STANDARD HORIZON

RP150

NMEA Repeater

Owner's Manual

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 RP150 is a high-quality digital NMEA repeater. It mounts into a 1¼" (32mm) diameter instrument hole

Features include:

- Connection for up to 4 separate NMEA instruments
- Display of information from a wide range of instruments:
  - Speed (SL150)
  - Depth (DS150)
  - Wind (WS150)
  - Compass (Digital Compass Sensor)
  - Specific GPS Sentences (see section 5 for details)
  - or any NMEA compatible instrument

2 Controls and connectors

Display is backlit for Night Operation

Multi-function display (When connected to DS150 & SL150)

Sea temperature

Depth/speed trend indicator

Alarm

Depth/speed trend indicator

STANDARD HORIZON

RP150

REPEAT

NMEA

3 Accessories

3.1 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
Dust Cover	DC150
Panel Gasket	108013023A

4 Installation

4.1 Location

The RP150 is designed for above or below deck installation. Select a position that is:

- At least 12 inches (300mm) from a compass
- At least 20 inches (500mm) from any radio
- Easy to read by the helmsman and crew
- Protected from physical damage
- Accessible to electrical cable connections

4.2 Mounting

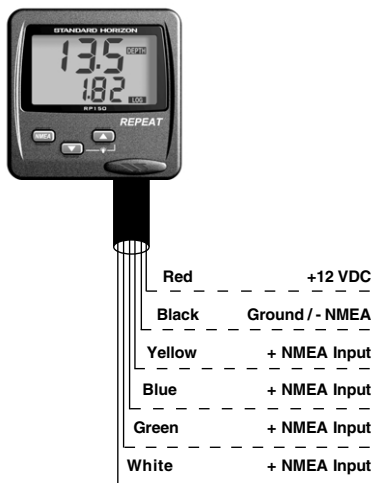The mounting surface must be flat. Use the template to set the center of the fixing hole.

1 Drill a 1¼" (32mm) diameter mounting hole through the bulkhead.

2 Remove the nut. Peel the protective paper off the foam gasket and attach the gasket to the rear of the instrument.

3 Insert the instrument through the bulkhead. Hand tighten the nut and then finally tighten with a spanner. Do not over tighten so that the water sealing ability of the gasket is damaged.
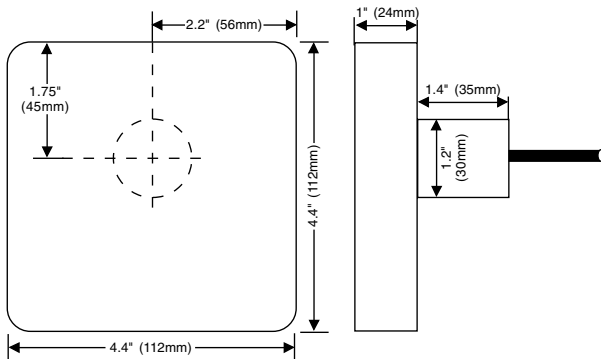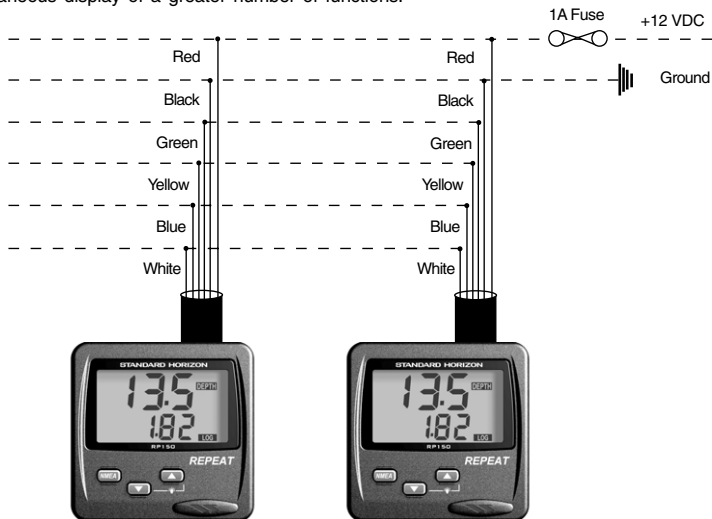

4.3 Wiring Connection

Note: An external switch is required to turn the instrument on and off.

1 Keep electrical and transducer cables away from alternator or other noise generating electrical cables. Avoid connecting the instrument to power circuits that share loads with ignition, alternators, inverters and radio transmitters. Electrical power supply connections should always be as short as possible.

