

**Where Do I Find Everything I Need for Process Measurement and Control? OMEGA...Of Course!**

**TEMPERATURE**

- ✓ Thermocouple, RTD & Thermistor Probes, Connectors, Panels & Assemblies
- ✓ Wire: Thermocouple, RTD & Thermistor
- ✓ Calibrators & Ice Point References
- ✓ Recorders, Controllers & Process Monitors
- ✓ Infrared Pyrometers

**PRESSURE, STRAIN AND FORCE**

- ✓ Transducers & Strain Gauges
- ✓ Load Cells & Pressure Gauges
- ✓ Displacement Transducers
- ✓ Instrumentation & Accessories

**FLOW/LEVEL**

- ✓ Rotameters, Gas Mass Flowmeters & Flow Computers
- ✓ Air Velocity Indicators
- ✓ Turbine/Paddlewheel Meters
- ✓ Totalizers & Batch Controllers

**pH/CONDUCTIVITY**

- ✓ pH Electrodes, Testers & Accessories
- ✓ Benchtop/Laboratory Meters
- ✓ Controllers, Calibrators, Simulators & Pumps
- ✓ Industrial pH & Conductivity Equipment

**DATA ACQUISITION**

- ✓ Data Acquisition & Engineering Software
- ✓ Communications-Based Acquisition Systems
- ✓ Plug-in Cards for Apple, IBM & Compatibles
- ✓ Datalogging Systems
- ✓ Recorders, Printers & Plotters

**HEATERS**

- ✓ Heating Cable
- ✓ Cartridge & Strip Heaters
- ✓ Immersion & Band Heaters
- ✓ Flexible Heaters
- ✓ Laboratory Heaters

**ENVIRONMENTAL MONITORING AND CONTROL**

- ✓ Metering & Control Instrumentation
- ✓ Refractometers
- ✓ Pumps & Tubing
- ✓ Air, Soil & Water Monitors
- ✓ Industrial Water & Wastewater Treatment
- ✓ pH, Conductivity & Dissolved Oxygen Instruments

M-4047 / 0304

**User's Guide**



<http://www.omega.com>  
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**LVH-200 Series Horizontal Mini-Float Level Switch**

