

Engineering Guide

Liquid Level Sensors Engineered for Accuracy, Reliability, and Custom Fit



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Liquid Level Sensors

Liquid Level Sensors Engineered for Accuracy, Reliability, and Custom Fit



LIQUID LEVEL SENSORS ENGINEERED FOR ACCURACY, RELIABILITY, AND CUSTOM FIT

Magnetic, reed switch–based liquid level sensors are a proven and reliable solution across industrial, process, appliance, automotive, food & beverage, and medical markets. These sensors use a float containing a permanent magnet that moves with the liquid level along a stem or housing containing one or more reed switches. As the float changes position, the reed switch state changes, producing a discrete or continuous output signal.

Built on decades of reed switch expertise, Standex Detect liquid level sensors deliver high reliability, environmental resilience, and flexible customization, even in demanding applications where other technologies struggle.



UNDERSTANDING LIQUID LEVEL MEASUREMENT TYPES: SINGLE, MULTI, AND CONTINUOUS

Single-Point Level Sensors- Single-point sensors provide a discrete ON/OFF signal when liquid reaches a defined level. They are valued for simplicity, robustness, and cost efficiency, making them ideal for high-volume applications such as brake fluid monitoring, humidifiers, and overflow tanks.

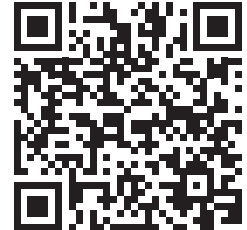
Multi-Point Level Sensors- Multipoint sensors integrate multiple reed switches and floats into a single sensor module, enabling detection of several discrete liquid levels. This reduces wiring, improves system reliability, and enables staged pump control and alarm thresholds, commonly used in chemical processing.

Continuous Level Sensors - Continuous level sensors provide a resistive, stepped, or analog output across the full measurement range using a reed ladder. They support near real-time monitoring and PLC integration, and are widely used in medical fluid management, industrial tank monitoring, and process controls.



Liquid Level Sensor Type Guide

Contact Standex Detect to collaborate on your liquid level sensor application!



START A
CONVERSATION

Level Type	Output Style	Measurement Capability	Key Benefits	Common Use Cases
Single-Point	Discrete ON/OFF	Single point liquid level	Simple, reliable, cost-efficient	Overfill protection, low-level alarms
Multi-Point	Multiple discrete outputs	Several defined liquid levels	Reduces wiring, staged control in one sensor	Pump staging, multi-level alarms
Continuous	Analog, stepped, or voltage output	Full measurement range	Higher resolution, real-time monitoring	PLC integration, process control, tank monitoring

FLOAT AND STEM MATERIAL SELECTION BASED ON LIQUID COMPATIBILITY

Selecting the correct materials is critical for accuracy, durability, and chemical compatibility. Standex Detect offers a broad portfolio of float and stem materials to support any operating conditions found across multiple markets. Float materials include NBR, Stainless Steel, Polyamide

(PA), and Polypropylene (PP), selected based on chemical compatibility, temperature, and buoyancy requirements. Stem materials include plastics for short sensors and stainless steel for longer sensors to ensure the stem is straight to ensure reliable float travel.

FLOAT MATERIAL AND LIQUID COMPATIBILITY



NBR

Nitrile Butadiene Rubber

Liquid Compatibility:

- Oils, fuels, hydrocarbons



STAINLESS STEEL

Aggressive fluids, corrosive environments

Liquid Compatibility:

- Industrial, food and beverage



PA

Polyamide / Nylon

Liquid Compatibility:

- General industrial liquids
- Automotive, compressors



PP

Polypropylene

Liquid Compatibility:

- Water, chemicals, acids, cleaning solutions
- Chemical water treatment

LIQUID LEVEL SENSOR APPLICATION EXAMPLES BY MARKET

The following diagram highlights representative liquid level applications across Standex Detect's core markets, illustrating how

our sensing capabilities help OEMs improve safety, efficiency, and system performance in demanding environments.



