

Technical Support

Tel: 562.598.3015
8:00 am and 5:00 pm PST Mon-Fri
www.flowline.com

Please make sure you have the Part & Serial number available

2 Year extended warranty available by registering online at www.flowline.com

Warranty

To register your product with Flowline, go to www.flowline.com. On-line warranty registration can be found under contact Flowline on the navigation bar along the side of the home page.

Flowline warrants to the original purchaser of its products that such products will be free from defects in material and workmanship under normal use and service for a period which is equal to the shorter of one year from the date of purchase of such products or two years from the date of manufacture of such products.

This warranty covers only those components of the products which are non-moving and not subject to normal wear. Moreover, products which are modified or altered, and electrical cables which are cut to length during installation are not covered by this warranty.

Flowline's obligation under this warranty is solely and exclusively limited to the repair or replacement, at Flowline's option, of the products (or components thereof) which FLOWLINE SHALL HAVE NO OBLIGATION FOR CONSEQUENTIAL DAMAGES TO PERSONAL OR REAL PROPERTY, OR FOR INJURY TO ANY PERSON.

This warranty does not apply to products which have been subject to electrical or chemical damage due to improper use, accident, negligence, abuse, or misuse. Abuse shall be assumed then indicated by electrical damage to relays, reed switches or other components. The warranty does not apply to products which are damaged during shipment back to Flowline's factory or designated service center or are returned without the original casing on the products. Moreover, this warranty becomes immediately null and void if anyone other than service personnel authorized by Flowline attempts to repair the defective products.

Products which are thought to be defective must be shipped prepaid and insured to Flowline's factory or designated service center (the identity and address of which will be provided upon request) within 30 days of the discovery of the defect. Such defective products must be accompanied by proof of the date of purchase.

Flowline further reserves the right to unilaterally waive this warranty and to dispose of any product returned to Flowline where:

- a. There is evidence of a potentially hazardous material present with product
- b. The product has remained unclaimed at Flowline for longer than 30 days after dutifully requesting disposition of the product.

THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE OF THIS WARRANTY. This warranty and the obligations and liabilities of Flowline under it are exclusive and instead of, and the original purchaser hereby waives all other remedies, warranties, guarantees or liabilities, express or implied. EXCLUDED FROM THIS WARRANTY IS THE IMPLIED WARRANTY OF FITNESS OF THE PRODUCTS FOR A PARTICULAR PURPOSE OR USE AND THE IMPLIED WARRANTY OF MERCHANT ABILITY OF THE PRODUCTS.

This warranty may not be extended, altered or varied except by a written instrument signed by a duly-authorized officer of Flowline, Inc.

Flowline and the Flowline logo are trademarks of Flowline Inc. All other trademarks or registered trademarks of their respective companies.

U.S. Patent #: 7,098,669

FLOWLINE



Model: DLI4-(XX)

EchoPod®

Quick Start

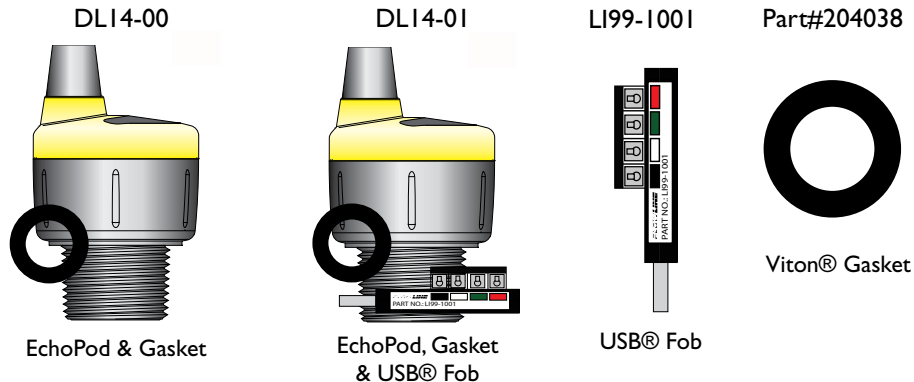
QS300210 REV: A
© 2009 Flowline, Inc.
All Rights Reserved
Made In USA

We Do Your Level Best!

