STANDARD HORIZON

DS35

Digital Depth Sounder

Owner's Manual

FT **232** ▼

DEPTH

Marine Division of Vertex Standard

STANDARD HORIZON

LIMITED WARRANTY

STANDARD HORIZON MARINE DIVISION OF VERTEX STANDARD warrants to the original purchaser that each new Marine Product manufactured and/or supplied by STANDARD HORIZON will be free from defects in materials and workmanship under conditions of normal use and service for a period of one (1) year from the date of delivery to the Purchaser. STANDARD HORIZON's liability under this warranty shall be limited to repair or replacement of the defective product, at STANDARD HORIZON's option, under no circumstances shall STANDARD HORIZON be liable for consequential, incidental, or other damages arising out of or in any way connected with a failure of the product to perform as set forth herein.

In the event of a defect, malfunction, or failure of the product to conform to specifications during the one-year warranty period, STANDARD HORIZON will repair or replace, at its option and without charge to the Purchaser, the product which upon examination by STANDARD HORIZON shall appear to be defective or not up to factory specifications. To obtain warranty service, the defective product must be returned to STANDARD HORIZON together with proof of the date of purchase. The Purchaser must pay any transportation expenses in returning the product to STANDARD HORIZON. STANDARD HORIZON will examine the product and respond to the Purchaser in approximately four (4) weeks from date of receipt of the product claimed to be defective.

This limited warranty does not extend to any product which has been subjected to misuse, neglect, accident, improper installation, or subject to use in violation of the maintenance or operating instructions, if any, furnished by STANDARD HORIZON, nor does this warranty extend to products on which the serial number has been removed, defaced, or changed. STANDARD HORIZON reserves the right to make changes or improvements to its products without notice during subsequent production without incurring the obligation to install such changes or improvements on previously manufactured or sold products.

To receive warranty service, the Purchaser must deliver the product, transportation and insurance prepaid, to **STANDARD HORIZON Marine Division of Vertex Standard, 115 North Wright Brothers Dr. Salt Lake City, Utah 84116-2838. Include proof of purchase and date of purchase. STANDARD HORIZON will return the Product to the Purchaser freight prepaid.**

Some states do not allow limitations on the duration of the warranty or exclusions or limitations of incidental or consequential damages so these limitations or exclusions may not apply to you. This warranty gives you specific legal rights, which may vary from state to state.

Lifetime Flat Rate Service Program: For the original Purchaser only, for the lifetime of the unit, STANDARD HORIZON will repair the unit to original specifications.

Note: The flat rate amount is payable by the Purchaser only if STANDARD HORIZON determines that a repair is needed. After the repair, a 90-day warranty will be in effect from the date of return of the unit to the Purchaser.

Owner's Records

Model	Serial number
Purchase date	Dealer

Contents

1 General Information

Note: Please familiarize yourself with the entire manual and transducer installation guide before attempting installation.

1.1 Introduction

The DS35 is a high-quality digital depth sounder. Features include:

- Depth readings from 3 to 200 feet with the added capability of displaying depth in meters or fathoms.
- Adjustable depth alarms to alert the user visually and audibly when the water depth is less than the shallow and greater than the deep alarm settings.
- The alarm settings are stored in memory and are preserved when power is off.
- Display damping is selectable for frequent readings at critical shallow depths and for smoother readings at greater depths.
- Trend arrows on the display indicate increasing or decreasing depth.
- The DS35 will withstand direct water spray on its front panel without damage.

Note: Actual depth capabilities depend on transducer used, transducer installation, bottom conditions and water conditions.
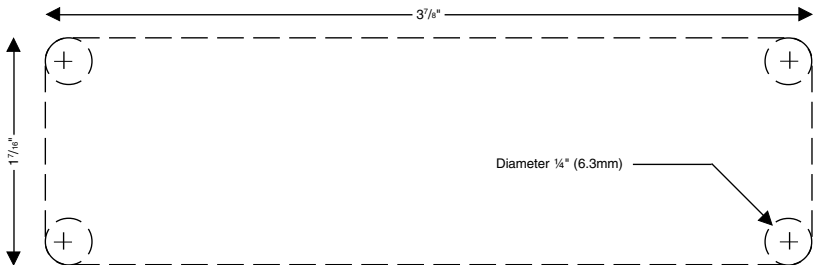
1.2 Front Panel

The display is a back-lit 3½ digit liquid crystal display (LCD) with an alarm icon (bell), trend arrows, and alpha flags. It also has a three-button keypad. The keypad uses tactile and audible feedback to indicate when a key is pressed. All functions are controlled entirely by these three keys.

