Technical Support

For complete product documentation, video training, and technical support, go to www.flowline.com.

For phone support, call 562-598-3015 from 8am to 5pm PST, Mon - Fri. (Please make sure you have the Part and Serial number available.)

Flowline Inc. 10500 Humbolt St, Los Alamitos, CA 90720

Warranty

FLOWLINE We do Your Level Best

Model: LU23, 28, 29 (-0, -1)

EchoSonic® II

NEMA 6 Enclosure

Quick Start

QS300610 Rev.C
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CE   RoHS Compliant   FM APPROVED

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Welcome to the EchoSonic® II Quick Start

The EchoSonic ® II Quick Start is meant to show some of the more common setup solutions to getting the EchoSonic ® II up and running quickly. If you run into an issue that is not addressed here or wish to install or set up with a non-standard configuration, please address the EchoSonic ® II Manual or refer to the Flowline website at www.flowline.com.

We Do Your Level Best

Thank you for purchasing the EchoSonic ® II. This general purpose ultrasonic sensor provides non-contact detection powered by the 4-20 mA loop. This Quick Start includes everything you'll need to get the sensor up and running. For complete information, please refer to EchoSonic ® II documentation located at www.flowline.com.

Components

Depending on how the EchoSonic ® II was shipped to you, you may or may not have the components shown below. All three components, including the EchoSonic ® II, USB Fob, and Viton® gasket are required to configure and install the sensor. If you need any additional components, you can order them directly from Flowline.
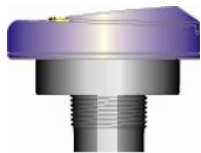
EchoSonic® II
LU23-0 (with cable)
LU23-1 (with cable)
LU28-0 (with cable)
LU28-1 (with cable)
LU29-0 (with cable)
LU29-1 (with cable)

USB Fob
L199-1001
(USB Fob not
provided with
LU2X-00 version)

Viton® gasket
200129 (2")

KEY
RED = POWER
BLACK = RETURN
SHIELD = ⏚
WHITE = TX
GREEN = RX

DISPLAY/PLC/CONTROLLER
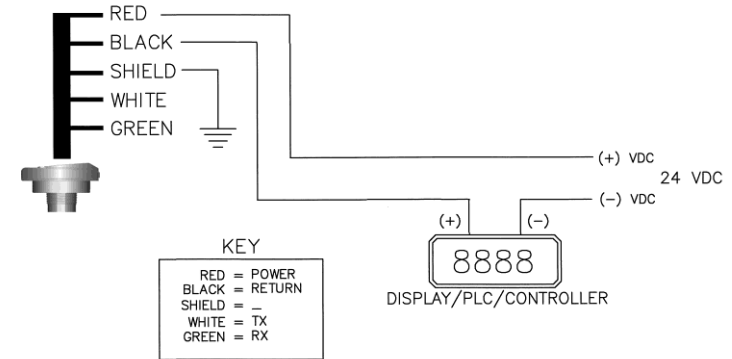
***Typical* Wiring diagram**
Your WebCal Wiring Diagram may vary.

General notes for electrical connections, usage and safety:

- Where personal safety or significant property damage can occur due to a spill, the installation must have a redundant backup safety system installed

- Wiring should always be completed by a licensed electrician

- Supply voltage should never exceed 28 VDC

- Protect the sensor from excessive electrical spikes by isolating the power whenever possible

- The sensor materials must be chemically compatible with the liquids to be measured

- Design a fail-safe system for possible sensor and/or power failure

- Never use the sensor in environments classified as **Hazardous**

Wiring the Sensor

After mounting the sensor, make the necessary electrical connections. A wiring diagram with specific recommendations for the sensor's configuration can be printed from the WebCal program. A general wiring diagram is shown on the previous page.

Red - Power
Blk - Return
Wht - TX (Out)
Grn - RX (In)
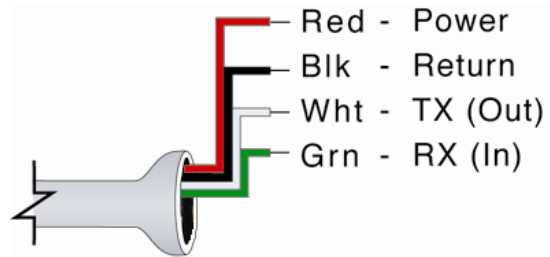
Red and **Black** leads are for connection to a 24 VDC power supply or to a 4-20 mA loop power source. The red and black wires can be extended more than 1000 feet using 22 gauge or larger wire, however do not extend the green and white wires.

