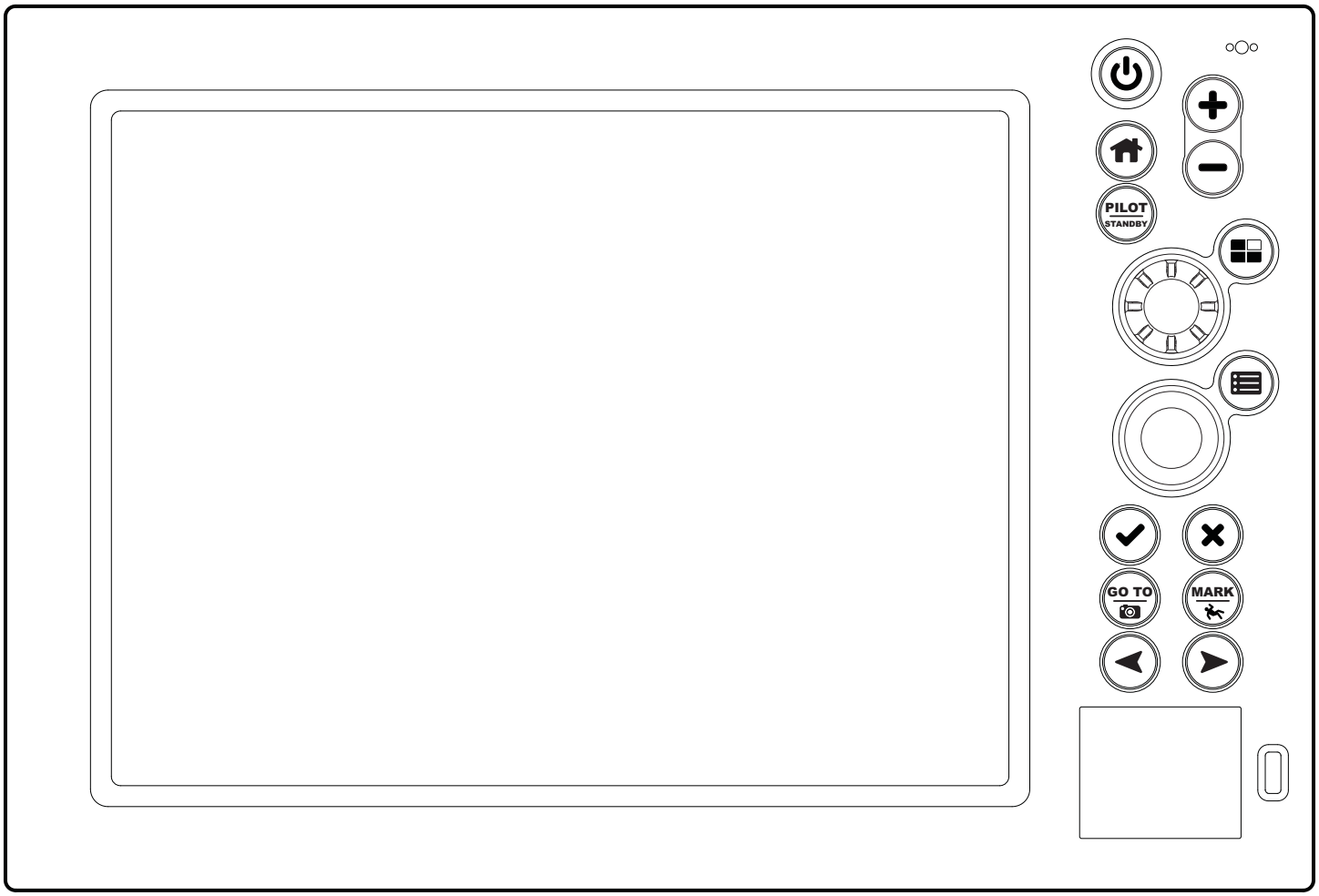
ION10 and ION12

Installation Guide



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HUMMINBIRD®

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Thank You!

Thank you for choosing Humminbird®, the #1 name in marine electronics. Humminbird has built its reputation by designing and manufacturing top-quality, thoroughly reliable marine equipment. Your Humminbird is designed for trouble-free use in even the harshest marine environment. In the unlikely event that your Humminbird does require repairs, we offer an exclusive Service Policy. For complete details, see the separate warranty card included with your unit. We encourage you to read this manual carefully in order to get full benefit from all the features and applications of your Humminbird product.

Contact Humminbird Customer Service at **1-800-633-1468** or visit our Web site at **humminbird.com**.

WARNING! This Humminbird system should be installed by a Certified Marine Electronics Technician (CMET) or an authorized Marine Electronics Installer (MEI). See NMEA.org for details. Incorrect installation may affect the system's performance, which affects the safety of the vessel and its passengers. If you have questions about the installation, contact Customer Service.

WARNING! This device should not be used as a navigational aid to prevent collision, grounding, boat damage, or personal injury. When the boat is moving, water depth may change too quickly to allow time for you to react. Always operate the boat at very slow speeds if you suspect shallow water or submerged objects.

WARNING! The electronic chart in your Humminbird unit is an aid to navigation designed to facilitate the use of authorized government charts, not to replace them. Only official government charts and notices to mariners contain all of the current information needed for the safety of navigation, and the captain is responsible for their prudent use.

WARNING! Compass Safe Distance: The control head must be installed at least 4 feet (1.2 m) from a compass or other magnetic equipment on the vessel. See your compass installation guide for more information.

WARNING! This device is granted for use in Mobile only configurations in which the antennas used for this transmitter must be installed to provide a separation distance of at least 8 inches (20 cm) from all person and not be co-located with any other transmitters except in accordance with FCC and Industry Canada multi-transmitter product procedures.

WARNING! Humminbird is not responsible for the loss of data files (waypoints, routes, tracks, groups, recordings, etc.) that may occur due to direct or indirect damage to the unit's hardware or software. It is important to back up your control head's data files periodically. Data files should also be saved to your PC before restoring the unit's defaults or updating the software. See your Humminbird online account at **humminbird.com** and the operations manual on your Humminbird Manual CD for details.

WARNING! Disassembly and repair of this electronic unit should only be performed by authorized service personnel. Any modification of the serial number or attempt to repair the original equipment or accessories by unauthorized individuals will void the warranty.

WARNING! This product contains chemicals known to the State of California to cause cancer and/or reproductive harm.

WARNING! Do not travel at high speed with the unit cover installed. Remove the unit cover before traveling at speeds above 20 mph.

NOTE: Some features discussed in this manual require a separate purchase, and some features are only available on international models. Every effort has been made to clearly identify those features. Please read the manual carefully in order to understand the full capabilities of your model.

NOTE: The illustrations in this manual may not look the same as your product, but your unit will function in the same way.

NOTE: To purchase accessories or any additional equipment for your control head configuration, go to **humminbird.com** or contact Customer Service at **1-800-633-1468**.

NOTE: The procedures and features described in this manual are subject to change without notice. This manual was written in English and may have been translated to another language. Humminbird is not responsible for incorrect translations or discrepancies between documents.

Environmental Compliance Statement: It is the intention of Johnson Outdoors Marine Electronics, Inc. to be a responsible corporate citizen, operating in compliance with known and applicable environmental regulations, and a good neighbor in the communities where we make or sell our products.

WEEE Directive: EU Directive 2002/96/EC "Waste of Electrical and Electronic Equipment Directive (WEEE)" impacts most distributors, sellers, and manufacturers of consumer electronics in the European Union. The WEEE Directive requires the producer of consumer electronics to take responsibility for the management of waste from their products to achieve environmentally responsible disposal during the product life cycle.

WEEE compliance may not be required in your location for electrical & electronic equipment (EEE), nor may it be required for EEE designed and intended as fixed or temporary installation in transportation vehicles such as automobiles, aircraft, and boats. In some European Union member states, these vehicles are considered outside of the scope of the Directive, and EEE for those applications can be considered excluded from the WEEE Directive requirement.

This symbol (WEEE wheelie bin) on product indicates the product must not be disposed of with other household refuse. It must be disposed of and collected for recycling and recovery of waste EEE. Johnson Outdoors Marine Electronics, Inc. will mark all EEE products in accordance with the WEEE Directive. It is our goal to comply in the collection, treatment, recovery, and environmentally sound disposal of those products; however, these requirements do vary within European Union member states. For more information about where you should dispose of your waste equipment for recycling and recovery and/or your European Union member state requirements, please contact your dealer or distributor from which your product was purchased.