Note: an ON/OFF switch must be installed to control the power to the instrument.

1.3 Rear Panel

The rear panel contains a cable terminated with an RCA phono receptacle for connection to the transducer and a 3.5ft. 12 VDC power cable with insulated stripped and tinned red and black wires.

$3^7/_8"$

$1^7/_{16}"$

Diameter ¼" (6.3mm)

2 Controls and Connectors

Operating Controls

Keys	Functions
DEPTH	Press and hold the DEPTH key three seconds to change units "MTR", "FT" and "FA".
ON ▲	Press the ON ▲ key to turn on the alarm.
OFF ▼	Press the OFF ▼ key to turn off the alarm.
ON ▲ ⌉ᴬᴸᴬᴿᴹ OFF ▼ ⌋	Press both ON ▲ OFF ▼ keys and hold for three seconds to enable the alarm setting mode. The display will alternate between "UP" and "LO". "UP" = deep and "LO" = shallow. "OFF" = alarm disabled, scroll to set depth. **Press** **Scroll** **Exit** ON ▲ "UP" OFF ▼ or ON ▲ DEPTH or **Press** **Scroll** **Exit** OFF ▼ "LO" OFF ▼ or ON ▲ DEPTH

DEPTH ON ▲	Press both DEPTH ON ▲ keys and hold for three seconds to enable the secondary mode which includes lamp intensity, keel offset, and damping adjustments. Scroll to adjust.
	      Scroll **Exit**
	 "LO" - off, "L1", "L2", or "L3" OFF ▼ or ON ▲ DEPTH
	 DEPTH ON ▲ Press both keys to step to Keel Offset.
	      Scroll **Exit**
	 "+0.0" OFF ▼ or ON ▲ DEPTH
	 DEPTH ON ▲ Press both keys to step to Damping
	      Scroll **Exit**
	 "d1", "d2", or "d3" OFF ▼ or ON ▲ DEPTH

3 Accessories

3.1 Provided with Instrument

- Power Cable
- Mounting bracket
- Flush mount kit
- Mounting bracket hardware

3.2 Optional

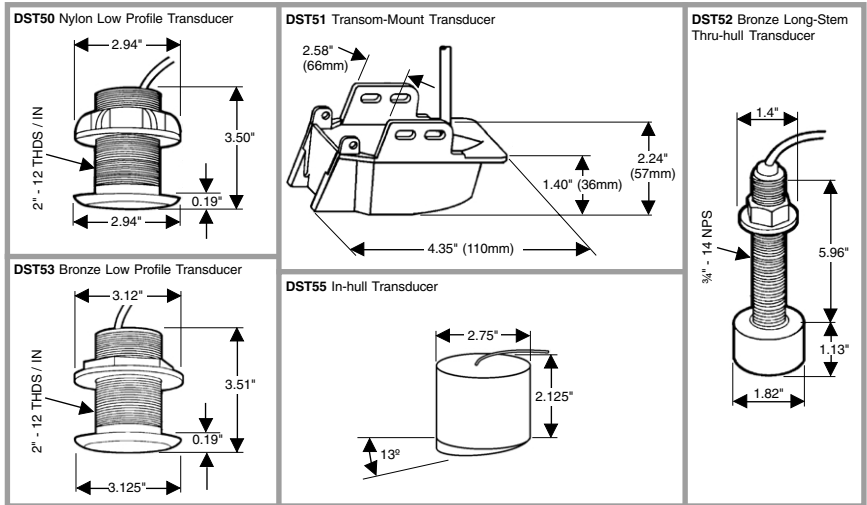|	
DC35	Dust Cover
EX345D	15-foot Transducer Extension Cable
DST50	Nylon Low-Profile Thru-hull Transducer
DST51	Transom-Mounting Transducer
DST52	Bronze Long-Stem Thru-hull Transducer
DST53	Bronze Low-Profile Transducer
DST55	In-hull Transducer
FBT52	Fairing block for DST52

Figure 1. Transducer types

3.3 Replacement Parts

The following parts may be ordered from the STANDARD HORIZON Parts Department.

