LORENZ®
MARINE ELECTRONICS
One Touch To Choose Your World

FISH PRO HD+

Dual Frequency 50 & 200kHz Black Box Fish Finder
CODE: A-150609

USER MANUAL

Important Information

CAUTION

- Please read through this manual before the first operation. If you have any questions, please contact the Company's customer service or your local dealer.
- The FISH PRO HD+ is not built water proof. Please make sure to avoid water intrusion into the unit. Water damage is not covered by the warranty.
- Extensive exposure to heat may result in damage to the FISH PRO HD+.
- Connection to the power source with reversed polarity will damage the FISH PRO HD+ severely. This damage is not covered by the warranty.
- The FISH PRO HD+ contains dangerous high voltage circuits which only experienced technicians MUST handle.

WARNING

- When plugging in or unplugging a transducer to the FISH PRO HD+ make sure power is turned off.

NOTE *We will not be liable for errors contained herein, or for incidental or consequential damages in connection with the performance or use of this material.*

Contents

About this User Manual

INTRODUCTION

The chart plotter combined with the sonar performance of the Fish Finder is one of the most advanced marine navigation system available.
Please read carefully this User Manual to learn the operating features for your unit. Refer to your chart plotter User Manual for all other unit operating instructions.

CONVENTIONS USED

Throughout this User Manual, the labelled keys are shown in capital letters enclosed in square brackets, for example [ENTER].
Menu operations are in bold characters listed by keys sequence with the menu names enclosed between inverted commas, for example **[MENU] + "ALARMS" + [ENTER]** means: press the [MENU] key, using the cursor key select the Alarms menu and then press [ENTER].

Any menu operation and function activation in this User Manual is related to the following chart plotter LCD models (see the following table). Whenever it is necessary, a note has been inserted for those models with differences.

Chart Plotter Name	Software Name	Available from Software Version
SKY X5	S4egLZ5vx	11.00
COMPACT X5	S4igLZ5vx	11.00
EXCALIBUR 7 Speed	S3egLZ7m	10.00
COMPACT 7 Plus	S3igLZ7m	10.00
EXCALIBUR 7 Speed SunColor	S3egLZ7c	10.00
COMPACT 7 Sun	S3igLZ7c	10.00
SKY X7	S3egLZ7cx	10.00
COMPACT X7	S3igLZ7cx	10.00
PANORAMIC 8 SUN	S3egLZ7wc	10.00
COMPACT 8 SUN	S3igLZ7wc	10.00
PANORAMIC 8 SUN	S4egLZ7wc	11.00
COMPACT 8 SUN	S4igLZ7wc	11.00
PANORAMIC 8 XL	S4egLZ7wcx	11.00
COMPACT 8 XL	S4igLZ7wcx	11.00
PANORAMIC 8 HD	S4egLZ8wc	11.00
COMPACT 8 HD	S4igLZ8wc	11.00
STARLIGHT PLUS	S3egLZctcs	10.00
STARLIGHT PRO	S3egLZctcp	10.00
MAGNUM PLUS	S3egLZctcms	11.00
MAGNUM PRO	S3egLZctcmp	11.00
WORLD MAP LCD 11	XSegLZ11m	10.00
WORLD MAP PRO COLOR	S3egLZ11c	10.00
WORLD MAP PRO SUN	S3egLZ11c	10.00
WORLD MAP PRO SUN VD	S3egLZ11c	10.00
WORLD MAP PRO COLOR VD	S3egLZ11c	10.00
WORLD MAP PRO HD	S5egLZ11c	11.00

HOW THIS USER MANUAL IS ORGANIZED

- **CHAPTER 1: Overview**
  Introduction to the basic information on the Fish Finder, its features and use.
- **CHAPTER 2: Fish Finder**
  Helps you understand how the chart plotter is connected to the Fish Finder and how to operate to improve your fishing.
- **CHAPTER 3: Setup your Fish Finder**
  Description of the Fish Finder Setup menu.
- **CHAPTER 4: FISH PRO HD+**
  Technical specification, dimension and installation of the FISH PRO HD+ and set up of the hardware configuration.
- **CHAPTER 5: Transducers**
  Introduction to the basic information on the transducer (device that transmits and receives sound waves into the water).
- **CHAPTER 6: Frequently Asked Questions**

The Analytical Index is at the end of this User Manual.

IF YOU NEED ASSISTANCE

If your chart plotter does not operate properly, please refer to the chart plotter User Manual.

1. Overview

The Fish Finder consists of a high power transmitter, sensitive receiver and a transducer. The Fish Finder sends an electrical pulse to the transducer which contains an element that converts the pulse into acoustic (sound) wave which is sent through the water. As this wave travels from the transducer to the bottom, it may strike fish, structures, thermoclines (temperature changes in the water). When the wave strikes an object(s) a certain amount of the wave is reflected back to the transducer depending on the composition and shape of the object. When the reflected wave is returned to the transducer it is converted into an voltage and is amplified by the receiver, processed and sent to the display. The speed of sound in water is roughly 4800 ft./sec, so the time lapse between the transmitted signal and the received echo can be measured and the distance to the object determined.

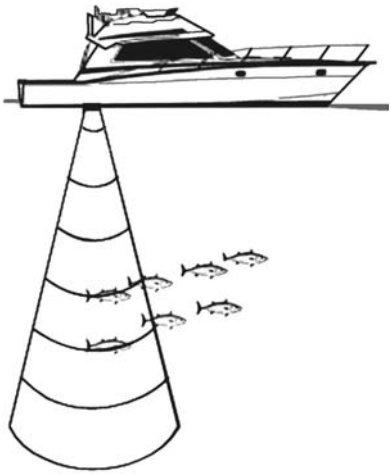


Fig. 1 - Fish Finder working principle

1.1 FISH FINDER

Features & Functions

- A-Scope (displays Sonar Echo in real time)
- 2X and 4X Zoom (capability to magnify any part of the Echogram image of a fixed rate)
- Full auto to manual, working preset modes (Fish, Cruise)
- Bottom Lock (capability to magnify a user defined range around the bottom)
- White Line (help distinguish between fish and bottom, when fish are swimming close to the bottom)
- STC (allows reducing or eliminating the surface clutter)
- Interference Rejection (allows reducing interference from other boats/Fish Finders)

- Noise Filter
- Fish Symbol feature (*)
- Automatic Transducer Setup. Recognition for XTRUCER devices (automatic trasducer identification and parameters setup for best performance)
- Alarms Handling (Shallow Alarm, Depth Alarm, Fish alarm, Temperature Upper, Temperature Lower)

NOTE* *On specific software version available.*

1.2 SELECTING THE FISH FINDER PORT

If the Fish Finder is connected to the Port 2 (see Par. 4.7), follow the procedure:

➤ **[MENU] + "BASIC SETTINGS" + [ENTER] + "INPUT/OUTPUT" + [ENTER] + "PORT 2 INPUT" + [ENTER] + "BBFF 50/200" + [ENTER]**

This is the default setting if the connecting cable supplied with the Fish Finder is used.

2. Fish Finder

This chapter is intended to help you understand how the chart plotter with the Fish Finder connected operates to improve your fishing.

2.1 UNDERSTANDING THE FISH FINDER PAGE

The display on chart plotters shows a history of time of the echoes received by the transducer. The chart plotters have a menu that allows adjustments to receiver sensitivity, depth range and scrolling speed of the Fish Finder display.

