



# Switch-Tek™ LU10 Ultrasonic Level Switches

## Overview

CSA approved for hazardous environments, the intrinsically safe ultrasonic point level switch provides reliable liquid level detection of chemical, solvent, hydrocarbon and petroleum based liquids with a 1A relay output. The submersible polypropylene (PP) liquid level sensor is universally mounted through the tank wall or inside the tank as a high level alarm or low level alarm.

## Features

- CSA approved intrinsically safe for use in hazardous environments
- Submersible polypropylene (PP) sensor and cable
- 60VA relay selectable NO or NC via power supply wiring polarity
- Compatible with Switch-Pak installation fittings
- Able to mount through the side wall or top wall of tank
- 2-year warranty

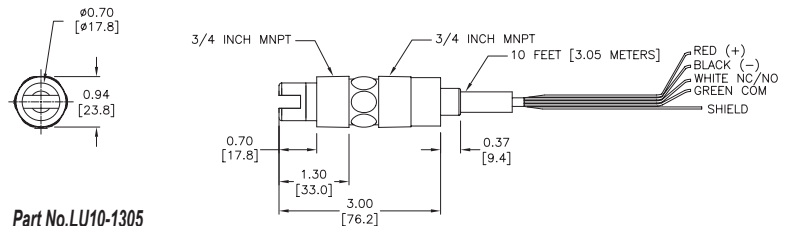
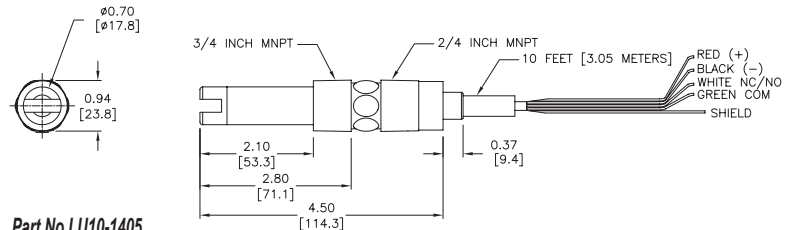
Part No. LU10-1305Part No. LU10-1405

| Switch-Tek™ LU10 Technical Specifications |                                                                                                                                           |                  |
|-------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| Model                                     | LU10-1305                                                                                                                                 | LU10-1405        |
| Price                                     | \$330.00                                                                                                                                  | \$350.00         |
| Weight (lb)                               | 0.7                                                                                                                                       | 0.7              |
| Insertion Length                          | 0.7 in [17.8 mm]                                                                                                                          | 2.1 in [53.3 mm] |
| Orientation                               | Universal                                                                                                                                 |                  |
| Accuracy                                  | ±1mm [0.04 in] in water                                                                                                                   |                  |
| Repeatability                             | ±0.5 mm [0.02 in] in water                                                                                                                |                  |
| Supply Voltage                            | 12-36 VDC                                                                                                                                 |                  |
| Consumption                               | 25mA maximum                                                                                                                              |                  |
| Contact Type                              | (1) SPST relay                                                                                                                            |                  |
| Contact Rating                            | General purpose: 60VA @ 1A (125VAC max)<br>Intrinsically safe: 32VDC @ 0.5 A                                                              |                  |
| Contact Output                            | Selectable NO / NC                                                                                                                        |                  |
| Process Temp.                             | -40°F to 176°F [-40°C to 80°C]                                                                                                            |                  |
| Pressure                                  | 150psi [10bar] @ 25°C, derated @<br>1.667 psi [0.113 bar] per °C above 25°C                                                               |                  |
| Sensor Rating                             | NEMA 6 (IP68)                                                                                                                             |                  |
| Sensor Material                           | PP (polypropylene)                                                                                                                        |                  |
| Cable Jacket Material                     | PP (polypropylene)                                                                                                                        |                  |
| Cable Type                                | 4-conductor, #22AWG, shielded                                                                                                             |                  |
| Cable Length                              | 10ft (3m)                                                                                                                                 |                  |
| Process Mount                             | 3/4" NPT                                                                                                                                  |                  |
| Classification                            | Intrinsically safe (Haz-Loc)                                                                                                              |                  |
| Agency Approvals*                         | CSA: Class 1, Groups A, B, C, & D; Class II Groups E, F & G; Class III<br>EEx: Class 1, Division 1, Groups A, B, C, & D;<br>EEx ib IIC T6 |                  |
| Intrinsically Safe (I.S.) Parameters      | CSA: Vmax = 32V, Imax = 300mA, Pmax = 1.3 W; Ci = 0μF, Li = 0μH<br>EEx: Ui = 32V; li = 300mA; Pi = 1.3 W; Ci = 0μF; Li = 0μH              |                  |
| Certificates*                             | CSA: LR 79326; EEx: LCIE 01.E6048 X                                                                                                       |                  |
| Compliance*                               | CE (EN61326, EN61010-1)                                                                                                                   |                  |