ROHS Statement: Product designed and intended as a fixed installation or part of a system in a vessel may be considered beyond the scope of Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

ATTENTION INTERNATIONAL CUSTOMERS: Products sold in the U.S. are not intended for use in the international market. Humminbird international units provide international features and are designed to meet country and regional regulations. Languages, maps, time zones, units of measurement, and warranty are examples of features that are customized for Humminbird international units purchased through our authorized international distributors.

To obtain a list of authorized international distributors, please visit our Web site at **humminbird.com** or contact Customer Service at **(334) 687-6613**.

Introduction

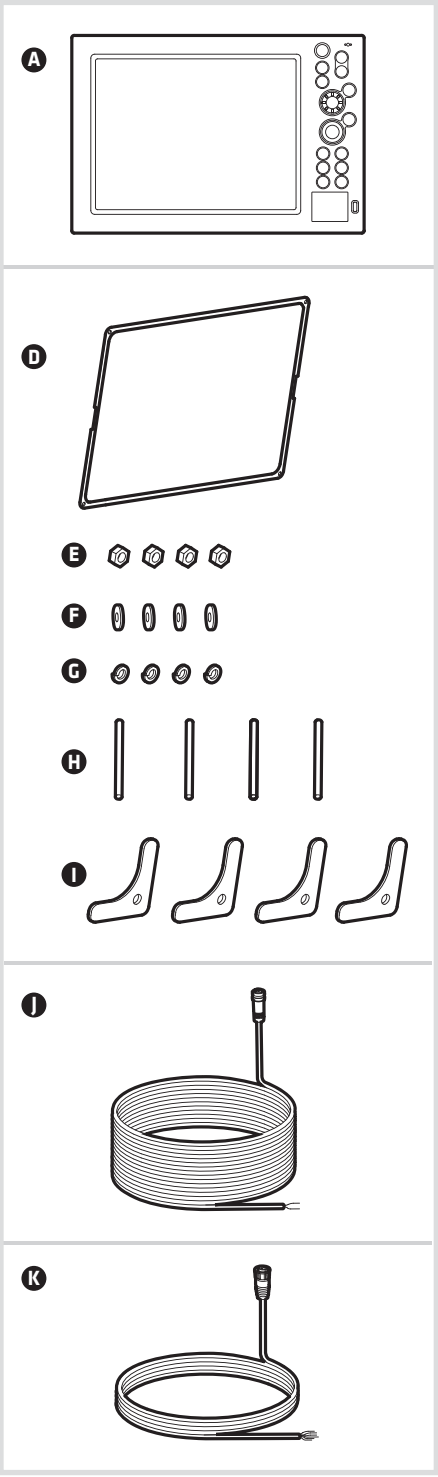
This manual will guide you through the following installation requirements:

- Installing the Control Head
- Connecting Cables to the Control Head
- Connecting the Control Head to Power
- Powering On the Control Head
- Configuring the Control Head and Basic System Setup

Preparation

Before you start the installation, please take a moment to familiarize yourself with the parts list and supplies lists. We also encourage you to read the instructions beforehand so that you may understand the installation requirements.

NOTE: Product supplies and features are subject to change without notice.



Parts

Your ION includes the following items:

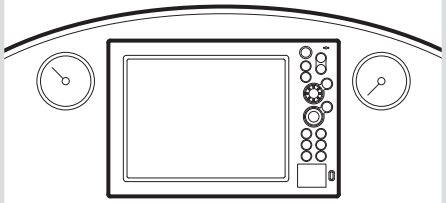
- A ION control head with cover
- B in-dash mounting template
- C in-dash mounting hardware
  - D (1) rubber gasket
  - E (4) nuts
  - F (4) flat washers
  - G (4) split ring lock washers
  - H (4) threaded rods
  - I (4) L-brackets
- J power cable
- K serial adapter cable (used with optional-purchase accessories)

Supplies

In addition to the parts supplied with your installation kit, you will need the following items:

- reciprocating saw
- socket wrench
- thread locker (medium strength, removable)
- masking tape
- safety glasses
- dust mask

In-Dash Mount



Install the Control Head

Use the instructions in the following section to in-dash mount the control head on your boat.

1 | Determine the Mounting Location

Start by locating a suitable, flat area of the dashboard for mounting. Consider the following to find the best mounting location:

Compass Safe Distance	The control head must be installed at least 4 feet (1.2 m) from a compass or other magnetic equipment on the vessel. See your compass installation guide for more information.
Interference	The mounting location must provide adequate distance from electric motors or any equipment that may cause electronic interference.
Stability	The mounting area should be protected from waves, shock, vibration, and water.
Visibility	The operator must have a clear view of the screen during operation. Review the visibility in relation to other dashboard equipment, sun, and the operator's main steering position.
Cover	See the In-Dash Mounting Template included with your control head to allow space for the cover.
Depth	The mounting area should have a depth of 6 inches (152.4 mm) to allow space for the control head and cables.
Ventilation	The area beneath the mounting surface should be well-ventilated.
Accessibility	The location should be easily accessible for all cables to reach the ports on the back of the control head.

NOTE: If a cable is too short for your application, extension cables are available. For assistance, contact Customer Service at **humminbird.com** or call **1-800-633-1468**.

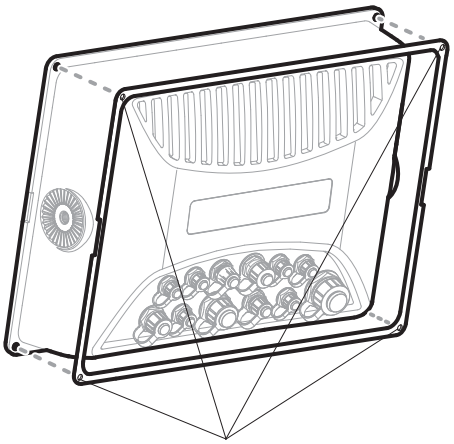
2 | Install the Control Head

1. Confirm you have the correct In-Dash Mounting Template for your control head.
2. Read the instructions on the template before proceeding with the installation.
3. Tape the template to the chosen mounting location.
4. Drill the four mounting hole locations using a 3/16" (4.5 mm approximately) drill bit.
5. At a location inside the dotted line on the template, drill a 3/8" (9.5 mm) diameter saw blade entry hole. Carefully begin cutting toward the dotted line, then continue cutting along the **inside** of the dotted line around the template.

   WARNING! The corner cut lines are critical to the installation. Carefully cut along the inside of the line.

6. Test the fit of the control head in the mounting hole and make adjustments to the mounting hole, if needed. Remove the control head and the template when finished.
7. Peel the adhesive from the rubber gasket. With the adhesive side down, align the gasket's screw holes with the holes on the control head. Gently press the gasket around the perimeter of the control head to assure it adheres.

Attaching the Rubber Gasket



Align the holes on the rubber gasket with the holes on the control head.

