

ZNC-YW780

Intelligent Capacitive Point Level Switch



PRODUCT HIGHLIGHTS

- Reliable point-level detection of liquids, viscous media, powders and granules.
- High-frequency capacitive sensing, with good resistance to foam interference.
- Compact G1/2 threaded design for installations with limited space.
- PEEK sensing tip and 304 / 316L stainless-steel wetted-part options.
- 12-32 VDC supply, IP67 protection and configurable switching delays.
- PNP or NPN transistor output, selected before manufacture (PNP default).

Overview

The ZNC-YW780 is a high-frequency capacitive point level switch for monitoring high or low levels of water-based liquids and other suitable process materials. It detects changes in capacitance and dielectric properties at the sensing tip as the medium covers or uncovers the probe, and provides a switching signal for level monitoring and alarm functions.

The compact sensor is designed for industrial non-hazardous areas. Setup can be performed using a handheld configurator or supported PC configuration software.

Operating Principle

A high-frequency electric field evaluates the capacitance at the probe tip and the dielectric constant of the surrounding medium. The instrument distinguishes the covered and uncovered states and changes the switching output accordingly.

Quick Specifications

Specification	Value
Detection capability	Dielectric constant (DC) ≥ 1.5
Operating temperature	-40 to +115 °C (process medium)
Working pressure	-1 to +25 bar
Process connection	G1/2 A male thread
Output configuration	1 × PNP or 1 × NPN (factory-selected)
Power supply / protection	12-32 VDC / IP67

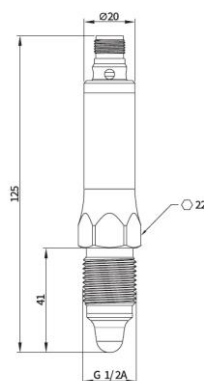
Detailed Technical Specifications

Specification	Value
Application media	Liquids, viscous materials, powders and granules
Detection threshold	Dielectric constant (DC) ≥ 1.5
Ambient temperature	-40 to +80 °C
Process temperature	-40 to +115 °C
Operating pressure	-1 to +25 bar

Switching output	1 PNP or 1 NPN output; configuration selected before shipment
Measurement hysteresis	±1 mm (as stated in source)
Repeatability	±1 mm (as stated in source)
Response time	0.2 s
Blocking delay	0.2-5 s; 10 selectable steps
Alarm delay	0-99 s, adjustable
Dielectric strength	500 VAC
Operating frequency	50-200 MHz
Supply voltage	12-32 VDC
Operating current	9 mA
Power consumption	0.28 W
Process connection	G1/2 thread (G1/2 A shown on drawing)
Wetted material	PEEK + stainless steel 316L, or PEEK + stainless steel 304
Process seal	FKM O-ring
Probe material / surface	PEEK / Ra < 0.8 µm
Electrical connection	4-pin M12 connector; 4-core flying-lead option
Ingress protection	IP67
Configuration	Handheld configurator; PC software
Output load current	Maximum 20 mA per output
Output voltage drop	< 2 V
Status indicators	Yellow LED: flashes 1 s during start-up; steady on at fault. Green LED: on when alarm condition is met; off otherwise.

Mechanical Dimensions

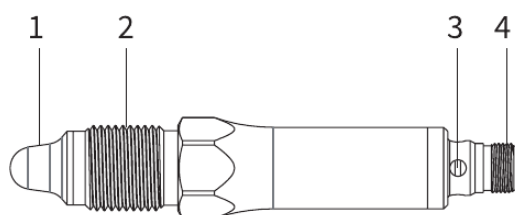
Standard design: dimensions in millimetres unless otherwise indicated. The technical drawing shows an overall length of 125 mm, a 41 mm process-end dimension, Ø20 body and 22 mm wrench flats.



Standard outline dimensions — process connection G1/2 A.