## Dimensions

inches [mm]

Part No. LU10-1305Part No. LU10-1405

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

## Compatible Products

Switch-Pro™  
Remote Level Controllers



LCXX

Switch-Pro™  
Junction Box and Strobe



LC06-1001

LC06-1001  
with LC09-1004  
and LM90-1001

Switch-Pak™  
Installation Fittings



LM45-7001-0000

LM45-1001-12

See the Switch-Pro® LCXX and Accessories pages at the end of the section for further details and pricing.

\* To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page at [www.AutomationDirect.com](http://www.AutomationDirect.com)



# Switch-Tek™ LU10 Ultrasonic Level Switches

## Intrinsically Safe (Haz-Loc) Wiring Information

### Models LU10:

The LU10 level switch has been approved for use in Class I, Groups A, B, C & D; UNDER CERTIFICATE NUMBER LR 79326-

4. The Entity parameter for the LU10 are:

$$V_{\max} = 32 \text{ VDC}$$

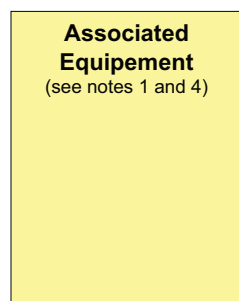
$$I_{\max} = 0.5 \text{ A}$$

$$C_i = 0 \mu\text{F}$$

$$L_i = 0 \text{ mH}$$

### Intrinsically Safe Control Drawing:

#### NON-HAZARDOUS LOCATION



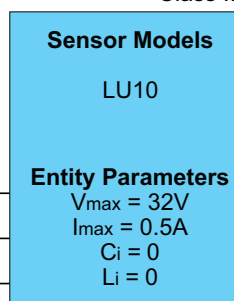
Red Wire

Black Wire

Shield

#### HAZARDOUS LOCATION

Class I, Groups A, B, C & D  
Class II, Groups E, F & G  
Class III



#### Notes:

1. CSA certified associated equipment with entity parameters.
2.  $V_{\max} \geq V_{oc}$ ,  $I_{\max} \geq I_{sc}$ ,  $C_i + C_{\text{cable}} \leq C_a$ ,  $L_i + L_{\text{cable}} \leq L_a$ .
3. Installation should be in accordance with CEC Part I, or NFPA 70.
4. Associated equipment must be installed per manufacturers instructions

**Sensor Drawing: LSD1**  
**Rev. B 10-01-02**



# Switch-Tek™ LU10 Ultrasonic Level Switches

## Intrinsically Safe (Haz-Loc) Wiring Information

### Models LU10:

The LU10 level switch has been approved for use in Class I, Division 1, Groups A, B, C & D; EEx ib IIC T6; UNDER CERTIFICATE NUMBER LCIE 01.E6048X.

The Entity parameter for the LU10 are:

| North America              | Europe                 |
|----------------------------|------------------------|
| $V_{max} = 32 \text{ VDC}$ | $U_i = 32 \text{ VDC}$ |
| $I_{max} = 0.5 \text{ A}$  | $I_i = 0.5 \text{ A}$  |
| $P_{max} = 1.3 \text{ W}$  | $P_i = 1.3 \text{ W}$  |
| $C_i = 0 \mu\text{F}$      | $C_i = 0 \mu\text{F}$  |
| $L_i = 0 \mu\text{H}$      | $L_i = 0 \mu\text{H}$  |

