# Ultrasonic Level Switch Specifications

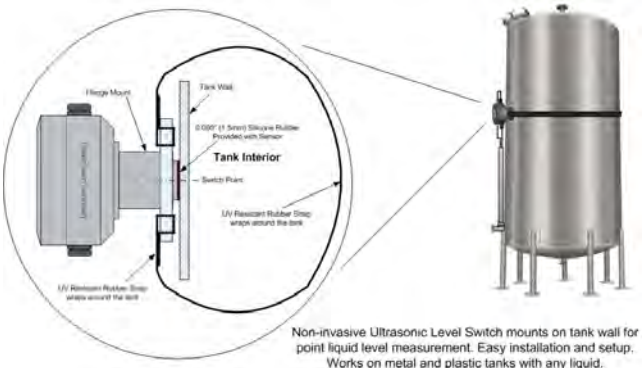
Order from: **C A Briggs Company**; 622 Mary Street; Suite 101 - Warminster, PA 18974
Phone: 267-673-8117 - 800-352-6265 - Fax: 267-673-8118; E-Mail: Sales@cabriggs.com - www.cabriggs.com

**Features**

Simple 2 step training using push button.
Single Pole Double Throw relay output 8A/230 Vac
RS485 Communication with diagnostics and data logging.
3 wire operation.
PVC or TEFLON materials for transducers.
PVC electronics enclosures.

**APPLICATIONS**

1) Any liquids
2) Food and beverage.
3) Water
4) Pharmaceutical.




Non-invasive Ultrasonic Level Switch mounts on tank wall for point liquid level measurement. Easy installation and setup. Works on metal and plastic tanks with any liquid.

**APPROVALS**

CE:IEC61010-1:90+A1:92+A2:95

**OPERATIONAL**

Accuracy :+/-1 mm
Wall Thickness : 0.030" - 0.250"
Tank Material: Plastic or Metal
Training : Push-button or programmable through RS485 port.

**ENVIRONMENTAL**

**Temperature Ratings**

Electronics Enclosure: -40 to 140°F (-40 to 60°C)
Continuous Operation

PVC & Standard Sanitary Nozzle:
- 40 to 140°F(-40 to 60°C)

Teflon Nozzle:
- 40 to 266°F(-40 to 130 °C)

**Installation Category**: Class II

**Electrical Specifications**

**Power:** 12 to 30 VDC, 0.07A Max @ 24 VDC
**Output:** Relay SPDT 8A / 230 VAC

**MECHANICAL**

**Power / Communication Cable**

5' - Belden #9503: 3 Pair #24 AWG
Supply 12 - 30 VDC 1 Pair (Red/Black)
Communication RS485 1 Pair (Black/White)

**Relay Cable**

5' - Belden #9493: 3 Wire #18 AWG Unshielded
Relay: SPDT 8A / 230 VAC

Conduit Entry: 1/2" NPT Hole
(PVC Conduit only for PVC Housing)

Enclosure : PVC 94V0
Ingress Protection: NEMA 6 (IP68)

# Ultrasonic Level Switch
# User Manual

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## Basic Switch Operation

The Ultrasonic Level Switch emits a short burst of ultrasonic energy. The energy is coupled through a rubber membrane to the tank causing the tank to vibrate. The tank vibrations are detected and analysed by the Switch. Based on the vibration patterns the Switch is able to detect the presence or absence of liquid inside the tank, and directly opposite the Switch.

When the liquid inside the tank is below the switch point of the Switch, the Switch's relay will be in the energized state referred to as the Normally Open (N.O) state (connecting the relay common to the relay normally open connector). When the liquid inside the tank is above the detection zone of the Switch, the relay will be in the non-energized state referred to as the Normally Closed (N.C) state (connecting the relay common to the relay normally close connector).

## Training The Switch

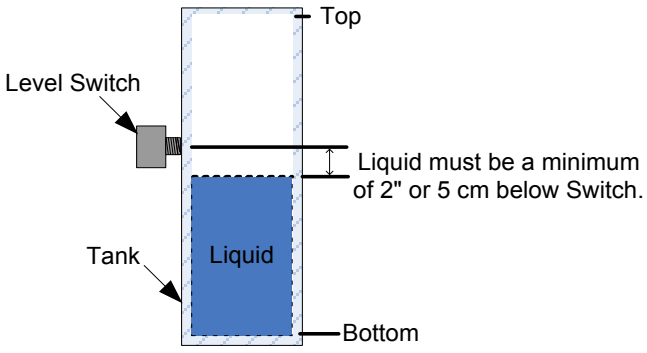
The Ultrasonic Level Switch is equipped with a training button that can be used to train the Switch to match tanks characteristics. To access the calibration button on the Switch please remove the Switch's lid by unscrewing it. To activate the training mode using the button, power must be supplied to the Switch and the button must be pressed for time specified in the Table below. Press the button until the LED turns the desired color and then release the button.

| Button Pressed (Seconds) | LED Color | Description |
|---|---|---|
| < 5 | Off | If the button is pressed less than 5 seconds it is ignored and no action is taken. |
| > 5 | Yellow | The tank liquid is below the Switch. Train the Switch for below Switch tank characteristics. |
| > 10 | Red | The tank liquid is above the Switch. Train the Switch for above Switch tank characteristics |
| > 15 | Off | If the button is pressed for greater than 15 seconds it is ignored and no action is taken. |

Table 1: LED color and timing. Symbols < "less than", > "greater than"

