



liquid level sensing



LF

Miniature Liquid Level Sensors

- Compact size
- Low cost
- Reliability/long switch life
- Can be used in a wide range of liquids
- Utility design for shock resistive construction in the float

These miniature liquid level switches have been designed for reliable operation in small tanks and containers. Their rugged design and careful engineering make them the perfect solution for OEM and large volume applications.

■ Operational Description

The stem of these miniature liquid level switches contains a hermetically sealed reed switch. The float contains a permanent magnet. As the float rises or falls with the level of the liquid, the reed switch is activated by the magnet. On most models, the operation of the switch, normally open (NO) or normally closed (NC), is easily changed by removing a retaining clip and inverting the float.

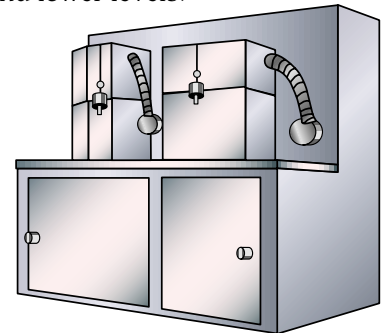
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■ Applications

Typical applications include automatic vending machines, photocopiers, small collection tanks, miniature pumping stations, pilot plants and similar small system applications.

Controlling delivery of plating liquid

Nickel plating liquid is used for surface treatment of electronic parts. The liquid is automatically fed into a plating bath with the LFP-V-2PG detecting the upper and lower levels.



Commercial Coffee Maker

The LFS-V-5UN is mounted in the water tank to detect the lower limit of the hot water. The LFS-V-5UN is suitable for food and pharmaceutical applications because the float joints are plasma welded and the surface is buffed smooth.



■ Protection from Electrical Surges

Overvoltage

Reed switches are not designed for the direct starting of inductive loads such as motors, contactors, solenoid valves, etc. They are susceptible to damage from overvoltages. Do not exceed the specified switch ratings listed in the specifications charts.

Contactors should be wired to miniature relays, suppressors or similar devices. STI recommends the use of the relay unit, Model RCU-7000. (Complete RCU-7000 specifications are located on the following STI website: www.stiapg.com/6204)

Overcurrent

Momentary surge currents produced by switching lamps or stray capacity from long cable lengths can weld the reed switches. Contactors should be wired to our Model RCU-7000 relay unit, coils in series, or suppressors. (Complete RCU-7000 specifications are located on the following STI website: www.stiapg.com/6204)

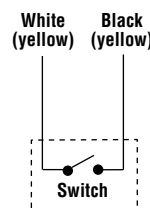
■ Intrinsic Safety

Any of the STI float switch level controls may be used with STI Intrinsic Safety Barriers (IS) to meet hazardous location requirements for level control device. For more information see www.stiapg.com/7150. For hazardous location requirements see the website at www.stiapg.com/0825.

■ Submersibility

These miniature liquid level switches are not designed to operate when fully submersed. The LFS-VE-S1 and LFS-VE-S2 series float switches can be submersed for short periods up to 76 hours under 500 mm depth of water at 20°C temperature. Water will penetrate the float for elevated temperatures and/or greater depths.

■ Wiring



■ Switch Rating

See specification charts on the following pages.

■ Technical Notes

- The sealing compound over the lead wire egress prevents moisture penetration, but is insufficient to prevent water penetration. Please install in an appropriate location or apply a suitable sealant.
- If there is surface wave motion, use a time delay relay to dampen the switch action.
- The switch should be located away from strong magnetic fields such as those produced by motors or solenoid valves.
- Maximum allowable impact is 10 g. Shocks greater than this can damage the switch.
- Maximum tensile force on the lead wire is 4.4 lb. (19.6 N) Exceeding this during installation may damage the switch.

■ Ordering Information

Please order by part number, as shown on the specification charts on the following pages.