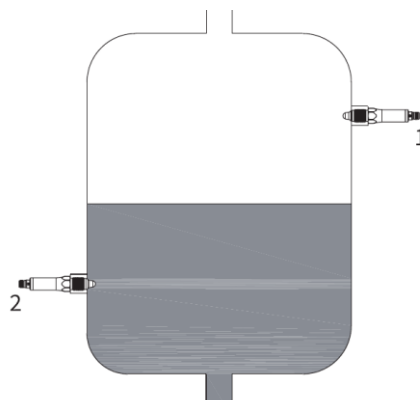
Installation Guide

Sensor parts and mounting points



1 Sensing tip 2 G1/2 A mounting thread 3 LED status indicator 4 M12 × 1 electrical connector

Typical level alarm positions



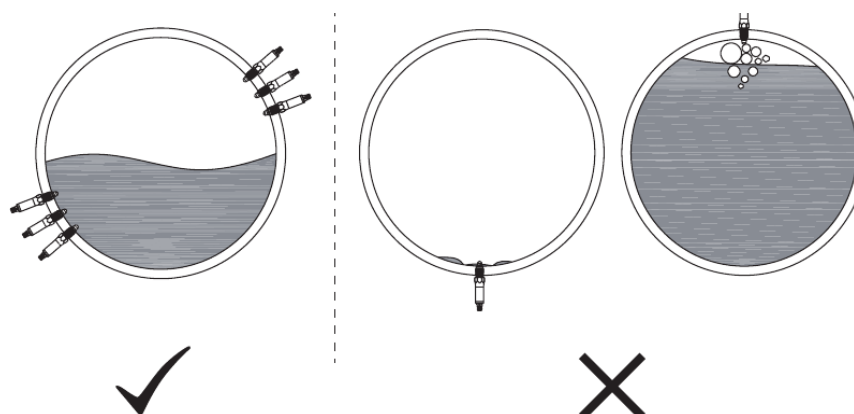
1 Overflow / high-level alarm (MAX) 2 Pump dry-run protection (MIN) 3 Low-level detection (MIN)

The switch may be mounted at an appropriate position on a tank, pipeline or vessel, including areas that are difficult to access with conventional instruments. Position the sensing tip at the required alarm level.

Installation Precautions

Install where the sensing tip is reliably covered or uncovered

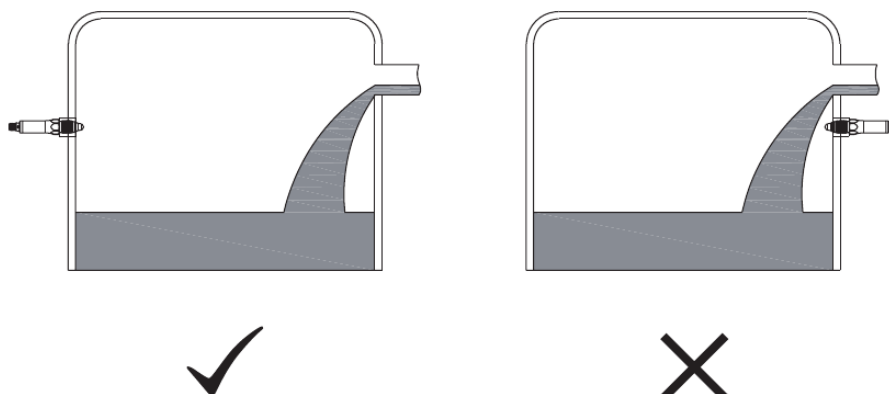
In horizontal pipes, vertical installation can affect detection when the sensing end is not completely immersed in liquid or is not fully covered by bubbles. Choose a suitable side position where the sensing condition is stable.



Preferred and unsuitable arrangements for horizontal piping (illustrative).

Avoid turbulent inlet areas

Installation close to an inlet can cause frequent fluctuations and unnecessary switching. Install the level switch at a stable measuring position, away from direct incoming material flow.