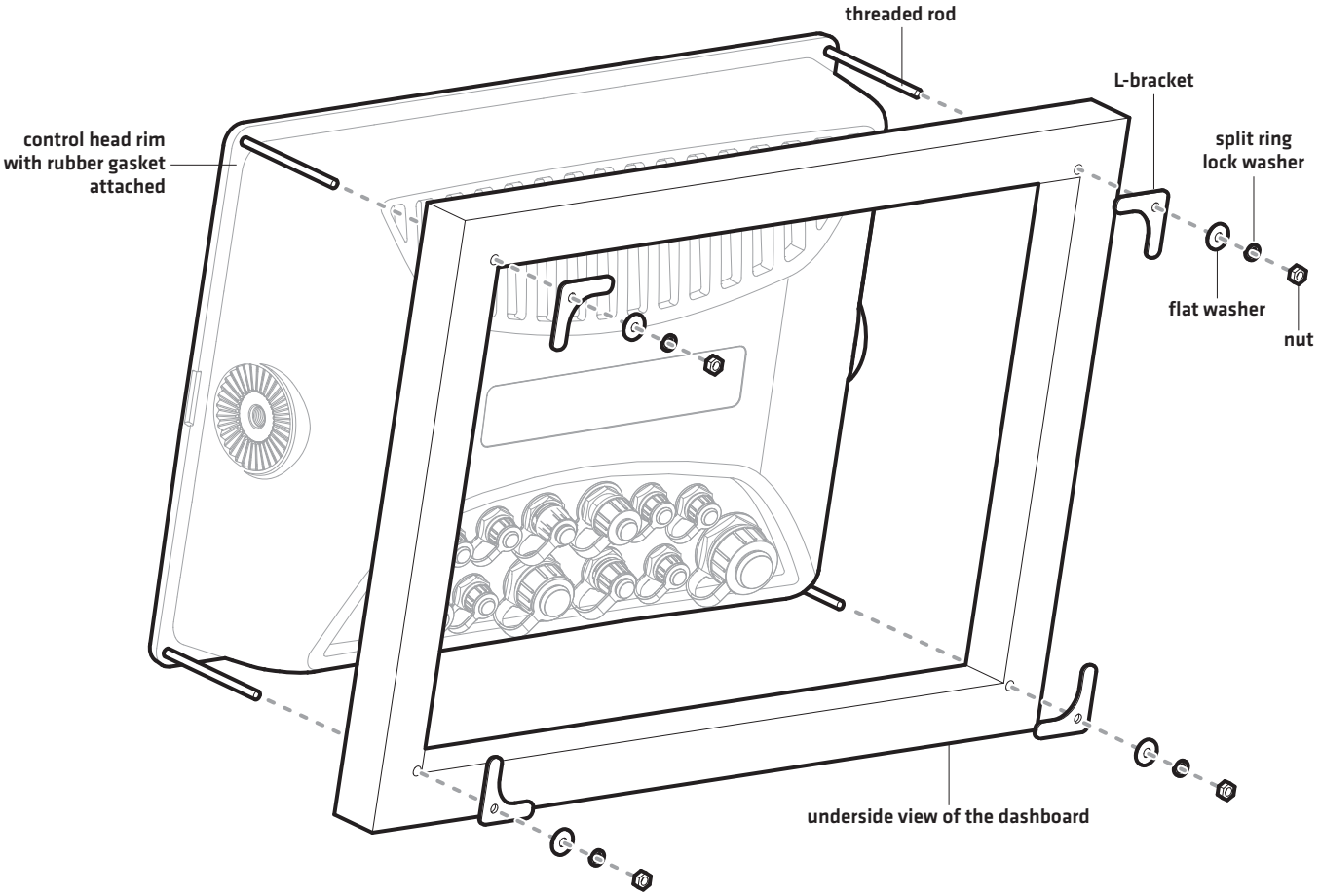
8. Insert and hand-tighten the four threaded rods into the threaded inserts located on the back of the control head.
9. Carefully slide the control head into the mounting hole and align the threaded rods with the drilled holes in the dashboard.

CAUTION! Do not force the control head into the mounting hole. If there is difficulty with the installation, check the drilled holes.

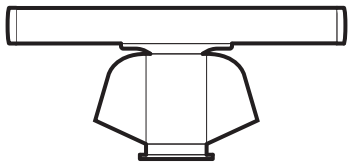
10. Place the hardware onto each threaded rod in the following order: L-bracket, flat washer, split ring lock washer, and nut (see the illustration *Mounting the Control Head*).
11. Using a socket wrench, tighten each nut so that the split ring washer flattens. You can also apply thread locker (medium strength, removable) to secure the installation.

CAUTION! The washers must be fully compressed for a secure installation.

Mounting the Control Head



Install Accessories



Install Accessories

If you have purchased additional accessories for your control head configuration, see the installation guide provided with each accessory for installation instructions. See the ***Network Configuration*** illustration for an example of possible network connections.

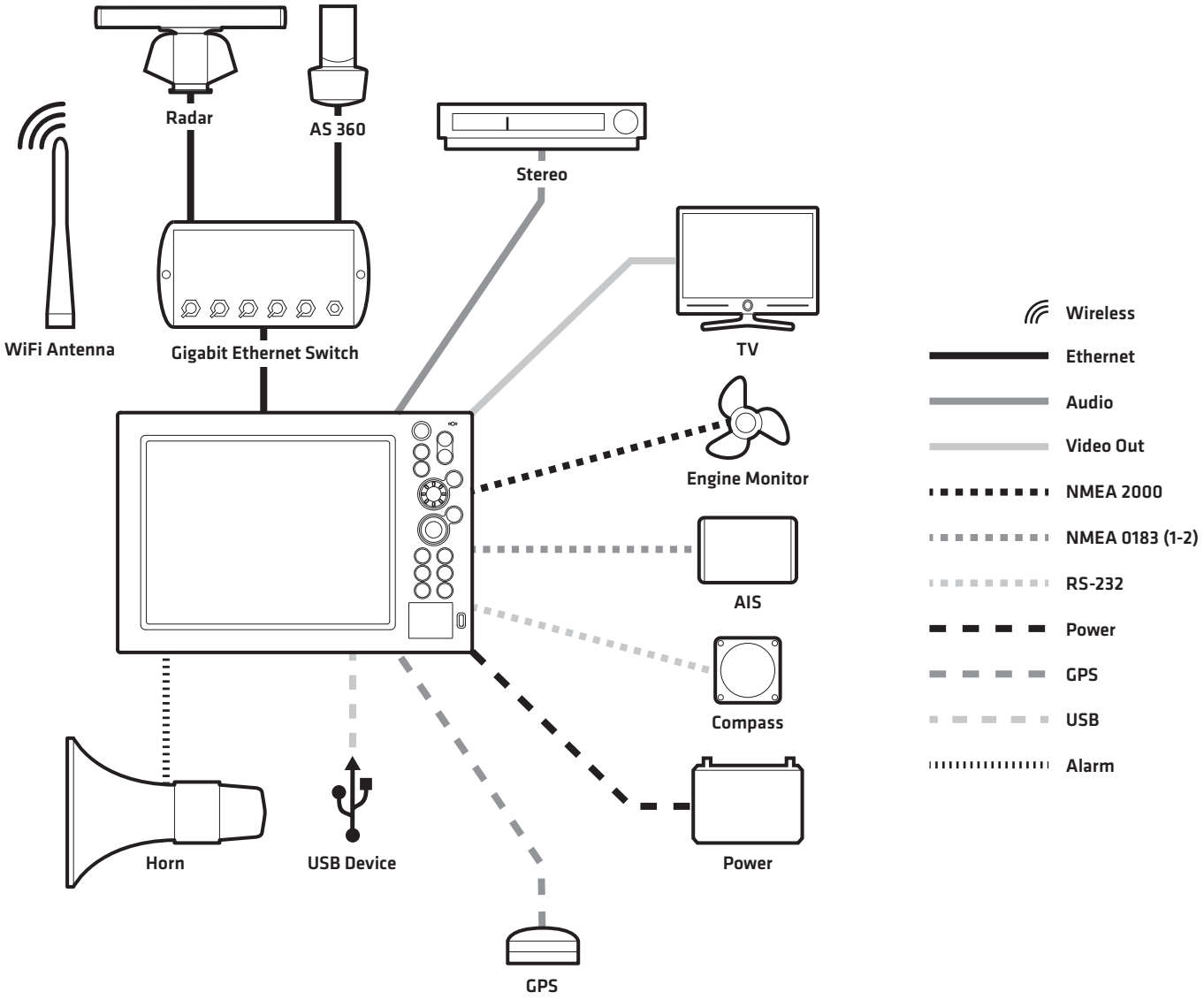
Ethernet: Your unit has a built-in ethernet connector so that you can network advanced accessories and multiple Humminbird units. The Ethernet cable requires a separate purchase. See the Ethernet Installation Guide for details.

Sonar: You can enable sonar on your ION control head by installing a black box sonar. See **humminbird.com** to purchase a black box sonar, transducer(s), and additional equipment. See the control head operations manual to set up transducers on the control head.

Adapter Cables: Your installation may require adapter cables to connect accessories to the control head. One serial adapter cable is included with your unit (see ***Preparation: Parts***). Additional cables require a separate purchase.

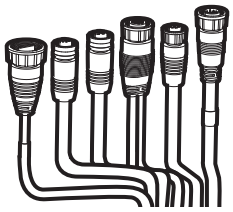
NOTE: To review the latest compatible accessories for your control head, and to purchase cables or other equipment, go to **humminbird.com** or contact Customer Service at **1-800-633-1468**.