To order, call: 562-404-2700 Ext 351

Part	Part Number
Flush Mount Panel Gasket	108007023A
Flush Mount Bracket Stud/Washer (2)	113001003A
Flush Mount Bracket Stud/Washer Screw (2)	569004022A
Flush Mount Mounting Bracket	160004020A
Flush Mount Mounting Nuts (2)	580010123A
Gimbal Screws (2)	154001016A
Gimbal Screw Washers (2)	581003030A
Gimbal Mounting Bracket	160003020A

4 Installation

4.1 Instrument Installation

The instrument can be easily installed in different types of instrument panels. Refer to Figures 2, 3, 4, and 5 for the following steps.

1. Select a suitable location for the instrument. When selecting the location for mounting, the following are recommended:
   - Controls of the instrument must be accessible to the user.
   - Electrical connections must be routed to their connections as directly as possible.

NOTE: The instrument must be connected through a switch to provide a means of turning the instrument on and off. The red lead of the power cable should be connected to a 1-Ampere circuit breaker then to the positive terminal of the power supply. The solid black lead should be connected to the negative terminal.

If your boat has an electrical system, there is probably a fuse panel in the console area, which can be used to connect the instrument. If a fuse terminal is available, use crimp-on type connectors to match the fuse panel terminal. See Figure 2.

2. Fasten the instrument with either the gimbal

Figure 2. Fuse Panel Connection
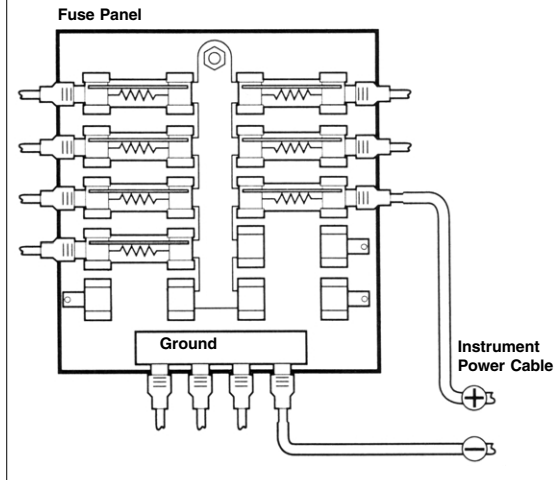
mounting bracket or the flush mount mounting bracket and nuts provided.

3. Obtain the power from a 12V source as directly as possible. Avoid power circuits which share loads with ignition, alternators, radio transmitters, etc. Excessive electrical noise associated with such devices may prevent the instrument from operating properly.

4. Connect the RCA phono plug on the transducer cable to the instrument.

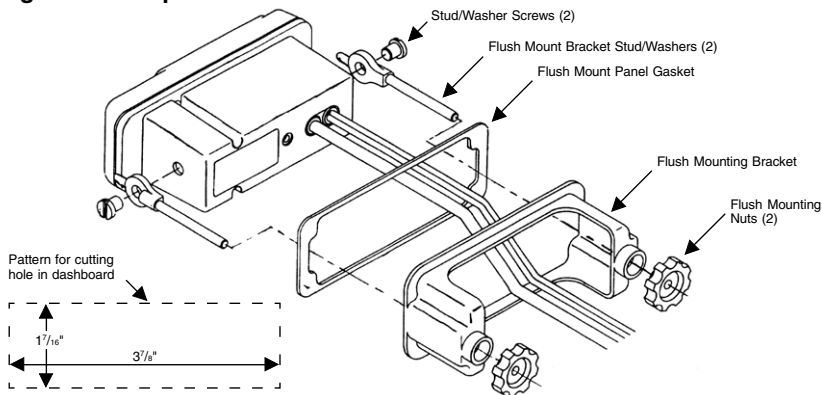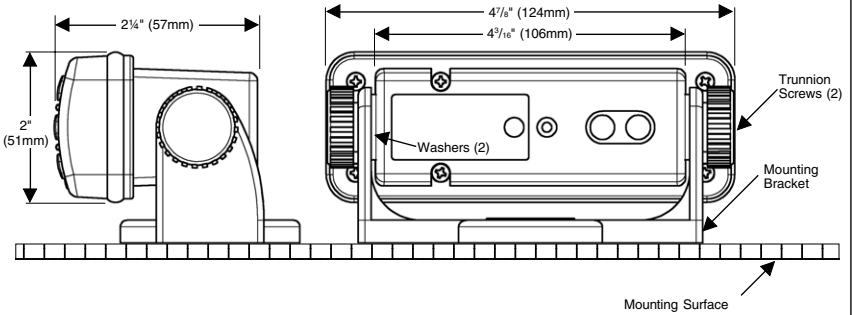**Figure 3. Rear panel flush mount installation**