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■ Plastic Float Specifications



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Series	LFE ⁽³⁾								
Model	LFE11P-0□	LFE11P-1□	LFE11R-0□	LFE11R-1□	LFE12P-0□	LFE12P-1□	LFE12R-0□	LFE12R-1□	
Part Number	Switch Type A	22152	22788	22151	22789	22157	22162	22160	22155
	Switch Type B	22156	22150	22197	22149	22628	22154	22587	22148
Material	Polypropylene		Polypropylene		Polypropylene		Polypropylene		
Stem	Polypropylene		Polypropylene		Polypropylene		Polypropylene		
Float	Polypropylene ⁽¹⁾		Buna ⁽¹⁾		Polypropylene ⁽¹⁾		Buna ⁽¹⁾		
Retainer	316L SS		316L SS		316L SS		316L SS		
Operating Temperature Range	14 to 194°F (-10 to 90°C)		14 to 194°F (-10 to 90°C)		14 to 194°F (-10 to 90°C)		14 to 194°F (-10 to 90°C)		
Pressure Rating	7 psi (0.5 bar)		145 psi (10 bar)		7 psi (0.5 bar)		145 psi (10 bar)		
Mounting	Vertical		Vertical		Vertical		Vertical		
Switch Rating (by model code)	0A/0B	1A/1B	0A/0B	1A/1B	0A/0B	1A/1B	0A/0B	1A/1B	
Maximum Capacity	10 VA	50 VA	10 VA	50 VA	10 VA	50 VA	10 VA	50 VA	
Nominal Current	0.1 A	0.17 A	0.1 A	0.17 A	0.1 A	0.17 A	0.1 A	0.17 A	
Maximum Voltage	100 VAC	300 VAC	100 VAC	300 VAC	100 VAC	300 VAC	100 VAC	300 VAC	
Life Expectancy (# of actuations)	10 ⁷	10 ⁷	10 ⁷	10 ⁷	10 ⁷	10 ⁷	10 ⁷	10 ⁷	
Lead Wires	#22 AWG 11.8 or 39.4 in. (300 or 1000 mm)		#22 AWG 11.8 or 39.4 in. (300 or 1000 mm)		#22 AWG 11.8 or 39.4 in. (300 or 1000 mm)		#22 AWG 11.8 or 39.4 in. (300 or 1000 mm)		
Minimum SG	0.9		0.7		0.9		0.7		
Dimensions — in./mm									
	Switch A: 0.59 in. (15 mm) Switch B: 0.55 in. (14 mm)		Switch A: 0.71 in. (18 mm) Switch B: 0.67 in. (17 mm)		Switch A: 0.98 in. (25 mm) Switch B: 0.91 in. (23 mm)		Switch A: 1.10 in. (28 mm) Switch B: 1.02 in. (26 mm)		

⁽¹⁾ The float magnet is exposed on these models and is in direct contact with liquids.
⁽²⁾ Alternative cables in PVC are available in lengths up to 78.7 in. (2000 mm). VCTF Ø 0.20, (5.2, 0.3 mm²)
⁽³⁾ Switch action of the LFE is nonreversible. Select Code A (NC) or Code B (NO).
 Specifications are subject to change without notice.



LFP				
	LFP-V-2A	LFP-V-2F	LFP-V-2PG	LFP-VE-B1
	22458	22091	22094	22917-0049
	Polyacetal Buna 316L SS	PVDF PVDF PVDF	Polypropylene Polypropylene Polypropylene	Polypropylene BUNA Polypropylene
	14 to 194°F (-10 to 90°C)	14 to 212°F (-10 to 100°C)	14 to 194°F (-10 to 90°C)	175°F (80°C)
	145 psi (10 bar)	145 psi (10 bar)	7 psi (0.5 bar)	145 psi (10 bar)
	Vertical	Vertical	Vertical	Vertical
	50 VA 0.17 A 300 VAC 10 ⁷	50 VA 0.17 A 300 VAC 10 ⁷	50 VA 0.17 A 300 VAC 10 ⁷	50V A 0.5 A 300 VAC/DC
	#22 AWG 11.8 or 39.4 in. ⁽²⁾ (300 or 1000 mm) ⁽²⁾	#22 AWG 11.8 or 39.4 in. ⁽²⁾ (300 or 1000 mm) ⁽²⁾	#22 AWG 11.8 or 39.4 in. ⁽²⁾ (300 or 1000 mm) ⁽²⁾	#22 AWG (300 mm)
	0.6	0.9	0.85	0.6



