Echotouch™, EchoSpan® & EchoSwitch® Ultrasonic Liquid Level Sensors

PUSHBUTTON CONFIGURED

The Echotouch, EchoSpan and EchoSwitch are innovative ultrasonic liquid level sensor families that replace 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 non-contact sensors are available with single and multi-function capabilities including continuous level measurement, switching and control.

For input to a PLC or other controller, measurement outputs include current, voltage and frequency. Models with three 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. **Units are easily configured using built -in pushbuttons.**

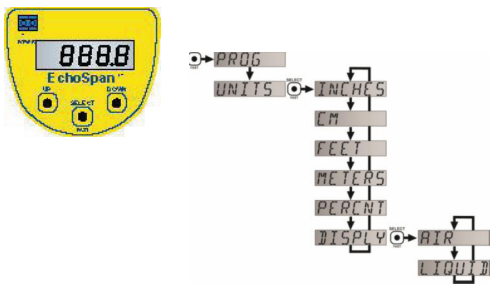
Made in the USA

Echotouch, EchoSpan & EchoSwitch Ultrasonic Liquid Level Sensors General Specifications								
Model	**LU20-5001-IS**	**LU80-5101**	**LU81-5101**	**LU83-5101**	**LU84-5101**	**LU77-5004**	**LU74-5004**	**LU78-5004**
Price	<--->	<--->	<--->	<--->	<--->	<--->	<--->	<--->
Type	Echotouch	EchoSpan				EchoSwitch		
Class	Intrinsically safe	General Purpose (non-hazardous)						
Range	6 in to 18 ft (15 cm to 5.5m)	4 in to 9.8 ft (10 cm to 3m)	8 in to 18 ft (20 cm to 5.5m)	8 in to 26.2 ft (20 cm to 8m)	12 in to 32.8 ft (30 cm to 10m)	4 in to 9.8 ft (10 cm to 3m)	8 in to 18 ft (20 cm to 5.5m)	8 in to 26.2 ft (20 cm to 8m)
Output Types	4-20 mA, two-wire					(1) SPDT relay, (2) SPST relays 4-20 mA, two-wire		
Install	Vertical, top of tank							
Mounting	2 in MNPT	1 in MNPT	2 in MNPT			1 in MNPT	2 in MNPT	
Relays	No relay					(1) SPDT relay, (2) SPST relays		
Configuration	Pushbutton / LCD							
Ambient Temperature	-4° to 140°F (-20° to 60°C)	-40° to 160°F (-40° to 71°C)						
Process Temperature	-40° to 140°F (-40° to 60°C)	-4° to 140°F (-20° to 60°C)						
Pressure	30 PSI (2 bar) @ 25°C, derated @ 1.667 psi (0.113 bar) per °C above 25°C (77°F)	30 PSI (2 bar) MAX						

Pushbutton Configuration

With no software or PC required, the Echotouch, EchoSpan, and EchoSwitch ultrasonic level sensors are easily configured using integral pushbuttons and LCD digital display. Configuration parameters are organized in a simple menu structure so that parameter values are easily accessed and set or changed as needed. Parameters are stored in non-volatile memory so the setting values are not lost when the sensor is powered down, allowing configuration before installation in the field.

Example - EchoSpan Display and Menu



Echotouch™ LU20 Ultrasonic Level Transmitter

PUSHBUTTON CONFIGURED

Part No. LU20-5001-IS

Overview

The Echotouch LU20 ultrasonic level transmitter is CSA approved for intrinsically safe applications. The two-wire ultrasonic transmitter provides non-contact measurement up to 18 ft (5.5m) and is ideally suited for corrosive, slurry or waste liquids. The transmitter is typically selected for atmospheric bulk storage, day tank and waste sump applications located within a classified hazardous area. Media examples include diesel fuel and hydrochloric acid. The transmitter is calibrated in less than a minute using the LCD display, 4-button interface and intuitive calibration menu. All user setpoints are held in non-volitile memory. In the event of acoustic signal loss, the transmitter will hold the current output at the user designated safe state.