**SPECIFICATIONS**

**Step One**

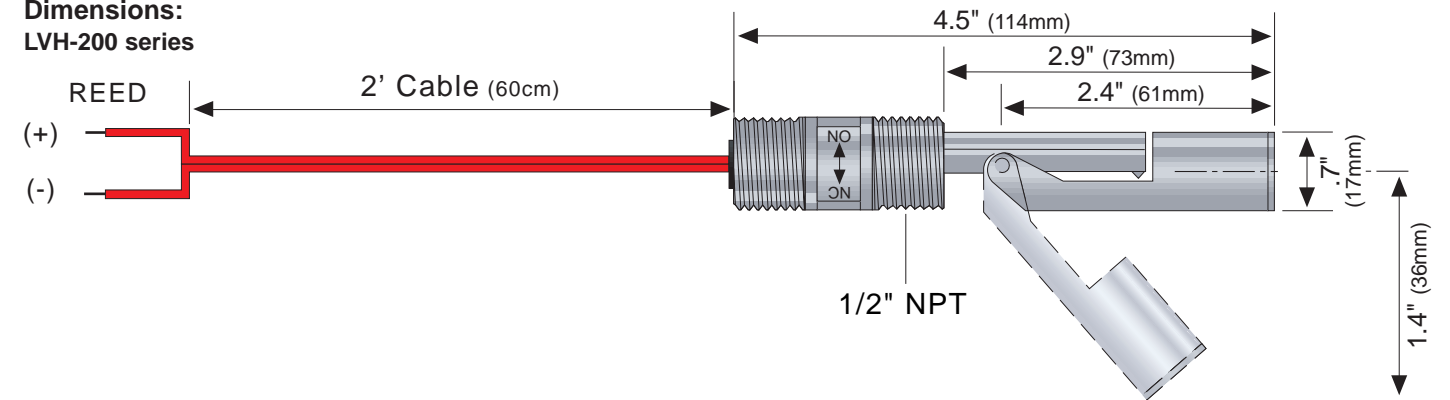
**Specifications:**

- Accuracy: ± 5 mm in water
- Repeatability: ± 2 mm in water
- Extreme orientation: ± 20° from horizontal
- Specific gravity: 0.55 minimum
- Reed type: Dry contact SPST
- Reed voltage: 120/240, 0-30 VDC @ 20 VA  
(CE: 30 Vrms and 42.2 V peak or 60 Vdc)
- Reed output: Selectable NO or NC
- Temperature rating: F: -40° to 225°  
C: -40° to 107.2°
- Pressure rating: 100 psi
- Probe material: Polypropylene (PP)
- Mounting threads: 1/2" NPT
- Cable length: 2 ft. (61 cm), 2-wire, 22 AWG
- CE Compliance: EN 60730

**Switch Ratings - Maximum Resistive Load -**

VA	Volts	Amps AC	Amps DC
20	0-30	0.4	0.3
	120	0.17	0.13
	240	0.08	0.06

**Dimensions: LVH-200 series**



**OMEGA ENGINEERING, INC. WARRANTY/DISCLAIMER**

OMEGA warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA Warranty adds an additional one (1) month grace period to the **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product. OMEGA warrants that the unit should maintain function, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper installation, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of being damaged as a result of excessive corrosion, or current, heat, moisture or vibration. Components which wear are not warranted, including but not limited to contact points, fuses, and trace. OMEGA is pleased to offer suggestions on the use of its various products. However, OMEGA neither assumes responsibility for any damages or errors nor assumes liability for any damages that result from the use of its products with hardware provided by OMEGA, either verbal or written. OMEGA warrants only that the parts manufactured by it will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXCEPTED OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIMITATION OF LIABILITY: The remedies of purchaser set forth herein are exclusive and the total liability of OMEGA with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the component. OMEGA is not intended to be used, nor shall it be used, in any medical application or used on humans. Should any Product(s) be used in or with any nuclear installation or activity, applications or used on humans. OMEGA assumes no responsibility as set forth in its basic WARRANTY/DISCLAIMER language, and additionally, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the Product(s) in such a manner.

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Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence. TO PREVENT BREAKAGE IN TRANSIT, OMEGA's Customer Service Department should be contacted for shipping charges, freight, insurance and proper packaging. FOR WARRANTY RETURNS, please have the following information available BEFORE contacting OMEGA: 1. P.O. number under which the product was PURCHASED. 2. Model and serial number of the product. 3. Repair instructions and/or specific problems relative to the product. OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering. OMEGA is a registered trademark of OMEGA ENGINEERING, INC. All rights reserved. This document may not be copied, photocopied, reproduced, translated or reprinted in any electronic medium or machine-readable form, in whole or in part, without prior written consent of OMEGA ENGINEERING, INC.

**FOR NON-WARRANTY RETURNS**, please have the following information available BEFORE contacting OMEGA: 1. P.O. number to cover the COST of repair. 2. Model and serial number of product, and repair instructions and/or specific problems relative to the product. OMEGA reserves the right to alter specifications without notice. The information contained in this document is believed to be correct but OMEGA Engineering, Inc. accepts no liability for any errors it contains, and reserves the right to alter specifications without notice.

**WARNING:** These products are not designed for use in, and should not be used for, patient connected applications.

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**OMEGA**

## SAFETY PRECAUTIONS

### Step Two

#### ⚠ About this Manual:

PLEASE READ THE ENTIRE MANUAL PRIOR TO INSTALLING OR USING THIS PRODUCT. This manual includes information on all models of horizontal mini-float level switches from OMEGA ENGINEERING, LVH-200 series. Please refer to the part number located on the switch label to verify the exact model which you have purchased.

#### ⚠ User's Responsibility for Safety:

OMEGA ENGINEERING manufactures a wide range of liquid level sensors and technologies. While each of these sensors is designed to operate in a wide variety of applications, it is the user's responsibility to select a sensor model that is appropriate for the application, install it properly, perform tests of the installed system, and maintain all components. The failure to do so could result in property damage or serious injury.

#### ⚠ Proper Installation and Handling:

Because this is an electrically operated device, only properly trained staff should install and/or repair this product. Use a proper sealant with all installations. Never overtighten the sensor within the fitting, beyond being hand tight. Always check for leaks prior to system startup.