White and **Green** leads are reserved for use with WebCal and should not be connected during usage in the application. These wires should not be connected to WebCal while power is supplied from any source other than the LI99 FOB.

Shield. This common wire provides transmission protection.

Never allow the white or green wires to touch any power supply.

Configuring the Sensor

Configuration of your sensor should be performed prior to mounting, since it requires connection to your PC.

Step 1: Install the WebCal Software

Download WebCal from www.flowline.com onto a PC with the following minimum specifications:

Windows[®] 2000/XP/Vista/7, 10 MB storage space, 256 MB RAM, 1 USB 2.0 port

Double-click the WebCal icon to install before proceeding to Step 2. You must have an active Internet connection to install WebCal, as it will automatically verify driver updates.

Step 2: Connect the USB Fob

NOTE: Do not connect the Fob until after you've installed WebCal.

The sensor communicates to its configuration software through the USB Fob. Prior to connecting the Fob, ensure that all external power is disconnected from the sensor as power is provided through the PC's USB 2.0 port. Do not use a cable connecting the sensor to the Fob any longer than 15 feet.

1) Connect the red, green, white, and black wires from the sensor to the corresponding colored terminals on the Fob (as shown in the diagram).

2) Tighten the terminal screws with a slotted screwdriver.

3) Plug the Fob into your PC's USB port.
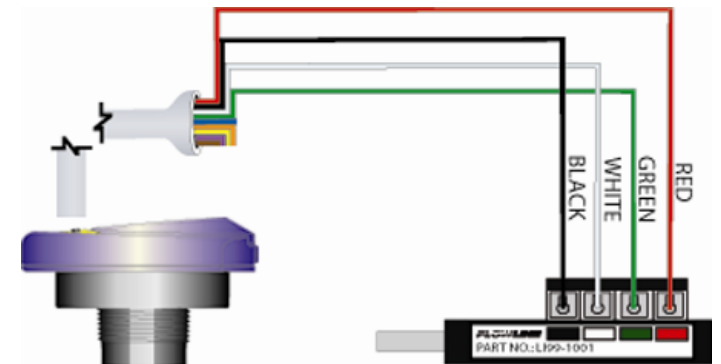
Step 3: Configure through WebCal

These instructions will walk you through configuration of the sensor through WebCal. For more information, click the WebCal **HELP** button in the lower right corner or anywhere on the WebCal screen or refer to the sensor Manual found at www.flowline.com.
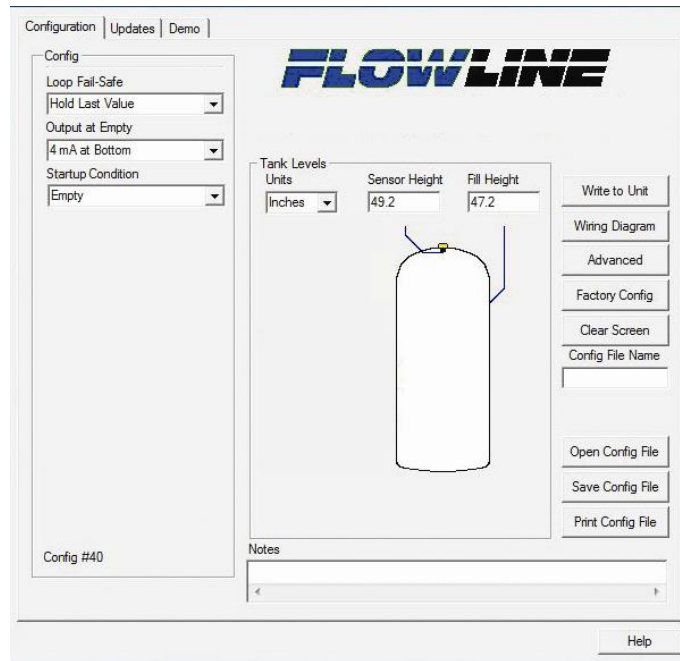
WebCal Configuration Screen

