High Level Probe

User Guide

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INTRODUCTION

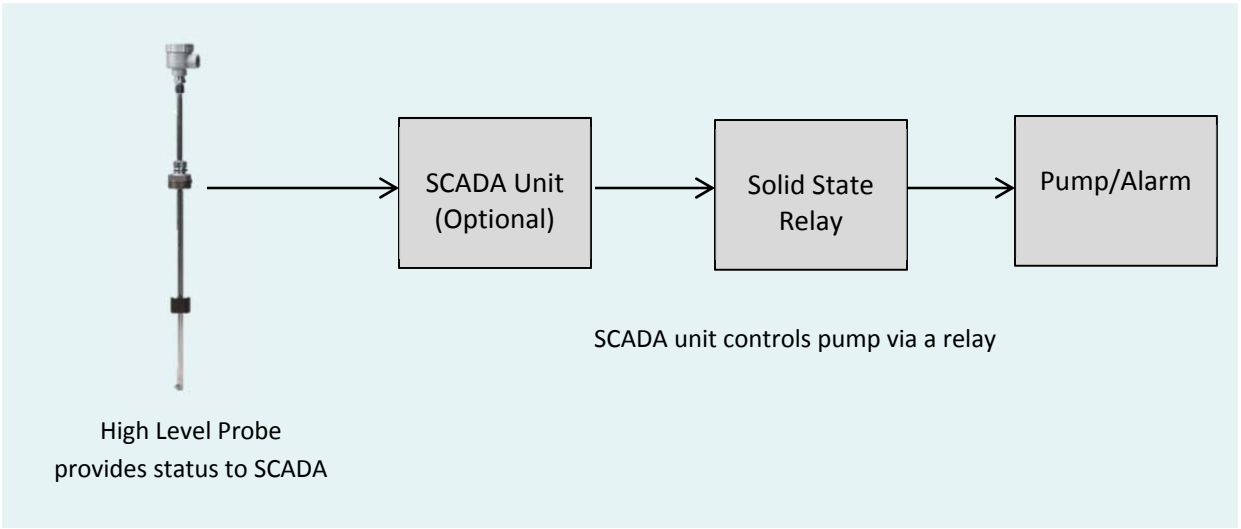
Electrolab's High Level Probe offers a single-point float switch for either high or low level detection in liquid tanks. The unit mounts vertically through a female NPT port on the top of the tank (a side mount version is also available upon request). An adjustable mounting grip provides for ease of installation.

The sensor incorporates discrete circuits of magnetic reed switches configured such that when the float is seated on the hose clamp, the switches are activated (closed). As the float rises (approximately 0.75" from the hose clamp), the switch will open indicating a "high" or alarm condition.

Typical applications for the High Level Probe include:

- High level detection in oil and salt water tanks
- Control points for pumps / alarms
- Liquid detection in containment areas

The High Level Probe has two wires exiting the head, which are used to connect to a SCADA unit or Programmable Logic Controller (PLC) and provide status information about the liquid level in the tank.



PART NUMBER

Individual High Level Probes are identified by their part numbers, which provide important information about the probe.

HLP1.0S1-NC

HLP= High Level Probe

HLP**1.0**S1-NC

Measurement Length in Feet (customer specified)

HLP1.0**S**1-NC

Tube Type: S= Stainless Steel or FG= Fiberglass

HLP1.0S**1**-NC

Number of Floats: 1= Single Float or 2= Dual Float

HLP1.0S1-**NC**

Switch Position Preference: NC= Normally Closed or NO= Normally Open

SPECIFICATIONS

The probe incorporates a combination of reed switches that are UL recognized (file E47258) and rated to 10W, 200Vdc with a switching current rating of 500mA. The float can be mounted on the tube with the magnets up (Normally Closed) or with the magnets down (Normally Open). The latter option will require a clamp to restrict float travel at the closed state. The voltage/current rating on the sensor label is considerably lower than the reed switch manufacturer ratings for safety purposes.

CAUTION: Always check the current capacity shown on the label of the unit to be sure your installation is within proper ratings. This product must be maintained and installed in strict accordance with the National Electrical Code. Failure to install this product properly could result in serious injury or damage to equipment.