Network Configuration

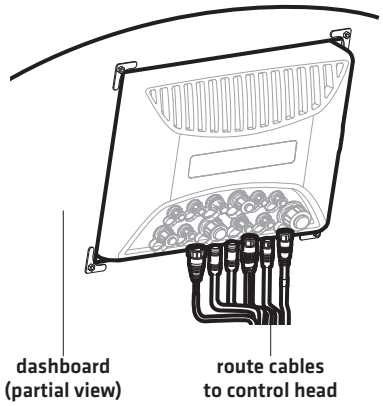


NOTE: To view more examples of network configurations, visit our Web site at **humminbird.com**.

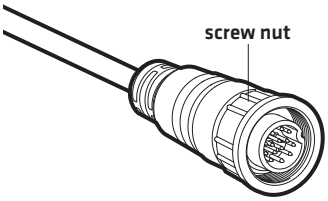
Routing the Cables



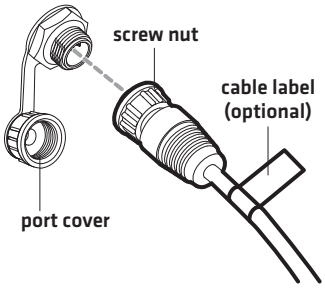
Routing the Cables to the Control Head



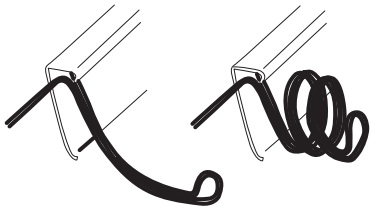
Connecting the Cable



Securing the Cables
(magnified view)



Storing Excess Cable



Route and Connect the Cables

Use the procedures in the following section to route and connect all cables to the control head.

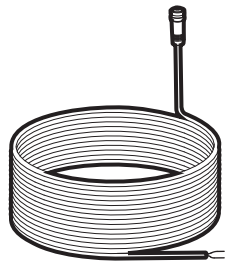
CAUTION! Do NOT mount the cables where the connectors could be submerged in water or flooded. If cables are installed in a splash-prone area, it may be helpful to apply dielectric grease to the inside of the connectors to prevent corrosion. Dielectric grease can be purchased separately from a general hardware or automotive store.

NOTE: If a cable is too short for your application, extension cables are available. For assistance, contact Customer Service at **humminbird.com** or call **1-800-633-1468**.

1. Route the accessory cables to the control head.
2. Connect the cable connectors to the appropriate ports on the control head. The ports are labeled, and the connectors are keyed to prevent incorrect installation.
3. Hand-tighten the screw nut on each cable to secure the connection. Any unused ports should be covered with the port covers to prevent potential damage.
4. Apply labels to the cables (optional). Use nylon cable ties (not included) to secure the cables and create a clean assembly.

NOTE: If there is excess cable that needs to be gathered at one location (as shown in the illustration), dress the cable routed from both directions so that a single loop is left extending from the storage location. Doubling the cable up from this point, form the cable into a coil. Storing excess cable using this method can reduce electronic interference.

Connecting the Power Cable



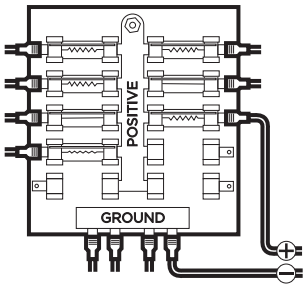
Connect the Control Head Power Cable

A 6 ft (2 m) power cable is included to connect power to the control head. You may shorten or lengthen the cable using 18 gauge multi-stranded copper wire.

CAUTION! Some boats have a 36 Volt electric system, but the control head MUST be connected to either a 12 VDC or 24 VDC power supply.

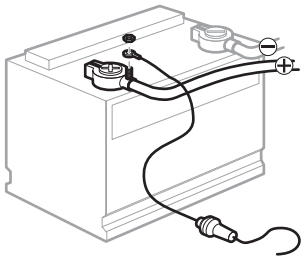
WARNING! Humminbird is not responsible for over-voltage or over-current failures. The control head must have adequate protection through the proper selection and installation of a 5 Amp fuse (recommended fuse type: slow-blow, time-delay, or time-lag).

Fuse Terminal Connection

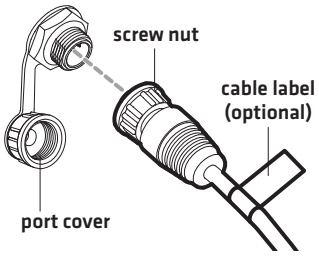


Power Cable	Fuse Terminal or Battery Switch
Black Wire	(–) Ground
Red Wire	(+) 12 or 24 VDC

Battery Switch Connection



Connecting the Power Cable to the Power Port
(magnified view)



Connect to Power

The power cable can be connected to a fuse panel (usually located near the console) or to a battery switch.

1. Make sure that the power cable is disconnected from the control head.

Fuse Terminal Connection

2a. Use crimp-on type electrical connectors (not included) that match the terminal on the fuse panel. Attach the black wire to ground (–), and the red wire to positive (+) 12 VDC or 24 VDC power. Install a 5 Amp fuse (not included) for protection of the unit.

OR

Battery Switch Connection

2b. Install the battery switch (not included) using the instructions provided with it. You will also need to install an inline fuse holder and a 5 Amp fuse (not included) for protection of the unit. Attach the black wire to (–) ground, and the red wire to (+) 12 VDC or 24 VDC power.

NOTE: In order to minimize the potential for interference with other marine electronics, a separate power source (such as a second battery) may be necessary.

3. Route the power cable to the control head, and insert the connector into the POWER port. The ports are labeled, and the connectors are keyed to prevent incorrect installation. Hand-tighten the screw nut to secure the cable connection.

Proceed to the section ***Power On the Control Head***.

Power On the Control Head

Use the procedures in this section to power on and power off the control head.

Power On

1. Press and hold the POWER key ⏻.

   First Power On: On the first power on after installation, the Welcome Menu displays on the screen.

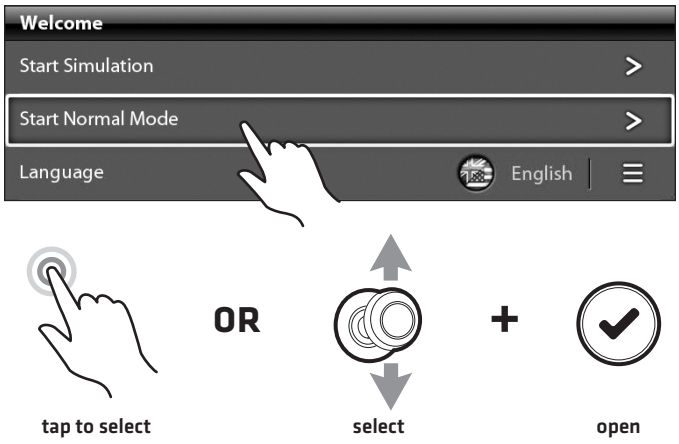
2a. Select **Start Normal Mode.**

2b. **International Units only:** Select **Language** to select the language displayed on the control head.

3. Selecting Start Normal Mode launches the Setup Guide. Proceed to the section ***Setup Guide*** for instructions.

Cross Touch: The Cross Touch feature allows you to use the touch screen or press the control head keys to select menus and start actions on the control head. See the Quick Start Guide for more information.

Welcome Menu



Power Off

1. Press and hold the POWER key ⏻.

Setup Guide

The Setup Guide is a first time setup tool to help you configure basic system preferences, such as the map source and units of measurement. The following sections provide basic instructions for each step of the Setup Guide.

See the Quick Start Guide and your control head operations manual for more information about the menu system.

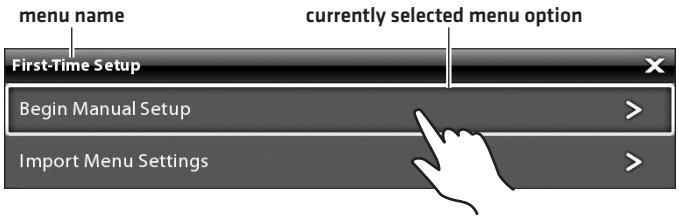
NOTE: All settings are automatically saved.

