

HOW LIQUID LEVEL SWITCHES POWER TODAY'S INDUSTRIAL APPLICATIONS

TE Connectivity's (TE) Liquid Level Switches Offer Air-Tight Seals, Rugged Performance, Flexible Configuration, Easy Installation and Field Service



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Liquid level switches are a workhorse of modern industry. Simple, high-performance, low-cost, and long-lasting, they perform critical operations across diverse industrial and chemical applications. Like the name signifies, these switches detect liquid levels in industrial tanks and other units.

By so doing, they maintain chemical ratios in mixed products, help protect valuable equipment from overheating, help reduce fire risks, and deliver many other benefits.



Liquid Level Switches Can Be Found in Applications Such As

Chemical and petrochemicals (Oils)

Agriculture fuel tanks, pressure washer (fuel level), generators (fuel level), lawnmower (fuel level), wind turbine (gearbox oil level), chemical application injectors (golf course/agriculture), and agriculture chemical level storage tanks.

Food and beverage

Industrial dish washing machines, food warmers, hot water heaters, steam cookers, and storage tanks.

Flood/water ingress/event detection

Provide alarms in basements and similar locations when water is detected.

HVAC

Air conditioning condensate (water level), cooling towers (water level), chiller (glycol level), and boilers (water level).

Production process monitoring

Maintain productivity by providing a low-level warning for timely refill. Provide effective pump action and fill control.

Water and waste water

Water storage tanks, sewage tanks water purification systems, filtration systems, industrial carpet cleaning machines (water reservoir), industrial floor scrubber machines (water reservoir), and pump skids (pump protection).



Case Study: Oil Well Monitoring

An oil well management company uses [TE liquid level switches](#) to remotely monitor the levels of low-producing oil wells in two states.

By using the switches, the company is able to send trucks only when wells are ready to be emptied, avoiding unnecessary trips. In addition, the firm can monitor levels to avoid pumps running dry, preventing the damage of costly equipment.

Taking a Deeper Look at Reed Switch Technology

Liquid level switches are so prevalent in industry because they are based on a mature and highly reliable technology – reed switches. These devices have been around for decades and continue to be used across applications because of their unique qualities, including:

- They require no power source to facilitate switching action, which occurs as a result of the interaction of a permanent magnet in the moving float with the reed switch.
- They function in systems that either require specific signal-level outputs (i.e. voltage or current) or as open/closed signal outputs.
- They can be used in high-temperature environments.
- They have a high insulation value, meaning that the current draw is lower than a solid-state electronic device, essentially “switching them off”. This quality makes them a good choice for battery-powered applications.

- The hysteretic nature of the reed switch minimizes liquid turbulence.
- They can be used in a variety of containers including pressurized tanks.
- Reed switches typically do not have any issues meeting electromagnetic capability (EMC) requirements. Testing can often be minimized or eliminated based upon the end application.
- They provide reliable performance across millions of cycles.

In fact, demand is so great, that analysts predict the reed switch market will grow by 7.4% between 2019 and 2023, pushing a \$1.49B market to \$2.3B in four short years¹⁾. Market appetite is driven first by China, due to its surging investment in automotive innovation, followed by the United States and Germany²⁾.



Case Study: Boiler Feed Tanks

TE's horizontal liquid level sensor, [LS509-11](#) model, controls the pump used to maintain a precise water level in steam generators. This prevents overheating of the appliance due to insufficient water level.

The sensor is comprised of Water Regulations Advisory Scheme (WRAS)-approved glass-filled polyphenylene sulfide.

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TE provides a diverse range of nearly 20 vertical and horizontal liquid level switches based on reed switch technology that are available in multiple materials and switching, fitting, and cable options. So, what makes TE products the best choice for your diverse industry applications? Our liquid level switches offer the following advantages:

- **Molded housings** – Obtain a completely water-resistant seal with our molded housings which eliminate leak paths. With TE liquid level switches, you are protected from potential corrosion that could affect product performance.
- **Harsh environments** – TE products can withstand temperatures from -40°C to 120°C, making them suited for boiling water or freezing liquids. They also function in pressured liquids, diesel fuels and gasolines, and alcohol and acids.
- **Long life** – TE liquid level switches will provide reliable performance over 10M plus cycles.
- **Multiple options** – We provide both vertical and horizontal mount switches that are available in diverse materials and switching, fitting, and cable options to support your application requirements.
- **Range of power inputs** – TE liquid level switches can handle high electrical loads of both AC and DC current, up to a maximum of 100 volts DC or 250 volts AC.
- **Standard and customized product offerings** – Order standard models to get fast access to high performance standard products or customize your own solutions to meet specific application needs.
- **Key certifications** – TE liquid level switches are both International Organization of Standardization (ISO)-certified for industrial applications and ISO/TS 16949-certified for automotive products.
- **Quantities** – Order in the quantity you need, from 100 customized switches to hundred of thousands of standard catalog switches.
- **Easy installation and field service** – Installation of the switches is simple. Simply orient the mounting mark in the correct orientation and use a threaded or push-in connection. If parts begin to fail near end of life, they can be easily removed and replaced.



- **Cross-industry expertise and solutions** – TE offers design and manufacturing expertise in sensors and switches across a number of verticals, including automotive, industrial, and commercial transportation.
- **Quality brand reputation** – TE liquid level switches are designed by our world-class manufacturing operation, meaning that we stand behind the quality, reliability, and performance of every product.
- **Global scale** – TE designs and manufacturers around the world, ensuring that you have regional access to the expertise, development capabilities, and global production you require to manage and scale your business.
- **Price-to-performance** – TE products are extremely cost-competitive, due to their pricing and extended performance.

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Conclusion

TE has the cross-industry expertise, solution set, and scale to support you as you develop industrial and commercial applications that require liquid level sensing. Our liquid level switches provide the versatility, reliability, and long-term performance you need to monitor and manage critical applications. Whether you need a custom or commodity solution, TE can help you achieve your business and technical goals successfully.

[Visit TE.com](https://www.te.com) to learn more about our standard and custom liquid level switches.



TE Liquid Level Switch Product Information

Horizontal Liquid Level Switches

[LS Series](#)

Available in a wide range of materials, switching, and fitting options with UL and WRAS models.

[LCS Series](#)

Push fit external mounted sensor, with cable or integral connector.

[LDS Series](#)

Has a close differential between operate and release, for sensing small changes in the liquid level.

Vertical Liquid Level Switches

[VS Series](#)

Wide range of materials and switching options, switch can also be internally or externally fitted.

[VCS Series](#)

Compact sensor available in a range of plastics suitable for use in boiling water and fuels.

[EVS Series](#)

Extended range of sensor in plastics, brass, and stainless steel which can indicate up to three positions or levels and be up to one meter long.



ABOUT TE CONNECTIVITY

TE Connectivity is a \$12 billion global industrial technology leader creating a safer, sustainable, productive and connected future. Our broad range of connectivity and sensor solutions, proven in the harshest environments, enable advancements in transportation, industrial applications, medical technology, energy, data communications and the home. With approximately 80,000 employees, including more than 7,500 engineers, working alongside customers in approximately 140 countries, TE ensures that EVERY CONNECTION COUNTS. Learn more at www.te.com.

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REFERENCE

- 1) "Tracking the Growth of the Global Magnetic Reed Switch Market in 2019," Online Report Description, Thomas Insights, February 4, 2019, <https://www.thomasnet.com/insights/tracking-the-growth-of-the-global-magnetic-reed-switch-market-in-2019/#register>
- 2) Ibid.

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