Mechanical Specifications
• Material: 0.5 inch stainless steel (2” NPT female port) or 1.75” inch (OD) fiberglass (4” NPT female port) • NYTROPHYL float with embedded magnets • Glass reed switch contacts • Explosion-proof junction box • Customer specified length
Electrical Specifications
• Operating temperature range: -40^{o}C to +80^{o}C • Dry Contact ratings 1-45v, 100mA (max)

PROBE CONSTRUCTION

The High Level Probe is constructed to be suitable for operation in hazardous locations. The Probe design (shown on the following page) consists of a combination of reed switches (A) mounted on a printed circuit board (B) with a pair of 22awg wires (C) as connections outside the stainless steel tubing. The reed switches are hermitically sealed by the manufacturer. The circuit board is encased in shrink tubing (D) and inserted into the stainless steel tube (E). The stainless steel tube is welded on the bottom end and epoxy sealed (F) on the top providing a gas tight seal. The wires protruding through the epoxy enter a UL listed (699G) conduit outlet box with cover (G), which is suited for hazardous locations. The Adjustable Mounting Grip (H) is available in two options: (1) a metal fastener that is used with side and top mount applications to hold the stainless steel tube firmly in place (this fastener prevents future adjustments from being made) or (2) a metal fastener with a rubber gasket which can be repositioned in the future, if needed.

INSTALLATION

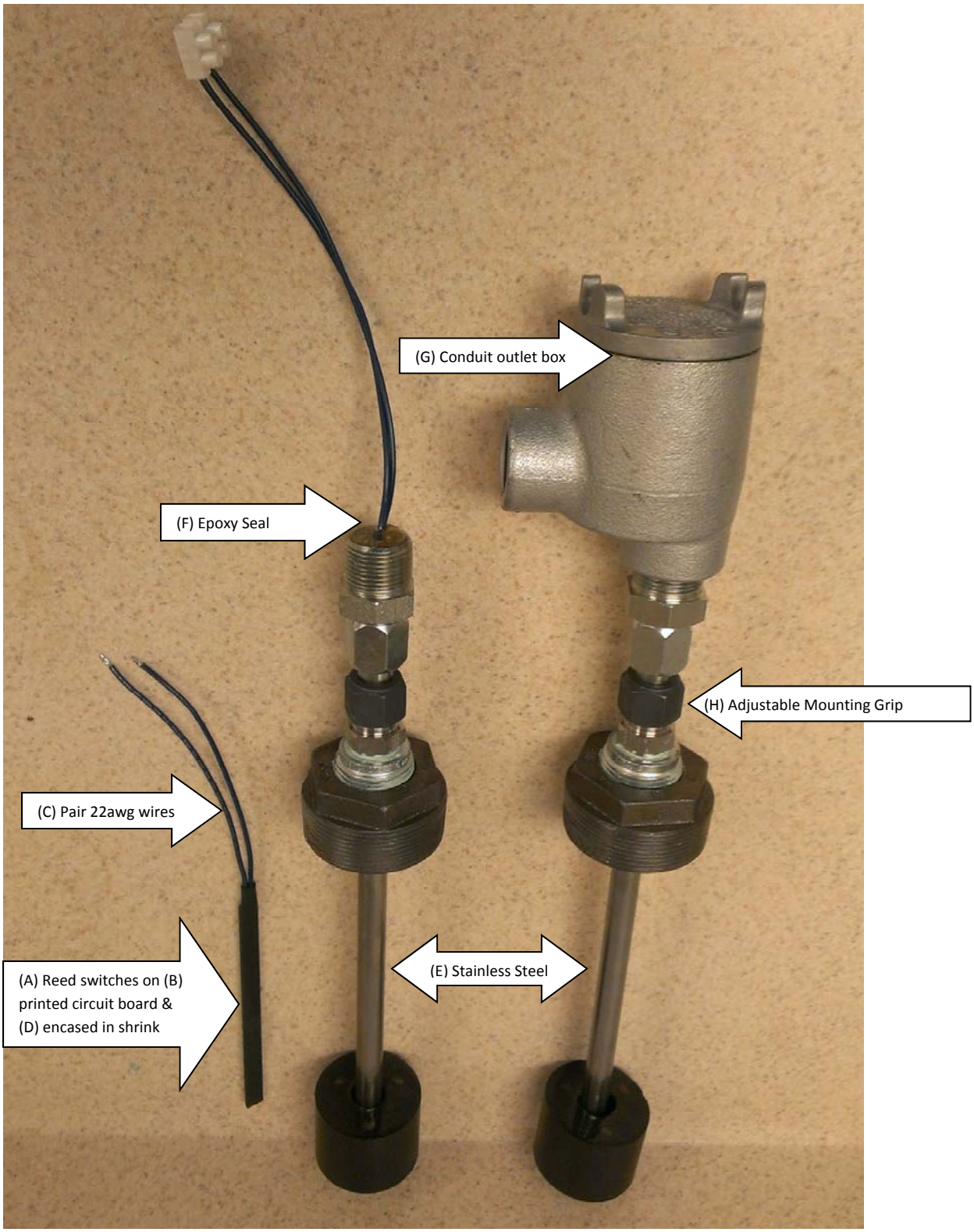
To install the sensor, follow the simple steps below:

1. Carefully insert the bottom end of the sensor into the tank top port and lower the sensor slowly in the tank. Be careful with the float, so that it does not hang up on the port edge.