NOTE: The Setup Guide settings can be changed at any time. See each menu option in the menu system for details. See your control head operations manual for more information.

First-Time Setup | Begin Manual Setup

1. Select **Begin Manual Setup** to manually select the settings.

   Selecting **Begin Manual Setup** will automatically open the first menu dialog box.



General Settings | Select Time and Date Format, and Units of Measurement

Select Units of Measurement

1. Select **Units** and open the submenu.
2. Select a menu option and open the submenu.
3. Select a setting and press the ENTER key ✔ to confirm the selection.
4. Tap the back arrow on-screen or press the EXIT key ✖ to return to the submenu.
5. Repeat steps 2 through 4 to change another setting.
6. Tap the back arrow on-screen or press the EXIT key ✖ to return to the main menu.
7. Select additional settings, as needed. Tap the right arrow on-screen or press the RIGHT ARROW key ➤ on the keypad to proceed to the next menu dialog box.

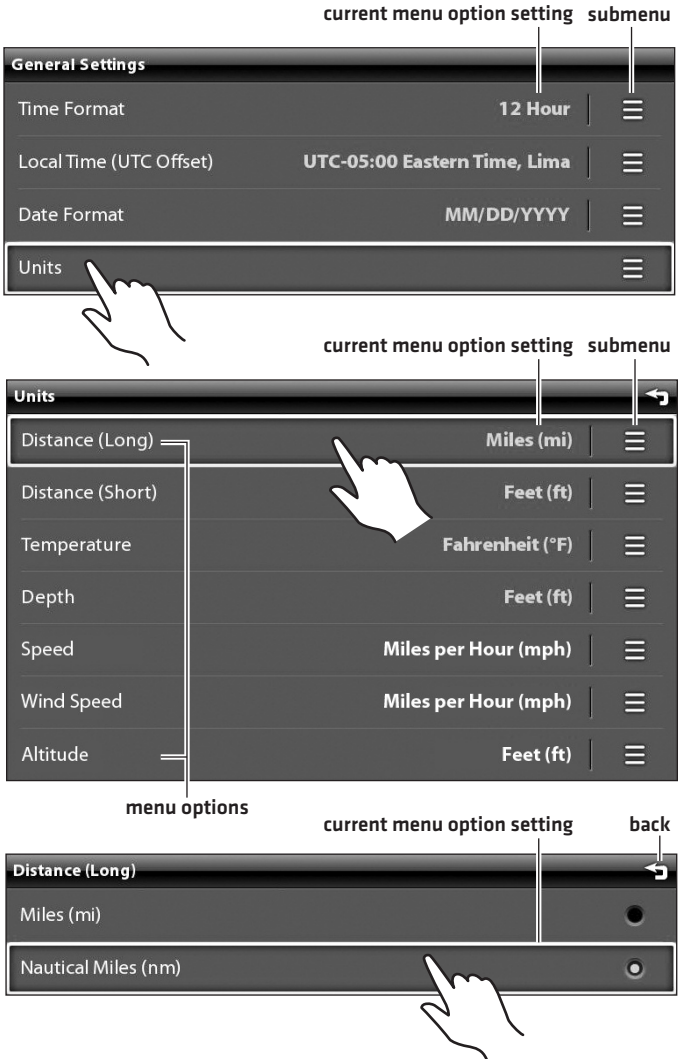


Chart | Select the Map Source and Water Level Offset

Humminbird is the built-in map source for your control head. You can also select Navionics or C-MAP by Jeppesen as your map source. If you install an SD card with additional maps, set the map source to match the SD card type.

From this menu, you can also set the Water Level Offset (Humminbird charts only). Water Level Offset allows you to change the level of the water being read from the control head. For example, if the lake is down 5 feet, set the Water Level Offset setting to -5. The displayed numbers on the Contour Lines will adjust from the Water Level Offset setting. See your control head operations manual for more information.

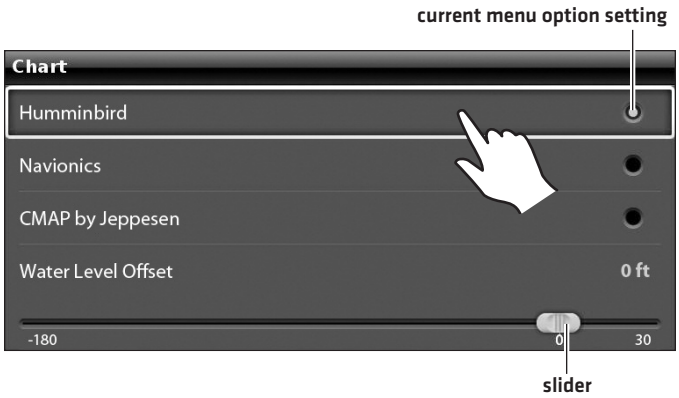
NOTE: If you trailer the boat to a new location, the Water Level Offset must be reset according to the current environment.

Select a Map Source

1. Select a map source and press the ENTER key ✔ to confirm the selection.

Set the Water Level Offset

1. Drag the slider, or use the Rotary Dial, to adjust the setting.
2. Tap the right arrow on-screen or press the RIGHT ARROW key ➤ on the keypad to proceed to the next menu dialog box.



Use the following instructions to select the NMEA 2000 engines and/or tanks and the vessel dimensions of your boat.

Select Engines and Tanks with NMEA 2000 Sensors

If you have a NMEA 2000 network on your boat that is connected to the engines and/or fuel tanks, select your current configuration to receive NMEA 2000 data on your control head.

NOTE: See ***NMEA Input/Output*** for a complete list of compatible NMEA sentences.

1. Select **Engines/Tanks** and open the submenu.
2. Select a setting and press the ENTER key ✔ to confirm the selection.
3. Tap the back arrow on-screen or press the EXIT key ✖ to return to the main menu.
4. Select additional settings as needed.

Set Vessel Dimensions

It is important to set the height, width, and depth allowances required for your vessel as that information affects the accuracy of auto route calculations during navigation.

1. Select **Vessel Dimensions** and open the submenu.
2. Select a setting. Drag the slider, or use the Rotary Dial, to adjust the setting.
3. Select additional settings as needed.
4. Tap the back arrow on-screen or press the EXIT key ✖ to return to the main menu.
5. Select **Confirm** to confirm the selected settings.

The unit will automatically enter normal operation.

Home Screen

Set Up the Control Head

After completing the Setup Guide, use the following sections to configure basic system settings and confirm operation.

NOTE: See the Quick Start Guide and the control head operations manual that was provided with your unit for additional information.

Start Radar Transmission

If you have a radar connected to the control head system, use the following instructions to start radar transmission.

WARNING! The radar must be configured before it can be used for on-the-water operations. See the operations manual for configuration instructions.

Start Radar Transmission

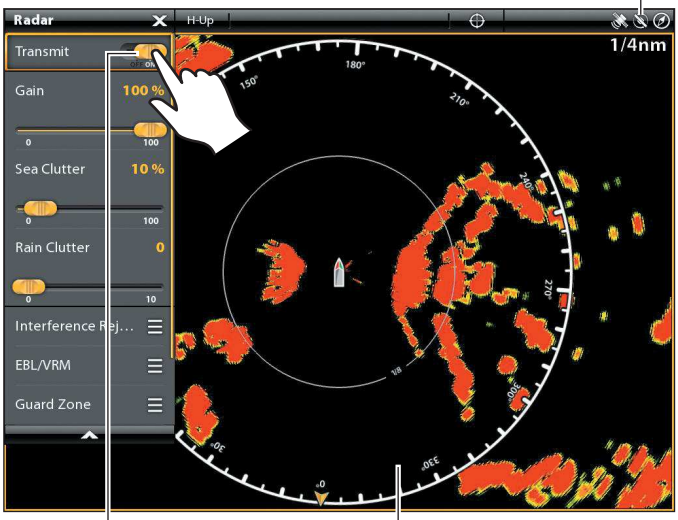
1. Confirm the radar power source is turned on (breaker or switch).
2. Press the **HOME** key.
3. Tap the **Radar view** on the Favorites Bar, or use the Joystick to select it and press the ENTER key to open.
4. With the Radar view open on-screen, press the MENU key.
5. Turn **Transmit ON**. A radar icon will appear in the system status bar confirming the radar is transmitting (see *Confirm Sensor Connection*).

