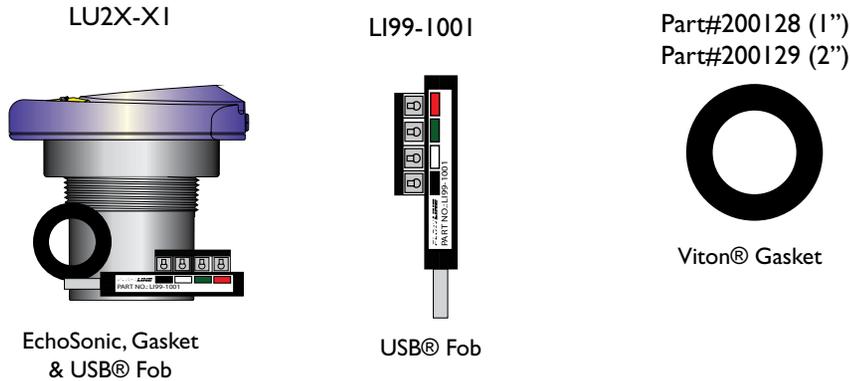


## We Do Your Level Best!

Thank you for purchasing Flowline's new innovative tank level solution. EchoSonic II LU2X series are general purpose sensors that provides non-contact ultrasonic level measurement for tanks 32.8' (10 m) or less. Flowline would like to thank you for your business and continue to do your level best!

## Components

EchoSonic II is offered in three different measuring lengths. Depending on the model purchased, you may or may not have been shipped all the components shown below. You do however, need an EchoSonic II, USB® Fob and Viton® gasket to configure, install and operate EchoSonic.



## Configuration

EchoSonic II is configured through WebCal, a PC software program. WebCal is a free download from Flowline's website. You must download and install WebCal prior to plugging in the USB® Fob. Please go to <http://www.flowline.com/webcal> and select download.

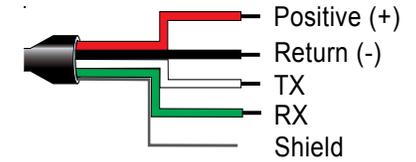
## WebCal System Requirements

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

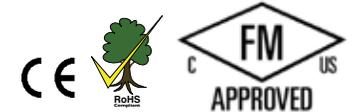
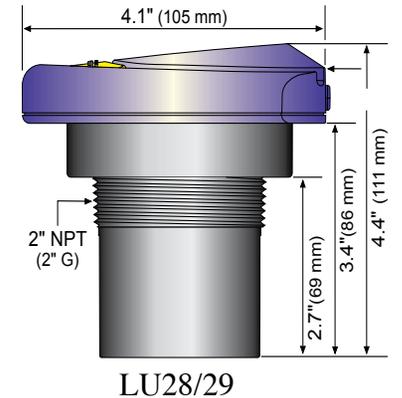
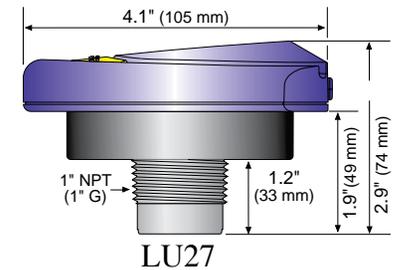
## Specifications