Appliances

- Washing machines & dishwashers: fill-level detection, overflow prevention
- Refrigerators & beverage dispensers: water reservoir monitoring for ice makers and chilled water



Industrial and Automation Equipment

- Hydraulic systems: real-time oil level monitoring
- Process tanks & sumps: high/low level alarms for chemicals, water, or coolants



Test and Measurement

- Calibration systems: precise fluid level control in test rigs
- Laboratory equipment: reagent or coolant reservoir level detection



Medical Devices

- Dialysis machines: multipoint or continuous monitoring of treatment fluids
- Suction & waste systems: overflow detection in collection canisters



Computing and Data Centers

- Immersion cooling systems: dielectric fluid level sensing
- Backup and auxiliary cooling tanks: level verification for system readiness



Transportation

- Electric vehicles (EVs): coolant level detection for battery thermal management
- Commercial vehicles & rail: fuel, DEF, and hydraulic fluid level sensing



Renewable Energy and Utilities

- Battery energy storage systems (BESS) and solar inverters: cooling fluid level monitoring
- Water treatment plants and electrical substations: basin and tank level control



Construction and Agriculture

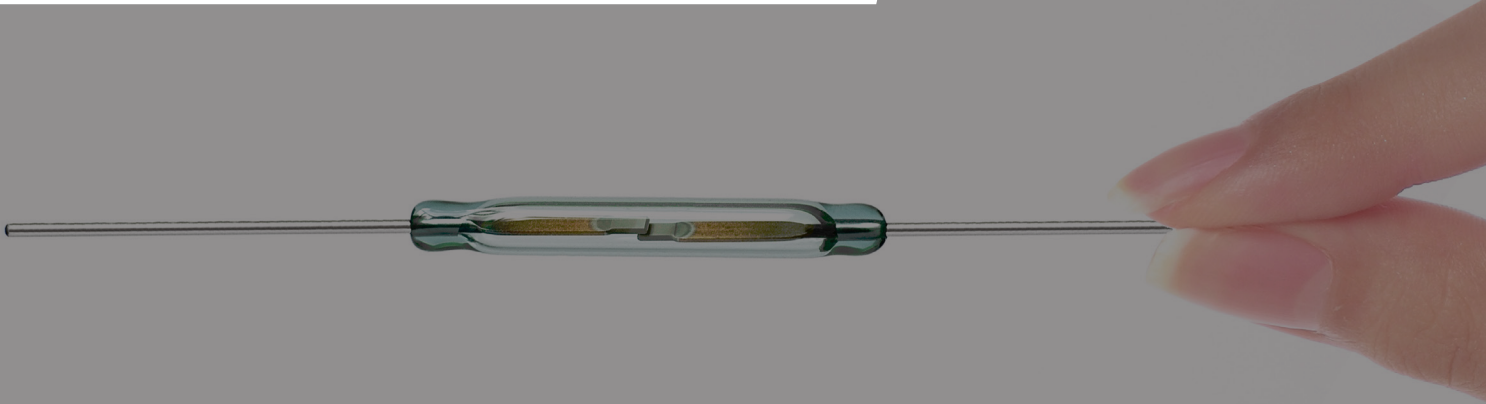
- Heavy equipment fuel tanks: diesel level sensing for excavators and tractors
- Sprayers & fertilizer tanks: liquid level detection to ensure proper dispensing



Safety and Security

- Fire suppression systems: water or foam agent tank level monitoring
- Hazardous material storage: spill prevention and level alarms

Advantages of Reed Switch-Based Technology





Float-based liquid level sensors provide highly reliable measurement by remaining in direct contact with the fluid. This direct interaction allows the sensor to **negate the effects of foaming, vapor buildup, and liquid turbulence**, delivering consistent performance even in challenging environments.



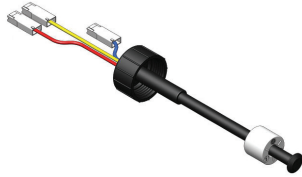
Reed switch–based designs offer additional advantages, including **no power requirement at the sensing point, high reliability, simple system integration, and cost efficiency** when compared to radar, ultrasonic, or capacitive technologies.



ENGINEERED CUSTOMIZATION: FROM CONCEPT TO PRODUCTION

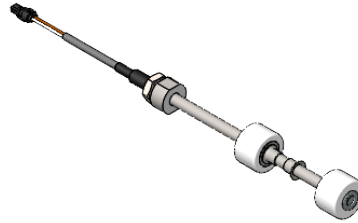
Standex Detect specializes in application-specific liquid level sensor solutions, offering custom sensor lengths, switching points, float materials, housings, connectors, sealing solutions,

and output formats from simple point detection to fully integrated continuous systems.