Features

- LCD digital display indicates level in inches or centimeters
- Polypropylene enclosure rated NEMA 4X / IP65 with rugged Kynar transducer
- Simple pushbutton calibration for all user setpoints
- Adjustable dead band and range filters eliminate false echo returns

Agency Approvals

- CSA: Class I, Groups A, B, C & D; Class II, Groups E, F and G; Class III; T3C

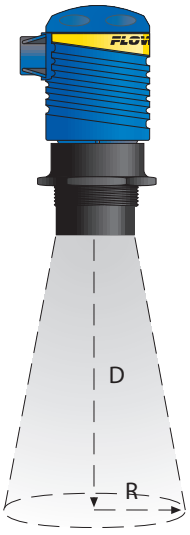
LU20-5001-IS Technical Specifications	
Price	<--->
Range	6 in to 18 ft (15 cm to 5.5m)
Accuracy	± 0.25% of span in air
Resolution	0.125 in (3 mm)
Sensing Dead Band*	6 in (15 cm)
Beam Width	8° conical
Configuration	Pushbutton / LCD
Display Type	LCD, 4-digit
Display Units	Inch or cm
Memory	Non-volatile
Loop Supply Voltage	12 - 32 VDC
Loop Resistance	600Ω max @ 24 VDC, 900Ω max @ 32 VDC
Signal Output	4-20 mA, two-wire
Signal Invert	4-20 mA or 20-4 mA
Loop Fail-Safe	4 mA, 22 mA or hold last
Calibration	digital, pushbutton, LCD
Process Temperature	-4° to 140°F (-20° to 60°C)
Ambient Temperature	-4° to 140°F (-20° to 60°C)
Pressure	30 psi @ 77°F, derated @ 1.667 psi per 1.8°F above 77°F (2 bar @ 25°C, derated @ 0.113 bar per 1°C above 25°C)
Enclosure Rating	NEMA 4X (IP65)
Installed Height	5.1 in (13 cm) above tank process mount
Enclosure Material	Polypropylene, UL94V0
Transducer Material	Polyvinylidene Flouride, Kynar
Process Mount	2 in MNPT (See accessories for installation fittings)
Terminal Block	26-12 AWG (tighten torque, 0.4 Nm), removable
Conduit Entrance	Single, 1/2 in FNPT
Weight (lbs)	2.2
Classification	Intrinsically safe (Haz-Loc)
Agency Approvals	CSA: Class I, Groups A, B, C & D; Class II, Groups E, F and G; Class III; T3C, CE, RoHS
I.S. Parameters	CSA Vmax < 32.0 V; Imax < 130 mA; Ca = 0 µF; La = 0 µH
Certificates	CSA: LR79326-10
Compliance	CE: EN 50082-2 immunity, EN 55011 emission (Recommended I.S. barrier MTL7706+)

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

Beam Cone Data

The "Beam Cone" is the amount in which the ultrasonic wave increases in diameter (Radius²) as the wave travels away from the sensor. This is important to note during installation to prevent objects in the tank from providing false echoes.

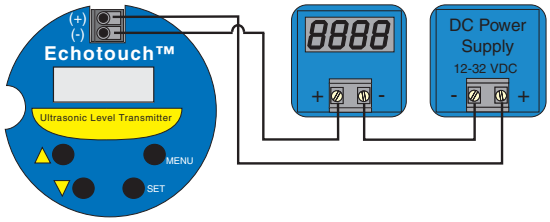
Depth (feet)	*Radius (inches)*	*Radius (cm)*
1	1.2	3.1
3	2.9	7.3
5	4.6	11.6
7	6.2	15.9
9	7.9	20.1
11	9.6	24.4
13	11.3	28.7
15	13.0	32.9
17	14.6	37.2
19	16.3	41.3