Thank you for purchasing EchoPod. The general purpose ultrasonic sensor provides non-contact level detection up to 49.2" (1.25m) with 4 SPST 60 VA 1A relays and a two-wire 4-20 mA level measurement output. A 2 year extended warranty is available for EchoPod by registering your sensor on our website, www.flowline.com. At Flowline, We Do Your Level Best.

Components

EchoPod is offered in two different configurations. Depending on the configuration you purchased, you may or may not have been shipped all the components shown below. A USB® Fob and Viton® gasket is required to configure and install EchoPod.



Configuration

EchoPod is configured through WebCal, a PC configuration software program, and is a free download from our website. You must download and install WebCal prior to plugging in the USB® Fob. To download WebCal, please visit www.flowline.com/webcal.

WebCal System Requirements

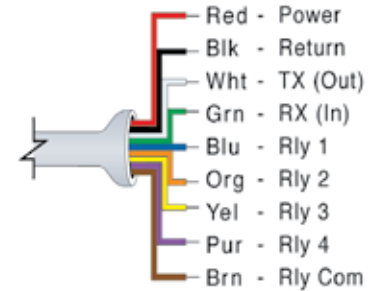
Windows® XP or 2000
 10 mB hard drive space
 256 mB RAM
 1 USB® 2.0 port
 Internet connection

Wiring EchoPod

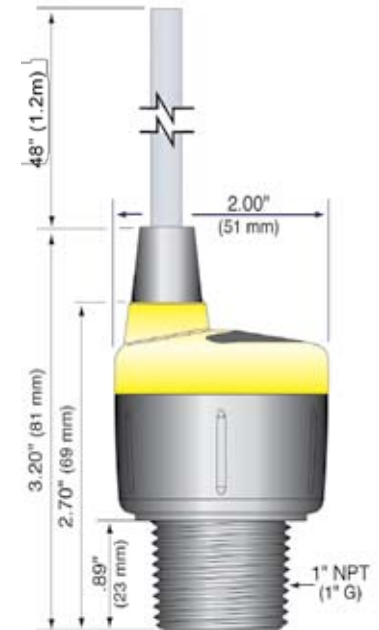
Follow the wiring diagram created in WebCal when the sensor was configured. Your custom diagram is generated by selecting "**Wiring Diagram,**" while running WebCal, in the configuration window during configuration.

Specifications

Range:	49.2" (1.25 m)
Accuracy:	0.125" (3 mm)
Resolution:	0.019" (0.5 mm)
Beam width:	2" (5 cm)
Dead band:	2" (5 cm)
Supply voltage:	24 VDC (loop)
Loop resistance:	400Ω max
Consumption:	0.5W
Signal output:	4-20 mA, two-wire (when loop powered)
Contact type:	(4) SPST relays 1A
Loop fail-safety:	4 mA, 20 mA, 21 mA, 22 mA or hold last
Relay fail-safety:	Power loss: Hold last Power on: Open, close or hold last
Hysteresis:	Selectable
Configuration:	WebCal® PC Windows® USB 2.0
Temp. comp.:	Automatic over range
Process Temp.:	F: 20° to 140° C: -7° to 60°
Ambient Temp.:	F: -31° to 140° C: -35° to 60°
Pressure:	MWP = 30 PSI
Enclosure:	Type 6P encapsulated, corrosion resistant & submersible
Encl. material:	PC/ABS FR
Strain relief mat.:	Santoprene
Trans. material:	PVDF
Cable length:	48" (1.2 m)
Cable jacket mat.:	Polyurethane
Process mount:	1" NPT (1" G)
Mount. gasket:	Viton®
Classification:	General purpose
Approvals:	CE, cFMus



Dimensions



Safety



1. Installation should be done by properly trained staff, wiring by a licensed electrician
2. Supply voltage should never exceed a maximum of 24 VDC
3. Always use stepper relays between the sensor and external loads
4. Make sure the sensor is chemically compatible with your application
5. Design a fail-safe system that accommodates the possibility of sensor and/or power failure.
6. This sensor should not be used in classified hazardous environments

Mounting Guide

Use a Flowline recommended fitting for best performance when mounting your sensor. A complete listing of mounting fittings is available on our website, www.flowline.com, under “Browse the Products”.

