



Application Alley

Extreme Temperature - Fluid Level Sensors

Multi-Point Hot Fluid Level Sensor

Introduction

There are several laboratory fluid systems that required fluid level monitoring to help control very elaborate equipment processes. This new float sensor has four sensing positions, three of which are dedicated to monitoring hot fluid levels, and the fourth to sense a low fluid level cutoff point. The fourth sensing point is for safety reasons. It insures that heating coils are never exposed above the fluid level, which could set up a very dangerous situation.

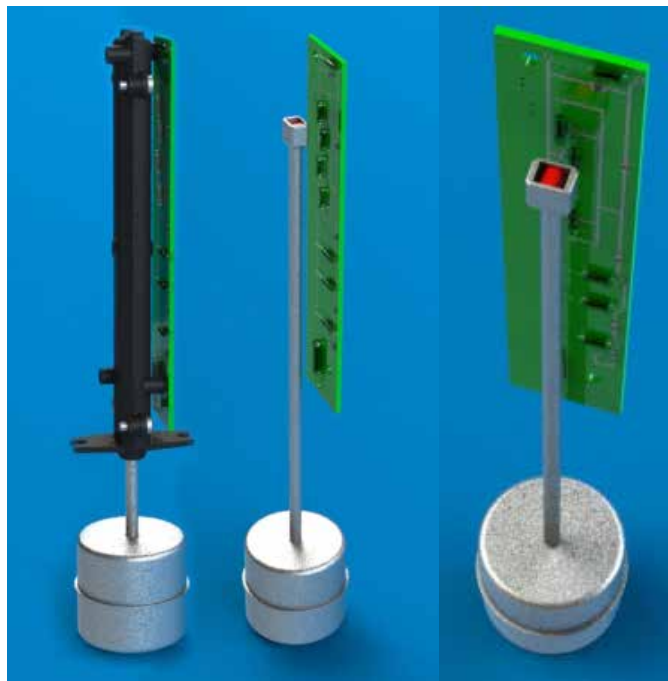


Figure 1. On the left the full sensor is shown and on the right the black casing is removed

Features

- Ability to operate at very hot temperatures up to 200°C as the normal operating environment
- Meets EU WEEE directive 2002/96/EC
- Meets RoHS directive 2002/95/EC
- Designed to work in hot and cold liquid temperatures
- Hermetically sealed
- Dynamically tested contacts
- Reliable switching
- Millions of reliable switching operations