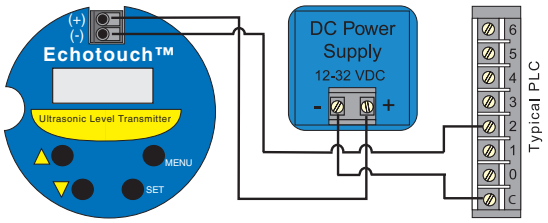


FLOWLINE® Echotouch™ LU20 Ultrasonic Level Transmitter

Wiring

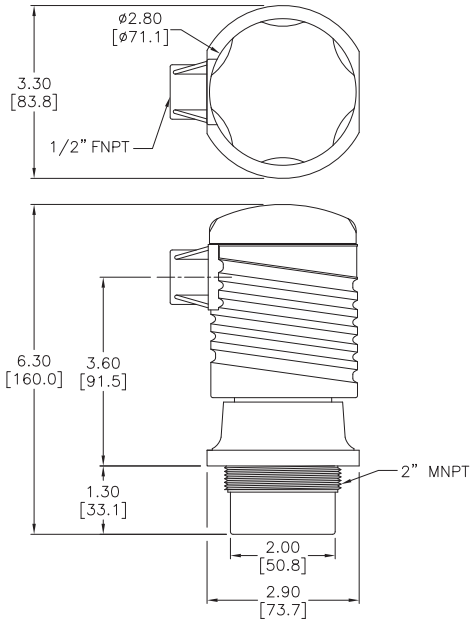
Typically loop powered indicator



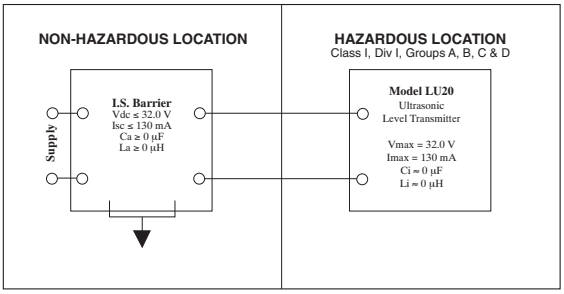


Dimensions

inches [mm]



Control Drawing



Control drawing for the LU20-5001-IS ultrasonic level transmitter approved under the entity concept as an I.S. apparatus

Control Drawing: LU20CD
Rev. 7-24-97

CSA Label

LR79326-10

NRTL/C

Intrinsically Safe/
Securite Intrinseque
Exia

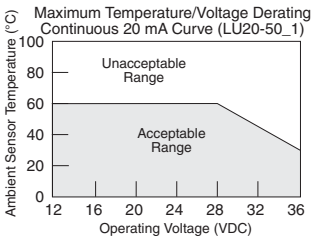
For use in
Hazardous Locations:
Class I, Groups A, B, C & D
Class II, Groups E, F & G
Class III
Temperature Code: T3C

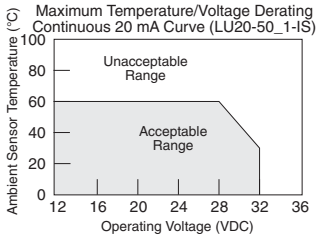
Intrinsically Safe when used with an approved I.S. barrier. Entity Parameters

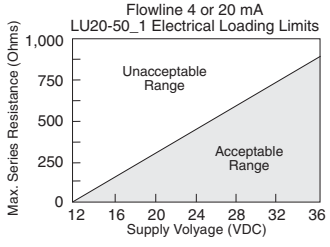
V_{max}	= 32.0 VDC
I_{max}	= 130 mA
C_i	= 0 µF
L_i	= 0 µH

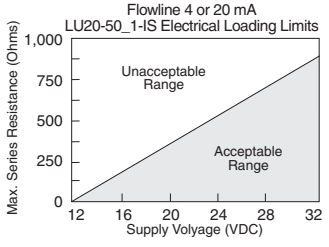
Warning: Suitable for Class I, Groups A, B, C & D; Class II, Groups E, F & G; Class III, T3C; when used with an approved I.S. barrier. Substitution of components may impair intrinsic safety LU20-50X1-IS requirements for Intrinsically Safe operation