#### ⚠ Material Compatibility:

The LVH-200 series switch is available in one wetted material. Models LVH-200 series are made of Polypropylene (PP). Make sure that the model you have selected is compatible with the application liquid. To determine the chemical compatibility between the sensor and its application liquids, refer to an industry reference such as the Compass Corrosion Guide (available from Compass Publications, phone 858-589-9636).

#### ⚠ Temperature and Pressure:

The LVH-200 series switch is designed for use in application temperatures up to 107.2 °C, and for use at pressures up to 100 psi.

#### ⚠ Wiring and Electrical:

The supply voltage used for the LVH-200 series should never exceed 120/240 volts AC / 30 volts DC @ 20 VA. CE mark versions should never exceed 30 Vrms and 42.2 Vpeak or 60 VDC. Electrical wiring of the sensor should be performed in accordance with all applicable national, state, and local codes.

#### ⚠ Flammable, Explosive and Hazardous Applications:

The LVH-200 series should not be used within flammable or explosive applications. In hazardous applications, use redundant measurement and control points, each having a different sensing technology. Refer to the National Electric Code (NEC) for all applicable installation requirements in hazardous locations.

### ⚠ WARNING ⚠

Orientation of the switch is critical. Make sure the switch is positioned correctly.

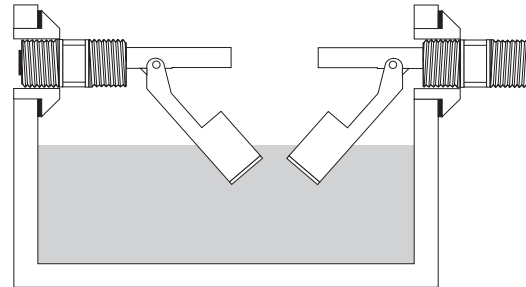
Avoid installing the LVH-200 series switch in ferromagnetic tanks. Doing so will activate the internal reed switch.

## INSTALLATION

### Step Three

#### Through Wall Installation:

OMEGA ENGINEERING's LVH-200 series sensors may be installed through the side wall of a tank. The LVH-200 series has dual male 1/2" NPT threads for installation from the outside of the tank in or the inside of the tank out. If the LVH-200 series is installed in the Outside-In method, then the outer threads may be used for connection



to conduit.

#### Maintenance:

The LVH-200 series sensor itself requires no periodic maintenance except cleaning as required. It is the responsibility of the user to determine the appropriate maintenance schedule, based on the specific characteristics of the application liquids.

#### Cleaning Procedure:

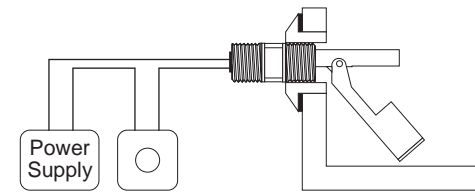
- 1. Power:** Make Sure that all power to the sensor, controller and/or power supply is completely disconnected.
- 2. Sensor Removal:** In all through-wall installations, make sure that the tank is drained well below the sensor prior to removal. Carefully, remove the sensor from the installation.
- 3. Cleaning the Sensor:** Use a soft bristle brush and mild detergent, carefully wash the LVH-200 series sensor. Do not use harsh abrasives such as steel wool or sandpaper, which might damage the surface sensor. Do not use incompatible solvents which may damage the sensor's Polypropylene plastic body.
- 4. Sensor Installation:** Follow the appropriate steps of installation as outlined in the installation section of this manual.

## ELECTRICAL

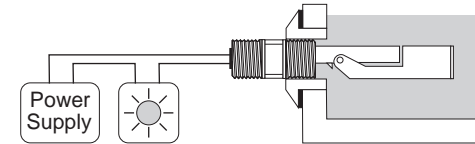
### Step Four

#### Signal Outputs (Reed Switch):

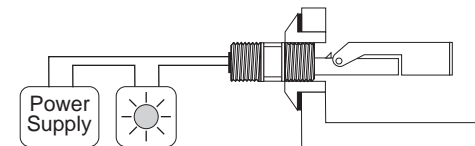
Normally Open Operation: Orientate the switch such that float swings down when the switch is dry. In the dry state, the float rests in the lowest position and the circuit is open.