Flowline’s “Proper Ultrasonic Sensor Mounting” instructional video is available to view on our website, www.flowline.com, in our “Level Learning” section. If not familiar with mounting ultrasonic level measurement technology, Flowline recommends you view the instructional video before mounting your sensor.

Mounting Guidelines:

1. Do not mount at an angle
2. Liquid should never enter the 2” dead band
3. Mount at least 2” from the side wall
4. Do not mount where obstacles will intrude in the 2” beam width
5. Do not mount in a vacuum
6. Never screw directly into the tank, always use a *non-metallic* fitting

Flowline Recommended Fittings

Bulkhead Fitting: Select Flowline’s LM52-2890 2” low-profile bulkhead fitting and combine with Flowline’s 2” x 1” thread by thread reducer bushing.

Reducer Bushing: Select Flowline’s LM52-1400 2” x 1” thread by thread reducer bushing with isolation gap between inner and outer threads.

Flange: Select Flowline’s LM52-2850 2” flange and combine with Flowline’s LM52-1400 2” x 1” thread by thread reducer bushing.

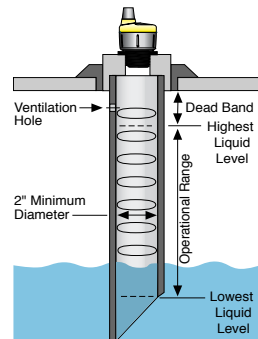
Side Mount Bracket: Use Flowline’s LM50-1001-1 side mount bracket that includes a 2” x 1” thread by thread reducer bushing.

Stand-Pipe: Use a stand-pipe when surface turbulence, vapor or foam are present. For instructions on installing a stand-pipe, view Flowline’s “How & Why to Use a Stand-Pipe” instructional video on our website, www.flowline.com, in our “Level Learning” section.

Riser: Use the riser specifications guide below, and match your riser’s inner diameter versus riser height.

	Riser Specifications	
	Inner Dia.	Max. Height
2" (5 cm)	2" (5 cm)	2" (5 cm)
3" (7.6 cm)	4" (10 cm)	4" (10 cm)
4" (10 cm)	8" (20 cm)	8" (20 cm)
6" (15 cm)	12" (30 cm)	12" (30 cm)

Riser specification chart



Example stand-pipe

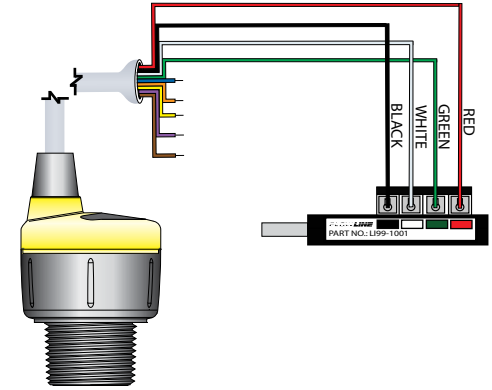
USB® Fob Interface

EchoPod communicates with WebCal through a USB® interface called a Fob. Before plugging your Fob into your computer’s USB® port, be sure that you have successfully installed WebCal.

Connect the red, green, white and black wires from EchoPod into the corresponding colored terminals on the Fob. Tighten the screws on the terminals and plug your Fob into the USB® port of your computer. To avoid damage to EchoPod or your computer, disconnect or power down all components that may be connected to the sensor.