Stud/Washer Screws (2)

Flush Mount Bracket Stud/Washers (2)

Flush Mount Panel Gasket

Flush Mounting Bracket

Flush Mounting Nuts (2)

Pattern for cutting hole in dashboard

$1^7/_{16}$"

$3^7/_8$"

Figure 4. Gimbal Mount Dimensions

2¼" (57mm)

2" (51mm)

4⁷/₈" (124mm)

4³/₁₆" (106mm)

Trunnion Screws (2)

Washers (2)

Mounting Bracket

Mounting Surface

Figure 5. Flush Mount Dimensions

Dashboard (¹/₈ to 1¹/₁₆" (3 to 27mm))

2⁹/₁₆" (65mm)

2" (51mm)

1¾" (44mm)

Stud (2)

Nut (2)

Bracket

Gasket

Figure 6. Gimbal Mount

Washers (2)

Screws (2)

Trunnion Screws (2)

Mounting Bracket

STANDARD HORIZON
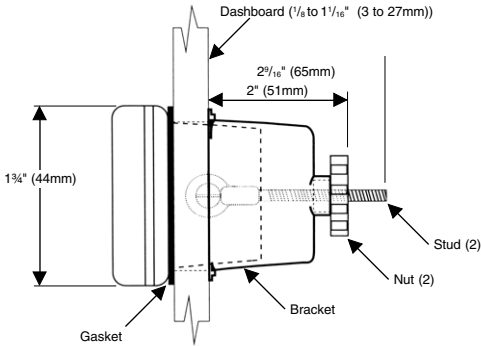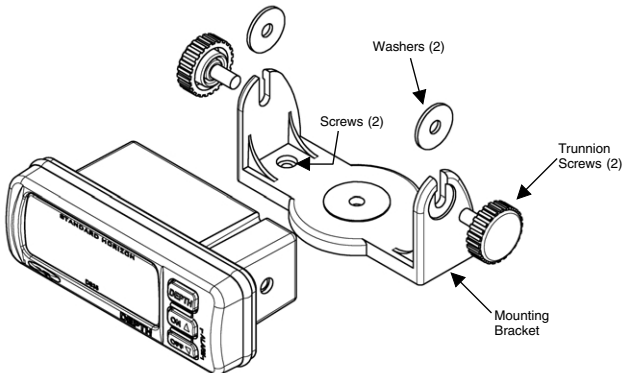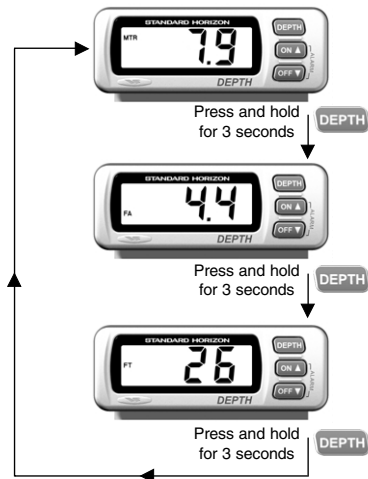
5 Operation

5.1 Primary Operation

5.1.1 Setting Unit of Measure

To select the unit of measure, press and hold the DEPTH key for three seconds. The display changes. Depth can be displayed in feet, meters, or fathoms.

Press and hold for 3 seconds DEPTH

Press and hold for 3 seconds DEPTH
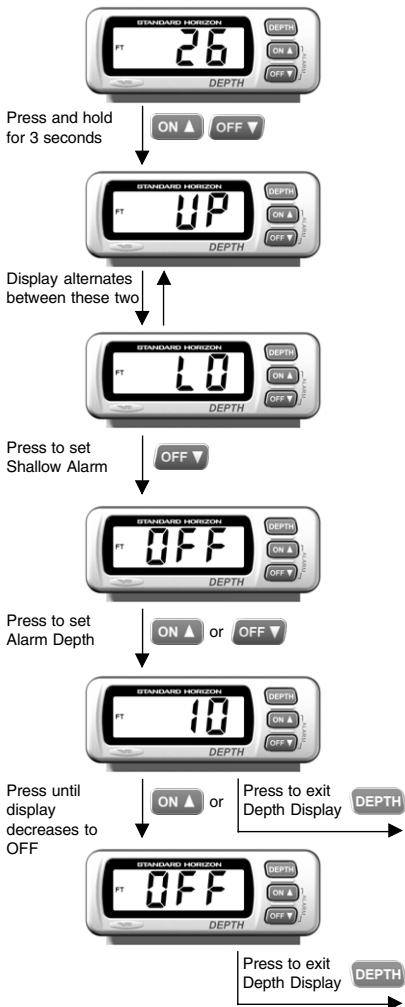
Press and hold for 3 seconds DEPTH