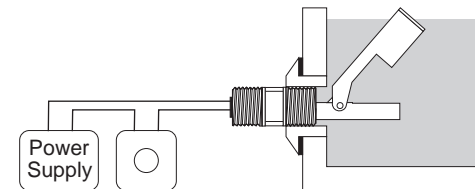
As the switch becomes wet, the float becomes buoyant and circuit closes.



Normally Closed Operation: Orientate the switch such that float rests on top of the switch when the switch is dry. In the dry state, the float rests on the switch and the circuit is closed.



As the switch becomes wet, the float becomes buoyant and circuit opens.

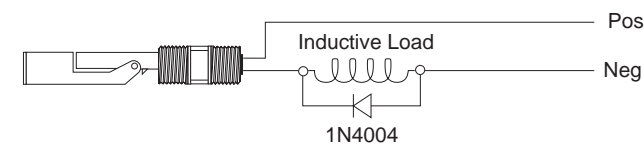


#### Contact Protection (Reed Switch):

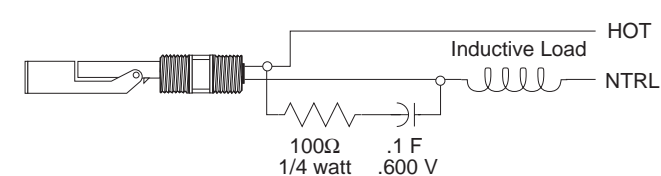
When current is interrupted, the inductance of the load generates a high frequency voltage, which appears across the switch contacts. If the voltage is large enough, it can cause arcing. Arcing can cause the contacts to weld to each other resulting in unreliable switching performance. It is essential to protect the circuit, by suppressing the voltage to prevent arcing.

This can be accomplished through the use of a diode for DC circuits and a resistor-capacitor network for AC circuits.

#### DC Contact Protection:



#### AC Contact Protection:



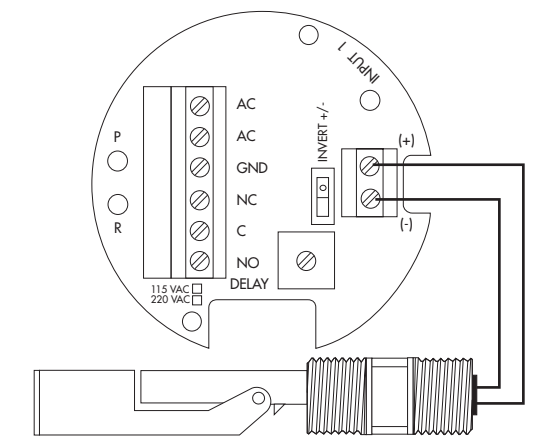
## WIRING

### Step Five

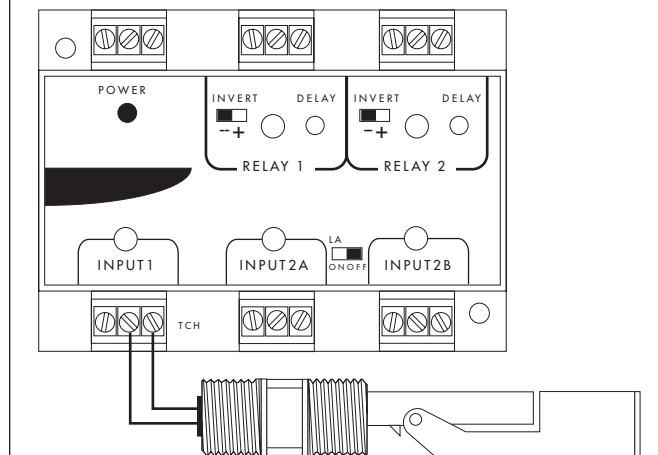
#### Wiring to a OMEGA ENGINEERING Controller:

OMEGA ENGINEERING controllers have a built-in 13.5 VDC power supply which provides power to all of OMEGA ENGINEERING's level switches. Alternative controllers and power supplies may also be used with the LVH-200 series switch.

#### LVCN-100 Series Controller



#### LVCN-120/-130/-140 Series Controller



Note: The above wiring is for NO operation. For NC operation, rotate the switch 180 degrees.

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