<b>Range:</b>	LU27: 4" to 8.2' (10 cm to 2.5 m) LU28: 8" to 24.6' (20 cm to 7.5 m) LU29: 8" to 32.8' (20 cm to 10 m)
<b>Accuracy:</b>	± 0.2% Range
<b>Resolution:</b>	LU27: 0.019" (0.5 mm) LU28/29: 0.079" (2 mm)
<b>Beam width:</b>	LU27: 2" (5 cm) dia. LU28/29: 3" (7.6 cm) dia.
<b>Dead band:</b>	LU27: 4" (10 cm) LU28/29: 8" (20 cm)
<b>Memory:</b>	Non-volatile
<b>Supply voltage:</b>	24 VDC
<b>Consumption:</b>	0.5W
<b>Loop resist.:</b>	500Ω Ohms @ 24 VDC
<b>Signal output:</b>	4-20 mA, two-wire
<b>Signal invert:</b>	4-20 mA or 20-4 mA
<b>Configuration:</b>	WebCal® PC Windows® USB 2.0
<b>Fail-safety:</b>	4 mA, 20 mA, 21 mA, 22 mA or hold last
<b>Process temp.:</b>	F: -4° to 140° C: -20° to 60°
<b>Temp. comp.:</b>	Automatic
<b>Ambient temp.:</b>	F: -31° to 140° C: -35° to 60°
<b>Pressure:</b>	MWP = 30 PSI
<b>Enclosure rating:</b>	Type 6P encapsulated, corrosion resistant & submersible
<b>Encl. material:</b>	Polycarbonate
<b>Trans. material:</b>	PVDF
<b>Cable jacket mat.:</b>	Polyurethane
<b>Cable type:</b>	4-cond., shielded
<b>Cable length:</b>	10' (3m)
<b>Process mount:</b>	LU27: 1" NPT (1" G) LU28/29: 2" NPT (2" G)
<b>Mount. gasket:</b>	Viton®
<b>Classification:</b>	General purpose
<b>Compliance:</b>	RoHS
<b>Approvals:</b>	CE, cFMus

## Wiring



## Dimensions



## Safety

1. Installation should be done by properly trained staff
2. Supply voltage should never exceed a maximum of 28 VDC
3. Make sure the sensor is chemically compatible with your application
4. Design a fail-safe system that accommodates the possibility of sensor and/or power failure.
5. This sensor should not be used in classified hazardous environments

## Wiring EchoSonic

After you have finished positioning and mounting EchoSonic II, follow WebCal's wiring diagram to then wire EchoSonic II. Flowline recommends using a licensed electrician to wire all of the application components.

*Note: Do not extend the white & green wires beyond 15'.*

## Mounting Guide

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

**Tank Adapter:** Select a tank adapter with minimum height to ensure that EchoSonic's transducer will not be substantially elevated inside the fitting. For LU27 sensors, Flowline recommends using a Spears 2" x 1", thread by thread, reducer bushing (LM52-1001).

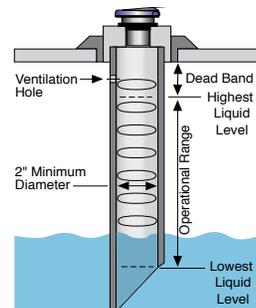
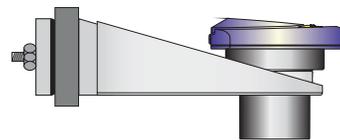
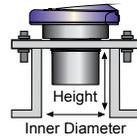
**Riser:** Use the riser specifications guide and match your riser's inner diameter with the height.

**Flange:** Select a flange with a thread that is above the plane of the flange. If your installation requires the use of a blind flange, tap a 2" thread. For LU27 sensors use a thread by thread reducer bushing (see tank adapter).

**Side Mount Bracket:** Use Flowline's LM50-1001 side mount bracket. The LM50-1001-1 includes a 2" x 1" reducer bushing for LU27 sensors.

**Stand Pipe:** Use a stand pipe when surface foam or turbulence are present. Use a 3" diameter pipe with a length that runs the distance of the span. Cut a 45° notch at the bottom and a 1/4" hole within 2" from bottom of the transducer face.

