



# EchoSpan® & EchoSwitch® Ultrasonic Liquid Level Sensors



## Overview

The, 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.



| EchoSpan & EchoSwitch Ultrasonic Liquid Level Sensors General Specifications |                                  |                                  |                                  |                                  |                                                      |                                  |                                  |
|------------------------------------------------------------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|------------------------------------------------------|----------------------------------|----------------------------------|
| Model                                                                        | <a href="#"><u>LU80-5101</u></a> | <a href="#"><u>LU81-5101</u></a> | <a href="#"><u>LU83-5101</u></a> | <a href="#"><u>LU84-5101</u></a> | <a href="#"><u>LU77-5004</u></a>                     | <a href="#"><u>LU74-5004</u></a> | <a href="#"><u>LU78-5004</u></a> |
| Price                                                                        | \$800.00                         | \$950.00                         | \$975.00                         | \$1,145.00                       | \$1,035.00                                           | \$1,100.00                       | \$1,165.00                       |
| Type                                                                         | EchoSpan                         |                                  |                                  |                                  | EchoSwitch                                           |                                  |                                  |
| Class                                                                        | General Purpose (non-hazardous)  |                                  |                                  |                                  |                                                      |                                  |                                  |
| Range                                                                        | 4in to 9.8 ft<br>(10cm to 3m)    | 8in to 18ft<br>(20cm to 5.5 m)   | 8in to 26.2 ft<br>(20cm to 8m)   | 12in to 32.8 ft<br>(30cm to 10m) | 4in to 9.8 ft<br>(10cm to 3m)                        | 8in to 18 ft<br>(20cm to 5.5 m)  | 8in to 26.2 ft<br>(20cm to 8m)   |
| Output Types                                                                 | 4-20 mA, two-wire                |                                  |                                  |                                  | (1) SPDT relay, (2) SPST relays<br>4-20 mA, two-wire |                                  |                                  |
| Install                                                                      | Vertical, top of tank            |                                  |                                  |                                  |                                                      |                                  |                                  |
| Mounting                                                                     | 1in MNPT                         | 2in MNPT                         |                                  |                                  | 1in MNPT                                             | 2in MNPT                         |                                  |
| Relays                                                                       | No relay                         |                                  |                                  |                                  | (1) SPDT relay, (2) SPST relays                      |                                  |                                  |
| Configuration                                                                | Pushbutton / LCD                 |                                  |                                  |                                  |                                                      |                                  |                                  |
| Ambient Temperature                                                          | -40° to 160°F (-40° to 71°C)     |                                  |                                  |                                  |                                                      |                                  |                                  |
| Process Temperature                                                          | -4° to 140°F (-20° to 60°C)      |                                  |                                  |                                  |                                                      |                                  |                                  |
| Pressure                                                                     | 30 PSI (2 bar) MAX               |                                  |                                  |                                  |                                                      |                                  |                                  |

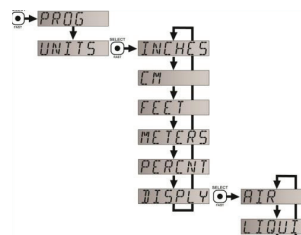
## Pushbutton Configuration

With no software or PC required 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.



Click on the thumbnail or go to <https://www.automationdirect.com/VID-LE-0002> for a short video introduction to Flowline EchoSpan, EchoSwitch and PodView product lines.

## Example - EchoSpan Display and Menu




**FLOWLINE™**  
 LEVEL BEST

# EchoSwitch® LU Series Ultrasonic Level Sensors

## Overview

The EchoSwitch LU series of ultrasonic level sensors are configured via the integral pushbutton display module, provides continuous level detection up to 26.2 ft (8m) with 3 programmable relays for level switch or level control functions and a 4-20 mA output. Each relay can be configured on a single setpoint (high level alarm or low level alarm) or latched on two setpoints for automatic fill or empty in simplex (one pump or valve), duplex (two pumps) or triplex (three pumps) level control modes with selectable time delay and fail-safe logic. The embedded level controller can lower cost by replacing external control hardware. These non-contact level sensors are ideally suited for corrosive, sticky or dirty liquids, and are broadly selected for pump lift station, sump and day tank level applications.