If the water depth is greater than 200 feet or if too much aerated water is passing over the transducer (refer to sections 4.2.2, 4.2.3, 4.2.4), the numeric section of the display will show two horizontal lines.
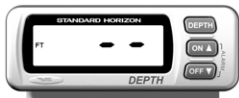
5.1.2 Setting Shallow Alarm

Press and hold both the OFF ▼ ON ▲ keys for three seconds to enable the alarm mode. Press the OFF ▼ key to select the shallow alarm. "LO" displays momentarily. Press either the ON ▲ or OFF ▼ key to change the setting. Press the DEPTH key to exit to normal operation. Or to disable the shallow alarm, press the OFF ▼ key until the display decreases to "OFF".

Press and hold for 3 seconds ON ▲ OFF ▼

Display alternates between these two

Press to set Shallow Alarm OFF ▼

Press to set Alarm Depth ON ▲ or OFF ▼

Press until display decreases to OFF ON ▲ or

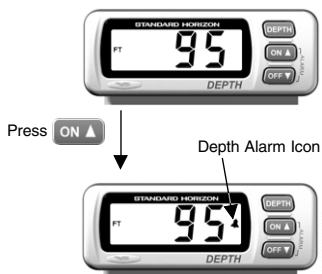Press to exit Depth Display DEPTH

Press to exit Depth Display DEPTH

5.1.3 Setting Deep Alarm

Press and hold both the ON ▲ OFF ▼ keys for three seconds to enable the alarm mode. Press the ON ▲ key to set the deep alarm. "UP" displays momentarily. Press either the ON ▲ or OFF ▼ key to change the setting. Press the DEPTH key to exit. Or to disable the deep alarm, press the OFF ▼ key until the display decreases to "OFF".

Press and hold for 3 seconds ON ▲ OFF ▼

Display alternates between these two

Press to set Deep Alarm ON ▲

Press to set Alarm Depth ON ▲ or OFF ▼

Press until display decreases to OFF OFF ▼ or Press to exit Depth Display DEPTH

Press to exit Depth Display DEPTH
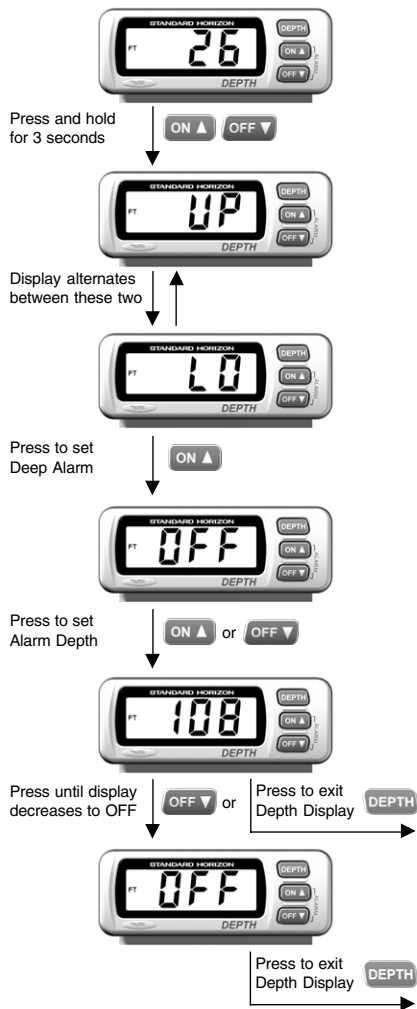
5.1.4 Alarm On

To turn the alarm, press the ON ▲ key. The alarm icon will appear.

Press ON ▲

Depth Alarm Icon

5.1.5 Alarm Off

To turn off the alarm, press the OFF ▼ key. The alarm icon will disappear.

Press OFF ▼

No Depth Alarm Icon
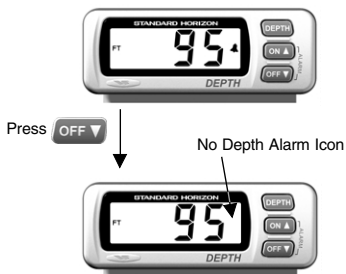
5.1.6 Depth Trend Indicators

If there is a continuing increase or decrease in water depth, a trend arrow will be displayed to show the direction of change.