1. Warning message
2. Echogram window
3. Color Bar
4. Digital Depth
5. Water temperature
6. Alarm Bar
7. Depth ruler
8. Variable Depth Marker (VDM)
9. Zoom Bar
10. A-Scope
11. Operating Frequency

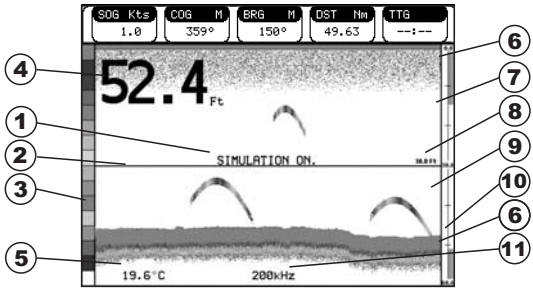


Fig. 2.1 - The Fish Finder page

The following is a short description of terms listed in the previous Fig. 2.1:

1 Warning Message
Flashing label "Simulation" when the echo sounder is in Simulation mode.

2 Echogram window
Graphic presentation of sonar soundings recorded as a continuous profile scrolling across the screen from right to left. Such recordings represent the image of the water beneath your boat, items appear as they pass under your transducer; the items on the right side of the screen are closer to you than those on the left. The correct interpretation of the Echogram allows retrieving useful information about what is under the boat. See the following Par. 2.1.1 for more information.

3 Color Bar
Colored scale located on the left side of the screen that shows the colors used in the Echogram to represent the echoes strength. The color on the top of the bar represents the maximum sonar strength, while the color on the bottom of the bar represents the minimum sonar strength.

④ **Digital Depth**
Readout of the current bottom depth.

⑤ **Water Temperature**
Readout of the current water temperature returned by the TEMP 1 sensor included into specific transducers.

⑥ **Alarm Bar**
Bars showing the shallow water and deep water alarm values. The alarm is triggered when depth is outside the range.

⑦ **Depth ruler**
Vertical graduated bar. It is a scale which reflects the depth of the area being displayed.

⑧ **Variable Depth Marker (VDM)**
Horizontal line on to the Echogram window with a depth label. The up/down cursor keys can move it up and down. The label displays the depth of the cursor position. It can be moved to any location pinpointing the depth of a target.

⑨ **Zoom Bar**
Bar showing the portion of the Echogram currently represented in the zoomed window (on the left part of the screen). It is turned on selecting Echo Sounder display page.

⑩ **A-Scope**
A real time representation of fish and bottom features passing through the beam of the transducer. It is drawn as horizontal lines whose length and hue is proportional to the sonar strength returned. When the default palette is selected, the strongest sonar returns will be shown as the color displayed of the top of Color Bar while the weakest as the bottom color.

⑪ **Operating Frequency**
Readout of the selected operating frequency.

2.1.1 Understanding the Echogram display

The main elements that can be easily distinguished into an Echogram are:

① Fishes
② Thermoclines
③ White Line
④ Surface Clutter
⑤ Structures
⑥ Bottom Echo Profile

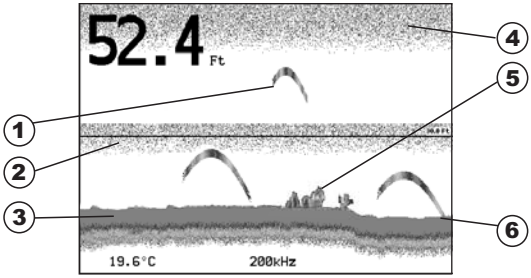


Fig. 2.1.1 - The Fish Finder Echogram

① **Fishes**
Fishes are represented as arcs because of the cone angle of the transducer. In fact as the boat passes over the fish the leading edge of the

cone strikes the fish, causing a display pixel to be turned on. As the boat passes over the fish, the distance to the fish decreases turning each pixel on at a shallower depth on the display. When the boat is directly over the fish, the first half of the arch is formed and since the fish is closer to the boat, the signal is stronger and the arch is thicker. As the boat moves away from the fish, the distance increases and the pixels appear at progressively deeper depths forming the remaining half of the arch.

(2) **Thermoclines**
Are the zones where two layers of different water temperatures meet. The greater the temperature differential, the thicker the thermocline is shown on the screen. Thermoclines are represented as horizontal stripes of noise. They are very important for fishing since often many species of game fish like to suspend in, just above, or just below the thermoclines.

(3) **White Line**
The White Line shows the difference between hard, soft bottoms and even distinguishes between fishes and structures located near the bottom. In this way it is easier to tell the difference between a hard and soft bottom and even to distinguish fishes and structures located nearby the bottom. For example, a soft, muddy or weedy bottom returns a weaker echo that is shown with a narrow white line while a hard bottom returns a strong echo that causes a wide white bottom line.

(4) **Surface Clutter**
Appears like noise at the top of the screen extending many feet below the surface. It's caused by many things, including air bubbles, bait fish, plankton and algae.

(5) **Structures**
Generally, the term "structure" is used to identify objects like wrecks and weeds rising from the bottom.

(6) **Bottom Echo Profile**
Bottom profile recorded by the Fish Finder. When the echo sounder is set in auto-range mode it is automatically kept in the lower half of the screen.

Other Elements
Large anchoring cables are returned by the echo sounder as very long and narrow arcs on the screen.

2.2 DISPLAYING THE FISH FINDER PAGE

This section will take you through the frequently used operations and assist you to customize the look of the chart plotter using the Fish Finder.

NOTE *The Fish Finder display page is available only if the Fish Finder is connected and powered On.*

2.2.1 How to select the Fish Finder page

To change the Fish Finder page use the **[PAGE]** key.

NOTE *On SKY/COMPACT X7, SKY/COMPACT X5, PANORAMIC/COMPACT 8 XL, PANORAMIC/COMPACT 8 HD, MAGNUM PLUS/MAGNUM PRO chart plotters use the [ECHO] key for displaying the Fish Finder pages. So in the following paragraphs please substitute the **[PAGE]** key with the **[ECHO]** key.*

You can select the Fish Finder page you wish, among the four available pages: **Full Display, 50/200kHz Full Display, Zoom Full Display** and **Chart/Fish display**.

NOTE *When the Radar* is connected, two other displaying pages are available too, **Radar/FF** and **Radar/FF/Chart/Nav Data**. See the Radar* User Manual for more information.*

(*) ONLY FOR WORLD MAP -LCD 11-PRO COLOR-PRO SUN-PRO SUN VD-PRO COLOR VD - PRO HD/STARLIGHT PLUS-PRO/MAGNUM PLUS-PRO/PANORAMIC-COMPACT 8 SUN/PANORAMIC-COMPACT 8 XL/PANORAMIC-COMPACT 8 HD

2.2.2 Fish Finder Full Display page

To display the Fish Finder Full Page Echogram, follow this procedure:

➤ **[PAGE]** to select the Full Display page

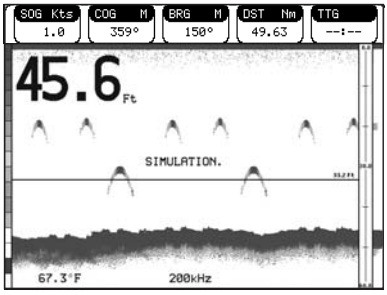


Fig. 2.2.2 - The 200kHz Fish Finder Full Display

NOTE *The frequency displayed depends on the selection done in the Frequency item (see Par 3.1.10).*

The MENU key
Pressing **[MENU]** activates the Fish Finder Setup menu (see Par. 3.1). Pressing **[MENU]** subsequent times toggles between the Fish Finder Setup menu and the Main menu.