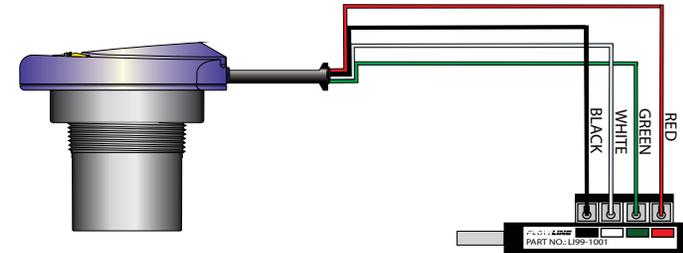
Riser Specifications	
Inner Dia.	Max. Height
2" (5 cm)	4" (10 cm)
3" (7.6 cm)	6" (15 cm)
4" (10 cm)	8" (20 cm)
6" (15 cm)	12" (30 cm)



## USB® Fob Interface

EchoSonic II 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 installed WebCal on your computer.

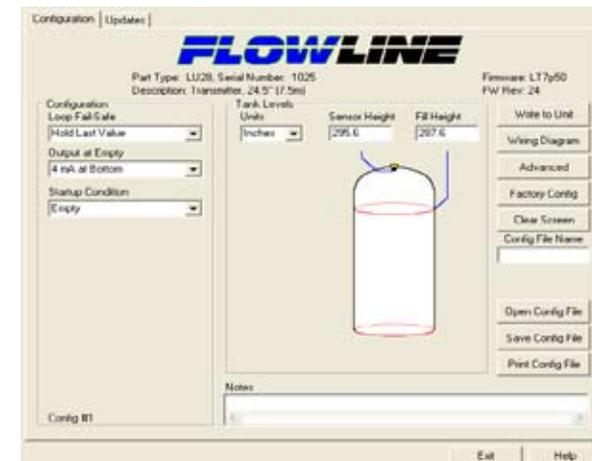
Connect the red, green, white and black wires from EchoSonic II into the correct terminals on the Fob. Tighten the screws on the terminals and plug your Fob into the USB® port of your computer.



\* Once EchoSonic II is configured, isolate the white and green wires from active power to prevent a short of the configuration circuit

## WebCal

With EchoSonic II connected to your computer, open the WebCal software. Follow steps 1-3 (pg. 4-5) to configure EchoSonic II. Click "Help" in the lower right hand corner and open the help menu of WebCal for additional instructions on WebCal. If you need additional assistance using WebCal, please contact a Flowline Applications engineer at (562) 598-3015.



## WebCal Step 1: Configuration

Configuration

Loop Fail-Safe  
 Hold Last Value

Output at Empty  
 4 mA at Bottom

Startup Condition  
 Empty

Config #1

This section of WebCal is where you select the application's configuration settings. 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.

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

## WebCal Step 2: Tank Levels

This 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  
 295.6

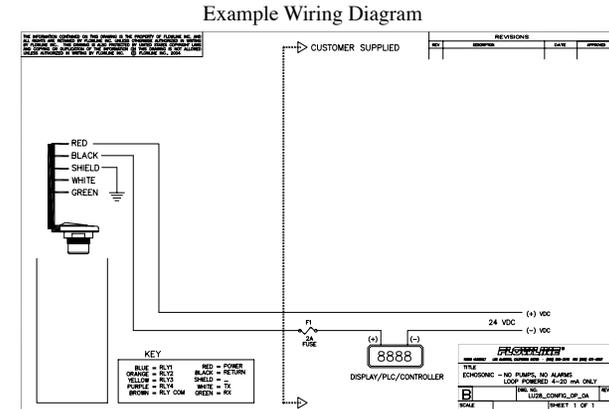
Fill Height  
 287.6

**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.

## WebCal Step 3: Write to Unit

After you have entered configurations and tank values, click "Write to Unit" and send the configuration to your EchoSonic II. Now use WebCal's file management features to save your configuration by clicking "Save Config File" and print your wiring diagram by clicking "Wiring Diagram."



## Position and Mount

Positioning and mounting EchoSonic II is critical to the sensor performing correctly. EchoSonic II should always be mounted perpendicular to the liquid in the tank, clear of any obstructions in the beam path. Not doing so will result in poor performance. Refer to Flowline's mounting guide on pg. 6 for further instruction, or [www.flowline.com](http://www.flowline.com).

