



Application Alley

Automotive - Fluid Level

Adaptable Multi-Point Fluid Level Sensor

Introduction

Liquid systems all have their own specialty aspects and their own peculiarities. The liquids vary in density and viscosity (flow level) in going from water with a centi-poise of 1 to liquid epoxies having up to 10,000 centi-poise. Also, the temperatures can vary from -40°C for flour-inert (3-M liquids) to 200°C for pressure heated water and other special liquids. Meeting these extremes is no easy matter. Standex's new LS04 series attacks these extremes along with multiple sensing points and multiple floats. Therefore, liquid baths having two or more different liquids with different densities and viscosities can be simultaneously measured and their liquid levels monitored.



Figure 1. A triple float sensor connected to the top part of a container

Features

- All inclusive fluid level sensor having the sensing element (reed switch), float, and magnet all as one component mounted on a PCB internal to the stem
- Ability to perform under hot and cold liquid systems
- Up to 9 point liquid level sensing
- Up to 6 active floats on one stem or shaft
- Meets RoHS Directive 2002/95/EC
- Hermetically sealed

- Dynamically tested contacts
- Reliable switching
- Stem length for 100 mm to 250 mm
- Ability to exist in oil, gasoline, petrol, water and mild acids

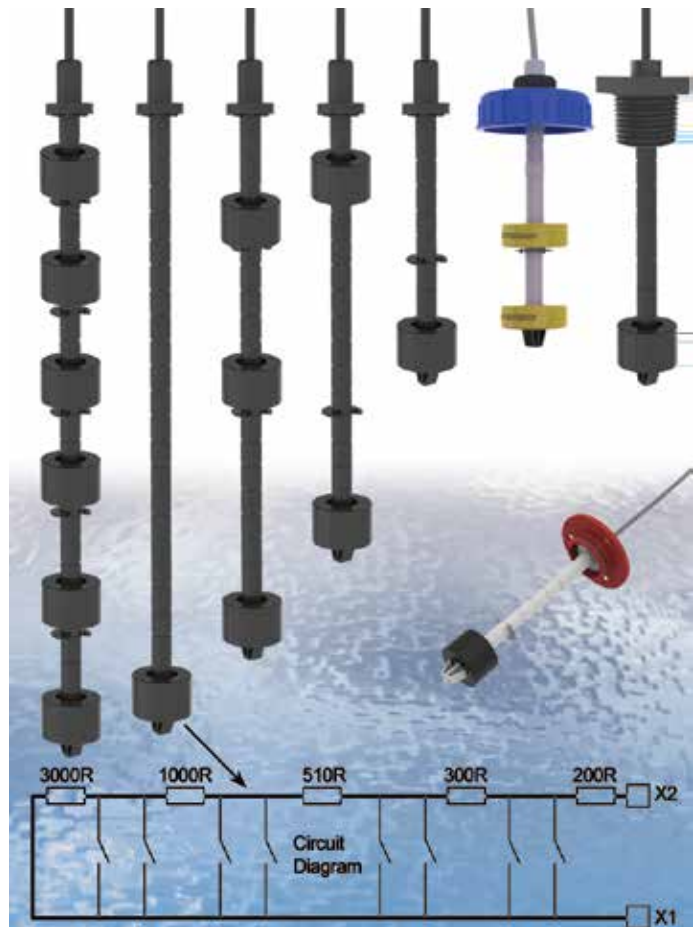


Figure 2. A representation of the versatility of the LS04 series showing multiple float and stem configurations.

Applications

- Single and multipoint liquid level sensing for an assortment of liquid systems running either hot and/or cold fluids

Standex's Versatile Approach to Liquid Level Sensing Offers the Needed Design Answers

Because of the plethora of requirements in liquid systems, sensing the levels and controlling their depth, takes on an assortment of requirements. Essentially every liquid system needs liquid level controls and almost all require a unique set of sensing parameters. For one sensing company to tool all these level sensing conditions would be insurmountable. Standex Electronics's goal however, is to satisfy all our customer's requirements. To solve this conundrum the Standex engineers have cleverly developed a set of tools that offer the versatility needed to satisfy the above requirements.

The LS04 Series approach has been tooled to handle

Specifications (@ 20°C) LS04 Series			
	Min	Max	Units
Operate Specifications			
Must close distance	Ref	Ref	mm
Must open distance	Ref	Ref	mm
Hysteresis			
Load characteristics			
Switching voltage		1000	V
Switching current		1.0	Amps
Carry current		2.0	Amps
Contact rating		200	Watts
Static contact resistance		150	mΩ
Dynamic contact resistance		200	mΩ
Breakdown voltage	4000		V
Operate time		0.8	msec
Release time		0.05	msec
Operate temp	-40	200	°C
Storage temp	-20	100	°C

up to 9 sensing positions and up to 6 individual floats on one shaft. This tooling versatility allows us to meet most of the more challenging Liquid System level sensing requirements. The stem or shaft ranges from 100 mm up to 250 mm representing a long vertical sensing range. Standard PVC cable is used to protect and insulate the electrical wiring that is all epoxied into the stem.