The Cursor key
Moving the Cursor key up/down adjusts the Variable Depth Marker (VDM) up or down on the screen.

The ENTER key
Pressing **[ENTER]** activates the Sensitivity menu (see Par. 3.1.1) that allows tuning the Gain, the Noise Threshold and the STC.

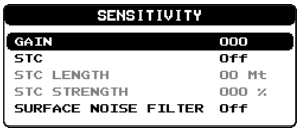


Fig. 2.2.2a - Sensitivity sub-menu

Pressing **[CLEAR]** turns off the Sensitivity menu.

The CLEAR key
By pressing **[CLEAR]** the Variable Depth Marker (VDM) is hidden.

The ZOOM IN and ZOOM OUT keys
From this page pressing **[ZOOM IN]** once changes to Zoom 2X, pressing **[ZOOM IN]** twice changes to Zoom 4X, while pressing **[ZOOM OUT]** reverts to Zoom 2X and no zoom.

2.2.3 50/200 kHz Full Display page

To display the Fish Finder Dual Echogram, follow this procedure:

➤ **[PAGE]** to select the 50/200 kHz Full Display page

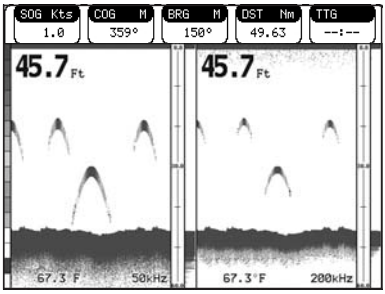


Fig. 2.2.3 - Fish Finder Dual Frequency mode

The Cursor key
Moving the cursor to the right or the left moves the Variable Depth Marker (VDM) between the 50 and 200kHz displays. Moving the cursor up or down will move the VDM up and down. Press **[CLEAR]** to hide the VDM.

The ZOOM IN and ZOOM OUT keys
From this page pressing **[ZOOM IN]** once changes to Zoom 2X, pressing **[ZOOM IN]** twice changes to Zoom 4X, while pressing **[ZOOM OUT]** reverts to Zoom 2X and no zoom.

2.2.4 Zoom Full Display page

To display the zoomed Fish Finder page on the left half of the screen and the unzoomed Fish Finder Echogram on the right half of the screen, follow this procedure:

➤ **[PAGE]** to select the Zoom Full Display page

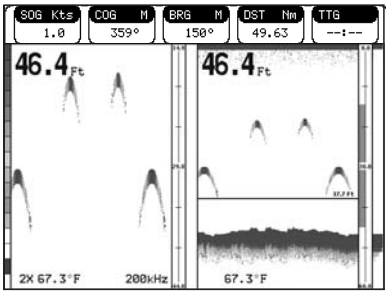


Fig. 2.2.4 - Fish Finder Zoom Page

The Depth Cursor is shown only on the unzoomed Fish Finder Echogram.

The ZOOM IN and ZOOM OUT keys
From this page pressing **[ZOOM IN]** changes to Zoom 4X, pressing **[ZOOM OUT]** changes to Zoom 2X.

2.2.5 Chart/Fish Display page

To display the Chart page on the left half of the screen and the Fish Finder Echogram on the right half of the screen, follow this procedure:

➤ **[PAGE]** to select the Chart/Fish Display page

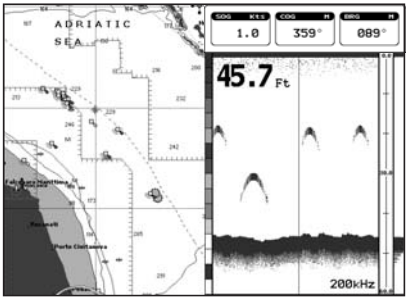


Fig. 2.2.5 - Fish Finder Chart/Fish page

The MENU key (to change the active window)

- if the active window is the Chart, press **[MENU]** (the Main menu is shown), press **[MENU]** again (the Fish Finder Setup menu is shown), then pressing **[CLEAR]** the active window is now the Fish Finder.
- if the active window is the Fish Finder, press **[MENU]** (the Fish Finder Setup menu is shown), press **[MENU]** again (the Main menu is shown), then pressing **[CLEAR]** the active window is now the Chart.

2.2.6 Fish Finder and Radar pages ONLY FOR WORLD MAP -LCD 11-PRO COLOR-PRO SUN-PRO SUN VD-PRO COLOR VD-PRO HD/STARLIGHT PLUS-PRO/MAGNUM PLUS-PRO/PANORAMIC-COMPACT 8 SUN/PANORAMIC-COMPACT 8 XL/PANORAMIC-COMPACT 8 HD

To display the Radar page on the left half of the screen and the Fish Finder Echogram on the right half of the screen, follow this procedure:

➤ **[PAGE]** to select the Radar/FF page

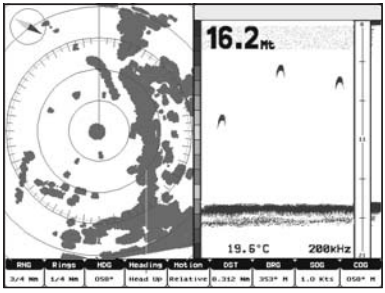


Fig. 2.2.6 - Radar/FF page

Otherwise to display the Radar and Fish Finder Combo pages, follow this procedure:

➤ **[PAGE]** to select the Radar/FF/Chart/Nav Data page

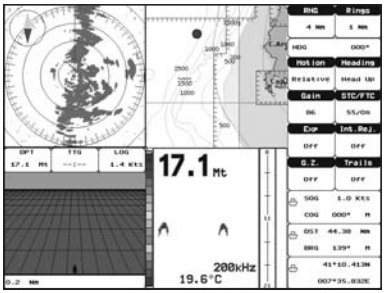


Fig. 2.2.6a - Combo page

When in Split/Combo pages, the active view is highlighted by a focus (Yellow frame). The keyboard commands are related to that focused view. To move the focus press **[MENU]** twice.

2.3 ZOOM MODES

2.3.1 The Bottom Lock Zoom

The Bottom Lock Zoom mode is activated when the Fish Finder is in Auto Range or Bottom Lock mode (see Par. 3.1.3) and the Variable Depth Marker (VDM) is not displayed on the screen.
In Bottom Lock Zoom mode the Fish Finder Echogram is automatically moved up/down as to keep the Bottom Line always visible in the lower half of the screen.

NOTE *Moving the Cursor key up/down displays the Variable Depth Marker (VDM) switching the Fish Finder in Marker Zoom mode.*

2.3.2 The Marker Zoom

The Marker Zoom mode is activated either when the Fish Finder is in Manual Range mode (see Par. 3.1) or the Depth Cursor is displayed on the screen.
In Marker Zoom mode the Fish Finder Echogram position is controlled by moving the Variable Depth Marker (VDM) and pressing and holding **[ENTER]** for 1 second on the selected position. Moving the Variable Depth Marker (VDM) over the top or below the bottom of the screen, automatically moves up/down the current zoomed Echogram view and re-position the Variable Depth Marker (VDM) at the center of the screen.