## Features

- 3 level detection ranges: 9.8 ft (3m), 18.0 ft (5.5 m) and 26.2 ft (8m)
- Configuration is simple via integral pushbutton display module
- Three programmable relays for switch, pump control and fail-safety
  - 1 pump or valve with 2 alarms
  - 2 pumps (lead-lag) with 1 alarm
  - 2 pumps (duplexing) with 1 alarm
  - 3 independent outputs
- 4-20 mA output can be used to provide local or remote level detection
- LCD display indicates level height in engineering units and relay status
- Narrow 2 inch or 3 inch beam width for applications with limited measurement space
- Short 4 inch or 8 inch dead band maximizes the measureable filling capacity of the tank
- PVDF transducer and NEMA 4X / IP65 polycarbonate enclosure for corrosive liquids
- Automatic temperature compensation
- 2-year warranty


 Part No. [LU77-5004](#)

 Part No. [LU74-5004](#)

 Part No. [LU78-5004](#)

### LU70 Series Technical Specifications

| Model               | LU77-5004                                                                        |                                                      | LU74-5004                   | LU78-5004                   |
|---------------------|----------------------------------------------------------------------------------|------------------------------------------------------|-----------------------------|-----------------------------|
| Price               | \$1,035.00                                                                       |                                                      | \$1,100.00                  | \$1,165.00                  |
| Range               | 4in to 9.8 ft (10cm to 3m)                                                       |                                                      | 8in to 18ft (20cm to 5.5 m) | 8in to 26.2 ft (20cm to 8m) |
| Repeatability       | 0.25 in (6.35 mm)                                                                |                                                      |                             |                             |
| Loop Output         | 4-20 mA isolated, sinking 12 to 28 VDC**                                         |                                                      |                             |                             |
| Loop Resistance     | 500Ω max @ 24 VDC                                                                |                                                      |                             |                             |
| Sensing Dead Band*  | 4in (10cm)                                                                       | 8in (20cm)                                           |                             |                             |
| Beam Width          | 2in (5.1 cm)                                                                     | 3in (7.6 cm)                                         |                             |                             |
| Configuration       | Pushbutton / LCD                                                                 |                                                      |                             |                             |
| Memory              | Non-volatile                                                                     |                                                      |                             |                             |
| Display Type        | Level and relay status, 6 character                                              |                                                      |                             |                             |
| Display Units       | Inch, cm, percent, feet or meter                                                 |                                                      |                             |                             |
| LCD Indication      | Level and relay status                                                           |                                                      |                             |                             |
| Supply Voltage      | 95 to 250 VAC (separate 12-28 VDC power supply required for 4-20 mA loop output) |                                                      |                             |                             |
| Power               | 20W @ 120VAC                                                                     |                                                      |                             |                             |
| Contact Type        | Relay 1, SPDT relay; Relay 2 & 3, SPST, N.O., all commons connected together     |                                                      |                             |                             |
| Contact Rating      | 2A @ 30VDC max / 2A @ VAC max                                                    |                                                      |                             |                             |
| Terminal Block      | 22-14 AWG (tighten torque, 0.5 Nm)                                               |                                                      |                             |                             |
| Contact Fail-Safe   | Programmable / selectable                                                        |                                                      |                             |                             |
| Process Temperature | -4° to 140°F (-20° to 60°C)                                                      |                                                      |                             |                             |
| Temp. Compensation  | Automatic                                                                        |                                                      |                             |                             |
| Ambient Temperature | -40° to 160°F (-40° to 71°C)                                                     |                                                      |                             |                             |
| Pressure            | 30 PSI (2 bar) MAX                                                               |                                                      |                             |                             |
| Enclosure Rating    | NEMA Type 4X (IP65)                                                              |                                                      |                             |                             |
| Enclosure Material  | Polycarbonate                                                                    |                                                      |                             |                             |
| Transducer Material | Polyvinylidene Fluoride                                                          |                                                      |                             |                             |
| Enclosure Hardware  | Brass & stainless steel                                                          |                                                      |                             |                             |
| Enclosure Vent      | Water tight membrane                                                             |                                                      |                             |                             |
| Conduit Entrance    | Dual, 1/2" FNPT                                                                  |                                                      |                             |                             |
| Process Mount       | 1in MNPT (See accessories for installation fittings)                             | 2in MNPT (See accessories for installation fittings) |                             |                             |
| Mount Gasket        | Viton (included, replacement part number 200128)                                 | Viton (included, replacement part number 200129)     |                             |                             |
| Weight (lbs)        | 1.5                                                                              | 2.0                                                  |                             |                             |
| Classification      | General purpose                                                                  |                                                      |                             |                             |
| Compliance          | CE, RoHS                                                                         |                                                      |                             |                             |

