FLOWLINE™ LEVEL BEST

EchoPod/EchoTouch® Reflective Technology™ Ultrasonic Liquid Level Sensors

Overview

The innovative EchoPod/EchoTouch Reflective Technology ultrasonic liquid level sensors replace other ultrasonic level sensors in condensation applications, as well as float, conductance and pressure sensors that fail due to contact with dirty, sticky and scaling media in small, medium and large capacity tanks. Applied in chemical, water and wastewater applications, these general purpose or intrinsically safe non-contact sensors are available with single and multi-function capabilities, including continuous level measurement, switching and control. The standard 4-20 mA output is easily monitored by a PLC or other controller. Models with four relays can be configured for level alarms and/or stand-alone level control such as automatic fill or empty functions using the embedded level controller. PC configuration of all models is simple with WEBCAL™ software, while the UG06, UG12 and US06 models also offer limited configuration via their pushbuttons and integral display.

What is Reflective Technology™?

Condensation is the most commonly encountered variable in liquid level applications. Condensation attenuates the acoustic signal of ultrasonic sensors that have a flat horizontal transducer face, weakening their signal strength and signal-to-noise ratio by up to 50%, and substantially reducing their measurement reliability. At the core of Reflective Technology™ is a simple fact: unlike flat horizontal surfaces, significant water droplets cannot adhere to smooth vertical surfaces. By orienting the internal ultrasonic transducer vertically, condensation runs off the transducer face and does not affect sensor performance. The unimpeded transmit and receive signals are redirected to and from the liquid off a 45° reflector, delivering reliable level measurement. Thanks gravity!

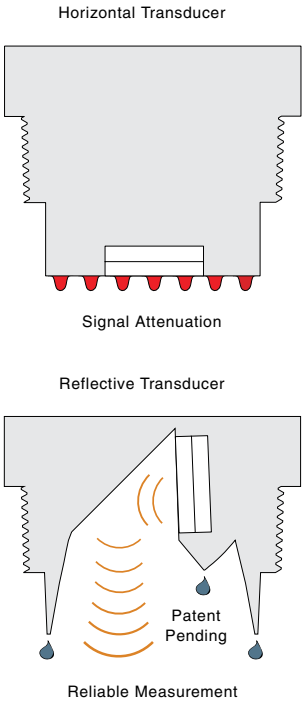
WEBCAL

LI99-2001

WebCal Software

WEBCAL PC software is a utility program that enables users to easily configure their EchoSonic II, EchoTouch and EchoPod level transmitters, switches, and controllers. Download your free copy of WebCal at www.AutomationDirect.com, and connect your sensor through our Fob USB adapter (LI99-2001). Develop your configuration using pre-programmed function menus as the tank graphic and set point fields automatically change to match your configuration. Then, input your level set point values and click the Write to Unit button. Your configuration will be downloaded into the sensor and verified in less than a second. Last, click the Wiring Diagram button to open a wiring schematic of your configuration in PDF format. Print the document, disconnect the sensor and wire it per the schematic. As new software or firmware becomes available, it can be downloaded and updated through WebCal.