NOTE *Pressing **[CLEAR]** hides the Depth Cursor and if the Fish Finder is in Auto Range or Bottom Lock mode switches into Bottom Lock Zoom mode.*

2.4 INFO ON FISH FINDER: SYSTEM INFORMATION

If you want to know information about the Fish Finder connected, follow the procedure:

➤ **[MENU] + "About..." + [ENTER]**

A window will be shown with the desired information on the Fish Finder Library row and on the Fish Finder module row.

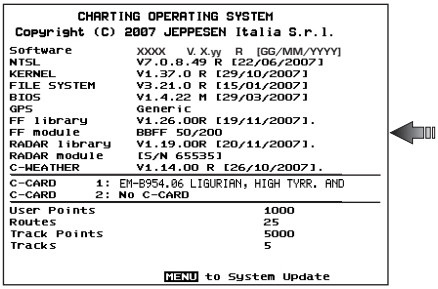


Fig. 2.4 - System Information page

2.4.1 The System Update menu

The System Update menu allows downloading the Fish Finder firmware into the Fish Finder device. To select this menu follow the procedure:

➤ **[MENU] + "About..." + [ENTER] + [MENU] + "Update BBFF Firmware" + [ENTER]**

The current Fish Finder firmware version is shown in the System Update window that appears on the screen.

Insert the C-CARD with the firmware in one of the chart plotter available slots, and the press **[ENTER]** to update. Now select "YES" and press **[ENTER]** to confirm.

WARNING

Turn Off and after a few seconds turn On the FISH PRO HD⁺ in case of failed firmware upload.

3. Setup your Fish Finder

3.1 FISH FINDER SETUP MENU

The Fish Finder Setup menu provides access to additional functions, setup and layout/data field options.
From the Fish Finder page, access this menu by pressing:

➤ **[MENU]**

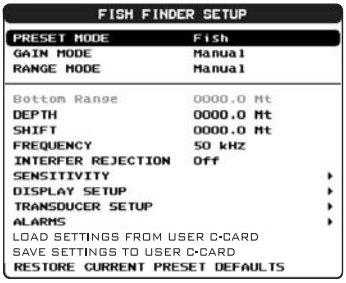


Fig. 3.1 - Fish Finder Setup menu

3.1.1 Preset Mode

Allows applying the following Fish Finder operating mode presets Fish and Cruise. See the following table.

➤ **[MENU] + "PRESET MODE" + [ENTER]**

Fish	:	Gain Mode = Auto, Range Mode = Auto, Frequency = do not change, Shift = 0, STC = Short if Freq=200kHz and Mid if Freq=50kHz, Scrolling Speed = 10, Fish Symbols = Echo, A-Scope = On, Surface Noise Filter = Off.
Cruise	:	Gain Mode = Auto, Range Mode = Auto, Frequency = do not change, Shift = 0, STC = Short if Freq=200kHz and Mid if Freq=50kHz, Scrolling Speed = 10, Fish Symbols = Echo, A-Scope = On., Surface Noise Filter = 4..

3.1.2 Gain Mode

Selects Auto or Manual.

➤ **[MENU] + "GAIN MODE" + [ENTER]**

3.1.3 Range Mode

Selects among Manual, Auto Range and Bottom Lock. When in **Manual Range Mode** it is possible to set Shift (the offset from the surface) (see Par. 3.1.6) and Depth (see Par. 3.1.5) on which the Fish Finder shall operate. When in **Auto Range Mode** the Fish Finder determines automatically the range as to keep the bottom visible in the lower left of the screen. In this mode, Shift is always set to 0. In **Bottom Lock Mode** the Fish Finder automatically tracks the range around the bottom specified by the Bottom Range value.

➤ **[MENU] + "RANGE MODE" + [ENTER]**

3.1.4 Bottom Range

Shows the max depth to reach. This option is available when Range Mode is Bottom Lock.

➤ **[MENU] + "BOTTOM RANGE" + [ENTER]**

3.1.5 Depth

This option is available only when Range Mode is Manual and it is disabled in Auto Range and Bottom Lock Mode.

➤ **[MENU] + "DEPTH" + [ENTER]**

3.1.6 Shift

Shows the depth from which start the bottom scanning. This option is available only when Range Mode is Manual and it is disabled in Auto Range and Bottom Lock Mode.

➤ **[MENU] + "SHIFT" + [ENTER]**

NOTE *The Bottom Range, Depth, Shift will apply to the currently selected frequency.*

3.1.7 Frequency

Allows you to choose the frequency among Auto, 50 kHz or 200 kHz when single frequency page is selected.

➤ **[MENU] + "FREQUENCY" + [ENTER]**

3.1.8 Interference Rejection

elects a filter to remove interference from other Fish Finders.

➤ **[MENU] + "INTERFER REJECT" + [ENTER]**

3.1.9 Sensitivity

The Sensitivity menu is accessible both from the Fish Finder Setup menu and by pressing **[ENTER]** when in Fish Finder pages. All settings in the Sensitivity menu are related to the Frequency selected.

➤ **[MENU] + "SENSITIVITY" + [ENTER]**

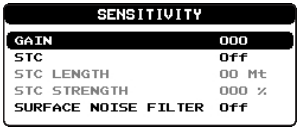


Fig. 3.1.9 - Fish Finder Sensitivity menu

NOTE *The Frequency value is only displayed: to select the desired frequency see the previous Par. 3.1.7.*

3.1.9.1 Frequency

This option is available only in the Dual Frequency page. It allows you to select the Frequency to which the Sensitivity parameters are applied.

3.1.9.2 Gain

Allows you to control the Gain of the unit's receiver. To see more details on the screen, increase the receiver sensitivity by selecting a higher gain percentage. If there is too much detail or if the screen is cluttered, lowering the sensitivity may increase the clarity of the display.

3.1.9.3 STC

Sensitivity Time Constant: it is a time varying gain curve which attenuates the sonar receiver gain in shallow water, increasing the gain gradually as the depth increases. This is for the purpose of filtering out surface clutter.

3.1.9.4 STC Length

If STC is Custom, it is possible to change the Length of the Sensitivity Time Constant.

3.1.9.5 STC Strength

If STC is Custom, it is possible to change the Strength of the Sensitivity Time Constant.

3.1.9.6 Surface Noise Filter

This function implements an advanced time varying filter that allows suppressing the surface clutter efficiently while leaving fish targets visible.

NOTE *Thus imposing the capability of the Fish Finder to correctly detect the weakest echoes coming from a very deep bottom.*

3.1.10 Display Setup

The Display Setup Menu allows you to change the color scheme of the Fish Finder display, adjusts the chart scrolling rate, enables or disables the White Line and allows determining the graphical representation of fishes.

➤ **[MENU] + "DISPLAY SETUP" + [ENTER]**

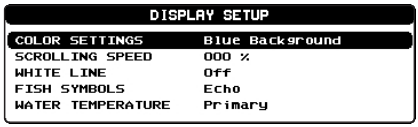


Fig. 3.1.10 - Fish Finder Display Setup menu

3.1.10.1 Color Settings ONLY FOR COLOR CHART PLOTTER

Allows you to change the color scheme of the Fish Finder display. The available colors are Blue Background, White Background, Black Background, Gray Scale and Reversed Gray Scale.