Use the same instructions to turn Radar Transmit off.

Favorites Bar

Confirm Radar Transmission

Radar icon is displayed in the system status bar.



Transmit is ON. **Radar data is displayed on-screen.**

Confirm Sensor Connection

This section provides information on how to confirm sensor connection and status.

System Status Bar

The system status bar is located at the top right of the display. Each accessory connected to the control head is represented by an icon in the system status bar. Each icon will display variations depending on the current sensor status.

Active: If a sensor is detected on the network and is active (transmitting or receiving data), the icon will be white. See the table below.

Inactive: If a sensor is connected, but not detected on the network or active (transmitting or receiving data), the icon will be gray.

NOTE: If you have connected an accessory to the control head and the icon is not displaying in the system status bar, check the installation of the accessory and the cable connection to the control head.

Active Status Icon	Sensor	Icon Description
	AIS	AIS is on and receiving targets.
	Compass	The selected accessory compass is on and heading data is being received.
	GPS	The selected GPS source is detected and a GPS fix has been obtained.
	iPilot	iPilot is connected, enabled, and actively navigating.
	Radar	The selected radar source is detected and transmitting data.
	2D Sonar	The selected 2D sonar source is detected and pinging data.
	360 Imaging Sonar	The 360 Imaging transducer is pinging data.
	Wi-Fi	Wi-Fi is on and connected to a hotspot with a strong signal strength.

Set Alarms

Your control head provides a wide variety of alarms that are organized under categories such as System, Navigation, and Engine. Before you start navigating with your control head, set up the appropriate alarms so that you will be alerted if the alarm condition is detected.

NOTE: Some alarms include default settings. Use the instructions below to change an alarm setting.

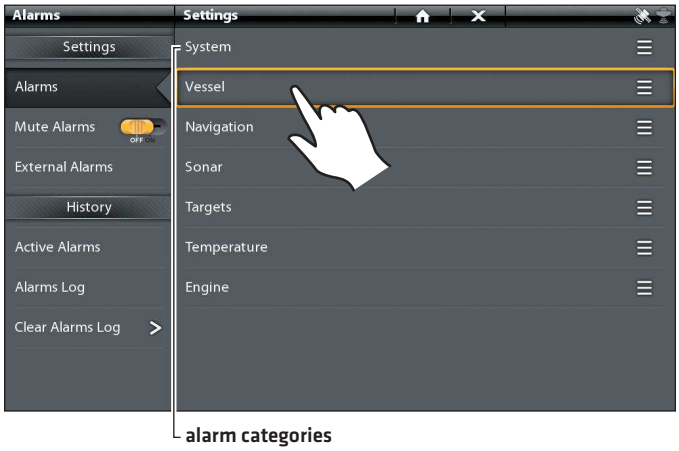
Set an Alarm

1. From the Home screen, select **Alarms**.
2. Select an alarm category and open the submenu.
3. Select an alarm name.
4. Tap the ON/OFF slider to turn the alarm ON.
5. Drag the slider, or use the Rotary Dial, to adjust the menu setting.

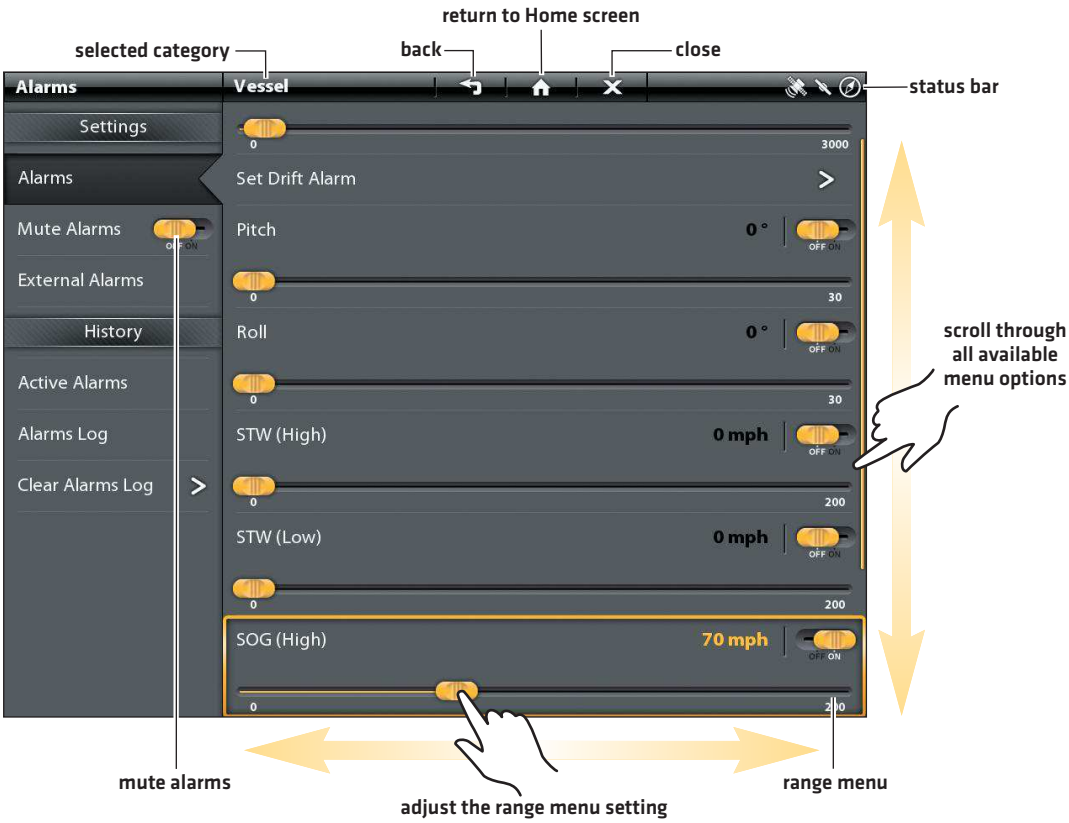
   NOTE: Menu options that include range menus may have an OFF default setting and may not automatically turn on when you adjust the menu setting. Confirm the menu option is turned ON before adjusting the range setting. The current setting will change from black (OFF) to yellow (ON).

6. Tap the back arrow on-screen, or press the EXIT key, to close the submenu and return to the Alarms menu.
7. Repeat steps 2 through 6 to set additional alarms.
8. Press the EXIT key to return to the Home screen.

Selecting an Alarm Category



Setting an Alarm



Display a Data Bar

Your control head allows you to choose a standard data bar or a navigation data bar with preset data boxes. If you attach additional accessories to the control head or network, additional data bar options may also be displayed. The data boxes in the data bar can also be changed.

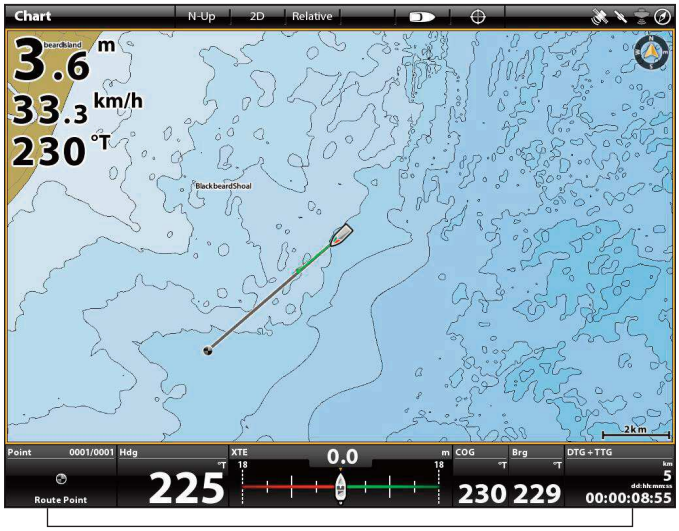
Select the Data Bar Type

1. With a view displayed on-screen, press the **PANE** key once. In a multi-pane view, press the PANE key repeatedly until the status bar turns yellow.
2. Press the **MENU** key once.
3. Select **Data Bar** from the View Options Menu.
4. Select the type of data bar to display. To hide the data bar, select Off.