Reflective Technology



FLOWLINE™ LEVEL BEST

REFLECTIVE TECHNOLOGY

EchoPod/EchoTouch® Reflective Technology™ Ultrasonic Liquid Level Sensors

EchoPod/EchoTouch Reflective Technology Ultrasonic Liquid Level Sensors General Specifications							
Model	***UG01-0001-40***	***UG03-0001-40***	***UG06-0001-00***	***UG12-0001-00***	***US01-0001-00***	***US03-0001-00***	***US06-0001-00***
Price	$-044hi:	$-044hj:	$044hk:	$;-0044hl:	$044hn:	$044ho:	$;004ze7:
Type	EchoPod/EchoTouch Reflective Technology (works in condensing environments)						
Classification	General purpose (non-hazardous)				Intrinsically safe		
Media	Liquids						
Range	1.5 in to 4.9 ft (3.8 cm to 1.5 m)	4in to 9.8 ft (10.1 cm to 3m)	8in to 19.6 ft (20cm to 6m)	18in to 39.3 ft (45.7 cm to 12m)	1.5 in to 4.9 ft (3.8 cm to 1.5 m)	4in to 9.8 ft (10.1 cm to 3m)	8in to 19.6 ft (20cm to 6m)
Output	4-20 mA and (4) SPST relays		4-20 mA (No Relays)				
Mounting	Vertical, top of tank, 2in NPT male			Vertical, top of tank, 3in NPT male	Vertical, top of tank, 2in NPT male		
Electrical Termination	Integral 48in, 9-conductor, shielded cable		Screwless terminals, 1/2in female NPT		Integral 48in, 4-conductor, shielded cable		Screwless terminals, 1/2in female NPT
Configuration	WEBCAL Software (free download) and LI99-2001 Fob USB Adapter (purchased separately)		WEBCAL Software (free download) and LI99-2001 Fob USB Adapter (purchased separately) or Pushbutton / LCD		WEBCAL Software (free download) and LI99-2001 Fob USB Adapter (purchased separately)		WEBCAL Software (free download) and LI99-2001 Fob USB Adapter (purchased separately) or Pushbutton / LCD
Ambient Temperature	-31° to 140°F (-35° to 60°C)						-40° to 176°F (-40° to 80°C)
Process Temperature	-40° to 176°F (-40° to 80°C)						
Pressure	30 PSI (2 bar) max.						

FLOWLINE™ LEVEL BEST

EchoTouch® US06 Series Ultrasonic Liquid Level Sensors

REFLECTIVE TECHNOLOGY

Part No. US06-0001-00 Shown

Overview

The EchoTouch US06 intrinsically safe reflective ultrasonic level transmitters provide continuous level measurement up to 19.6′ (6m) with a 4-20 mA analog signal output, and are configured via WEBCAL software with limited configuration also available via the integral pushbutton display module. The non-contact liquid level sensor features Flowline's proprietary Reflective Technology™ that delivers reliable level measurement in condensing environments. Select this sensor for intrinsically safe environments and bulk tanks with non-foaming and mildly vaporous media such as chemicals, water, wastewater and oil. Typical applications include bulk storage, neutralization tank, clarifier and waste sumps.

Features

- Intrinsically safe approvals for hazardous locations
- 6m (19.6′) measurement range
- Reflective Technology™ measures reliably with condensation
- Corrosion resistant PVDF transducer with aluminum IP66 enclosure
- Fail-safe diagnostics with selectable signal fail-safe outputs
- LCD display indicates level in inches, feet, or meters
- Narrow 3″ (7.6cm) beam width for applications with limited space
- Configuration via WEBCAL software with limited configuration via the integral pushbutton and display
- Short 8″ (20.3 cm) dead band maximizes tank filling capacity
- Type 4X (IP66) compact enclosure for small tank applications
- Automatic temperature compensation from -40° to 176°F (-40° to 80°C)
- 2-year warranty