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■ Plastic Float Specifications (continued)



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Series	LFP			
Model	LFP-VE-P1	LFP-VE-P2	LFP-H-3 ⁽⁴⁾	LFP-H-10
Part Number	22917-0051	22917-0017	22085	22555
Material				
Stem	Polypropylene	Polypropylene	Polypropylene	Polypropylene
Float	Polypropylene	Polypropylene	Polypropylene ⁽¹⁾	Polypropylene
Retainer	Polypropylene	Polypropylene	Polypropylene	Polypropylene
Operating Temperature	194°F (90°C)	194°F (90°C)	14 to 194°F (-10 to 90°C)	14 to 194°F (-10 to 90°C)
Pressure Rating	7 psi (0.5 bar)	7 psi (0.5 bar)	7 psi (0.5 bar)	7 psi (0.5 bar)
Mounting	Vertical	Vertical	Horizontal	Horizontal
Switch Rating (by model code)				
Maximum Capacity	50 VA	50 VA	50 VA	50 VA
Nominal Current	0.5 A	0.5 A	0.17 A	0.17 A
Maximum Voltage	300 VAC/DC	300 VAC/DC	300 VAC	300 VAC
Life Expectancy (# of actuations)			10 ⁷	10 ⁷
Lead Wires	#22 AWG (300 mm)	#22 AWG (300 mm)	#22 AWG 11.8 or 39.4 in. ⁽²⁾ (300 or 1000 mm) ⁽²⁾	#22 AWG 11.8 or 39.4 in. ⁽²⁾ (300 or 1000 mm) ⁽²⁾
Minimum SG	0.9	0.85	0.8	0.8
Dimensions — in./mm				

⁽²⁾ Alternative cables in PVC are available in lengths up to 78.7 in. (2000 mm). VCTF Ø 0.20, (5.2, 0.3 mm²)

⁽⁴⁾ The LFPH-3 is nonreversible. Use NO (Up ON) only.

Specifications are subject to change without notice.

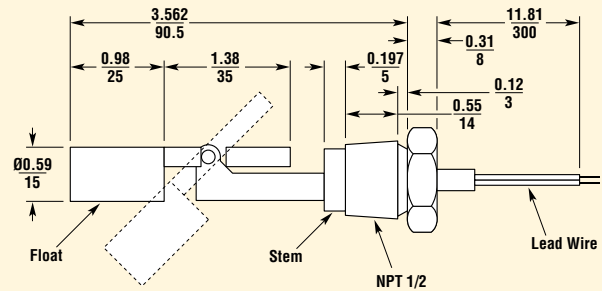
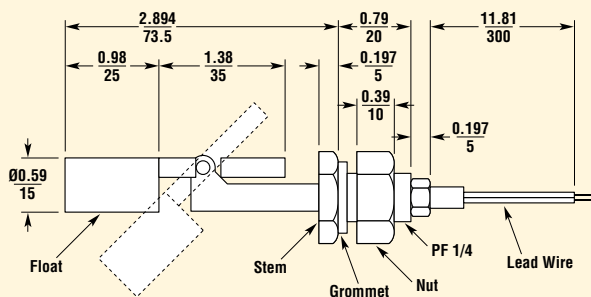


LFP

	LFP-HE-P1	LFP-HE-N1	LFP-HE-P2	LFP-HE-N2
	22917-0012	22917-0054	22917-0053	22917-0013
	Polypropylene Polypropylene n/a	6-nylon 6-nylon n/a	Polypropylene Polypropylene n/a	6-nylon 6-nylon
	175°F (80°C)	230°F (110°C)	175°F (80°C)	230°F (110°C)
	7 psi (0.5 bar)	7 psi (0.5 bar)	7 psi (0.5 bar)	7 psi (0.5 bar)
	Horizontal	Horizontal	Horizontal	Horizontal
	50 VA 0.5 A 300 VAC/DC	50 VA 0.5 A 300 VAC/DC	50 VA 0.5 A 300 VAC/DC	50 VA 0.5 A 300 VAC/DC 10 ⁷
	#22 AWG (300 mm)	#22 AWG (300 mm)	#22 AWG (300 mm)	#22 AWG (300 mm)
	0.8	0.8	0.8	0.8