Customize the Data Bar

Your control head provides a wide variety of data types (categories), including Vessel, Navigation, Speed, Wind, Fuel, and Engine, with multiple data box options. The data bars can be customized with the data boxes you select. See your control head operations manual for more information.

Chart View with Data Bar Displayed



navigation data bar

Set the Trip Log

The Trip Log provides current navigation data, such as Speed Over Ground (SOG), timer for elapsed time, distance traveled since last reset, average speed, and trip fuel.

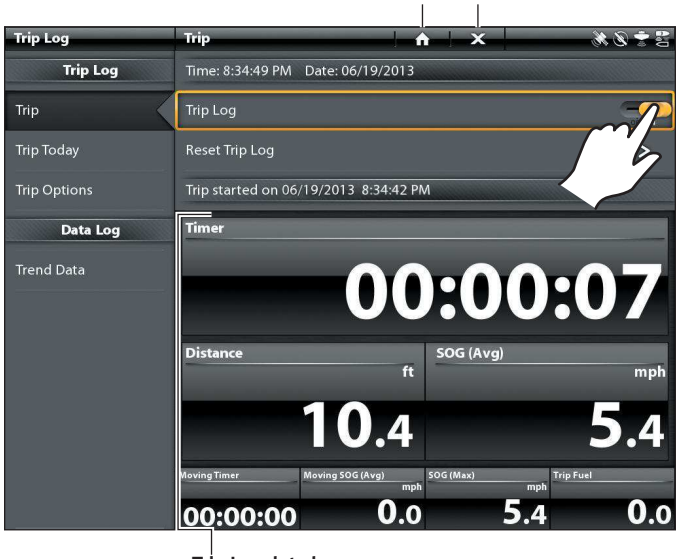
Turn On Trip Log

1. From the Home screen, select the **Trip Log** tool .
2. Under Trip Log, select **Trip**.
3. Select **Trip Log** and tap the ON/OFF slider to turn Trip Log ON.

Use the same instructions to turn the Trip Log off.

Starting the Trip Log

return to Home screen close



Trip Log data boxes

Manage Your Control Head

WARNING! Humminbird is not responsible for the loss of data files (waypoints, routes, tracks, groups, snapshots, recordings, etc.) that may occur due to direct or indirect damage to the unit's hardware or software. It is important to back up your control head's data files periodically. Data files should also be saved to your PC before restoring the unit's defaults or updating the software. See your Humminbird online account at **humminbird.com** and the operations manual on your Humminbird Manual CD for details.

Rename Your Control Head

Use the following instructions to rename your control head.

1. From the Home screen, select **Settings**.
2. Select **Network**.
3. Select **System Info**.
4. Select **Rename Unit**. Using the on-screen keyboard or keypad, enter the name you would like to use for your control head. Select **Save**.

You can use the same instructions to rename the Network, under Network Info.

Register Your Humminbird Unit

Set up an online account so that you will receive the latest Humminbird news, including accessory compatibility and software update information.

1. Go to our Web site at **humminbird.com**, and click My Account.
2. Follow the on-screen instructions to create a new account. Then, click Register a Product.

Save System Settings to an SD Card

You can save your customized system settings to an SD Card. This allows you to import your favorite settings to another control head or to a control head that has been restored to its factory settings.

1. Insert an SD Card into one of the SD Card slots on the control head.
2. From the Home screen, select the **Files** tool .
3. Under Export, select **Menu Settings**.
4. Follow the on-screen prompts to export the menu settings to the SD Card.

You can use the same instructions to import saved settings to the control head. Select **Import > Menu Settings**.

Humminbird Manuals on CD

The CD included with your control head contains the operations manuals (and other related manuals) for your Humminbird product. To open, read, and print the Adobe PDF files, you will need Adobe Reader software installed on your computer.

To download the free Adobe Reader Software to your computer, visit ***http://get.adobe.com/reader***.

1. Insert the CD into your computer's CD drive.
2. From the on-screen window, click **Open Folder to View Files**.

   NOTE: If the window does not automatically open, locate the CD drive from your desktop and double-click the CD title to open the folder.

3. Under **Files Currently on the Disc**, select a manual folder and double-click to open.
4. **Select a language folder.** Double-click the folder to view the included PDF files. (EN = English, FR = French)
5. Double-click the PDF file to open the manual.

PDF File Tips (also see Adobe Reader Help):

- In the Bookmarks Panel, click a section name to jump to a specific section of the manual. Bookmarks can be expanded and collapsed by clicking on the plus (+) or minus (-) icons.
- To search words or phrases throughout the manual, press Ctrl F and type the word(s) into the text box.

The included CD is not a DVD.

Update the Control Head Software

If your model can be updated, you can download software updates from your Humminbird online account.

1. Log in to your account at **humminbird.com**.
2. From the My Equipment tab, click the file name of the latest control head software update (unit name [version #]).
   - Read the instructions in the dialog box and click Download.
   - Follow the on-screen instructions to save the software file to the SD Card.
3. Install the SD card with the software file into your control head card slot. Press the POWER key to power on your control head. The unit will recognize the new software and run through a series of prompts to confirm the software installation.

NMEA Input/Output

Your control head is compatible with the NMEA 0183 and NMEA 2000 sentences shown in the following sections.

NMEA 0183

Message	Description	Input	Output
AAM	Waypoint Arrival Alarm		▪
APB	Heading/Track Controller (Autopilot) Sentence "B"		▪
BOD	Bearing-Origin to Destination		▪
BWC	Bearing & Distance to Waypoint - Great Circle		▪
BWR	Bearing & Distance to Waypoint - Rhumb Line		▪
DBT	Depth Below Transducer	▪	▪
DPT	Depth	▪	▪
GGA	Global Positioning System Fix Data	▪	▪
GLL	Geographical Position - Latitude/Longitude	▪	▪
GNS	GNSS Fix Data	▪	▪
GSA	GNSS DOP and Active Satellites	▪	▪
GSV	GNSS Satellites In View	▪	▪
HDG	Heading, Deviation & Variation	▪	▪
HDM	Heading, Magnetic	▪	▪
HDT	Heading, True	▪	
MTW	Water Temperature	▪	▪
MWD	Wind Direction & Speed	▪	
MWV	Wind Speed & Angle	▪	
RMB	Recommended Minimum Navigation Information		▪
RMC	Recommended Minimum Specification GNSS Data	▪	▪
ROT	Rate of Turn	▪	▪
VBW	Dual Ground/Water Speed	▪	
VDM	AIS VHD Data Link (Other Vessels)	▪	
VDO	AIS VHD Data Link (Own Vessel)	▪	
VHW	Water Speed and Heading	▪	▪
VTG	Track Made Good & Ground Speed		▪
XDR	Transducer Measurements	▪	
XTE	Cross-Track Error, Measured		▪
ZDA	Time & Date	▪	▪

NMEA 2000

Message (PGN)	Description	Input	Output
059392	ISO Acknowledgement	▪	▪
059904	ISO Request	▪	▪
060928	ISO Address Claim	▪	▪
126208	NMEA - Command/Request/Acknowledge Function	▪	▪
126464	Receive/Transmit PGN List Group Function	▪	▪
126992	System Time	▪	
126996	Product Information	▪	▪
127245	Rudder	▪	
127250	Vessel Heading	▪	
127251	Rate of Turn	▪	
127488	Engine Parameters, Rapid Update	▪	
127489	Engine Parameters - Dynamic	▪	
127497	Trip Parameters, Engine	▪	
127505	Fluid Level	▪	
128267	Water Depth	▪	
129026	COG & SOG, Rapid Update	▪	
129029	GNSS Position Data	▪	
129033	Time & Date	▪	
129283	Cross Track Error	▪	
129284	Navigation Data	▪	
129285	Navigation - Route/WP Information	▪	
129539	GNSS DOPs	▪	
129540	GNSS Sats in View	▪	
130052	Loran C TD Data	▪	
130306	Wind Data	▪	
130310	Environmental Parameters	▪	
130311	Environmental Parameters	▪	
130312	Temperature	▪	
130313	Humidity	▪	
130314	Actual Pressure	▪	
130576	Small Craft Status	▪	

NMEA 2000 AIS Messages

Message (PGN)	Description	Input	Output
129038	Class A Position Report	▪	
129039	Class B Position Report	▪	
129809	AIS Class B Static Data, Part A	▪	
129810	AIS Class B Static Data, Part B	▪	

Select NMEA 0183 Sentences for Output

Use the following instructions to select NMEA 0183 output sentences.

