Capacitive Level Switch

CP-LS Series

LEVEX

Industrial Level Sensing Solutions

Capacitive Level Switch | CP-LS Series

Product Description

LEVEX CP-LS capacitive level switches provide reliable point-level detection for liquids, powders, and bulk solids. The sensor operates by detecting changes in capacitance caused by the presence or absence of material at the sensing probe.

The CP-LS series is designed for applications where mechanical level switches are unsuitable, such as viscous liquids, sticky media, powders, granules, or processes requiring non-moving sensing elements. Solid-state electronics and adjustable sensitivity ensure stable performance in demanding industrial environments.

Key Features

- Point-level detection for liquids and solids
- No moving parts — maintenance-free operation
- Adjustable sensitivity for different media
- Single or dual level detection options
- Output options: Relay, PNP, or NPN
- Compact industrial housing
- Resistant to vibration, buildup, and contamination

Typical Applications

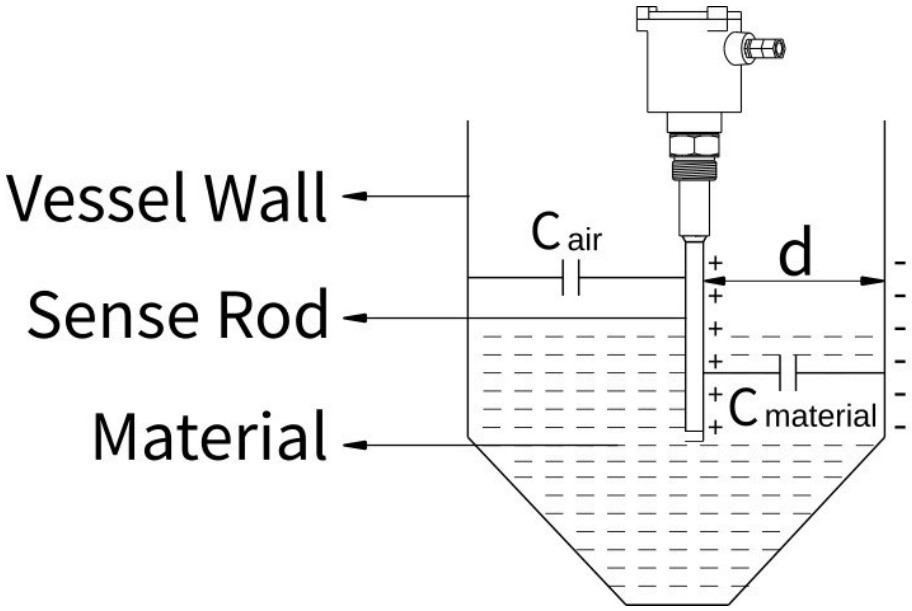
- Liquid level alarms
- Powder and granule level detection
- High and low level protection
- Overflow prevention
- Chemical processing
- Food and beverage applications

Operating Principle:

The sensing probe of the CP-LS forms one plate of a capacitor, while the tank wall or surrounding medium forms the second plate. When material approaches or contacts the probe, the dielectric constant changes, resulting in a change in capacitance.

The internal electronics continuously monitor this change and switch the output when the preset threshold is reached, providing a reliable ON/OFF level signal. Used for alarms, relays, or PLC inputs.

* The dielectric constant of material is process temperature dependant, the sensor should be calibrated at the nominal process material temperature for the most accurate level detection.



Specifications:

Parameter	STAINLESS STEEL (std.)	SS+TEFLON	Wire coming soon
Wetted material	STAINLESS STEEL	SS + TEFLON	STAINLESS STEEL
Probe length	300 (std.), Max. 2500mm		1000~6000mm
Process connection	NPT 1” (std.)		
Enclosure	Aluminium, TEFLON, SS, plastic		
Supply voltage	24VDC 150mA (std.)		
Relay contact rating	SPDT, 5A 250VAC/ 5A 24VDC (Resistive)		
NPN/ PNP contact rating	200mA Max 24VDC		
Sensitivity	Adjustable with Potentiometer		
Status indication	LED indicator		
Process temp.	–20 °C to +80 °C (std.), 150 °C (opt.)		
Ambient temp.	–20 °C to +60 °C		
Storage temp.	–40 °C to +80 °C		
Humidity	0–95 % RH (non-condensing)		

*The contacts are used for signal switching only, For load switching please use external power relays.