NOTE *Only Gray Scale and Reversed Gray Scale are available on the 11" Gray Levels chart plotters.*

3.1.10.2 Scrolling Speed

Adjusts the chart scrolling rate. Note that the scrolling rate is limited by the sound speed and the depth according with the following relation: the deeper the setting, the slower the scrolling rate. 100% is the maximum possible.

3.1.10.3 White Line

Controls how the chart plotter displays information about the bottom type (hard or soft).

3.1.10.4 Fish Symbols

This selection allows determining the graphical representation of underwater suspended targets. See the following table.

Echo	: shows echoes
Echo + Icon	: shows the Fish icon and echoes
Echo + Icon + Depth:	shows the Fish icon, depth values and the fish echoes
Echo + Depth	: shows depth values
Icon	: shows Fish icons
Icon + Depth	: shows Fish icons and their depth (accordingly to currently selected depth unit)

The Fish icons displayed are among four different shapes depending on the size of the Target (Small, Med, Big, Huge).

3.1.10.5 Water Temperature

Allows you to choose the Water Temperature label displayed over the echogram

between Primary and External.

➤ **[MENU] + "WATER TEMPERATURE" + [ENTER]**

3.1.11 Transducer Setup

The Transducer Setup menu contains settings that does not require frequent changes.

➤ **[MENU] + "TRANSDUCER SETUP" + [ENTER]**

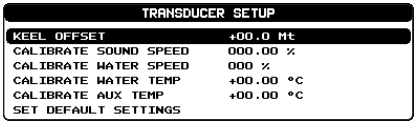


Fig. 3.1.11 - Fish Finder Transducer menu

3.1.11.1 Keel Offset

It is the transducer depth offset from the surface. This makes it possible to measure depth from the surface instead of from the trasducer's location.

3.1.11.2 Calibrate Sound Speed

Allows calibrating the value of Sound Speed in the water, depending on the water temperature and salinity.

3.1.11.3 Calibrate Water Speed

Allows calibrating the value of Water Speed sensor. The calibration value, in the range between -10% to +10%, will be applied to the water speed from the transducer.

3.1.11.4 Calibrate Water Temperature

Allows the calibration on the Water Temperature sensor. Using the readings from a precise temperature measuring device, insert here a positive/negative offset to display right value on Fish Finder screens.

3.1.11.5 Calibrate Aux Temperature

Allows the calibration of the Aux Temperature sensor. Using the readings from a precise temperature measuring device, insert here a positive/negative offset to display right value on FF screens.

3.1.12 Alarms

The Alarms menu allows you to define additional sonar alarm settings for Fish Alarm, Shallow Alarm, Depth Alarm and Temperature Upper/Lower/Rate.

➤ **[MENU] + "ALARM" + [ENTER]**

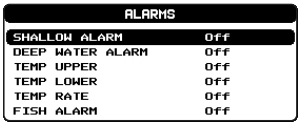


Fig. 3.1.12 - Fish Finder Alarms menu

3.1.12.1 Shallow Water

Triggers an alarm when depth becomes shallower than the value set.

3.1.12.2 Depth Water

Triggers an alarm when depth becomes deeper than the value set.

3.1.12.3 Temperature Upper
Triggers an alarm when the transducer reports a temperature (from TEMP 1 sensor) above the value set.

3.1.12.4 Temperature Lower
Triggers an alarm when the transducer reports a temperature (from TEMP 1 sensor) below the value set.

3.1.12.5 Temperature Rate
Triggers an alarm when the transducer reports a temperature (from TEMP 1 sensor) variation rate above the value set.

3.1.12.6 Fish Alarm
The options for Fish Alarm set the size of the fishes that, if detected by the unit, switches an alarm to sound. These options are: Off, Small, Medium, Big and Huge. The alarm sounds if the set size (or bigger) is detected.

3.1.13 Load Settings from User C-CARD
Load the complete settings from the User C-CARD and changes the active menu settings.
Insert the User C-CARD into the slot, then follow the procedure:
- **[MENU] + "LOAD SETTINGS FROM USER C-CARD" + [ENTER]**

3.1.14 Save Settings to User C-CARD
This is useful to avoid the user having to retune up Radar after a Clear RAM operation or a software update.
Insert the User C-CARD into the slot, then follow the procedure:
- **[MENU] + "SAVE SETTINGS TO USER C-CARD" + [ENTER]**

3.1.15 Restore Current Preset Defaults
This option restores the default values only for the current presets (see Par. 3.1.1, Preset Mode) and does not affect the other presets. Follow the procedure:
- **[MENU] + "RESTORE CURRENT PRESET DEFAULTS" + [ENTER]**

A confirmation window is shown. Select "YES" and press [ENTER] again.

4. FISH PRO HD+

This chapter provides instructions to assist in planning the installation of the FISH PRO HD+.

4.1 TECHNICAL SPECIFICATIONS

- Display Colors : 16 colors on color chart plotter or 16 gray levels on gray levels chart plotter
- Display Vertical Resolution : up to 400 pixels (depending on chart plotter screen resolution)
- Power Requirements : 10 - 35 Volt dc
- Over Voltage protection
- Reverse Polarity protection
- Power Consumption - operating: 17W max
- Power Consumption - stand by: 1.7W max
- Operating Frequency : Dual 50 and 200kHz
- Output Power : 600/1000W (4000/8000Wpp)
- Depth Range*
  - 1KW/200kHz : 2.5Ft (0.76m) to 1200Ft (366m)
    Max Typical = 980Ft (299m)
  - 1KW/50kHz : 5Ft (1.52m) to 4000Ft (1219m)
    Max Typical = 2700Ft (823m)
  - 600W/200kHz: 2.5Ft (0.76m) to 700Ft (213m)
    Max Typical = 600 Ft (183m)
  - 600W/50kHz : 5Ft (1.52m) to 1500Ft (457m)
    Max Typical = 1350 Ft (411m)

NOTE* *This is not a guaranteed specification. The actual maximum depth capability of the system depends on the type of transducer fitted, the reflectivity of the bottom, water condition, etc.*

- Status LED
- External Buzzer : 12VDC, 400mA
- Speed Sensor : if available on transducer
- Temperature Sensor : one channel TEMP1 (if available on transducer), optional second channel TEMP2
- NMEA Output sentences : Depth: $SDDPT, $SDDBT
  Speed: $VWVHW
  Trip Log: $VWVLW
  Water Temperature: $YXMTW
  TEMP2 Temperature: $YXXDR
- Operating temperature range: 0°C to +50°C
- Storage temperature range : -20°C to +70°C
- Weight : 1 kg (2,20 LBS)
- Water Proof Specification : IP 54
- Case Size : 7.73" (196.4mm) x 6.5"(164.96mm) x 1.96" (50mm)

When the package containing the FISH PRO HD+ is first opened, please check it for the following contents (if any parts are missing contact the dealer the FISH PRO HD+ was purchased from):

- FISH PRO HD+ (with Power Serial and optional devices cables already connected)
- Fuse 5 Amp. + fuseholder
- User Manual