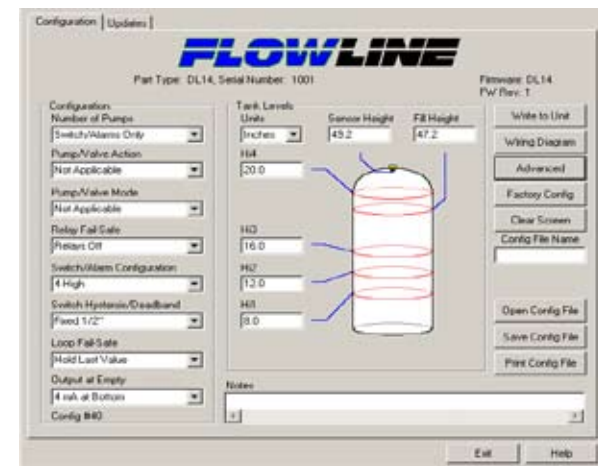
Your computer’s USB® port powers EchoPod during configuration, limiting the cable length during configuration to 4 feet. Cable lengths longer than 4 feet will not allow WebCal to properly communicate with EchoPod.

* Once EchoPod is configured, isolate the white and green wires from active power to avoid shorting the configuration circuit.



WebCal®

With EchoPod connected to your computer, open WebCal. Follow steps 1-3 (pg. 4-5) to configure the set points and span of the sensor. If at any time you need additional assistance, Click “Help” in the lower right hand corner or contact a Flowline applications engineer at (562) 598-3015.



WebCal Step 1: Configuration

Configuration

Number of Pumps
Switch/Alarms Only

Pump/Valve Action
Not Applicable

Pump/Valve Mode
Not Applicable

Relay Fail-Safe
Relays Off

Switch/Alarm Configuration
4-High

Switch Hysteresis/Deadband
Fixed 1/2"

Loop Fail-Safe
Hold Last Value

Output at Empty
4 mA at Bottom

Config #40

The *Configuration* menu of WebCal is where you configure the different features of EchoPod. Start from the top and work to the bottom, choosing the selections that are applicable to your configuration. "Not Applicable" will automatically show when a selection doesn't apply to your configuration settings, and you may move on. All configuration settings must be selected or have "Not Applicable" before you can continue to step 2.

Note: Right click on any menu that you may have questions on to open the help menu.

Note: To reset all configuration menu selections, press "Clear Screen".

WebCal Step 2: Tank Levels

This *Tank Values* section of WebCal is where you enter application measurement values. All values must be filled in before moving to step 3.

Tank Levels

Units
Inches

Sensor Height
49.2

Fill Height
47.2

Hi4
20.0

Hi3
16.0

Hi2
12.0

Hi1
8.0

Sensor Height: Distance from the bottom of the tank to the bottom of the transducer.

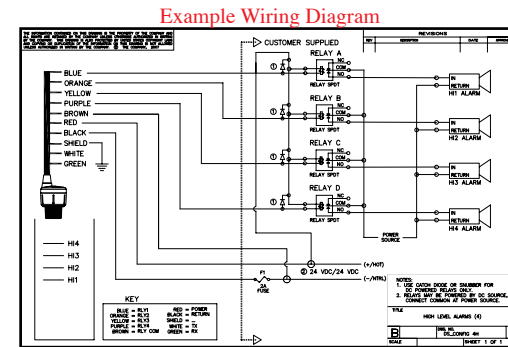
Fill Height: Distance from the bottom of the tank to the maximum liquid height.

Relay Set Points: Distance from the bottom of the tank to set-points.

WebCal Step 3: Write to Unit

After you have selected and entered all the required values, click "Write to Unit" and download the configuration to EchoPod.

WebCal has additional features to assist in configuration file management and wiring of the sensor. Flowline recommends saving each of your different configurations, and printing the corresponding wiring diagram. These functions plus more can be completed by clicking the corresponding buttons on the right hand side of WebCal's configuration window.



Position and Mount

EchoPod should always be mounted perpendicular to the liquid surface and installed using the supplied Viton® mounting gasket. Flowline recommends you avoid fitting types or shapes with thick mounting structures located around the transducer threads greater than 3/8". Using Flowline plastic fittings, or equivalent, with thin wall mounting structures that isolate the transducer, will give you the best performance over the lifetime of the sensor.

Before mounting EchoPod, please read the Flowline Mounting Guide on page 6 of this quick start.