Agency Approvals

- CSA, CE

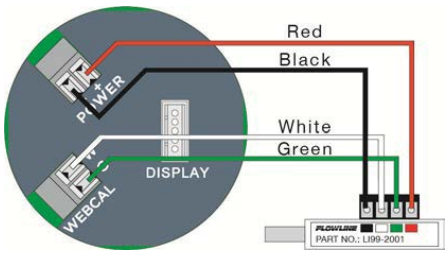
US06 Technical Specifications

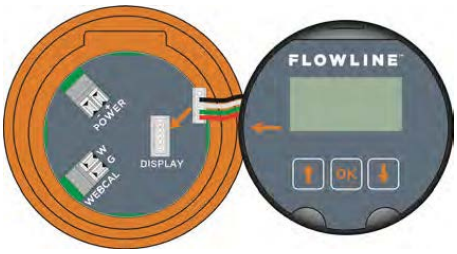
Model	US06-0001-00
Price	$;004ze7:
Weight (lbs)	1.9
Range	8in to 19.6 ft (20cm to 6m)
Accuracy	±0.2% of range
Resolution	0.079 in (2mm)
Sensing Dead Band*	8in (20.3 cm)
Beam Width	3in (7.6 cm)
Configuration	Pushbutton or WEBCAL® PC Windows® USB® 2.0
Memory	Non-volatile
Display Type	LCD, 6-digit
Display Units	Inch, cm or percent
Supply Voltage	14-28 VDC
Loop Resistance	500Ω @ 24VDC
Signal Output	4-20 mA, two-wire
Signal Invert	4-20 mA or 20-4 mA
Signal Fail-Safe	4mA, 20mA, 21mA, 22mA, hold last
Process Temperature	-40° to 176°F (-40° to 80°C)
Temp. Compensation	Automatic
Ambient Temperature	-40° to 176°F (-40° to 80°C)
Pressure	30 PSI (2 bar)
Enclosure Rating	Type 4X (IP66)
Enclosure Material	Aluminum
Enclosure Vent	Water tight membrane
Transducer Type	Reflective
Transducer Material	Polyvinylidene Fluoride (PVDF)
Conduit Entrance	1/2in NPT
Process Mount	2in Male NPT
Classification	Intrinsically safe
Approvals (for USA)	CSA: Class I, Div 1, Groups A,B, C & D T4; Class II, Div 1 Groups E, F & G T4; Class III T135C; Class I, Zone 0, IIC AEx ia T4 Ga; Class II, Zone 20, IIIC AEx ia, T135C, Da
Approvals (for Canada)	CSA: Class I, Div 1, Groups A,B, C & D T4; Class II, Div 1 Groups E, F & G T4; Class III T135C
Approvals (for IECEx)	Ex ia IIC T4 Ga; Ex ia IIIC, T135C Da; Tamb: -40 to 80C
Compliance	CE

** Dead band is the minimum distance the sensor must be mounted above the max liquid level.*

Configuration

The settings for the US06 are configured with free WEBCAL software (downloadable from AutomationDirect Web site), and an LI99-2001 Fob USB adapter (purchased separately).





Note: Remove the display from the housing and disconnect the cable from the connector before wiring the Fob.

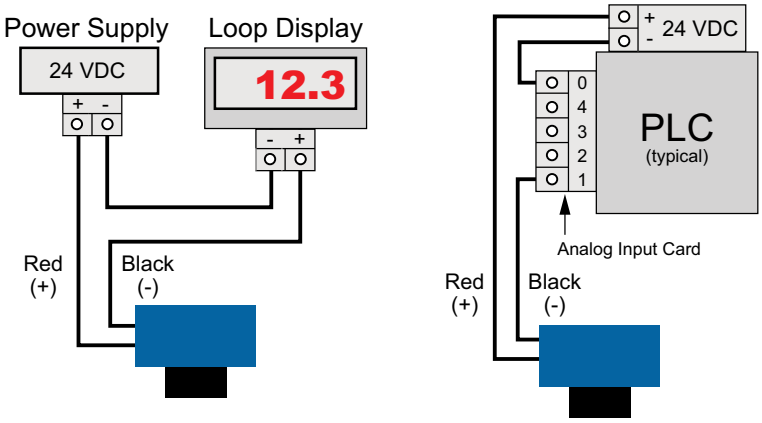
LI99-2001

See the end of the Ultrasonic Level Sensor Section for further details and Accessories