Temperature and Resistance Derating Charts









Ultrasonic Liquid Level Sensor Accessories

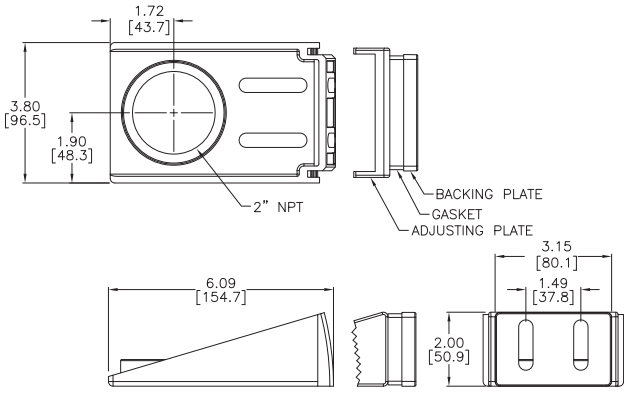
Ultrasonic Liquid Level Sensor Accessories					
Part No.	**Item Photo**	**Description**	**Quantity**	**Weight**	**Price**
LI40-1001		Flowline PodView general purpose digital indicator, displays tank level or volume and sensor relay status, 6-digit LCD display with four relay status indicators, 3-button user interface, polycarbonate panel mount enclosure with NEMA 4 (IP65) faceplate, 6-foot (1.8-meter) 22AWG 4-conductor cable, compatible with any Flowline EchoPod series ultrasonic level sensor with firmware V50 or later	1	0.6	<--->
LM50-1001		Flowline side mount bracket, 2 inch NPT female threads, polypropylene (PP), for use with Flowline DL34, LU20, LU23, LU28, LU29, LU74, LU78, LU81, LU83, and LU84 series ultrasonic level sensors	1	0.4	<--->
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	<--->
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	<--->
LM52-2400		Flowline reducer bushing, 3 inch NPT male x 2 inch NPT female threads, PVC, for use with Flowline DL34, LU20, LU23, LU28, LU29, LU74, LU78, LU81, LU83, and LU84 series ultrasonic level sensors	1	0.6	<--->
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	<--->
LM52-2890		Flowline low-profile bulkhead fitting, 2 inch NPT female x slip socket, with mounting nut, PVC, for use with Flowline DL34, LU20, LU23, LU28, LU29, LU74, LU78, LU81, LU83, and LU84 series ultrasonic level sensors	1	1.2	<--->
LM52-1850		Flowline mounting flange, 1 inch NPT female threads, PVC, for use with Flowline DL14, DL24, DS14, DL10, DX10, LU27, LU77, and LU80 series ultrasonic level sensors	1	0.5	<--->
LM52-2850		Flowline mounting flange, 2 inch NPT female threads, PVC, for use with Flowline DL34, LU20, LU23, LU28, LU29, LU74, LU78, LU81, LU83, and LU84 series ultrasonic level sensors	1	1.0	<--->
204038		Replacement mounting gasket, for use with Flowline DL14, DL10, DX10, and DS14 series ultrasonic level sensors	1	0.1	<--->
200128		Replacement mounting gasket, for use with Flowline DL24, LU27, LU77, and LU80 series ultrasonic level sensors	1	0.1	<--->
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	<--->

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.

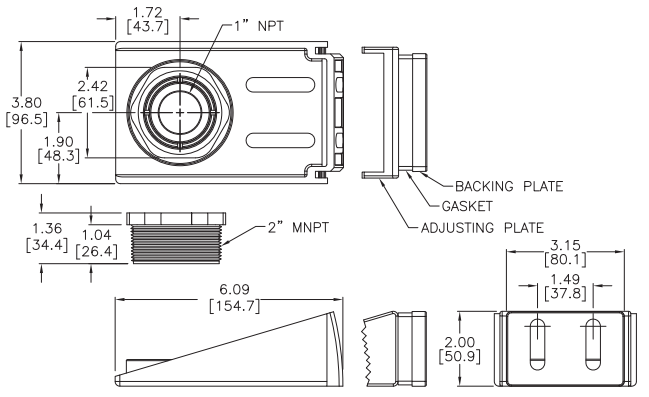
Dimensions

inches [mm]