### Intrinsically Safe Control Drawing:

#### NON-HAZARDOUS LOCATION

**Entity Parameters:**  
 North America  
 $V_{oc} \leq V_{max}$   
 $I_{sc} \leq I_{max}$   
 $C_a \geq C_i + C_{cable}$   
 $L_a \geq L_i + L_{cable}$   
 Europe  
 $U_o \leq U_i$   
 $I_o \leq I_i$   
 $C_o \geq C_i + C_{cable}$   
 $L_o \geq L_i + L_{cable}$

Red Wire  
 Black Wire  
 Shield

#### HAZARDOUS LOCATION

Class I, Division1,  
 Groups A,B,C,D  
 EEx ib IIC T6

**Sensor Models**  
 LU10-\_\_5  
**Entity Parameters:**  
 North America  
 $V_{max} = 32\text{V}$   
 $I_{max} = 300 \text{ mA}$   
 $P_{max} = 1.3 \text{ W}$   
 $C_i = 0 \mu\text{F}$   
 $L_i = 0 \mu\text{H}$   
 Europe  
 $U_i = 32\text{V}$   
 $I_i = 300 \text{ mA}$   
 $P_i = 1.3 \text{ W}$   
 $C_i = 0 \mu\text{F}$   
 $L_i = 0 \mu\text{H}$

Sensor Drawing: U10900  
 Sheet 1 of 2  
 Rev. B 4-02-01

#### NON-HAZARDOUS LOCATION

**Entity Parameters for 12-32 Lines:**  
 $V_{oc} \leq V_{max}$ ,  $U_o \leq U_i$   
 $I_{sc} \leq I_{max}$ ,  $I_o \leq I_i$   
 $C_a \geq C_i + C_{cable}$ ,  $C_o \geq C_i + C_{cable}$   
 $L_a \geq L_i + L_{cable}$ ,  $L_o \geq L_i + L_{cable}$   
**Entity Parameters for Switch Outputs:**  
 $V_{oc} \leq V_{max}$ ,  $U_o \leq U_i$   
 $I_{sc} \leq I_{max}$ ,  $I_o \leq I_i$   
 $C_a \geq C_i + C_{cable}$ ,  $C_o \geq C_i + C_{cable}$   
 $L_a \geq L_i + L_{cable}$ ,  $L_o \geq L_i + L_{cable}$

Red Wire  
 Black Wire  
 Shield  
 Green Wire  
 White Wire

#### HAZARDOUS LOCATION

Class I, Division1,  
 Groups A,B,C,D  
 EEx ib IIC T6

**Sensor Models**  
 LU10-\_\_5  
**Entity Parameters for 12-32 Lines:**  
 $V_{max} = 32\text{V}$ ,  $U_i = 32\text{V}$   
 $I_{max} = 300 \text{ mA}$ ,  $I_i = 300 \text{ mA}$   
 $P_{max} = 1.3 \text{ W}$ ,  $P_i = 1.3 \text{ W}$   
 $C_i = 0 \mu\text{F}$ ,  $C_i = 0 \mu\text{F}$   
 $L_i = 0 \mu\text{H}$ ,  $L_i = 0 \mu\text{H}$   
**Entity Parameters for Switch Outputs:**  
 $V_{max} = 32\text{V}$ ,  $U_i = 32\text{V}$   
 $I_{max} = 500 \text{ mA}$ ,  $I_i = 500 \text{ mA}$   
 $P_{max} = 1.3 \text{ W}$ ,  $P_i = 1.3 \text{ W}$   
 $C_i = 0 \mu\text{F}$ ,  $C_i = 0 \mu\text{F}$   
 $L_i = 0 \mu\text{H}$ ,  $L_i = 0 \mu\text{H}$

Notes: PARAMETERS DEPEND ON OUTPUT TYPE

1. Installation should be in accordance with CEC Part 1, or NFPA 70.
2. Associated Equipment shall be CSA certified with entity parameters connected in accordance with manufacturers instructions.

Sensor Drawing: U10900  
 Sheet 2 of 2  
 Rev. B 4-02-01



# Switch-Pro™ Remote Level Controllers

## Overview

CSA approved, the Switch-Pro general purpose level controllers are offered in three configurations for alarms, pump and valve control. The LC40 accepts one level sensor input and provides one 10A relay for high level or low level alarm. The LC41 accepts two level sensor inputs and provides one latching 10A relay for automatic fill or empty control. The LC42 accepts three level sensor inputs with one latching 10A relay output for automatic fill or empty control, and a second non-latching 10A relay for high level or low level alarm.