FLOWLINE LEVEL BEST EchoTouch® US06 Series Ultrasonic Liquid Level Sensors

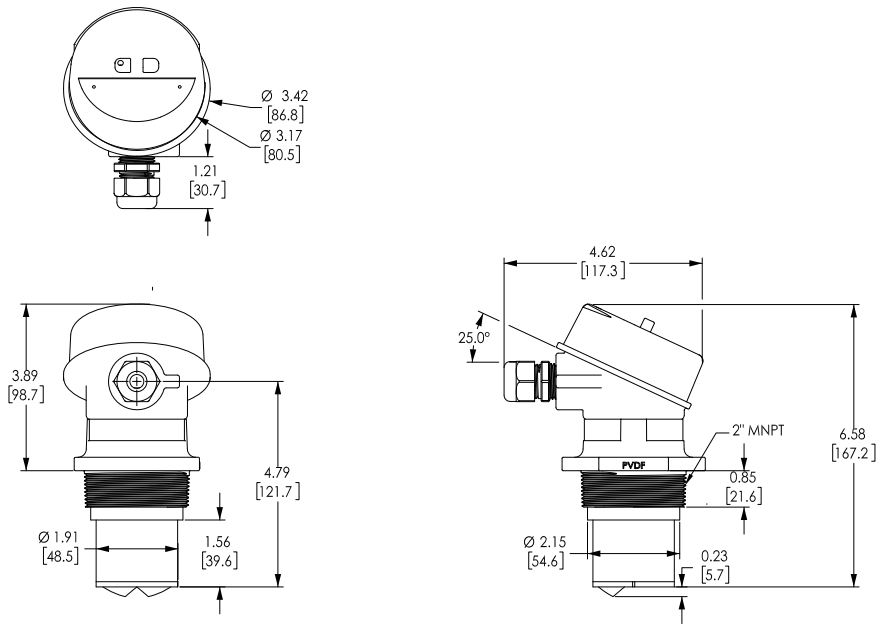
Wiring

Common wiring to display, controllers and PLC examples



Dimensions

inches [mm]



Part No. US06-0001-00

FLOWLINE™ LEVEL BEST

Ultrasonic Liquid Level Sensor Accessories

Ultrasonic Liquid Level Sensor Accessories					
Part No.	***Item Photo***	***Description***	***Quantity***	***Weight***	***Price***
LI40-1001		Flowline PodView general purpose digital indicator, displays tank level or volume and sensor relay status, 6-digit LCD display with four relay status indicators, 3-button user interface, polycarbonate panel mount enclosure with NEMA 4 (IP65) faceplate, 6-foot (1.8-meter) 22AWG 4-conductor cable, for use with Flowline EchoPod DL, DS and DX series ultrasonic level sensor with firmware V50.0 or later	1	0.6	$0046d:
LM50-1001		Flowline side mount bracket, 2 inch NPT female threads, polypropylene (PP), for use with Flowline DL34, LU23, LU28, LU29, LU74, LU78, LU81, LU83, LU84, UG01, UG03, UG06, US01, US03 and US06 series ultrasonic level sensors	1	0.4	$05he:
LM50-1001-1		Flowline side mount bracket, 2 inch NPT female threads, polypropylene (PP), and 2 inch NPT male x 1 inch NPT female reducer bushing (PVC), for use with Flowline DL14, DL24, DS14, DL10, DX10, LU27, LU77 and LU80 series ultrasonic level sensors	1	0.6	$;05hf:
LM52-1400		Flowline reducer bushing, 2 inch NPT male x 1 inch NPT female threads, PVC, for use with Flowline DL14, DL24, DS14, DL10, DX10, LU27, LU77 and LU80 series ultrasonic level sensors	1	0.2	$;0ek,:
LM52-2400		Flowline reducer bushing, 3 inch NPT male x 2 inch NPT female threads, PVC, for use with Flowline DL34, LU23, LU28, LU29, LU74, LU78, LU81, LU83, LU84, UG01, UG03, UG06, US01, US03 and US06 series ultrasonic level sensors	1	0.6	$-0el1:
LM52-3800		Flowline reducer bushing, PVC, 4in male NPT to 2in female NPT. For use with Flowline DL34, LU23, LU28, LU29, LU74, LU78, LU81, LU83, LU84, UG01, UG03, UG06, US01, US03 and US06 series ultrasonic level sensors	1	2.0	$044hp:
LM52-1890		Flowline low-profile bulkhead fitting, 1 inch NPT female x slip socket, with mounting nut, PVC, for use with Flowline DL14, DL24, DS14, DL10, DX10, LU27, LU77 and LU80 series ultrasonic level sensors	1	0.5	$-0el0:
LM52-2890		Flowline low-profile bulkhead fitting, 2 inch NPT female x slip socket, with mounting nut, PVC, for use with Flowline DL34, LU23, LU28, LU29, LU74, LU78, LU81, LU83, LU84, UG01, UG03, UG06, US01, US03 and US06 series ultrasonic level sensors	1	1.2	$-00el2:
LM52-3890		Flowline low-profile bulkhead fitting, PVC, 3in female NPT to slip socket. For use with Flowline UG12 series ultrasonic level sensors. Mounting hardware included.	1	2.1	$044hs:
LM52-1850		Flowline mounting flange, 1 inch NPT female threads, CPVC, for use with Flowline DL14, DL24, DS14, DL10, DX10, LU27, LU77 and LU80 series ultrasonic level sensors	1	0.5	$;06h,:
LM52-2850		Flowline mounting flange, 2 inch NPT female threads, CPVC, for use with Flowline DL34, LU23, LU28, LU29, LU74, LU78, LU81, LU83, LU84, UG01, UG03, UG06, US01, US03 and US06 series ultrasonic level sensors	1	1.0	$-006i0:
LM52-3850		Flowline mounting flange, CPVC, 3in female NPT. For use with Flowline UG12 series ultrasonic level sensors.	1	1.9	$044hq:
204038		Replacement mounting gasket, for use with Flowline DL14, DL10, DX10 and DS14 series ultrasonic level sensors	1	0.1	$;d[a:
200128		Replacement mounting gasket, for use with Flowline DL24, LU27, LU77 and LU80 series ultrasonic level sensors	1	0.1	$;06h!:
200129		Replacement mounting gasket, for use with Flowline DL34, LU23, LU28, LU29, LU74, LU78, LU81, LU83 and LU84 series ultrasonic level sensors	1	0.1	$06h?:

When installing the 1" NPT level sensors care should be used to mechanically isolate the sensor housing from the tank. This can easily be done by using any of the Flowline mounting accessories which are designed to provide the isolation needed.

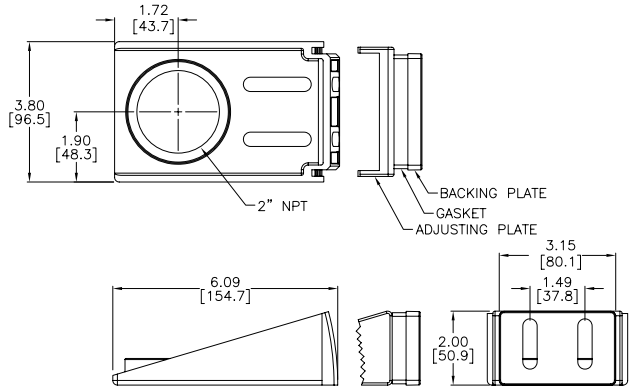
FLOWLINE™ LEVEL BEST

Ultrasonic Liquid Level Sensor Accessories

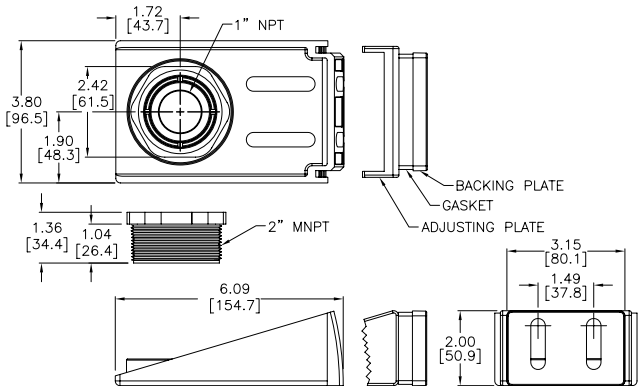
Dimensions

inches [mm]