LM50-1001



LM50-1001-1



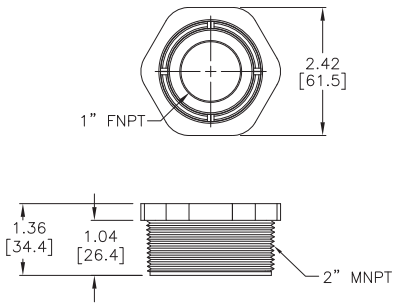
FLOWLINE® Ultrasonic Liquid Level Sensor Accessories

We Do Your Level Best

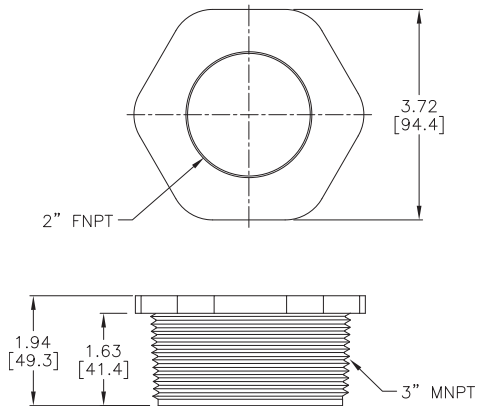
Dimensions

inches [mm]

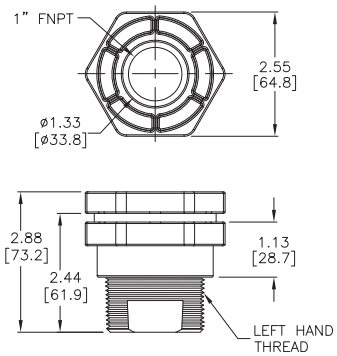
LM52-1400



LM52-2400



LM52-1890



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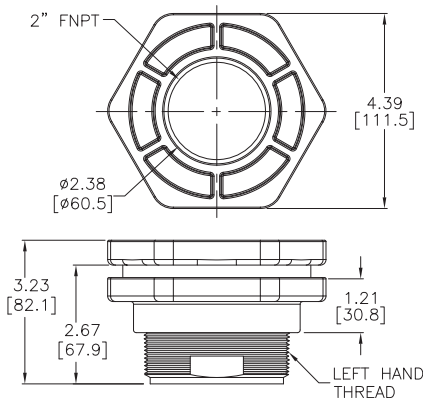
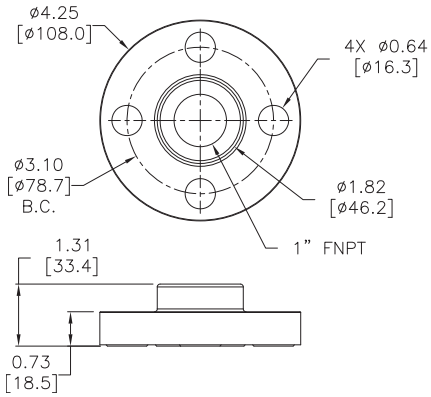
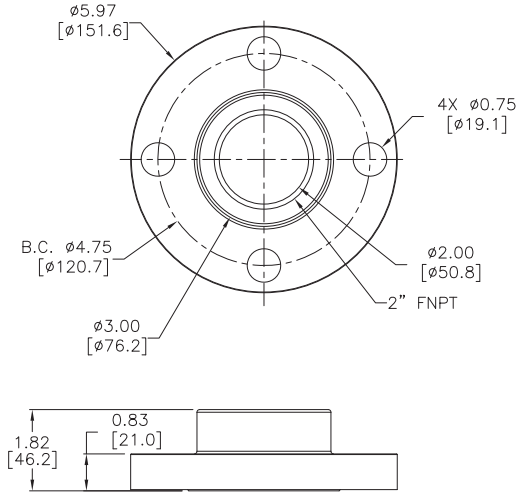


LM52-1850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