Increasing Trend

Decreasing Trend

5.2 Secondary Settings

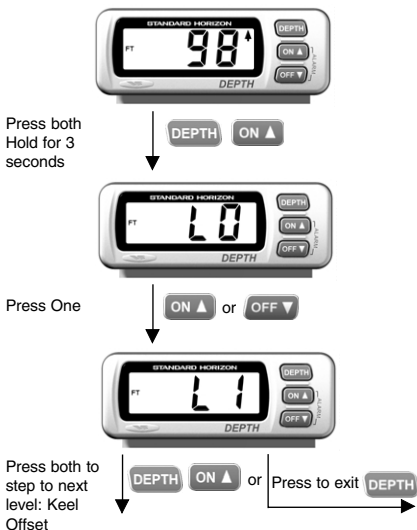To access the secondary settings, press and hold the `DEPTH` and `ON ▲` keys for three seconds. Succeeding depressions of the `DEPTH` and `ON ▲` keys will step the display through each level of the secondary settings.

The levels accessible, in succession, are:

- Lamp Intensity
- Keel Offset
- Display Damping
- Transducer Settings

5.2.1 Lamp Intensity

Press and hold the `DEPTH` and `ON ▲` keys for three seconds to go to the LAMP mode. To adjust the lamp intensity, press either the `ON ▲` or `OFF ▼` key. Intensities of 1, 2 or 3 can be selected; 0=OFF. Press the `DEPTH` key to exit, or press the `DEPTH` and `ON ▲` keys to advance to the keel offset mode.

Press both
Hold for 3 seconds
DEPTH **ON ▲**

Press One
ON ▲ or **OFF ▼**

Press both to step to next level: Keel Offset
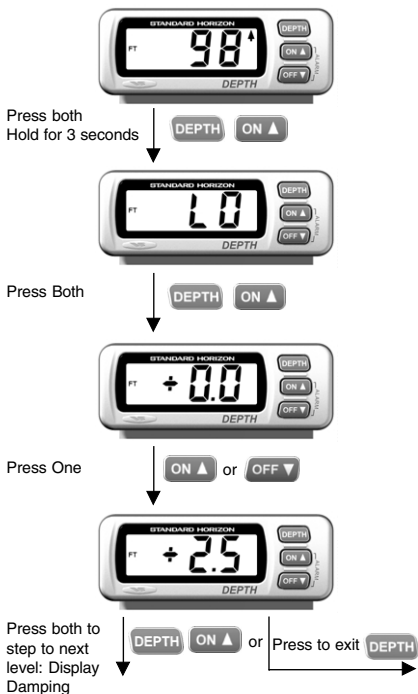**DEPTH** **ON ▲** or Press to exit **DEPTH**

5.2.2 Keel Offset

In the Secondary mode, with the Lamp Intensity level displayed, press the `DEPTH` and `ON ▲` keys to step to the Keel Offset display; "+0.0" will be displayed for adjustment. Keel Offset can be adjusted for any of the following situations. Displayed depth will be adjusted accordingly.

- Depth below the water line (positive adjustment – depending on the distance the transducer is below the water line)
- Depth below the keel (negative adjustment – depending on the distance the keel is below the bottom of the transducer)
- Depth below the transducer (set offset to 0.0)

Note: The keel offset quantity may be entered in either feet, meters, or fathoms in 0.1 unit increments.
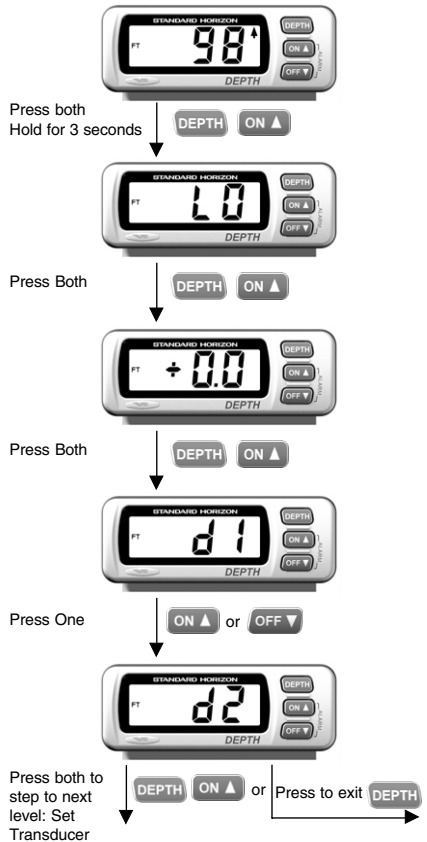
Press the `ON ▲` or `OFF ▼` key to set the offset depth. Press the `DEPTH` key to exit, or press the `DEPTH` and `ON ▲` keys to advance to the Display Damping mode.