Using a Standpipe

A standpipe may be used to dampen turbulence, separate surface foam from the point of measurement or increase performance in heavy vapor. Select a 3" pipe and attach the sensor with a coupling and reducer bushing. The pipe length should run the measurement span and the bottom of the pipe should remain submerged at all times to prevent foam from entering the pipe. Cut the bottom end of the pipe at 45° and drill a 1/4"pressure equalization hole high in the dead band. The pumps should not drive liquid past the open end of the standpipe which causes the liquid in the pipe to become turbulent.
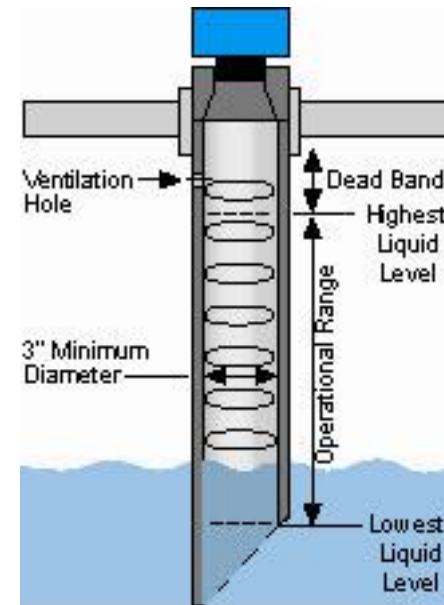
Mounting with a Standpipe

IMPORTANT MOUNTING GUIDELINES:

1) Never mount the transmitter at an angle.
2) Liquid should never enter the dead band.
3) Mount at least 3" from the side wall.
4) Never mount in a vacuum.
5) Do not obstruct the transmitter's beam width.

Mounting the Sensor

The sensor should always be mounted perpendicular to the liquid surface using the provided Viton® mounting gasket. Insure that there are no restrictions or obstacles in the path of the ultrasonic signal. Further mounting information can be found on the Flowline website at www.flowline.com.

The LU23, LU29 and LU29 have a 2" NPT or G fitting that can be installed in standard 2" tank adapters. It is best to keep the height of any adapter to a minimum with 6" being the absolute maximum for a 2" riser. The LM-1001 is a good choice for sidewall mount applications.

Mounting with a Tank Adapter: Select a tank adapter fitting, such as the LM52-2890.

Mounting with a Riser: As installations with tall, narrow risers can impede the acoustic signal. 2" diameter risers should be no taller than 4". Larger diameter risers should be no taller than 12".

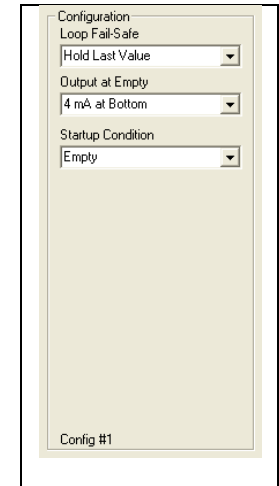**Mounting with a Side Mount Bracket**: Use Flowline's LM50-1001 side mount bracket.
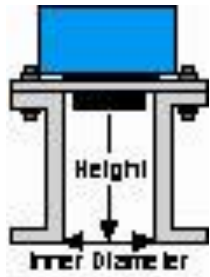
Riser Mounting
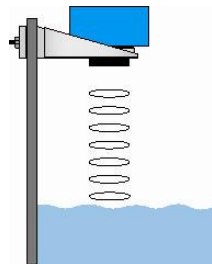
Side Mounting

Using the drop-down menus on the left of the WebCal screen, set the configuration for your application requirements. When a selection does not apply to your application, "Not Applicable" will appear in the drop-down. Make sure all drop-downs are set appropriately for your application before moving to the Tank Level section.

- **Loop Fail Safe**. Use this setting to choose the output level should the sensor not receive an echo.
- **Output at Empty**. Use this setting to change the 4-20 mA setting from its default.
- **Startup Condition**. During the 15-20 seconds during which the sensor starts up, this describes the level at which it will begin searching for the contents of the tank.
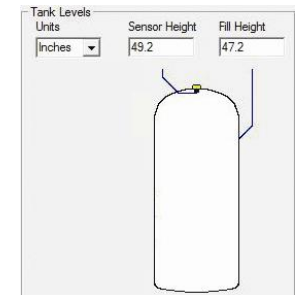
NOTE: If you would like to start over, click the **Clear Screen** button on the right.