2 Connect the red wire to the positive supply via a 1 amp fuse or a 1 amp circuit breaker. Connect the black wire to the electrical ground. A 1 amp fuse will provide protection for up to five 150 series instruments.

3 The RP150 repeater is intended to be connected with a number of other 150 series instruments or to other instruments that output NMEA 0183 data.

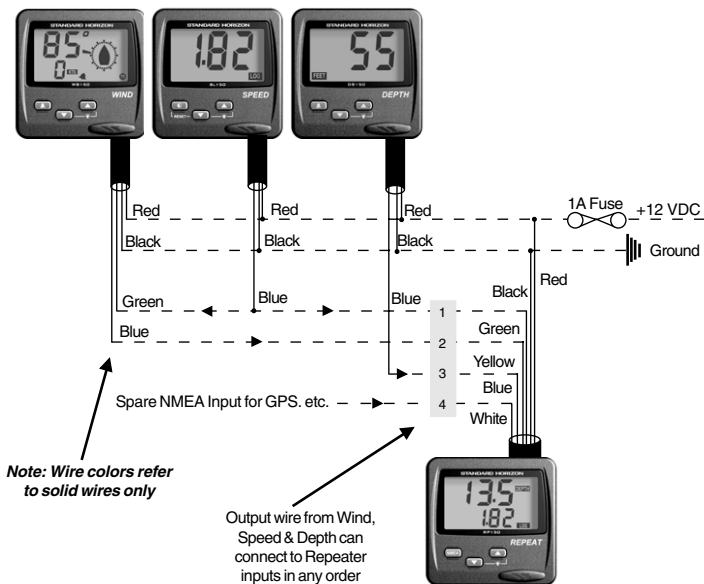| Red | +12 VDC |
Black	Ground / - NMEA
Yellow	+ NMEA Input
Blue	+ NMEA Input
Green	+ NMEA Input
White	+ NMEA Input

4.4 Multiple Repeaters

Multiple repeaters may be connected so that repeaters can be placed in different locations or to allow the simultaneous display of a greater number of functions.


4.5 Multiple Instruments

Note: Wire colors refer to solid wires only

Output wire from Wind, Speed & Depth can connect to Repeater inputs in any order

Spare NMEA Input for GPS. etc.

4.6 Setup
4.6.1 Data Search Mode
The RP150 has four individual data inputs. After making the initial connection to the RP150, or after making any additional connections, it will be necessary to place the RP150 into data search mode.

*Note: **This operation must be completed when first installing the RP150.***

Press and hold the NMEA and ⋀ keys for 7 seconds to enter data search mode. The instrument automatically searches for inputs from up to 4 attached devices.

SEARCHES

AUTO RETURN TO
LAST FUNCTION
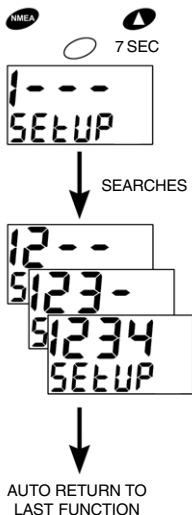
4.7 NMEA Functions
Data can be displayed from other NMEA instruments.

After connecting an NMEA instrument and completing "Data Search Mode", it is necessary to place the RP150 into "NMEA Setup Mode".

Press and hold the NMEA and ⋁ keys for 7 seconds to enter NMEA Setup Mode.

Function No. (See RP150 NMEA Setup Table)

Input Channel Number

Current Display Status

To turn function on or off press the NMEA key.

To step to the next function, press the ⋁ key. To step to the previous function, press the ⋀ key.

To exit turn off the power to the instrument.