Applications

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

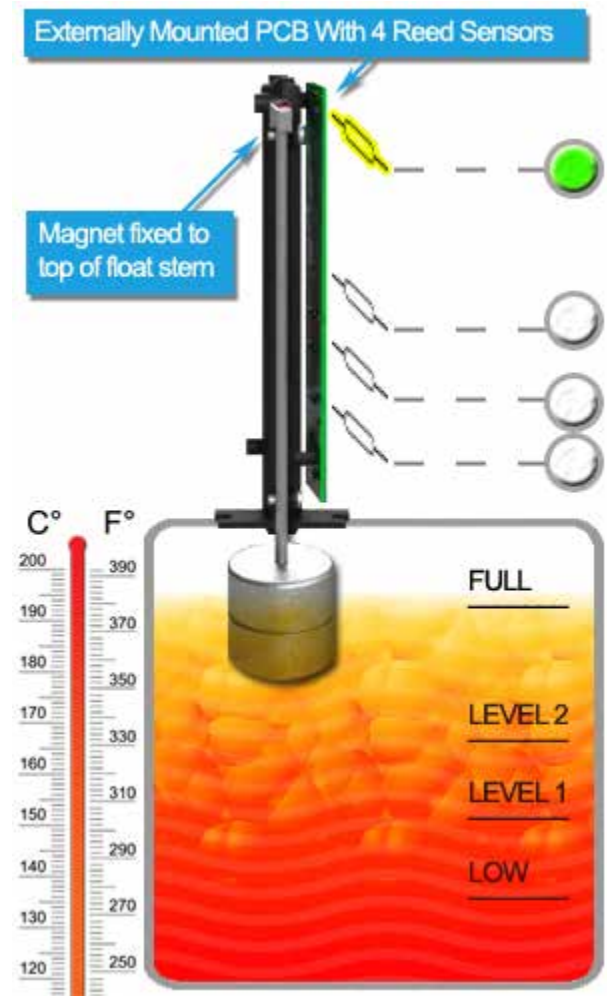


Figure 2. Showing a full tank with LED indicator

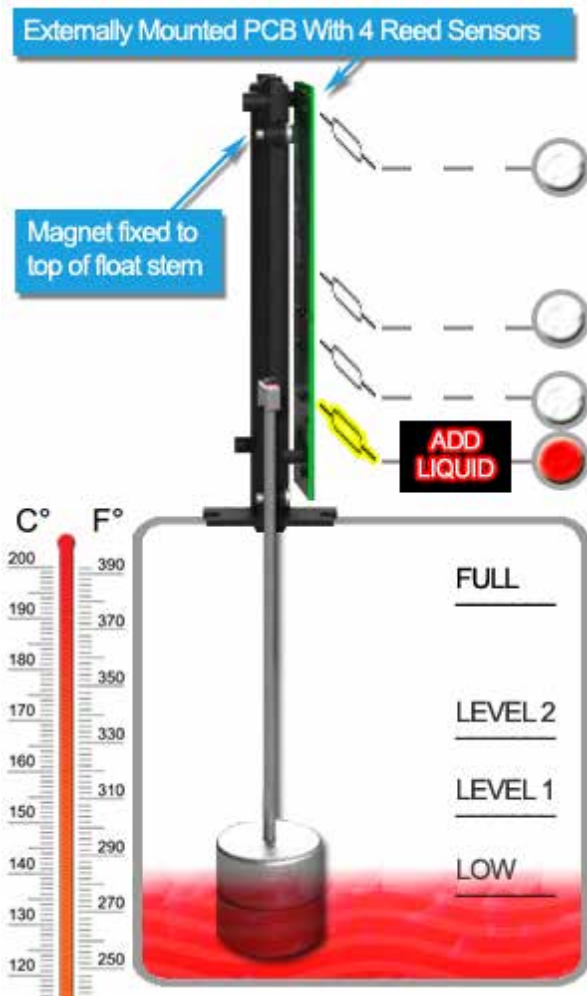


Figure 3. Showing a low tank with LED indicator

Standex Electronics Once Again Leads the Way Developing Specific Float Sensors Solving Full Solution Requirements

Often, designing a sensing system, requires more than 'off the shelf' solutions. More and more applications require unique component development specific to a given set of circumstances.

In this application, the sensor must operate at extreme temperatures where the float and magnet must withstand operating temperatures as high as 200°C. Standex Electronics's approach has been

to use only the most reliable materials that have demonstrated their quality and reliability in the field for the life of the system.

The magnet and stainless steel float are attached by a stainless steel rod, (see Figure 2). The magnet/rod are captured in a plastic sleeve. The PCB is immediately outside this plastic sleeve and senses the movement of the float and magnet. In this manner the four detection points are monitored.




Specifications (@ 20°C) LSS Series

	Min	Max	Units
Operate Specifications			
Must close distance	ref	ref	mm
Must open distance	ref	ref	mm
Hysteresis			
Load characteristics			
Switching voltage		200	V
Switching current		0.5	Amps
Carry current		1.0	Amps
Contact rating		10	Watts
Static contact resistance		150	mΩ
Dynamic contact resistance	200		mΩ
Breakdown voltage	200		V
Operate time		0.6	msec
Release time		0.05	msec
Operate temp	-10	200	°C
Storage temp	-25	75	°C

The fluid levels will naturally increase as the liquids are heated and expand; and conversely, the fluid level will decrease as the fluid bath temperature cools. Evaporation of the fluids can also occur, particularly at the higher temperatures, potentially reducing the liquid levels.

Most reed sensor offerings supply only the reed sensor. Standex Electronics's new design encompasses it all – the reed sensor, the float, and the magnet along with a PCB and its associated circuitry. This saves the designer a valuable amount of 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 systems. The hermetically sealed reed switches are properly placed and positioned in their predetermined sensing locations.

Multi-Point Liquid Level Series				
Series		Dimensions		Illustration
		mm	inches	
KSS-BV15078	W	25	0.984	
	H	25	0.984	
	L	165	6.496	
LS01	W	25	0.984	
	H	25	0.984	
	L	165	6.496	
LS02	W	7-16	0.276-0.630	
	H	7-16	0.276-0.630	
	L	80-2000	3.150-78.740	

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, the

DCR test will detect these conditions and reject the sensor. This testing is carried out in an automated testing system. Standex Electronics's design for manufacturing approach provides a long reliable life in the field.

Consult our engineering group with your specific applications.

Single Point Liquid Level Series				
Series		Dimensions		Illustration
		mm	inches	
LS01	W	19	0.748	
	H	24	0.945	
	L	42	1.654	
LS02	W	19	0.748	
	H	24	0.945	
	L	75	2.953	
LS03	W	25	0.948	
	H	25	0.948	
	L	80	3.150	

**Consult the factory for more options not listed above.

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.

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