This tooling can be molded in various plastics, each capable of meeting the rigors of certain liquids. For instance molding the stem or shaft of the sensor with polyamide (PA) and a float of NBR (Nitrile Butadiene Rubber) will allow usage in oils, gasoline, and petrol. Using Polypropylene (PP) will be ideal for water and dilute acidic liquids.

Standex's new designs encompass it all – the reed

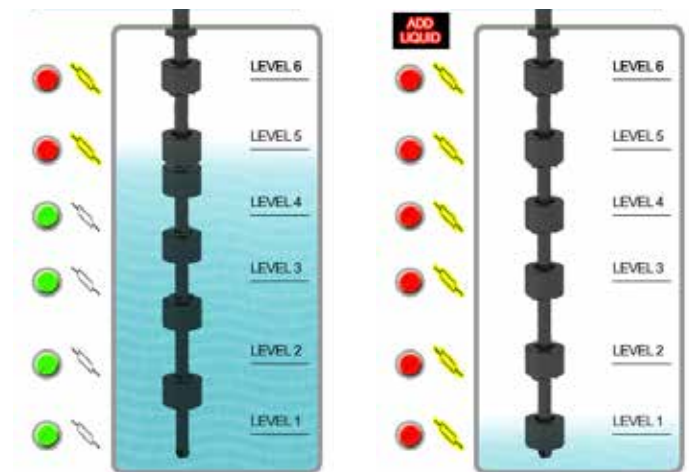




Figure 3. Shows the LS04 operating at different levels of liquid detection.

sensor, the float, and the magnet along with a PCB and its associated circuitry. This saves the system designer's valuable time by only having to specify and qualify one component. They no longer have to work with several different suppliers and coordinate between them.




Since this sensor requires some electrical circuitry, using a printed circuit board with plated thru solder holes guarantees reliable connections using an automated wave soldering system. The PCB is a long thin circuit board that runs down the length of the stem. And in this manner the hermetically sealed reed switches are properly placed and positioned in their sensing locations.

Another critical element is the acknowledgement that during assembly, problems can occur. Standex Electronics tests all sensors 100% for all operating conditions, but in addition tests for dynamic contact resistance (DCR). Essentially this test is a guard against the many faults that can occur during assembly. If the reed contacts have any internal contaminations; or the reed capsule has been stressed or a slight crack has occurred, this DCR will detect these conditions and reject the sensor. This testing is all carried out in an automated testing system. Standex Electronics's design for manufacturing approach provides a long reliable life in the field.

Adaptable Multi-Point Liquid Level Series

Series	Dimensions		Illustration
	mm	inches	
LS04	W	0.984	
	H	25	
	L	165	
LS05	W	7-16	
	H	7-16	
	L	80-2000	

Single Point Liquid Level Series

Series	Dimensions		Illustration
	mm	inches	
LS01	W	19	
	H	24	
	L	42	
LS02	W	19	
	H	24	
	L	75	
LS03	W	25	
	H	25	
	L	80	

Find out more about our ability to propel your business with our products by visiting www.standexelectronics.com or by giving us a hello@standexelectronics.com today! One of our brilliant engineers or solution selling sales leaders will listen to you immediately.

About Standex Electronics

Standex Electronics is a worldwide market leader in the design, engineering, and manufacture of standard and custom electro-magnetic components, including magnetics products and reed switch-based solutions.

Our magnetics offerings include planar, current sense, and conventional low- and high-frequency transformers and inductors. Reed switch-based solutions include Meder, Kent, and KOFU brand reed switches, as well as a complete portfolio of reed relays, and a comprehensive array of fluid level, proximity, motion, water flow, HVAC condensate, hydraulic pressure differential, capacitive, conductive and inductive sensors.

We offer engineered product solutions for a broad range of product applications in the transportation, automotive, medical, test and measurement, military and aerospace, aviation, HVAC, appliance, security and safety, and general power and industrial markets.

Standex Electronics has a commitment to absolute customer satisfaction through a partner, solve, and deliver approach. With a global organization that offers sales support, engineering capabilities, and technical resources worldwide – we implement customer driven innovation that puts the customer first.

For more information on Standex Electronics, visit us on the web at standexelectronics.com.

Contact Information:

Standex Electronics

World Headquarters
4538 Camberwell Road
Cincinnati, OH 45209 USA

Standex Americas (OH)

+1.866.STANDEX (+1.866.782.6339)
info@standexelectronics.com

Standex Electronics Asia (Shanghai)

+86.21.37606000
salesasia@standexelectronics.com

Standex Electronics Europe (Germany)

+49.7731.8399.0
info@standexelectronics.com

Standex Electronics India (Chennai)

+91.98867.57533
kkasaragod@standexelectronics.com

Standex Electronics Japan (Kofu)

+81.42.698.0026
sej-sales@standex.co.jp