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■ **Metal Float Specifications**



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Series	LFS			
Model	LFS-V-5G	LFS-V-5UN	LFS-V-30	LFS-V-50
Part Number	22097	22098	22076	22350
Material				
Stem	316L SS	316L SS	304 SS	304 SS
Float	316L SS	316L SS	316L SS	316L SS
Retainer	316L SS	316L SS	304 SS	304 SS
Operating Temperature	14 to 212°F ⁽⁵⁾ (-10 to 100°C) ⁽⁵⁾	14 to 212°F (-10 to 100°C)	14 to 248°F (-10 to 120°C)	14 to 392°F (200°C)
Pressure Rating	290 psi (20 bar)	290 psi (20 bar)	290 psi (20 bar)	290 psi (20 bar)
Mounting	Vertical	Vertical	Vertical	Vertical
Switch Rating (by model code)				
Maximum Capacity	50 VA	50 VA	15 VA	110 VA
Nominal Current	0.17 A	0.17 A	0.06 A	0.5 A
Maximum Voltage	300 VAC	300 VAC	264 VAC	220 VAC
Life Expectancy (# of actuations)	10 ⁷	10 ⁷	10 ⁶	10 ⁶
Lead Wires	#22 AWG (300 or 1000 mm)	#22 AWG (300 mm)	Silicon (0.3 mm ²) (400 mm)	Silicon cable (0.5 mm ²) (400 mm)
Minimum SG	0.8	0.8	0.55	0.7
Dimensions — in./mm				

⁽⁵⁾ Optional 248°F (120°C) available
Specifications are subject to change without notice.



LFS

	LFS-VE-S1	LFS-VE-S2	LFS-VE-S3	LFS-VE-S4
	22917-0031	22917-0032	22917-0010	22917-0011
	304 SS	316L SS	304 SS	316L SS
	304 SS	316L SS	304 SS	316L SS
	304 SS	316L SS	304 SS	316L SS
	390°F (200°C)	390°F (200°C)	390°F (200°C)	390°F (200°C)
	290 psi (20 bar)	290 psi (20 bar)	290 psi (20 bar)	290 psi (20 bar)
	Vertical	Vertical	Vertical	Vertical
	50 VA 0.5 A 300 VAC/DC	50V A 0.5 A 300 VAC/DC	50 VA 0.5 A 300 VAC/DC	50 VA 0.5 A 300 VAC/DC
	#22 AWG (350 mm)	#22 AWG (350 mm)	#22 AWG (350 mm)	#22 AWG (350 mm)
	0.8	0.8	0.8	0.8



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■ **Metal Float Specifications (continued)**



liquid level sensing

Series	LFS	
Model	LFS-H-10	LFS-H-25S/90
Part Number	22427	22556
Material		
Stem	316L SS	304 SS
Float	316L SS	316L SS
Retainer	316L SS	304 SS
Operating Temperature	14 to 248°F (-10 to 120°C)	14 to 212°F (-10 to 100°C)
Pressure Rating	145 psi (10 bar)	290 psi (20 bar)
Mounting	Horizontal	Horizontal
Switch Rating (by model code)		
Maximum Capacity	50 VA	50 VA
Nominal Current	0.17 A	0.17 A
Maximum Voltage	300 VAC	300 VAC
Life Expectancy (# of actuations)	10 ⁷	10 ⁷
Lead Wires	#22 AWG (300 mm)	#22 AWG (300 mm)
Minimum SG	0.6	0.8
Dimensions — in./mm		

Specifications are subject to change without notice.

LFS

	LFS-HE-S1	LFS-HE-S2
	22917-0055	22917-0014
	304 SS 304 SS n/a	304 SS 304 SS n/a
	250°F (120°C)	250°F (120°C)
	145 psi (10 bar)	145 psi (10 bar)
	Horizontal	Horizontal
	50 VA 0.5 A 300 VAC/DC	50 VA 0.5 A 300 VAC/DC
	#22 AWG (500 mm)	#22 AWG (500 mm)
	0.6	0.6



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