Part No. [LC40-1001](#)Part No. [LC41-1001](#)Part No. [LC42-1001](#)

## Features

- Fail-safe relay control of pumps or valves with 0-60 second delay
- Easy setup with LED indicators for sensor, power and relay status
- 35mm DIN rail mount or panel mount polypropylene (PP) enclosure with removable terminal strips
- Invert switch changes relay state from NO to NC without rewiring
- Mounts easily in control panel
- Connects to any Flowline level switch
- Interfaces directly with any horn, buzzer, valve, etc...
- Use LC41, LC42 version for automatic fill/empty operations
- 2-year warranty



## Switch-Pro LC Series Technical Specifications

| Model               | <a href="#">LC40-1001</a>                              | <a href="#">LC41-1001</a>   | <a href="#">LC42-1001</a>                         |
|---------------------|--------------------------------------------------------|-----------------------------|---------------------------------------------------|
| Price               | \$275.00                                               | \$325.00                    | \$385.00                                          |
| Weight (lb)         | 1.9                                                    | 1.9                         | 1.9                                               |
| Supply Voltage      | 120VAC @ 50-60 Hz (can be field configured for 240VAC) |                             |                                                   |
| Consumption         | 5W maximum                                             |                             |                                                   |
| Sensor Inputs       | (1) two wire level switch                              | (2) two wire level switches | (3) two wire level switches                       |
| Sensor Supply       | 13.5 VDC @ 27mA                                        |                             |                                                   |
| LED Indication      | Sensor (green), power (green) & relay (red)            |                             |                                                   |
| Contact Type        | (1) SPDT relay (non-latching)                          | (1) SPDT relay (latching)   | (2) SPDT relays, (one non-latching, one latching) |
| Contact Rating      | 250VAC @ 10A                                           |                             |                                                   |
| Contact Output      | Selectable NO / NC                                     |                             |                                                   |
| Contact Latch       | N/A                                                    | Selectable ON / OFF         | Selectable ON / OFF                               |
| Contact Delay       | 0-60 seconds                                           |                             |                                                   |
| Ambient Temperature | -40°F to 158°F [-40°C to 70°C]                         |                             |                                                   |
| Enclosure Mounting  | 35mm DIN rail or thru-hole panel mount                 |                             |                                                   |
| Enclosure Material  | PP (polypropylene), UL94VO                             |                             |                                                   |
| Classification      | General purpose                                        |                             |                                                   |
| Compliance*         | CSA LR 79326                                           |                             |                                                   |

\* To obtain the most current agency approval information, see the Agency Approval Checklist section on the specific part number's web page at [www.AutomationDirect.com](http://www.AutomationDirect.com)



# Switch-Pro™ Remote Level Controllers

## Wiring

**LC40 series:** 1 sensor input, 1 relay output.

**Typical Application:**

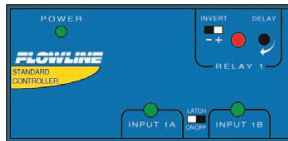
High level or low level alarm



**LC41 series:** 2 sensor inputs, 1 relay output. The relay included is a latching relay.

**Typical Application:**

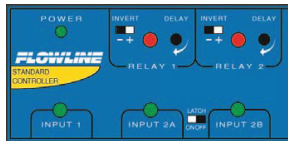
Automatic fill or empty



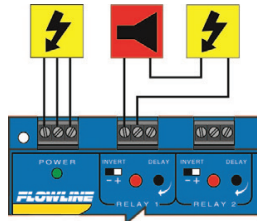
**LC42 series:** 3 sensor input, 2 relay outputs. One relay is latching and the other is a single input relay.