Press both
Hold for 3 seconds
DEPTH **ON ▲**

Press Both
DEPTH **ON ▲**

Press One
ON ▲ or **OFF ▼**

Press both to step to next level: Display Damping
DEPTH **ON ▲** or Press to exit **DEPTH**

5.2.3 Display Damping

The user has a choice of three levels of display damping. Damping controls the speed at which the LCD display is able to record and display the actual changes in the water depth. Level 'd1" allows the display to change very rapidly; it is selected when operating in shallow water at higher speeds. Level 'd2" or "d3" may be required in deeper or deepest water where passing schools of fish, thermal layers, or debris may introduce random echoes.

With the instrument in the keel offset setting, press the DEPTH and ON ▲ keys to step to the display damping setting. Press the either ON ▲ or OFF ▼ key to select an update rate of "d1", "d2" or "d3". Press the DEPTH key to exit, or press the DEPTH and ON ▲ keys to advance to the transducer setting mode.

Press both
Hold for 3 seconds   DEPTH ON ▲

Press Both   DEPTH ON ▲

Press Both   DEPTH ON ▲

Press One   ON ▲ or OFF ▼

Press both to step to next level: Set Transducer   DEPTH ON ▲ or Press to exit DEPTH
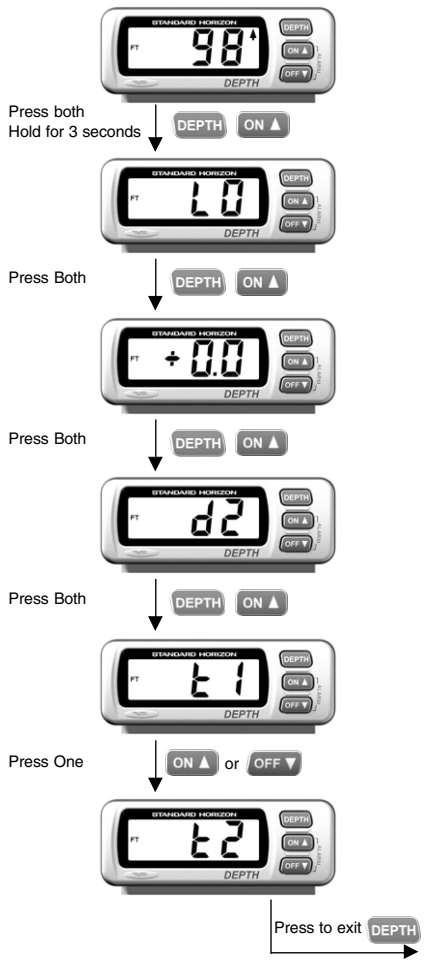
5.2.4 Transducer Setting

The Transducer Setting function enables the user to optimise the operation of the DS35 for the particular transducer installed. Transducer performance varies widely, larger diameter transducers produce strong signals resulting in improved deep water performance but can suffer from reduced shallow water performance, due to transducer ringing. Smaller transducers produce the opposite effect, with improved shallow water performance and reduced deep water performance.
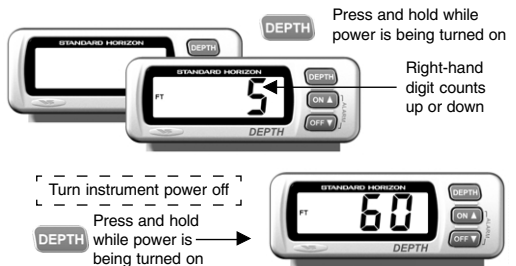
There are three values of transducer settings (1 to 3). The lower numbers improve the shallow water performance and may produce reliable readings to below 3 feet. It is recommended to use the lowest number possible if shallow water performance is important. It must also be noted that in situations where the DS35 is tracking the bottom and displaying a consistent depth but occasionally displaying "--" or erroneous depths of 3 to 4 feet, that this generally indicates the transducer setting is too low and should be increased. The transducer settings only affect the instrument operation in the 2.5 to 4 feet region. The transducer settings have no affect in water deeper than 4 feet.

The transducer setting is a secondary function and can be accessed as shown in the diagram below.