Ordering information:

Model Coding: LEVEX-CP-LS-[Probe]- [Length]- [Levels]-[Output]-[Connection]

Examples: LEVEX-CP-LS-R-500-1-RLY-NPT1

Probe type: R = Rod, IR = Insulated Rod, W = Wire

Length: length in mm

Levels: 1 = Single level, 2 = Dual level

Output: RLY = Relay output, PNP = PNP output, NPN = NPN output

Connection: Screw, Flang, Tri-clamp, custom

Warranty: 12 months from delivery against manufacturing defects.

Installation:

Below recommendation should be considered when installation.

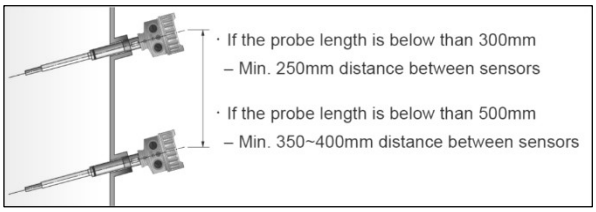
CP-LS Series is generally used for high or low alarm with the installation on the side or top of the tank and can also be applied to metallic or synthetic resin tank because the ground electrode is installed in the level switch and measurement is not affected by tank material.

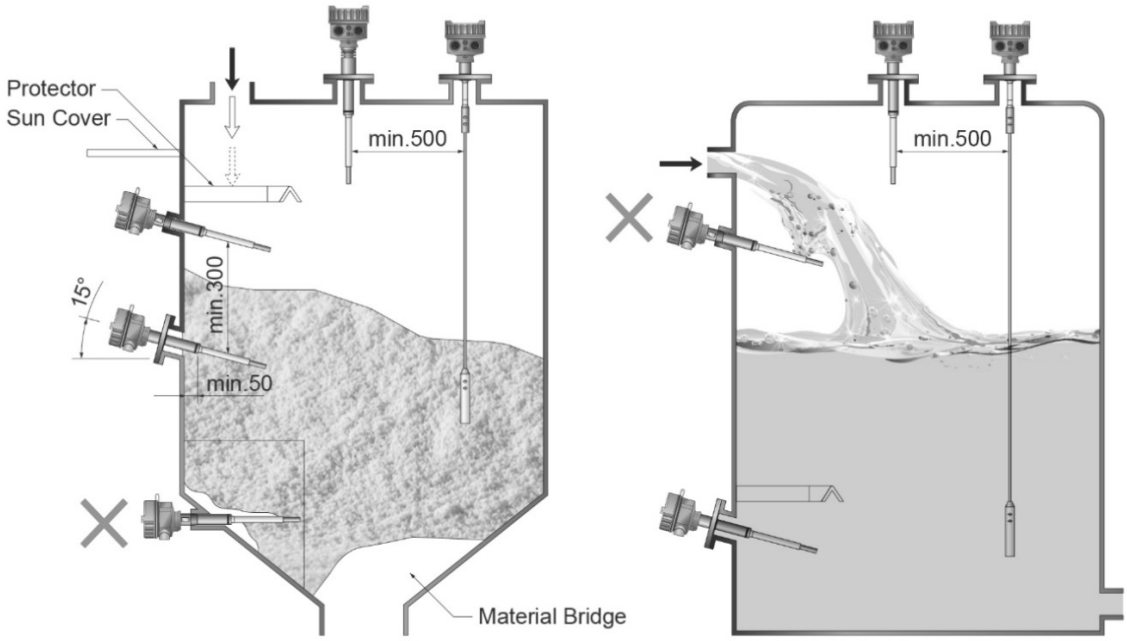
1. Top Mounting Installation:

This installation is not much affected by build-up of the medium on the probe but the sensitivity is lower than side mounting because it measures the level by the end of probe only, and it is not suitable to detect a level of the medium which has a low dielectric constant.

2. Side Mounting Installation:

Highly sensitive measurement is available because it measures the level by whole of probe but it should be installed with a slope, forwarding of sensor to the bottom in order to avoid a malfunction caused by build-up of the medium on the sensing probe.