**Typical Application:**

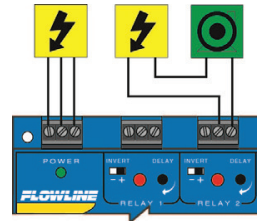
Automatic fill or empty with high level or low level alarm



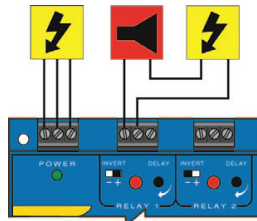
**Low Level Alarm Output Wiring Example (One level sensor input required):**



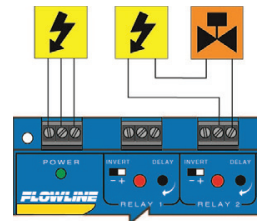
**Automatic Fill Output Wiring Example (Two level sensor inputs required):**



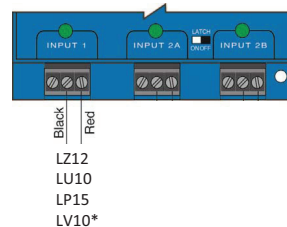
**High Level Alarm Output Wiring Example (One level sensor input required):**



**Automatic Empty Output Wiring Example (Two level sensor inputs required):**



**Level Sensor Input Wiring Example:**



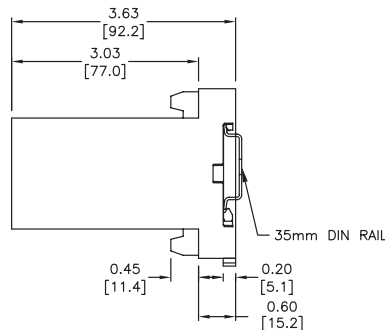
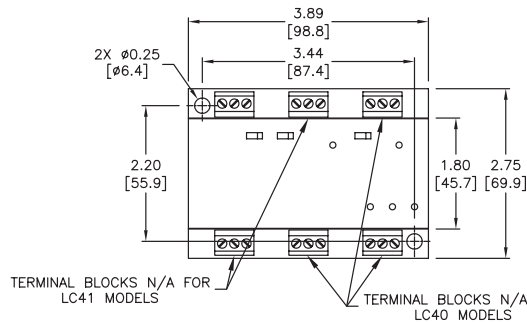
**Symbol Key:**



## Dimensions

inches [mm]

MODEL LC42



LV10 series can be wired using the White and Black wires for NO operations or the Red and Black wires for NC operations.

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

## Compatible Products

### ProSense Float Level Switches



### Switch-Tek™ Level Switch Sensors





# Level Switch Accessories

| Level Sensor Accessories              |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |          |             |         |
|---------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------|---------|
| Part No.                              | Item Photo                                                                          | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Quantity | Weight (lb) | Price   |
| <a href="#"><u>LM45-1001-12</u></a>   |    | Flowline Switch-Pak level sensor extension installation fitting, polypropylene (PP) construction, 12 inch insertion length, 2 inch NPT male process connection, 3/4 inch NPT female sensor threads, 3/4 inch NPT male electrical junction box threads                                                                                                                                                                                                                 | 1        | 1.1         | \$72.00 |
| <a href="#"><u>LM45-7001-0000</u></a> |    | Flowline Switch-Pak level sensor extension installation fitting kit, polyvinyl chloride (PVC) construction, includes (1) fitting with 2 inch NPT male process connection, 3/4 inch NPT male electrical junction box threads and 3/4 inch PVC pipe socket; (1) fitting with 3/4 inch NPT female sensor threads and 3/4 inch female PVC pipe socket. Purchase 3/4 inch schedule 40 PVC pipe separately, cut to desired length and solvent weld to fittings in this kit. | 1        | 0.7         | \$52.00 |
| <a href="#"><u>LC06-1001</u></a>      |    | Flowline Switch-Pro compact electrical junction box, polypropylene (PP) construction, screw cover with O-ring gasket, NEMA 4X rated, 3/4 inch NPT female mounting threads with 300 degree swivel base, 1/2 inch NPT female conduit entrance, removable 6-pole terminal strip                                                                                                                                                                                          | 1        | 0.7         | \$85.00 |
| <a href="#"><u>LM90-1001</u></a>      |  | Cable gland, 1/2 inch NPT male thread, Buna N sealing gland accommodates a cable diameter range of 0.180 to 0.400 inches (4.6 to 10.2 mm), nylon housing, IP68 protection level                                                                                                                                                                                                                                                                                       | 1        | 0.4         | \$10.00 |