Press both Hold for 3 seconds — DEPTH + ON ▲

Press Both — DEPTH + ON ▲

Press Both — DEPTH + ON ▲

Press Both — DEPTH + ON ▲

Press Both — DEPTH + ON ▲

Press One — ON ▲ or OFF ▼

Press to exit DEPTH

5.3 Simulation

Simulation is a feature used to demonstrate the operation of the instrument. The owner may activate the simulation mode by holding the DEPTH key down and turning on the power to the instrument. Simulation is in operation when the right-hand digital of the display counts up or down one digit at a time. To disable simulation mode, turn off the power and hold the DEPTH key down as power is turned on.

Press and hold while power is being turned on

Right-hand digit counts up or down

Turn instrument power off

Press and hold while power is being turned on

6 Specifications

Dimensions
- 4.875W x 2.25D x 2H inches (124W x 57D x 51H mm)

Mounts
- Flush/Gimbal

Flush Mount
- 4.25 x 1.375 inch (108 x 35mm) hole
- Depth behind panel 2.25 inch (57mm)

Display
- Liquid Crystal 3½ digit numeric, 0.75in. (19mm) high

Color
- Black or white

Water Integrity
- Front will withstand direct spray

Depth Display
- Feet:
     3 to 200 (3 to 19.9 in tenths, 20 to 200 in whole numbers)
- Meters:
     0.8 to 61 (0.8 to 9.9 in tenths, 10 to 61 in whole numbers)
- Fathoms
     0.5 to 33 fathoms

Accuracy
- +/- 2%

Alarms
- Depth: shallow and deep, adjustable, non-volatile

Options (keypad selectable)
- Illumination Intensity Level (3-step)
- Damping level (5, 10 & 15%)
- Keel Offset (Adjustable, +/- 10 units)

Trend Indication
- Up and down arrows

Sensitivity
- 0.4 mV RMS at 30+ feet

Transducer
- Transom, Thru-hull option, or In-hull options 600 ohm, 1500 pF parallel impedance

Frequency
- 201 +/- 1 kHz

Operating Voltage
- 13.8 VDC +/- 20%

Operating Temperature
- 32° to 122°F (0° to 50°)

Current Drain
- 70 mA nominal

Output Power
- 50 watts RMS

RF Interference
- 6 dB maximum quieting on any marine radio channel with 3 dB gain antenna within 1 meter of the DS35

7 Maintenance

Your depth sounder is designed for years of trouble free operation assuming proper installation and care are provided. Following the operation and installation guidelines in this manual should ensure optimum performance of the instrument. In the unlikely event that the instrument shall fail to perform or shall need servicing, contact:-

Standard Horizon
Factory Repair Facility
115 North Wright Brothers Drive
Salt Lake City, UT 84116

Telephone number (800) 366-4566
Technical support telephone number (562) 404-2700
Fax number (801) 359-4122
E-mail address marinetech@vxstdusa.com
www.standardhorizon.com

8 Troubleshooting

8.1 Technical Description

The transmitter generates pulses (201 kHz) of ultrasonic energy, radiated towards the bottom of the sea.

At exactly the moment a pulse leaves the transmitter, the transmitter is turned off, and the transducer receiver is turned on.

The sound energy echoes off the bottom and returns to the transducer. The echo is converted to digital signals for the microcomputer which computes the depth based on the time it takes to receive a return echo. The longer it takes for the energy to reach the bottom and return to the transducer, the deeper the water.

The microcomputer sends the computed depth to the instrument display.

8.2 Troubleshooting

1 No display:
• Check DC power connections and DC polarity with voltmeter. Voltage must be between 10.7 and 16.6 volts.

2 No depth reading "--" at all depths:
a Check the transducer for growth or multiple coats of paint.
b Check the transducer cable for cuts and sharp bends.
c Substitute the transducer with a known good Standard Horizon transducer, hold it over the side of the boat into the water to see if the instrument functions. This isolates cause of problem (transducer or instrument).

3 Erratic readings while moored
• Check the transducer for growth or multiple coats of paint.

4 Erratic readings while underway
• Cavitation (air) under the face of the transducer. Review installation and reinstall if necessary.

5 When power is applied, display right-hand digit counts up or down
• See section 5.3 Simulation

6 Erratic readings only when engine is running
a Reroute DC and transducer cables away from engine, ignition wires and battery cables.
b Add feed-thru filter capacitor on the positive terminal of the ignition coil.
c Add alternator whine filter to alternator.
d Replace spark plug wire with resistive type.