

Capacitive or Optical? Choose the right level sensor

Reliable liquid detection is an essential requirement in many industrial sectors, including plant engineering. To meet these needs, Elessa introduced two new products: the **HSC capacitive level sensor**, suitable for conductive liquids such as water and non-conductive liquids such as oil/diesel, and the **HSO optical level sensor**, ideal for translucent liquids. Both ensure accuracy and robustness, yet differ in their operating principles and application fields.

HSC | CAPACITATIVE LEVEL SENSOR

The HSC model, based on capacitive technology, uses a conductive electrode coated in PTFE, inserted directly into the tank or container where the liquid level must be detected. Its operating principle relies on the variation of electrical capacitance generated inside the tank: the probe and the surrounding metal walls form a sort of capacitor whose capacitance changes according to the liquid level.

As the fluid level rises, the probe's electrical capacitance increases accordingly, enabling precise detection. In practice, capacitance is low when the tank is empty and high when it is full.

This solution is extremely versatile: it is suitable for **conductive fluids such as water (W version)** and for **oils and diesel fuel (O version)**. The maximum operating temperature ranges from **-30 to +125°C**, while pressure resistance reaches **50 bar**.

HSO | OPTICAL LEVEL SENSOR

The HSO optical sensor detects the presence or absence of liquids by exploiting the different refraction of the generated infrared beam. When no liquid is present, the beam is completely reflected toward the receiver; when liquid is present, the prism's refractive index changes and part of the infrared beam is dispersed into the liquid, causing the output to switch.

This technology does **not** require direct contact with the liquid. Its flexible installation—both horizontal and vertical—makes it a reliable and practical solution even in demanding operating conditions, withstanding **up to 100 bar** of pressure and temperatures between **-30 and +110°C**.

Both solutions share several key advantages: compact size and simple construction, no mechanical parts subject to wear, low energy consumption, and minimal maintenance requirements.

In this way, HSC and HSO offer two different responses to level-control needs: the former for maximum versatility and resistance in harsh environments, the latter for applications where hygiene, compactness, and optical precision are essential.

With this new range of level sensors, we provide our customers with reliable, technologically advanced tools suitable for multiple application scenarios.



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