4.2 DIMENSIONS

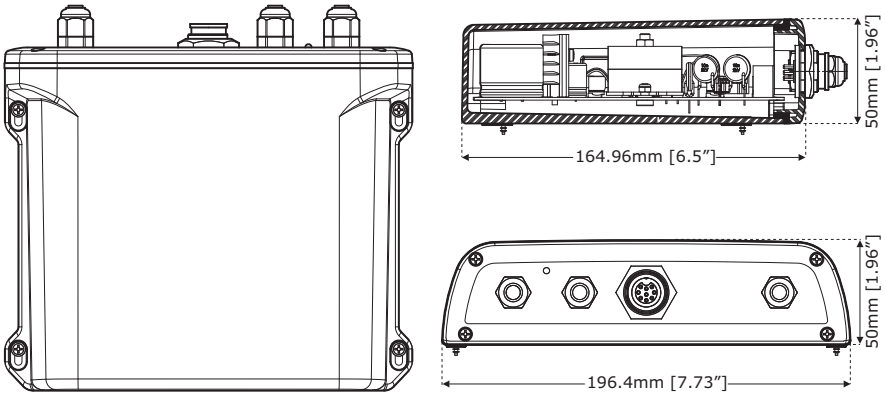


Fig. 4.2 - FISH PRO HD+ Dimensions

4.3 MOUNTING THE FISH FINDER

The FISH PRO HD+ should be preferably mounted in a dry and well ventilated location. Do not mount it where it will be submerged in liquids or exposed to high temperature.

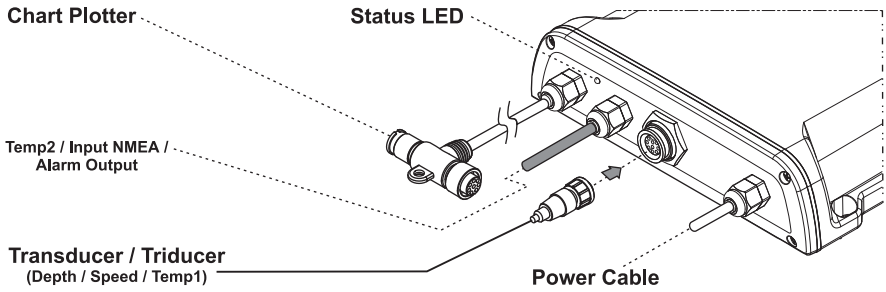


Fig. 4.3 - The FISH PRO HD+

4.3.1 Installation

Picture showing actual example of the FISH PRO HD+ installation.

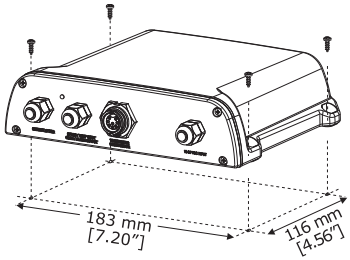


Fig. 4.3.1 - The FISH PRO HD⁺ Installation

- Fix the FISH PRO HD⁺ to the mounting location using the four screws (holes diameter 4 mm), see Fig. 4.3.1.
- Route the CHART PLOTTER cable to the chart plotter.
- Mount the transducer according to the instructions provided with it.
- Connect the POWER cable to the battery. Please be advised that the FISH PRO HD⁺ when not operating will remain in Stand-By mode.

4.3.2 Installing Optional Devices

See the External Connection diagram.

4.4 STATUS LED

There are seven different LED behaviors, representing seven different diagnostic conditions. These are described below.

- **OFF**
  The FISH PRO HD⁺ is not powered or maintenance/update routines are running.
- **ON, CONTINUOUSLY**
  There is not communication with the chart plotter, and no transducer is connected.
- **1 long flash every 2 seconds**
  A transducer is connected properly, but there is no communication with the chart plotter.
- **2 short flashes every 2 seconds or 1 short flash every 2 seconds**
  The FISH PRO HD⁺ and the transducer are operating properly. This is the normal behavior when everything is working.
- **3 short flashes every 2 seconds**
  The FISH PRO HD⁺ has detected a transducer without transducer ID. On the chart plotter a warning window is shown, select "IGNORE" and press [ENTER]: the FISH PRO HD⁺ is working at low power.
- **4 short flashes every 2 seconds**
  The FISH PRO HD⁺ has detected a transducer without transducer ID. On the chart plotter a warning window is shown, select "CANCEL" and press [ENTER]: the FISH PRO HD⁺ is not sending any signal.

4.5 EXTERNAL CONNECTIONS

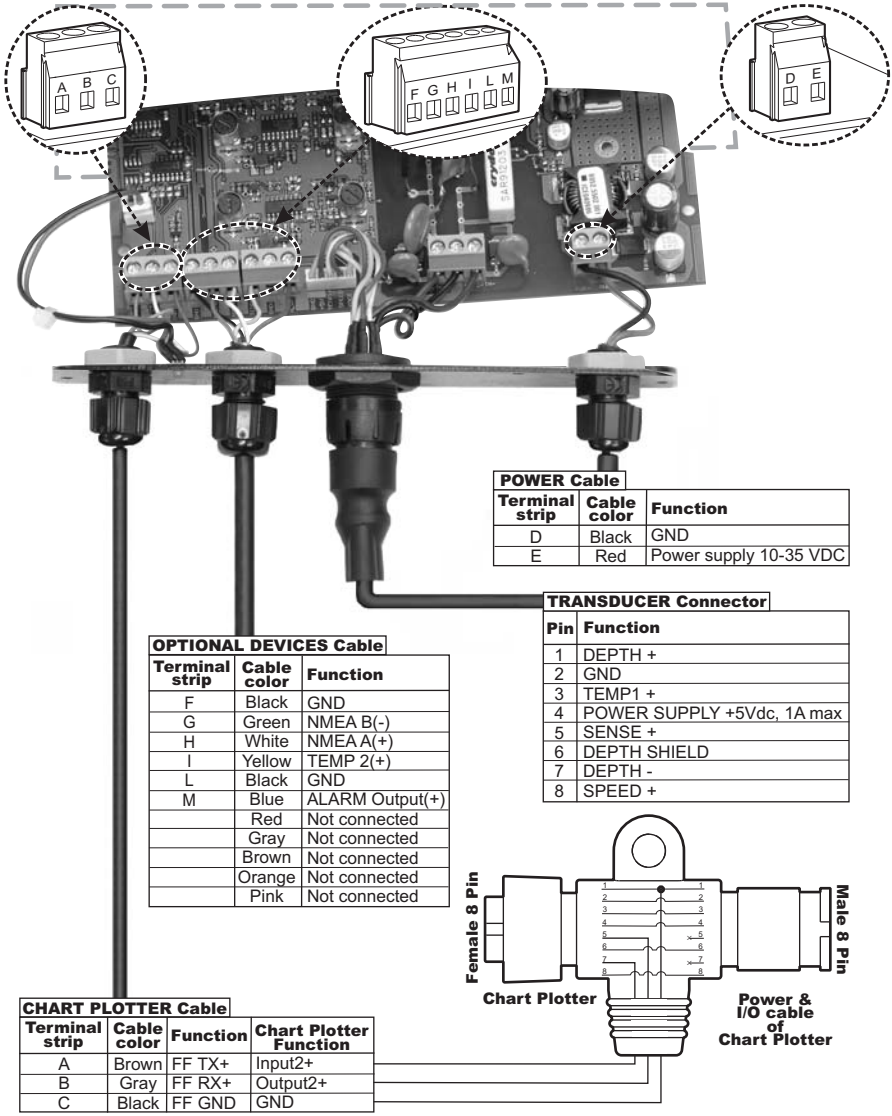


Fig. 4.5 - FISH PRO HD⁺ External Wiring

4.6 POWER SUPPLY WIRING DIAGRAM

We recommended the installation of a switch and a (5A) fuse in the positive DC supply to the FISH PRO HD+. The FISH PRO HD+ is active sending the digital depth through the NMEA interface even when the power (chart plotter) is turned off, thus the need for a switch.