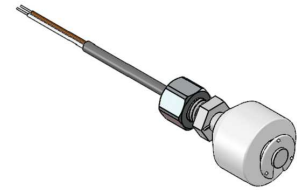
USE CASE #1

INTEGRATED CAP FOR EASY INSTALL



USE CASE #2

MAXIMIZING SWITCHING POINTS



USE CASE #3

SUBMERSION FLOAT



Challenge

The customer required a high/low level sensing for a medical solvent. The sensor had to be implemented in a bottle with the only port being a threaded opening. The customer required a single piece that would seal the bottle from the environment.



Solution

Standex Detect created a custom housing to incorporate a threaded cap with the sensor stem. The internal PCB utilizes a high and low switch.



Outcome

This custom design allowed the customer to easily implement a sensor in their bottle design. The high and low switching points ensured automated reading in the medical equipment to ensure enough solvent is present to start their mixing process.

The customer needed to increase a single switching point sensor to a 4 point sensor but remain in the same package size which limited the sensor to two floats.

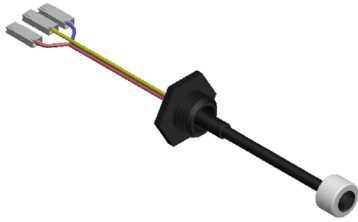
Standex Detect utilized Normally Open and Normally Closed switches to maximize the number of switching points available.

The sensor had four switching points with a unique resistance for each condition to ensure the proper output into the customers PLC to alert full.

The customer needed to detect a low level in a large tank. Due to the size of the tank there was no practical method to reach the desired switching point with a long stem.

Standex Detect used a small sensor with a cap nut to seal the sensor from the environment.

Standex Detect created a submersion float that fluid could fill above.



USE CASE #4

EXTERNAL TANK MONITORING



Challenge

The customer could not install a sensor from the internal portion of the bottle.



Solution

Standex Detect designed a housing with an M30 thread to be installed from the outside of the bottle.



Outcome

The sensor could be installed from the outside of the bottle to allow for connects on the cable harness for easier system integration.



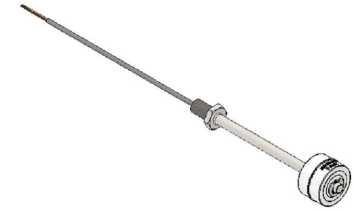
USE CASE #5

VISUAL FLOAT MONITORING

The customer needed a continuous level sensor but also wanted a visual check through their opaque bottle.

Standex Detect added a blue colorant for their polypropylene float to allow for a visual check when the sensor is installed in application.

Standex Detect created a unique float color that was visible in application due to the blue hue.



USE CASE #6

HIGH-TEMP LOW SPECIFIC GRAVITY FLUID

The customer needed a continuous level sensor in an environment up to 150°C in a fluid with a low specific gravity.

Standex Detect provided a large stainless steel float to increase buoyancy and to have temperature resiliency to ensure reliable sensing in application.

The customer received a reliable sensor that ensured float buoyancy when other float materials such as Polypropylene failed.

WHY CHOOSE STANDEX DETECT

**For When it Matters - The Right Design, at
the Right Time, at the Optimal Cost**

With a broad portfolio, deep reed switch expertise, proven customization capabilities, and global support, Standex Detect delivers reliable, cost-effective, and customizable liquid level sensing solutions engineered for real-world applications.

**Let's Engineer What's
Next Together!**





A Standex **Electronics** Business

The modern world pulses with silent signals that activate, safeguard, and synchronize the systems that underpin everyday life. As automation, renewable energy, transportation, and smart environments evolve into autonomous, adaptive networks, everything begins with one capability: the power to **Detect** what's next.

Standex Electronics delivers the high-performance sensing and switching solutions that enable this future. Through customer intimacy and deep technical collaboration, we listen, design, refine, and deliver solutions built for unwavering reliability.

Our expertise in reed switches, sensors, and relays enables equipment to sense position, measure speed, **Detect** presence, ensure safety, and control power with precision. We're advancing Detection at the speed of innovation for when it matters. Delivering the right design, at the right time, at the optimal cost.

Tomorrow's breakthroughs depend on our ability to Detect instantly, quietly, and reliably.

Welcome to **Standex Detect**.

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