4.8 RP150 NMEA Data

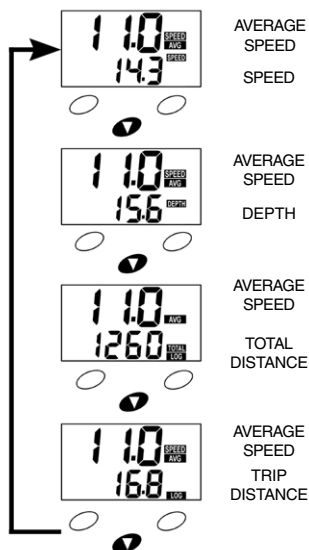| Number	Function	NMEA Sentence
110	Boat Speed, Knots	$VHW
120	Boat Speed, km/hr	$VHW
130	Distance since reset, nautical miles	$VLW
140	Total cumulative distance, nautical miles	$VLW
150	Depth, meters (below transducer)	$DPT
200	Depth, feet (Below keel)	$DBK
210	Depth, meters (Below keel)	$DBK
220	Depth, fathoms (Below keel)	$DBK
230	Depth, feet (Below surface)	$DBS
240	Depth, meters (Below surface)	$DBS
250	Depth, fathoms (Below surface)	$DBS
260	Depth, feet (Below transducer)	$DBT
270	Depth, meters (Below transducer	$DBT
280	Depth, fathoms (below transducer)	$DBT
290	Temperature, degrees C)	$MTW
300	Wind speed	$MWV
310	Wind angle	$MWV
320	Speed parallel to wind, knots	$VPW
330	Speed parallel to wind, m/s	$VPW
340	Heading, degrees magnetic	$HDG
350	Heading, degrees true	$HDT
400	Bearing to waypoint, degrees	$APB
410	Bearing to waypoint, degrees true	$BWC
420	Bearing to waypoint, degrees magnetic	$BWC
430	Bearing to waypoint, degrees true	$RMB
440	Distance to waypoint, nautical miles	$BWC
450	Distance to waypoint, nautical miles	$RMB
460	Speed over ground, knots	$RMA
470	Speed over ground, knots	$RMC
480	Speed over ground, knots	$VTG
490	Speed over ground, hm/hr	$VTG
500	Course over ground, degrees true	$RMA
510	Course over ground, degrees true	$RMC
520	Course over ground, degrees true	$VTG
530	Course over ground, degrees magnetic	$VTG
540	Crosstrack error, nautical miles	$APB
550	Crosstrack error, nautical miles	$RMB
600	Crosstrack error, nautical miles	$XTE

5 Operation

5.1 Changing Functions

The upper and lower display sections can be configured to display depth or speed readings. The remaining functions are dedicated to either the upper or lower display.

The ∧ key selects functions dedicated to the upper display. The selection remains in memory after power down.
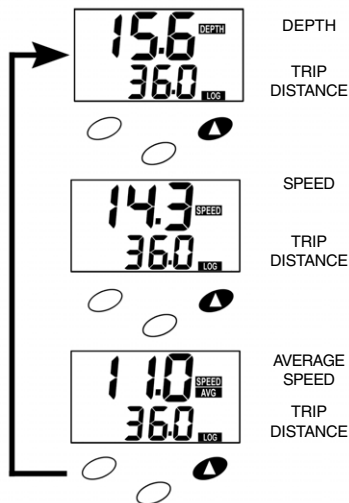
The ∨ key selects functions dedicated to the lower display. The selection remains in memory after power down.

Note: The upper and lower display functions will only be active when the DS150 and/or the SL150 instruments are connected.