2. Slide the reducer/sensor mount assembly down to the tank port and tighten it into the port. Position the sensor to the desired depth and tighten the cord grip or compression nut sufficient that the sensor doesn’t slip.

3. Connect the pair of wires exiting the head (conduit outlet box) to the PLC per the instructions for your specific PLC.

WARNING: On the fiberglass High Level Probe tube, the maximum measured capacitance on the metallic hose clamp to ground is 4.14 pF. A risk of ignition due to electrostatic discharge is present. Be sure to take necessary precautions against electrostatic discharge.

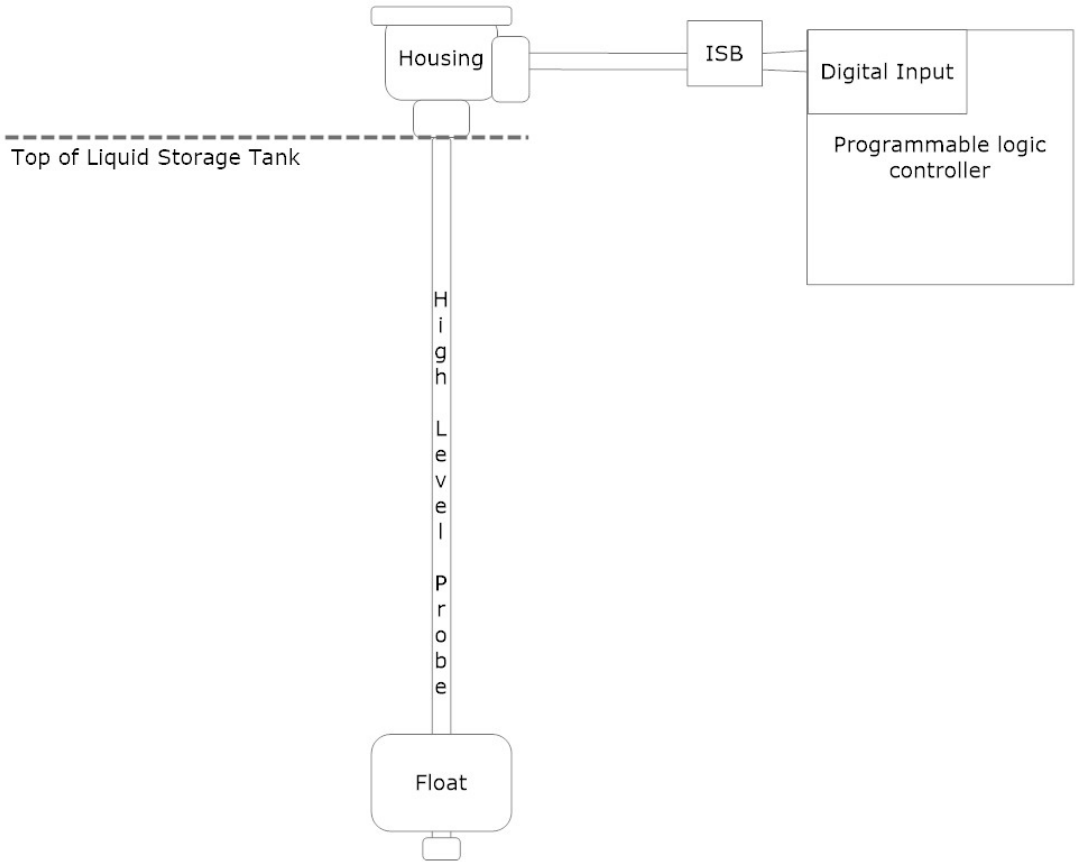

(G) Conduit outlet box
(F) Epoxy Seal
(H) Adjustable Mounting Grip
(C) Pair 22awg wires
(A) Reed switches on (B) printed circuit board & (D) encased in shrink
(E) Stainless Steel

WIRING

The probe has 2 wires per discrete circuit that are intended for status only (Discrete Input to a processor). The reed switches are not intended to drive a load.

NOTE: Please refer to the manual for your Programmable Logic Controller (PLC) for instructions on how to install these two wires for digital input, as this may vary based on your specific installation and configuration.

For UL compliance, an approved barrier device (ISB on the drawing below) is required for Class I, Div. 1, Intrinsically Safe areas.



TECHNICAL ASSISTANCE

Installation, troubleshooting, and other technical assistance for the High Level Probe may be obtained by contacting the manufacturer, Electrolab, Inc:

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E-mail: Insidesales@electrolabcontrols.com