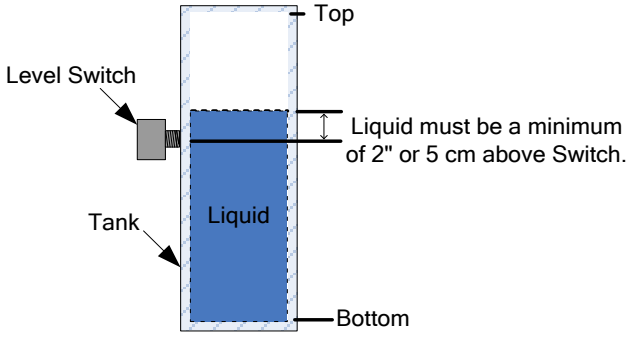
### Training the Switch for Liquid Levels Below the Switch

For this step the liquid level must be a minimum of 2 inches (5 centimeters) below the Switch as shown in Figure below. With the Switch powered on the LED should be green. Press and hold the training button. The LED will turn off, 5 seconds later it will turn yellow. Release the button when the LED turns yellow. During the training process the LED will blink green for 10 seconds. When the Switch is finished its training cycle the LED will stop blinking and remain green.




### Training the Switch for Liquid Levels above the Switch

For this step the liquid level must be a minimum of 2 inches (5 centimeters) above the Switch as shown in Figure below. With the Switch powered on the LED should be green. Press and hold the training button. The LED will turn off, after 5 seconds the LED will turn yellow, after another 5 seconds the LED will turn red. Release the button when the LED turns red. During the training process the LED will blink green for 10 seconds. When the Switch is finished its training cycle the LED will stop blinking and remain green.



# Ultrasonic Level Switch Dimensions

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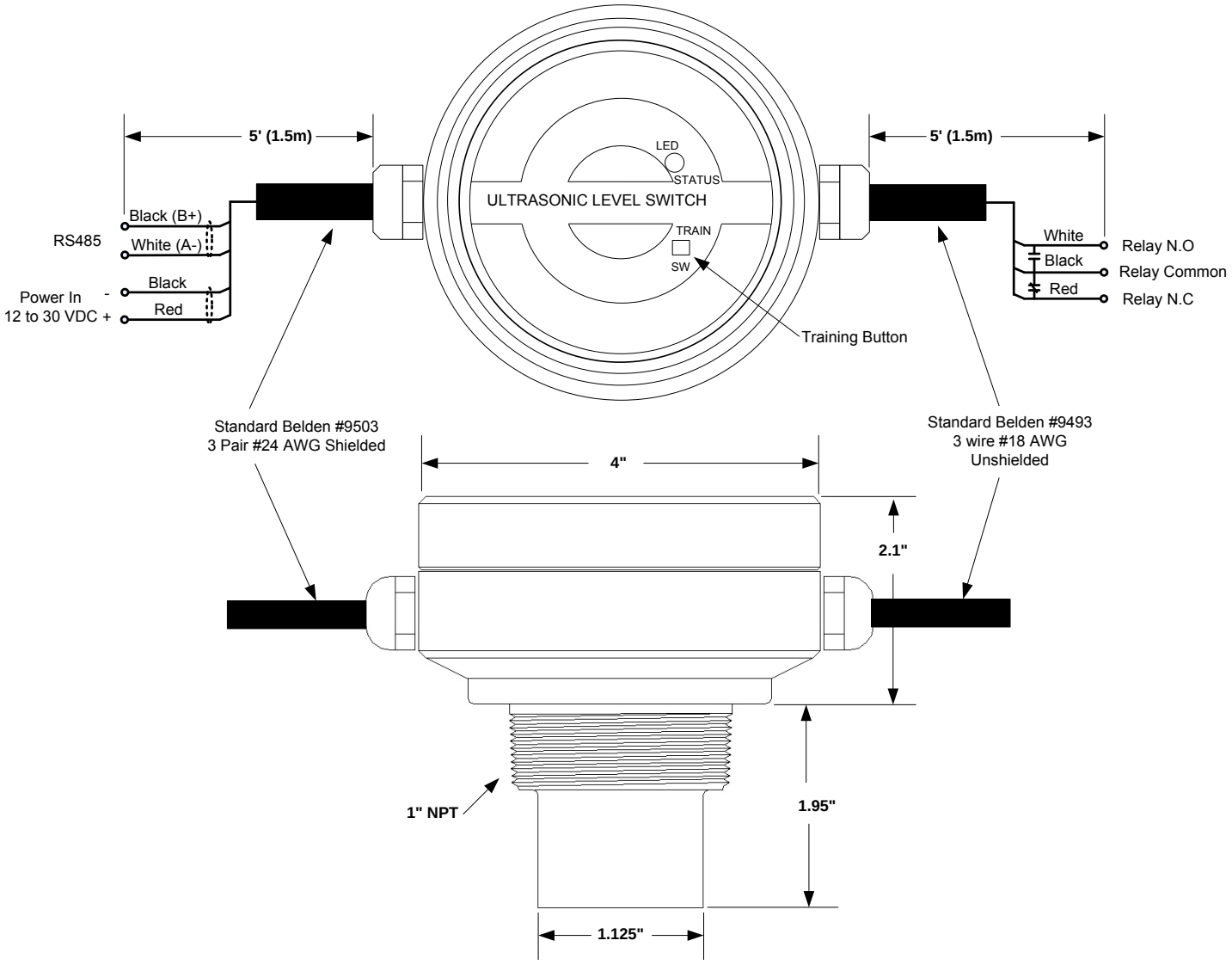


| Model # | Transducer Housing | Operating Frequency | Mounting Thread NPT |
|---|---|---|---|
| ABM300-148USC4-PVPVC-IP68 | PVC | 148 KHz | 1” |
| ABM300-148USC4-PVTEF-IP68 | Teflon | 148 KHz | 1” |