1. From the Home screen, select **Settings**.
2. Select **Network**.
3. Select NMEA 0183 (1), NMEA 0183 (2), or RS-232.
4. Select **NMEA Output**.
5. Select NMEA sentences for output.
6. Tap the back arrow on-screen or press the EXIT key to return to the main menu.

Select the Baud Rates

Use the following instructions to set the baud rate for the NMEA 0183 (1), NMEA 0183 (2), and RS-232 ports.

1. From the Home screen, select **Settings**.
2. Select **Network**.
3. Select NMEA 0183 (1), NMEA 0183 (2), or RS-232.
4. Select **Baud Rate**.
5. Select a Baud Rate (Auto, 4800, 9600, or 38400; Default = Auto) and press the ENTER key to confirm the selection.
6. Tap the back arrow on-screen or press the EXIT key to return to the menu.

Specifications

ION10

Display Size (diagonal)	10.4 inches (264.2 mm)
Pixel Matrix	XGA 1024 x 768
Display Type	TFT Color
Backlight	LED
Communication	NMEA 0183 Bus NMEA 2000 Bus RS232 USB Ethernet
Power Requirement	10 to 32 VDC
Current Draw	2.5 Amps
Target Separation	2 1/2 inches (63.5 mm)
IPX Rating	IP67 Waterproof/Submersible @ 1m for 30 minutes and dust tight

NOTE: Product specifications and features are subject to change without notice.

ION12

Display Size (diagonal)	12.1 inches (307.3 mm)
Pixel Matrix	XGA 1024 x 768
Display Type	TFT Color
Backlight	LED
Communication	NMEA 0183 Bus NMEA 2000 Bus RS232 USB Ethernet
Power Requirement	10 to 32 VDC
Current Draw	2.5 Amps
Target Separation	2 1/2 inches (63.5 mm)
IPX Rating	IP67 Waterproof/Submersible @ 1m for 30 minutes and dust tight

NOTE: Product specifications and features are subject to change without notice.

Maintenance

Your control head is designed to provide years of trouble-free use with very little maintenance. Use the following procedures to ensure your Humminbird continues to deliver top performance.

Control Head Maintenance

It is important to consider the following precautions when using your Humminbird control head:

- Chemicals, such as those found in bug spray and sunscreen, may cause permanent damage to the control head screen. Such damage is not covered by the warranty.
- NEVER leave the control head in a closed car or trunk. The high temperatures generated in hot weather can damage the electronics.
- When the control head is not in use, cover the unit with the control head cover.
- Repairs should be performed only by an authorized technician.

Use the following information to keep the control head and screen clean.

- **Screen:** To clean the control head screen, use a mild soap (such as a non-abrasive liquid hand soap) and warm water. Wipe the screen dry with a soft cloth. Be careful to avoid scratching the screen. If water spots remain, use a solution of water and vinegar.

  WARNING! Do not use a chemical glass cleaner on the screen. Chemicals in the solution may cause cracking in the lens of the unit.

  NOTE: Do not wipe the screen while dirt or grease is on the screen.

- **Control Head:** If the control head comes into contact with salt spray, wipe the affected surfaces with a cloth dampened with fresh water.

Transducer Maintenance

If you have a transducer installed on your boat, use the following information to maintain transducer operation.

- If your boat remains in the water for long periods of time, algae and other marine growth can reduce the effectiveness of the transducer. Periodically clean the face of the transducer with a mild, marine-safe and plastic-safe soap or solution.

  NOTE: To clean the transducer, you may need to pivot the transducer up in the bracket. See the installation guide included with your transducer for more information.

- If your boat remains out of the water for a long period of time, it may take some time to wet the transducer when it is returned to the water. Small air bubbles can climb to the surface of the transducer and interfere with proper operation. These bubbles dissipate with time, or you can wipe the face of the transducer with your fingers after the transducer is in the water.

Troubleshooting

Before contacting Humminbird Customer Service, please read the following section. Taking the time to review these troubleshooting guidelines may allow you to solve a performance problem yourself, and therefore avoid sending your unit back for repair.

Control Head Doesn't Power Up

If your control head doesn't power up, use the Installation section of this manual for specific confirmation details, making sure that:

- the power cable is properly connected to the control head;
- the power cable is wired correctly, with red to positive battery terminal and black to negative terminal or ground;
- the fuse is operational;
- the battery voltage of the power connector is at least 10 Volts.

Correct any known problems, including removing corrosion from the battery terminals or wiring, or actually replacing the battery if necessary.

Display Problems

There are several main conditions or sources of possible interference that may cause problems with the quality of the information displayed on the control head. Look in the following table for some symptoms of display problems and possible solutions:

Display Problems	Possible Solutions
The control head loses power at high speeds.	If the power output of your boat's engine is unregulated, the control head may be protecting itself using its over-voltage protection feature. Make sure the input voltage does not exceed 32 Volts.

Finding the Cause of Noise

Electrical noise usually affects the display with many black dots at high speeds, and high sensitivity readings. See the table below for possible sources that can cause noise or interference.

Possible Source of Noise	Isolation
Other electronic devices	Turn off any nearby electronic devices to see if the problem goes away, then turn them on one at a time to see if the noise re-appears.
The boat's engine	To determine whether the boat's engine is the source of the noise, increase the RPMs while the boat is in neutral and stationary to see if the noise increases proportionately; if the noise appears when you rev the engine, the problem could be the spark plugs, alternator, or tachometer wiring. Replace the spark plugs with resistor plugs, install an alternator filter, or route the control head power cable and transducer cables (depending on your system configuration) away from the engine wiring.

Sonar Display Problems

The troubleshooting information in the table below applies to units connected to a transducer and black box sonar (separate purchases required).

There are several main conditions or sources of possible interference that may cause problems with the quality of the information displayed on the control head. Look in the following table for some symptoms of display problems and possible solutions. Also, see the installation guides included with the transducer and black box sonar.

Sonar Display Problems	Possible Solutions
Control head doesn't display sonar data.	Using the installation guide included with your black box sonar, check to make sure that the transducer cable is securely connected to the black box sonar. Next, confirm the black box sonar cable is securely connected to the control head. Reconnect the cables if necessary, and power up the unit again to see if this fixes the problem. Replace the non-functioning transducer with a known good transducer if available and power up the control head again. Check the transducer cable and black box sonar cable. Replace the cables if damaged or corroded.
When the boat moves at higher speeds, the bottom disappears or suddenly weakens, or the display contains gaps.	The transducer position may need to be adjusted. A mix of air and water flowing around the transducer (cavitation) may be interfering with the interpretation of sonar data. See the installation guide for your transducer for instructions on adjusting the transducer position. Electrical noise from the boat's engine may be interfering with sonar reception. See ***Finding the Cause of Noise*** for more information.
There are no fish detected, even when you know they are in the water under the boat, or sonar readings seem weak or faulty.	Sonar readings may be affected if the transducer is not positioned correctly (i.e. mounted at an angle, not straight down), or there is some kind of mechanical interference, either because it is mounted inside a hull that is too thick for proper sonar transmission, the bond between the transducer and the hull is not airtight, or because the transducer is dirty. See the installation guide for your transducer for instructions on adjusting the transducer position, and make sure the transducer is clean. Low battery voltage may be affecting the power of signal transmission. Electrical noise from the boats engine may be interfering with sonar reception. See ***Finding the Cause of Noise*** for more information.
Cavitation from the boat's propeller	Turbulence created by the propeller can cause noise. Confirm the transducer has been properly installed according to its specific mounting requirements (see the installation guide included with your transducer and black box sonar). Also, make sure that the water flows smoothly over the face of the transducer at all times.

Contact Humminbird

Contact Humminbird Customer Service in any of the following ways:

Web site:

humminbird.com

E-mail:

service@humminbird.com

Telephone:

1-800-633-1468

Direct Shipping:

Humminbird
Service Department
678 Humminbird Lane
Eufaula, AL 36027 USA

Hours of Operation:

Monday - Friday

8:00 a.m. to 4:30 p.m. (Central Standard Time)

Social Media Resources:

Facebook.com/HumminbirdElectronics

Twitter.com (@humminbirdfish)

YouTube.com/humminbirdtv