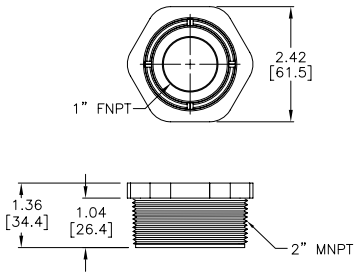
LM50-1001



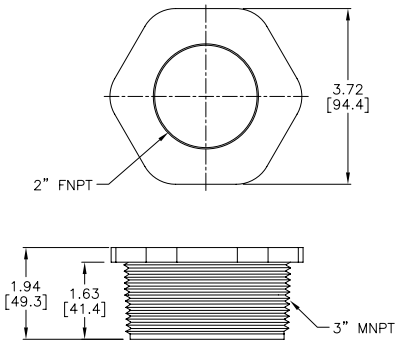
LM50-1001-1



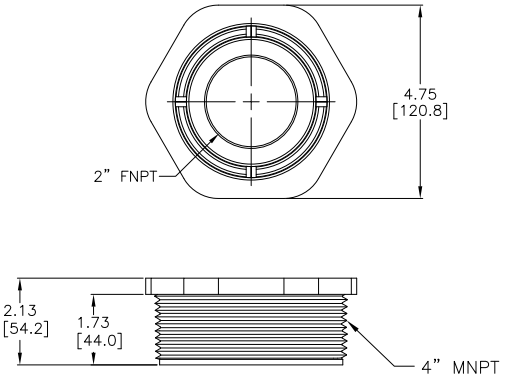
LM52-1400



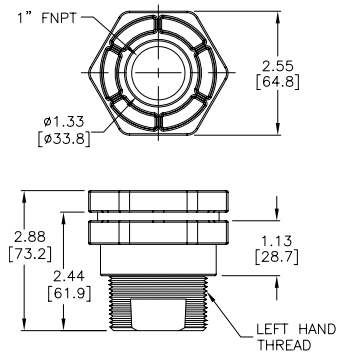
LM52-2400



LM52-3800



LM52-1890



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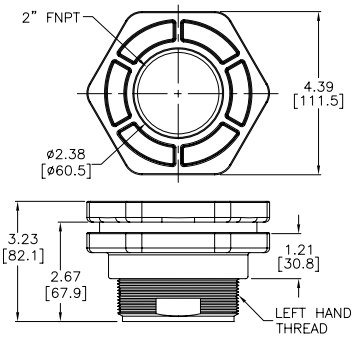

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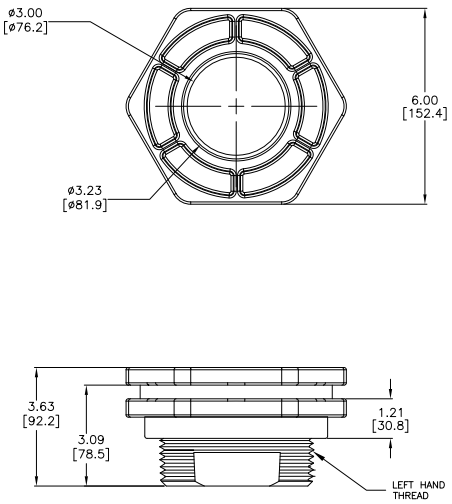


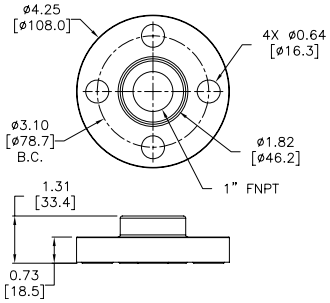
See our website www.AutomationDirect.com for complete Engineering drawings.

Ultrasonic Liquid Level Sensor Accessories

Dimensions

inches [mm]

LM52-1850



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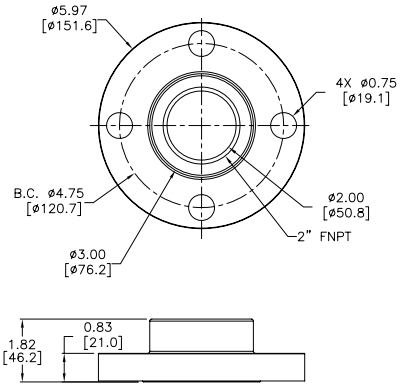

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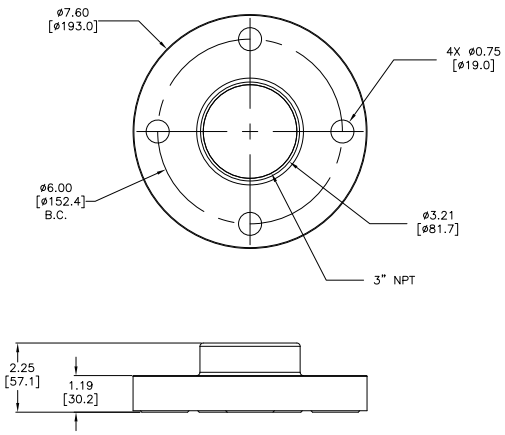


See our website www.AutomationDirect.com for complete Engineering drawings.