## Accessory Field Assembly Example



Order the following parts for field assembly: (1)

[LC06-1001](#) - Junction box

(1) [LM90-1001](#) - Cable gland

(1) LU10 Series ultrasonic level switch

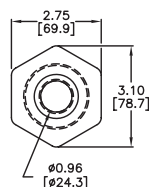


# Level Switch Accessory Drawings

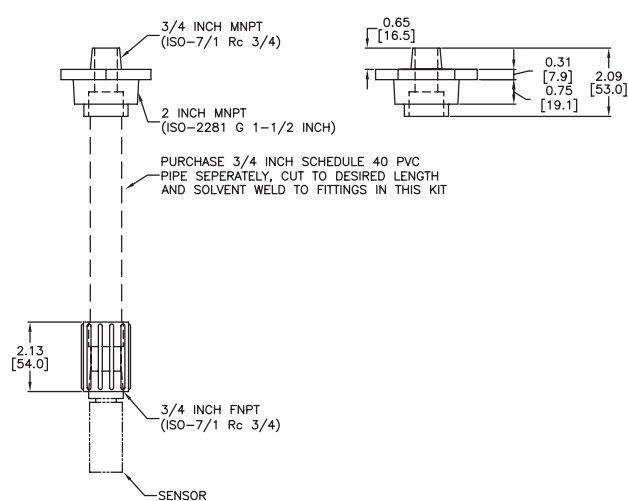
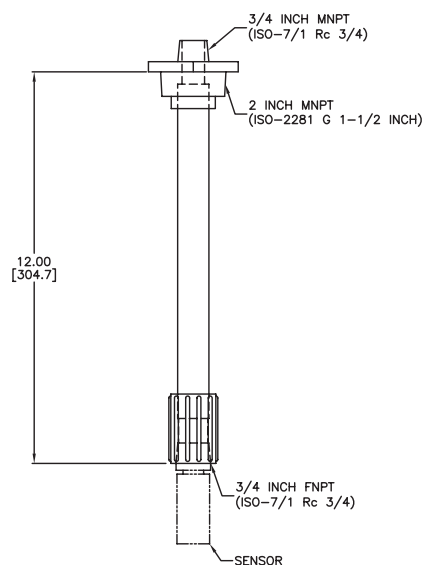
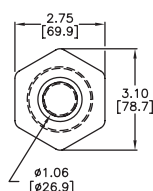
## Dimensions

inches [mm]

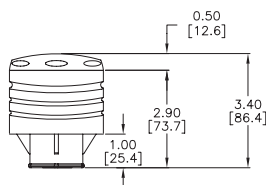
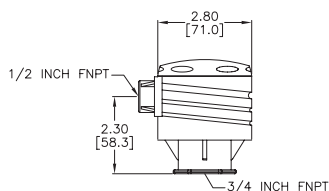
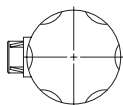
### LM45-1001-12



### LM45-7001-0000



### LC06-1001



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

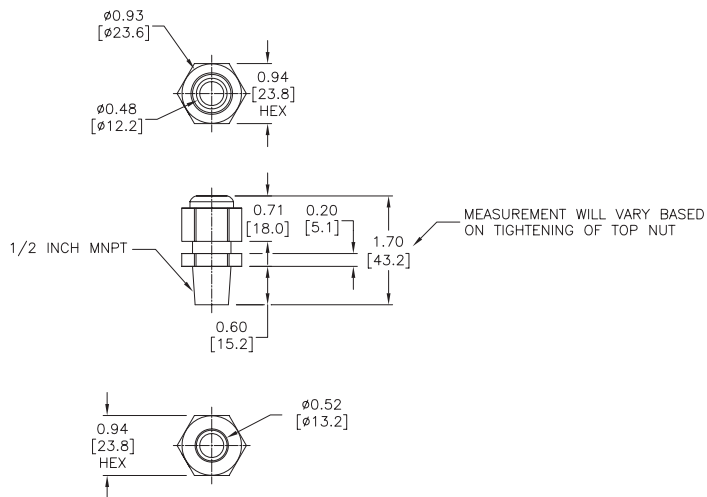


# Level Switch Accessory Drawings

## Dimensions

inches [mm]

### LM90-1001



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