducer is not immersed into water well.	Install it where it is always immersed under the water line.
When installation of transducer is bad, air bubbles wind easily at high speed sailing. It results in no display.		Check the installation of transducer	
Influence of air bubble when the boat runs across the wakes of another boat.		Move the own boat or wait until air bubbled disappear.	
Transducer wire is cut.		Replace the transducer.	

Bottom or fish school is not displayed well.	Too low sensitivity	Increase the sensitivity. Or set to Auto Gain (automatic sensitivity).
	<Installation of transducer is bad> <ul style="list-style-type: none"> • Transducer glued inside the boat's bottom almost come loose. • Transducer installed on boat does not face just under the boat. 	Re-install the transducer at adequate position.
	Rubbish, weed or etc. attached on the surface of transducer.	Remove the attachment well.
	<p>As the reflected echoes are very weak at the below described place, the image with low sensitivity may be shown. But it is not trouble.</p>  <p>where there are many sludge. where there are many sea weeds. where there are many mud of rubbish. where the water is whirled by rapid current.</p>	
Many noise appear on the screen.	Too high sensitivity.	Decrease the sensitivity. Or set to Auto Gain (automatic sensitivity).
	Interference with other boat's fish finder.	Noise disappears if adequate distance between own boat and other keeps.
	Noise from engine.	Change routing of cables such as transducer, power cable, etc. Separate from engine as far as possible.

12. Dimension Drawing



<Drawing of holes for installing bracket>



HONDA ELECTRONICS CO.,LTD.

20 Oyamazuka, Oiwa-cho, Toyohashi, Aichi Japan, 441-3193

Tel: 81-532-41-2512,