DEPTH
TRIP DISTANCE

SPEED
TRIP DISTANCE

AVERAGE SPEED
TRIP DISTANCE

AVERAGE SPEED
SPEED

AVERAGE SPEED
DEPTH

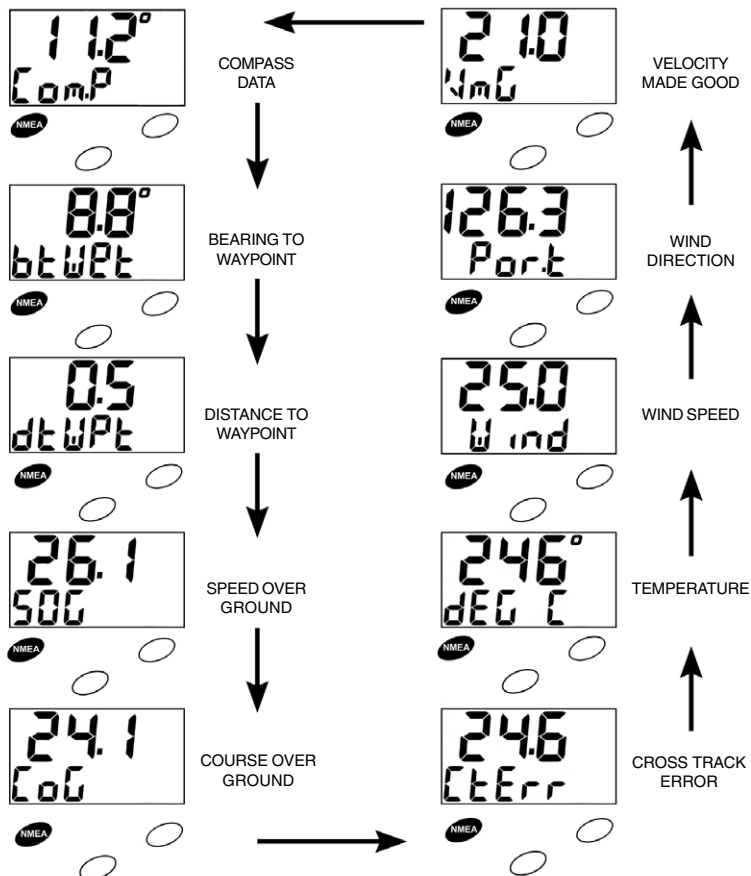AVERAGE SPEED
TOTAL DISTANCE

AVERAGE SPEED
TRIP DISTANCE

5.1.1 Backlighting On / Off

Simultaneously press the ∧ and ∨ keys to turn the backlight on. Repeat this procedure to turn the lighting off.
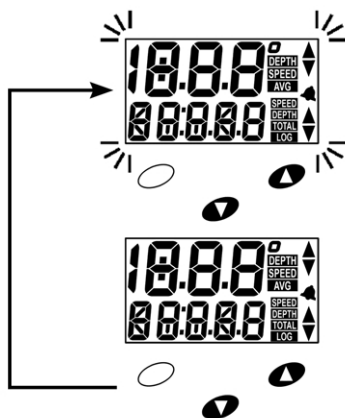
5.2 Displaying NMEA Functions

To scroll through the different functions that are on, press the NMEA key.

11.2° ComP — COMPASS DATA	**21.0** VmG — VELOCITY MADE GOOD
8.8° btWPt — BEARING TO WAYPOINT	**126.3** Port — WIND DIRECTION
0.5 dtWPt — DISTANCE TO WAYPOINT	**25.0** Wind — WIND SPEED
26.1 SOG — SPEED OVER GROUND	**246°** dEG C — TEMPERATURE
24.1 CoG — COURSE OVER GROUND	**24.6** CtErr — CROSS TRACK ERROR

Note: If a depth, speed, or wind instrument other than the 150 series is connected, the data will be shown by using the NMEA key.

5.3 Simulation Mode

The RP150 has a simulation mode.

1 To enter this mode hold down the NMEA key and then switch on the power. The instrument will remain in this mode even when power is switched off.

2 Repeat this procedure to exit simulation mode.

Note: At power up, if all the segments display for 5 seconds then the instrument is in simulation mode.

5.4 Microprocessor reset

When instrument is not functioning properly, the microprocessor can be reset as follows:

1 Turn off the instrument power.

2 Press and hold the ∧ and ∨ keys then turn the power back on.

3 All calibration settings will be reset to factory-set defaults.

6 Maintenance

Your NMEA repeater 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:

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

Telephone number (800) 366-4566
Fax number (801) 359-4122

7 Specifications

Power Supply
• 10.7 to 16.6 VDC, 10mA nominal, 30 mA with backlight on.

Operating temperature
• 32°F to 113°F (0°C to 45°C)

Size of display
• 4.4 x 4.4 x 1" (112 x 112 x 24mm), overall depth 1.4" (35mm) behind panel.

Display type.
• Twisted Nematic (TN) grey background, 32° to +158°F (0° to +70°C)

Illumination
• Red LED switchable from key pad.

RF interference
• Less than 6 dB maximum quieting on any marine radio channel with 3 dB gain antenna within 1 meter of instrument display head.

Input data
• See table in section 4.8

8 Troubleshooting

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

Unit displays dashed lines:
• Ensure that data search was successfully completed (see section 4.6.1) Repeat the procedure if necessary.

Unit will not display information from NMEA device or unit displays information from one or some instruments, but not all connected instruments:
1 Ensure that the necessary NMEA function has been turned on (see section 4.7)
2 Check wiring connections and if necessary, redo connections.

Information on screen does not correspond with readings on the connected instruments:
• Ensure that the RP150 is not in simulation mode (see section 5.3)

Faulty wind speed or wind direction indication:
1. Possible defective Masthead Cable
2. Possible defective Masthead Assembly
3. Possible defective instrument
• Remove the Masthead Assembly from the masthead and connect it directly to the instrument red moulded cable. If the indication is normal, the Masthead Cable is defective. If the problem persists, contact your supplier for service.
NOTE: The instrument and Masthead Assembly may be connected directly for linearization of the repaired or new equipment prior to installation.

No wind speed or wind direction indication
• Check the DC power source applied to the WS150.

Simulation Mode
• At power up, if all the segments display for 5 seconds then the instrument is in simulation mode.