Left: preferred stable mounting position. Right: unsuitable mounting close to the feed inlet.

Sealing and tightening

Use a 22 mm open-ended wrench or an adjustable wrench with a minimum 22 mm opening. Apply PTFE sealing tape to the threaded connection and tighten the sensor. Maximum tightening torque for G1/2 A: 30 N·m.

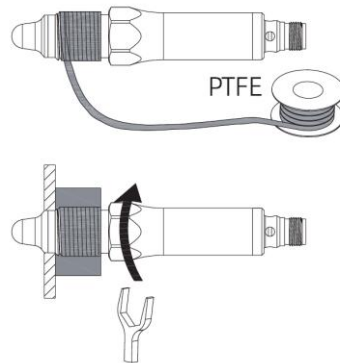


Illustration of sealing tape and wrench tightening.

Handling, Storage and Safety

Receipt inspection and storage

- Protect the product against moisture and heavy impacts during transport; do not throw or drop the packaging.
- Storage temperature: -20 to +75 °C; relative humidity not more than 80%; avoid corrosive gases.
- Open the packaging carefully and check the model, quantity, accessories and documentation. If items are missing or damaged, contact the supplier.
- Only properly trained and authorised personnel should install, commission, operate or service the instrument. Follow all relevant site safety requirements.
- Safe transport, appropriate storage, correct installation and proper maintenance are necessary for stable operation.

Safety notices used in the source manual

Level	Meaning
Notice	Important information that helps avoid incorrect operation.
Warning	Failure to take precautions may result in major equipment damage.
Severe warning	Failure to take precautions may cause significant damage, serious injury or death.

Electrical Connection

Disconnect the power supply before wiring and verify that the supply voltage matches the instrument specification. The 4-pin M12 connector uses the conductor colours shown below.

M12 pin / wire colour	Function shown in source drawing
Pin 1 — BN (Brown)	L+ / positive supply
Pin 2 — WH (White)	OUT1 / switching output (labelled PNP in source schematic)
Pin 3 — BU (Blue)	L- / supply negative
Pin 4 — BK (Black)	OUT2 / switching output (labelled NPN in source schematic)

OUTPUT CONFIGURATION The original specification table lists both PNP and NPN, but the original manual explicitly states they cannot be output simultaneously and that PNP is the factory default. The original wiring diagram shows both output labels. Confirm the selected PNP/NPN version and final pin allocation before connecting the output(s).

Switching Operation and Electrical Notes

Alarm logic

Specification	Value
High-level alarm	Alarm when material immerses/covers the sensing tip.
Low-level alarm	Alarm when material level drops below and uncovers the sensing tip.
Startup / fault indication	Yellow LED flashes for 1 s at startup; lights continuously on fault.
Alarm indication	Green LED lights when the alarm condition is reached.

External loads and wiring precautions

- Maximum load current: 20 mA per switching output.
- The original manual illustrates external pull-down and pull-up resistors; resistor value is shown as supply voltage divided by load current.
- When the device uses an AC supply system or is connected to external equipment above safety extra-low voltage, use cables meeting the stated insulation and relevant IEC requirements.
- Keep installation and operation within the rated voltage, pressure, temperature and medium compatibility limits.

WIRING CLARIFICATION In the source manual, the pull-up/pull-down resistor instructions refer to pin 3, while the pin table identifies pin 3 as L-. This inconsistency must be resolved before adopting the resistor examples for a wiring design.

Commissioning and Configuration

The basic system comprises the point level switch, a handheld configurator and a PC-based configuration interface. Depending on the selected configuration, switching thresholds, alarm delays and process data can be reviewed and adjusted using the supported setup tools.

Specification	Value
Level monitoring	High-level and low-level point detection
Output mode	Factory-configured PNP or NPN; standard factory default PNP
Switch response	0.2 s; configurable blocking and alarm delay
Application limitations	Non-hazardous industrial environments; medium dielectric constant ≥ 1.5