In the example below you will notice the positive DC power connection is run through a switch and a fuse before connecting it to the FISH PRO HD+ and the chart plotter.

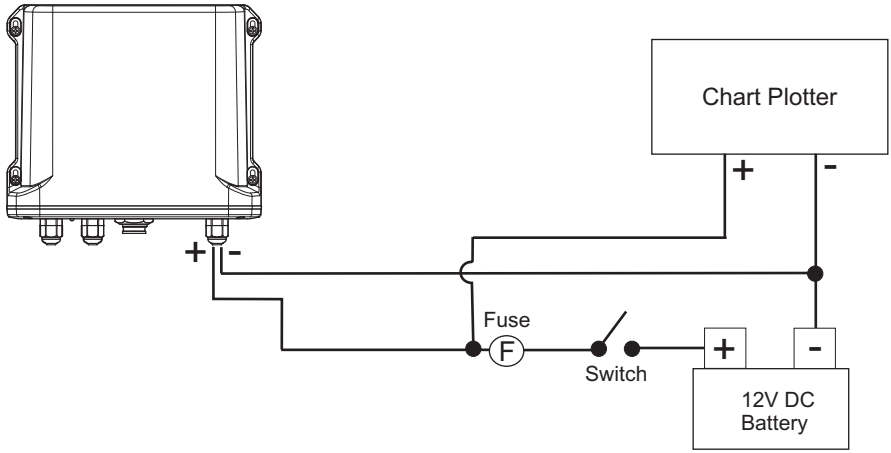


Fig.4.6 - The FISH PRO HD+ and the chart plotter could be turned Off

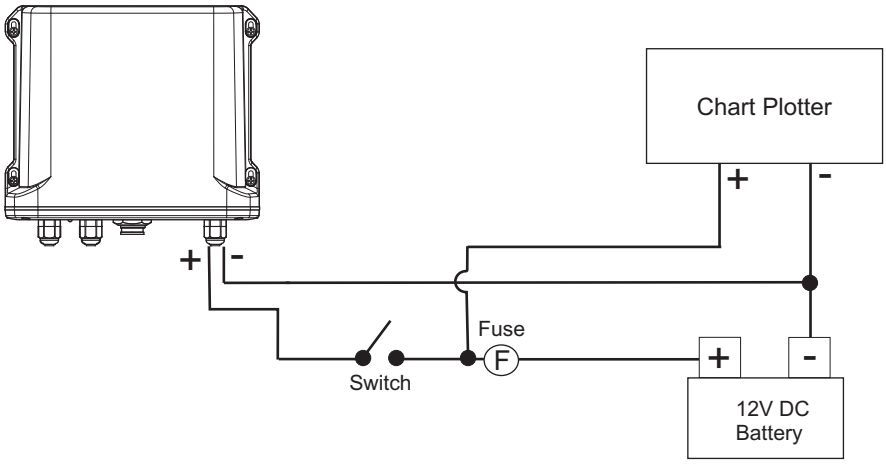


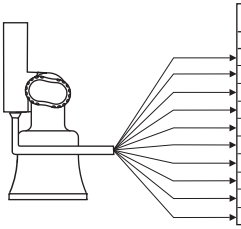
Fig.4.6a - The FISH PRO HD+ could be turned Off without turning Off the chart plotter

4.7 SUGGESTED PLOTTER CONNECTIONS

The following are suggested "*Fish Finder - chart plotter*" connections.

NOTE *On the chart plotter with software "S3" the Port 1 is optoisolated, so the Pin 4 - Green is the Input 1- and it is not the GND COMMON for the Port 2. The described connections are valid too.*

If the chart plotter has a quick disconnect bracket (see the chart plotter User Manual) see the following picture to make the connection to the chart plotter:



QUICK DISCONNECT BRACKET CABLE

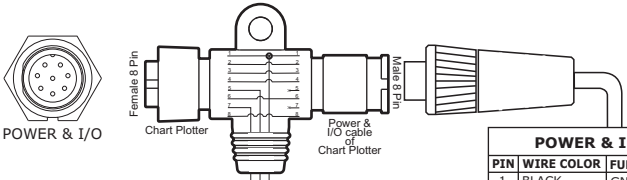
WIRE COLOR	FUNCTION
RED	+10-35 Vdc
BLACK	GND/COMMON
WHITE	INPUT 1+
GREEN	GND
YELLOW	OUTPUT 1+
BROWN	INPUT 2+
GRAY	OUTPUT 2+
ORANGE	INPUT 3+
PINK	OUTPUT 3+
BLU	GND

BBFF PLOTTER CABLE

WIRE COLOR	FUNCTION
BROWN	BBFF TX+
GRAY	BBFF RX+
BLACK	BBFF GND

Fig.4.7 - Connection to the Fish Finder for chart plotter with quick disconnect bracket

If the chart plotter has a 8 pin Power & I/O connector see the following picture:



POWER & I/O CONNECTOR

PIN	WIRE COLOR	FUNCTION
1	BLACK	GND/COMMON
2	RED	PWR+ (10-35 Vdc)
3	WHITE	INPUT 1+
4	GREEN	COMMON
5	GREY	OUTPUT 2+
6	YELLOW	OUTPUT 1+
7	BROWN	INPUT 2+
8	BLUE	OUTPUT EXTERNAL ALARM+

BBFF Plotter Cable

CABLE COLOR	FUNCTION
BROWN	FF TX+
GRAY	FF RX+
BLACK	FF GND

Fig.4.7a - Connection to the Fish Finder for chart plotter with 8 pin Power & I/O connector

5. Transducers

The transducer is a device that transmits and receives sound waves into the water. The active component inside the transducer is commonly referred to as an element but actually is a piezoelectric ceramic material.
Please refer to installing instructions of the transducer manufacturer.

NOTE *In the following tables, related to the transducer functions in the "Funct." column, these abbreviations are used: D = Depth, S = Speed and T = Temperature.*

5.1 DEDICATED AVAILABLE TRANSDUCERS

5.1.1 FISH PRO HD+

	AIRMAR #	Model Designation	Housing	Mount	Funct.	Power
P58 	31-492-1-01	P58 Transom Mount	Plastic	Transom	D/S/T	600W
P66 	31-680-1-01	P66 Hi Performance	Plastic	Transom	D/S/T	600W
P79 	31-494-2-01	P79 Plastic	Plastic	In-hull	D	600W
P319 	31-495-2-01	P319 Plastic	Plastic	Thru-hull	D	600W

B744V

31-658-2-02 B744V W/ Hi Performance Fairing Bronze Thru-hull D/S/T 600W

B45

31-696-1-01 B45 W/ Hi Performance Fairing Bronze Thru-hull D/T 600W

B258

41-191-1-01 B258 W/ Hi Performance Fairing Bronze Thru-hull D/T 1000W

B260

B260

41-226-2-01 B260 W/ Hi Performance Fairing Bronze Thru-hull D/T 1000W

M260

41-225-2-01 M260 W/ In-Hull Tank Kit Urethane In Hull D 1000W

M258

41-192-1-01	M258 W/ Transom Bracket 1000W	Urethane	Transom	D		

5.1.2 Optional Devices for FISH PRO HD+

	AIRMAR #	Model Designation	Housing	Mount	Funct.	Power
EST800 	35-005-2-01	EST800 Speed/Temp Sensor	Plastic	Thru-hull	S/T	N/A
TEMP2 Sensor 	31-039-9-01	TEMP2 Sensor, Transom Mounted	Stainless	Surface	T	N/A

NOTE *Please contact your local dealer for more information on transducers.*

6. Frequently Asked Questions

6.1 How can I disconnect the cables from the FISH PRO HD+ in case I need to do so for the installation?

- Open the FISH PRO HD+ box unscrewing the four screws (see the following figure).