Installation Notes

- CP-LS can be top-mounted or side-mounted. Side mounting is more sensitive (probe length engages the material), top mounting measures at probe tip only. See mounting recommendations: use slight tilt for side mount to avoid buildup; use stilling tube if turbulence present.
- For non-metallic tanks, use the built-in ground/reference electrode or an external ground electrode if required. Specify tank material when ordering.
- Avoid mounting near large metal objects or strong electromagnetic sources. Keep distance from agitators.
- For best repeatability, calibrate after installation and when process temperature steady at nominal temp.

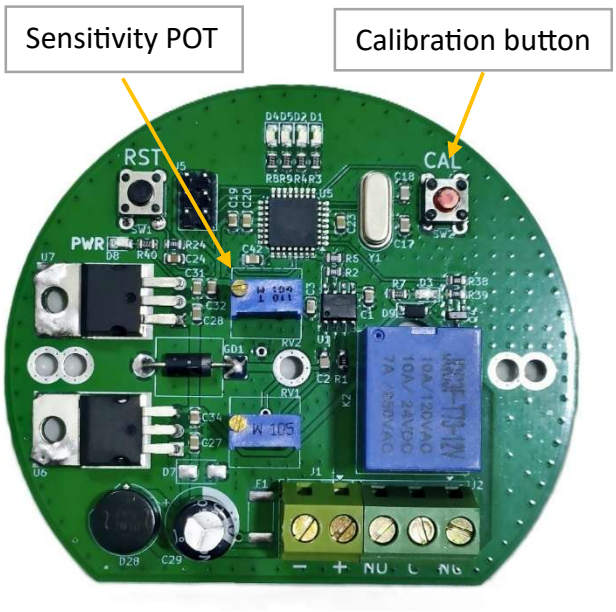
Wiring:

Wiring the DC (24V) according to specification of power supply.

When wring of DC power supply, +, - should be wired correctly.

Wiring should not be carried out when the power is On.

The standard is SPDT and the COM and N.O terminal can be used for High Alarm, and the COM and N.C terminal can be used for Low Alarm.



Calibration:

To calibrate the sensor, follow the following steps: -

1- Install the sensor as per installation guide.
2- Power up and allow electronics to stabilize (~30 s).
3- Empty the tank (or set known empty reference). Press and hold CAL button until LED flashes, then release — LED will flash while learning empty reference (~10 s), then stop.
4- Fill to known full level (or let process fill), adjust sensitivity pot for desired activation point.
5- Verify switching thresholds and hysteresis in real process conditions. Recalibrate if medium or temperature changes.

* The sensitivity potentiometer is used to set how much material should cover the prob in order to the sensor to activate the output:

- To increase the sensitivity, turn the sensitivity potentiometer anti-clockwise (*minimum material covering the prob will activate the output*).
- To decrease the sensitivity, turn the sensitivity potentiometer clockwise (*more material should cover the prob to activate the output*).

Legal Disclaimer & Notice

Legal Disclaimer

The information contained in this document is provided for general guidance and technical reference purposes only. All specifications, descriptions, drawings, and performance data are subject to change without prior notice.

LEVEX products are supplied **"as is"** and are intended for use by qualified personnel familiar with industrial instrumentation and control systems. It is the responsibility of the user, installer, or system integrator to verify the suitability of the product for the intended application, operating conditions, and safety requirements.

LEVEX shall not be liable for any direct, indirect, incidental, or consequential damages resulting from improper selection, installation, use, or maintenance of the product.

Specification Change Notice

LEVEX reserves the right to modify product specifications, materials, dimensions, electrical characteristics, firmware, and performance parameters **without prior notice**, in the interest of continuous product improvement.

Actual product characteristics may differ from those described in this document depending on configuration, application conditions, and optional features.

Application Responsibility

The user is solely responsible for:

- Selecting the appropriate sensor type and configuration
- Ensuring compatibility with the process medium, temperature, pressure, and environment
- Verifying compliance with local safety regulations and standards
- Performing proper installation, calibration, and periodic inspection

LEVEX does not assume responsibility for system design, redundancy requirements, or safety interlocks.

Warranty Reference

Warranty terms are governed exclusively by the commercial agreement or quotation issued at the time of sale.
This document does not constitute a warranty or guarantee of performance.