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

\*\* If supply exceeds 28 VDC damage to the transmitter may occur.

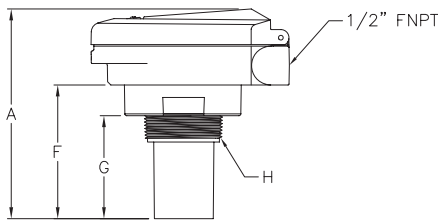
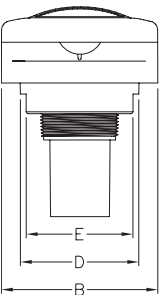
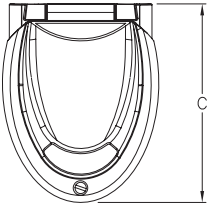


# EchoSwitch® LU Series Ultrasonic Level Sensors

## Dimensions

inches [mm]

### LU70 Series



See our website [www.AutomationDirect.com](http://www.AutomationDirect.com) for complete Engineering drawings.

| Dimensions  | A               | B               | C               | D           | E           | F           | G           | H       |
|-------------|-----------------|-----------------|-----------------|-------------|-------------|-------------|-------------|---------|
| LU74 & LU78 | 5.50<br>[139.6] | 4.10<br>[104.1] | 5.20<br>[132.1] | 3.10 [78.8] | 2.80 [71.1] | 3.50 [89.0] | 2.70 [69.0] | 2" MNPT |
| LU77        | 3.90 [99.1]     | 4.10<br>[104.1] | 5.20<br>[132.1] | 3.10 [78.8] | 2.80 [71.1] | 1.90 [48.3] | 1.25 [31.8] | 1" MNPT |

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.

## Configuration

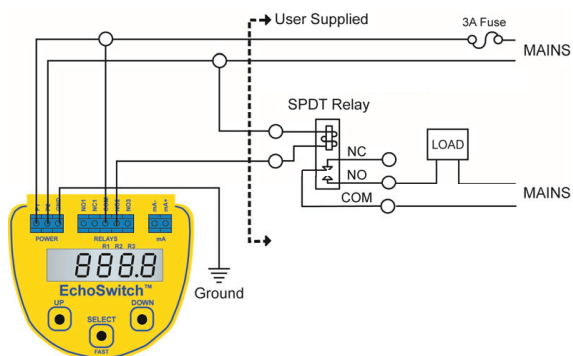
The transmitter is configured using the three buttons (UP, DOWN and SELECT) and the transmitter's LCD on the transmitters face.

More information about configuring the LU series sensors can be found at [www.AutomationDirect.com](http://www.AutomationDirect.com)



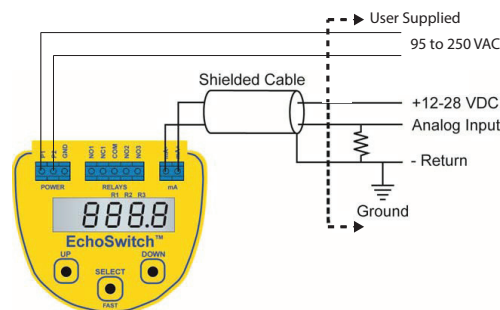
## Wiring

### Relay Application



Note: Isolate power to instrument from power to load (pumps, etc.) as much as possible by running power to the sensor directly from main power source. All relay commons are internally connected.

### Loop Application



Note: Separate 12-28 VDC power supply is required for loop output.