Configuration Settings

Enter the appropriate tank level set points for your application.

- **Units**. Display measurements in inches or centimeters.
- **Sensor Height**. Distance measured from the bottom of the empty tank to the bottom of the transducer. Under factory configuration, this becomes the 4 mA set point.
- **Fill Height**. Distance measured from the bottom of the empty tank to the maximum fill height within the tank. Under factory configuration, this becomes the 20 mA set point.

Tank Level Settings

The options on the right of the WebCal screen to finalize the configuration.

- **Write to Unit**. Send your configuration into sensor
- **Wiring Diagram**. Open PDF wiring schematic of your configuration.
- **Advanced**. Configure advanced settings. Read the section below on advanced setting options
- **Factory Config**. Return sensor to the original factory configuration.
- **Clear Screen**. Clears the screen of configuration settings.
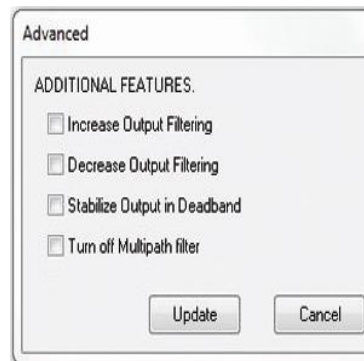- **Config file**. Name, save, open or print your configuration for later use.

Write to Unit
Wiring Diagram
Advanced
Factory Config
Clear Screen
Config File Name
Open Config File
Save Config File
Print Config File
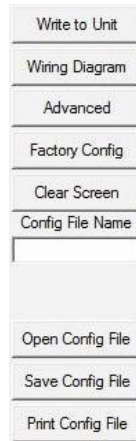
Finalize Settings

The **Advanced** button is used for options available when setting up the sensor with special, non-standard features. Many of these features are available for specific applications that may change from time to time. Consult WebCal's **HELP** file for the latest information on the use of any of these features.

The more commonly used Advanced features are the Invert Relay and Increase Output Filtering described below.

- **Increase Output Filtering**. Select this radio button to add additional filtering to the 4-20 mA output.
- **Decrease Output Filtering**. Select this radio button to remove all output filtering on the 4-20 mA output.

Advanced

ADDITIONAL FEATURES.

☐ Increase Output Filtering

☐ Decrease Output Filtering

☐ Stabilize Output in Deadband

☐ Turn off Multipath filter

[Update] [Cancel]

Advanced Settings

Before configuration can be completed:

> You must click the **Write to Unit** button to save the settings to the unit.

> Then, click **Wiring Diagram** for a hard copy of the sensor's settings.

> Finally, enter the file name under which you wish to save the configuration file and click **Save Config File**.

Configuration is now complete.

For Updates to WebCal, or to make sure you're using the most up-to-date version available, click the **Update** tab on the top of the WebCal screen.

To view the Demo page (shown here), click the **Demo** tab on the top of the WebCal screen.

The demo page is a simulation, useful for verifying the configuration. There is not enough power going to the unit to power the relays. The larger numbers represent the liquid level while the smaller numbers show the distance from the transducer to the surface. The sensor must be pointed at a flat perpendicular surface.
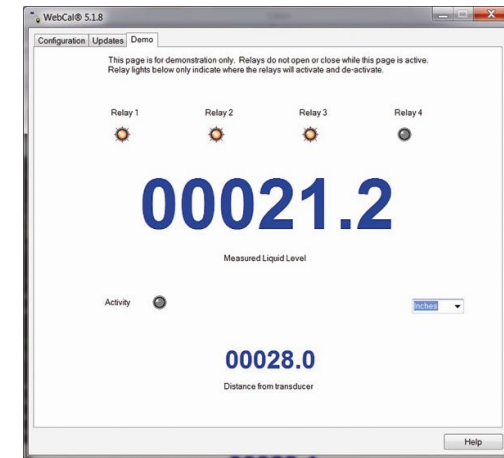
Demo screen (Simulation)

Disconnect the USB Fob before the next step: Mounting the sensor