FLOWLINE LEVEL BEST

WebCal Ultrasonic Level Sensor Software and USB Fob Adapter

Overview

WEBCAL PC software is a utility program that allows users to easily configure their EchoPod, EchoTouch and EchoSonic II level transmitters, switches, and controllers. Download your free copy of WEBCAL at www.AutomationDirect.com, and connect your sensor through the Fob USB adapter (LI99-2001). Develop your configuration using pre-programmed function menus as the tank graphic and set point fields automatically change to match your configuration. Then, input your level set point values and click the Write to Unit button. Your configuration will be downloaded into the sensor and verified in less than a second. Last, click the Wiring Diagram button to open a wiring schematic of your configuration in PDF format. Print the document, disconnect the sensor and wire it per the schematic. It's that simple.

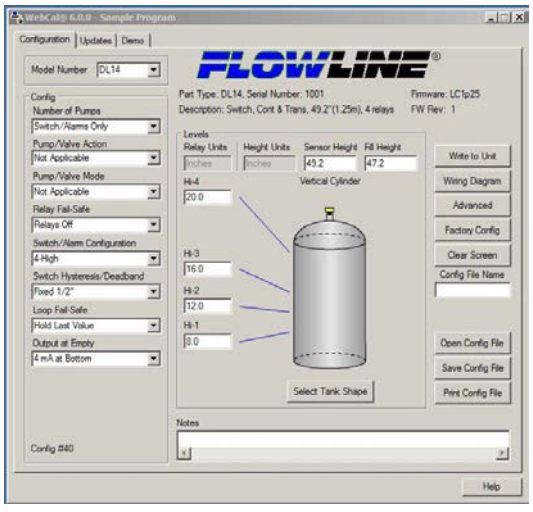
Configuration files can be named, saved, emailed, printed, opened and used again under revision control. The advanced feature page enables you to change the measurement signal, output filtering and invert relay states from N.O. to N.C. As new software or firmware becomes available, they can be downloaded and updated through WEBCAL.

Features

- 169 configurations with pull-down menu selections
- Graphical interface lets you visualize your configuration
- Applicable level set point fields appear automatically
- Installs and tests configuration in less than a second
- Available PDF wiring diagram for each configuration
- Technical help menu with FAQs, tips and glossary
- Rapidly program sensors to the same configuration
- Save configuration files for future use or reference
- Print wiring diagrams and configuration text files
- Email configuration files to other remote users
- Please check www.automationdirect.com for the most recent system requirments.

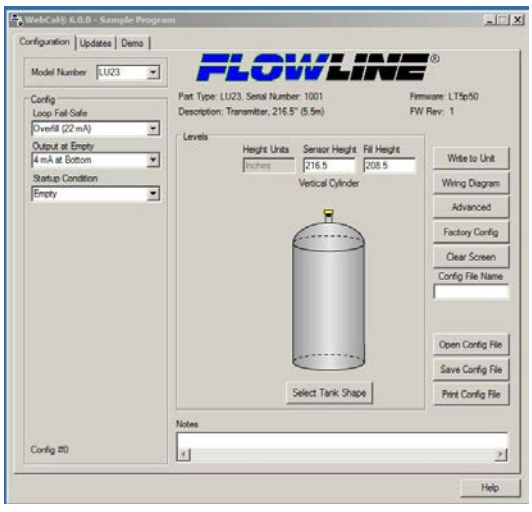
WebCal Ultrasonic Level Sensor Software and USB Adapter					
Part No.	***Item Photo***	***Description***	***Quantity***	***Weight (lbs)***	***Price***
LI99-2001		Flowline Fob USB adapter, required for use with WebCal software to configure Flowline EchoPod, EchoTouch and EchoSonic II ultrasonic level sensors.	1	0.1	$;44ht:
WEBCAL	FLOWLINE WEBCAL	Configuration software for Flowline EchoPod, EchoTouch and EchoSonic II ultrasonic level sensors. Requires an LI99-2001 Fob USB adapter (purchased separately).	1	0.1	Free Download

EchoPod Configuration



Click on the thumbnail or go to https://www.automationdirect.com/VID-LE-0004 for Part 1 of our How To video on the use of the Flowline Ultrasonic Level Sensors

EchoSonic II Configuration



Click on the thumbnail or go to https://www.automationdirect.com/VID-LE-0005 for Part 2 of our How To video on the use of the Flowline Ultrasonic Level Sensors