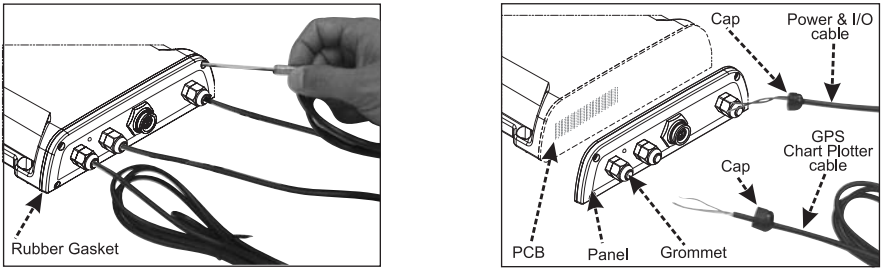


Fig. 6.1 - The FISH PRO HD+

- Once the screws are removed, pull out the panel and the Printed Circuit Board (PCB). Unscrew the cables from the PCB.
- Wire the cables as needed.
- Reconnect the cables to the PCB (see the Fig. 4.5 for reference).
- Push the panel towards the case (be sure to have well positioned the rubber gasket). Close the FISH PRO HD+ box screwing the four screws.

6.2 How can I set optimal operating parameters.

Optimal operating parameters can be set accordingly with the intended use of the Fish Finder, anyway to quickly get optimal operational parameters for fishing it is possible to select the FISH preset from the Fish Finder Setup menu, while for cruising it is possible to select the CRUISE preset.

6.3 What are preset modes?

Preset modes are pre-defined settings of the Fish Finder operating parameters. You can use them to quickly set the Fish Finder in the most commonly used operating modes. These are:

- CRUISE: sets the Fish Finder in full auto mode with the sensitivity settings (GAIN OFFSET, NOISE level and STC) optimized for displaying at best the bottom.
- FISH: sets the Fish Finder in full auto mode with the sensitivity setting optimized for target searching.

6.4 How can I restore the Fish Finder default operating parameters?

Simply select the CRUISE or the FISH preset. This will restore optimal operating parameters for either cruising or fishing.

6.5 Can I always leave the Fish Finder in Full Auto/(auto gain and auto range) mode?

Yes, but note that the full auto mode suits the 90% of the cases, however in extreme situations the auto modes mail fail and thus it is necessary to switch to the Manual mode.

6.6 What are extreme situations in which auto modes may fail?

When the bottom is very deep, at high boat speed, when the bottom is very shallow (< 5 feet), when the water is full of materials in suspension, with bad sea conditions.

6.7 What should I do if the auto modes fail?

Failure of auto modes can happen for various reasons. Hereafter you can find a range of possibilities.

6.8 Auto-range fails in very shallow waters displaying a digital depth readout deeper than the actual value. What should I do?

This usually happens if the STC is set to LONG or MID and the bottom is shallow or SHORT if the bottom is very shallow causing the auto-range to hook to the second or third echo from the bottom (since in shallow waters the sound bounces more times back and forth the surface to the bottom). Try decreasing the STC value to SHORT in shallow waters or to switch it to VERY SHORT or OFF.

6.9 Auto range fails, and the digital depth readout displays a very shallow reading. What should I do?

This usually happens if the STC is off or is set to a low value causing disturbs from surface clutter to be stronger than bottom echoes. Try increasing the STC value. As general rule STC has to be set as in shallow waters and LONG in depth waters.

6.10 Auto-range fails in very deep waters displaying a digital very shallow depth readout. What should I do?

The Fish Finder capability to detect the bottom decreases as the bottom depth increase. If the bottom composition is soft as mud, if the sea conditions are bad, if there are thermoclines or the water is full of materials in suspension it can further decrease thus causing the digital depth readout to fail. When this happens the auto-range algorithm also fails. To recover from this situation it is necessary to switch to manual range mode and to set the manual depth mode. When manual depth mode is selected the algorithm that calculates the digital depth readout searches for the bottom within the range manually selected by the user. At this point it is necessary to increase manually the range until the bottom becomes graphically visible. If the echoes from the bottom are strong enough, the Fish Finder shall look to the bottom giving a correct depth reading and shall be possible to return in auto range mode. Please note that if one or more of the conditions that reduce the echoes from the bottom listed above is true the bottom may be not visible at all, in this situation a

strong thermocline or surface clutter may be interpreted by the Fish Finder as the bottom.

6.11 At a very shallow range upper half of the screen appears almost completely filled by the surface clutter. How can I eliminate it?

This is normal in shallow waters. To clean up the surface clutter without degrading the digital depth readout algorithm functionality there are two modes: 1) if Surface Declutter = OFF, it is possible to set the STC value to custom setting the STC length to the same size of the surface clutter, and increasing the STC strength until the image on the screen cleans up. Please note that in very shallow waters it is usually better to switch to manual gain mode to reduce gain fluctuation due to rapidly changing bottom conditions. 2) Using Surface Declutter, increase the SD value until the surface declutter disappears completely.

6.12 Why do I never see fishes in the range between 0 to 0.7 meters?

The minimum range of the Fish Finder is 0.7 meters. In this interval the Fish Finder can detect neither the bottom nor any target.

6.13 How can I reduce the surface clutter?

You can act by: properly setting the STC as described at 6.11 and also by increasing the NOISE LEVEL and reducing the GAIN or the GAIN OFFSET (if you are in auto gain mode). However please note that a strong attenuation of surface clutter may also reduce the capability to detect targets.

6.14 The Fish Finder is in auto gain mode but the picture display too many small targets, what shall I do to reduce the screen clutter?

Try increasing the NOISE LEVEL or decreasing the GAIN OFFSET.

6.15 In very shallow waters when the AUTO GAIN mode is selected there are fluctuations in the bottom profile width and its color representation. What should I do?

In very shallow waters the environment situation (bottom/water condition) vary very quickly thus causing the auto gain algorithm to create oscillations while trying to set optimal GAIN value for each situation. To avoid this it is advisable to switch to MANUAL GAIN mode and fine tune the GAIN to a fixed setting.

6.16 In very deep waters even setting the GAIN to its maximum value I cannot see the bottom what shall I do?

Try decreasing the NOISE LEVEL. If still the bottom is not visible there is nothing you can do, the bottom echo is simply too weak to be detected.

Analytical Index