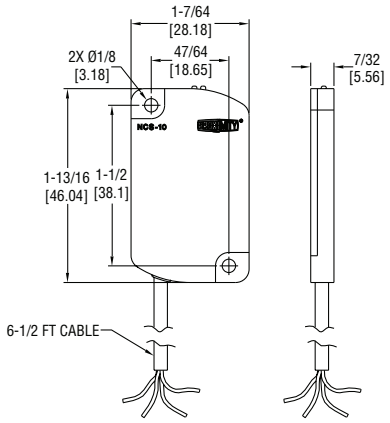
Series NCS-10 Capacitive Level Sensor

Specifications - Installation and Operating Instructions



Capacitive sensors have the unique ability to detect almost all materials, either in liquid or solid form. Capacitive sensors can detect metallic as well as non-metallic objects, however, their traditional use is for non-metallic materials such as:

- Plastic Industry: resins, regrinds or molded products.
- Chemical Industry: cleansers, fertilizers, liquid soaps, corrosives and petrochemicals.
- Wood Industry: saw dust, paper products, door and window frames.
- Ceramic & Glass Industry: raw material, clay or finished product, bottles.
- Packaging Industry: package inspection for level or contents, dry goods, fruits and vegetables, dairy products.

Materials are detected due to their dielectric constant. The bigger the size of an object, the higher the density of material, the better or easier it is to detect the object. Nominal sensing distance for a capacitive sensor is referenced to a grounded metal plate.

INSTALLATION

1. Mounting the sensor

Mount the sensor in the required position pointing at the target and make sure that the distance to the target is within the range of the sensor.

2. Supplying the sensor

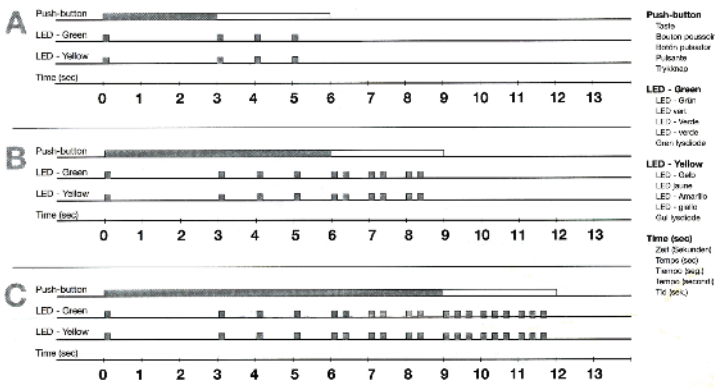
To supply the sensor, connect blue wire (3) to ground (0 VDC) and brown wire (1) to + (10-30 VDC)

3. Programming the sensor

Program the sensor as described in the Teach-in guide. The following functions are programmable: 1. Background adjustment and switch-point setup, 2. Object adjustment, 3. NO/NC selection and 4. Restore factory settings (1. and 2. are mandatory)

SPECIFICATIONS

Service: Solids, liquids, or slurries.
Temperature Limits: Operating temperature: -20 to 80°C (-4 to 176°F); Storage temperature: -40 to 185ºF (-40 to 85ºC).
Enclosure Rating: NEMA 4X (IP68).
Repeatability: 5%.
Power Requirements: 10 to 30 VDC (ripple incl.).
Switch Type: NPN or PNP.
Electrical Rating: 200 mA (continuous).
Rated Operating Distance (S_n): 0.39″ (10 mm).
Sensing Range: 0.039 – 0.39″ (1 – 10 mm) (factory set at 10 mm).
Sensitivity Effective Operating Distance (S_r): Adjustable (teach-in) $0.9 \times S_n \leq S_r \leq 1.1 \times S_n$.
Usable Operating Distance (S_u): $0.8 \times S_r \leq S_u \leq 1.2 \times S_r$.
Hysteresis: Depending on Teach-in.
Ripple: ≤10%.
No-load Supply Current: ≤12 mA.
Voltage Drop: ≤2.5 VDC @ max. load.
Protection: Short-circuit, reverse polarity, transients.
Frequency of Operating Cycles: 10 Hz.
Indication: For output ON: LED, Yellow; For safe/unsafe: LED, Green.
Connection: Cable: Black, 6.5 ft (2 m), 4 x 0.14 mm², oil proof, PVC.
Weight: 50 g.
Approvals: CE.



Teach-in Guide

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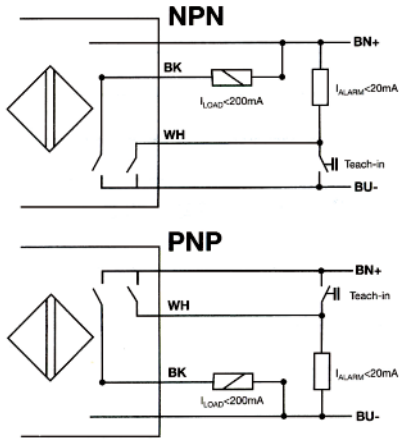
A Adjustment – Background, No target present
Press push-button >3 seconds until LED's are flashing one time per second. The surroundings will be calibrated when the push-button is released during the following 3 seconds. The sensor will calculate a switch-point by itself. No further calibration is needed.

B Adjustment – Target, Target present
The self-calculated switch-point can be changed by means of the Teach-in function for "Target present". Press push-button >6 seconds until LED's are flashing two times per second. The object will be calibrated when the push-button is released during the following 3 seconds.

C Adjustment – NO/NC
Press push-button >9 seconds until LED's are flashing three times per second. The status of NO-NC will toggle when the push-button is released during the following 3 seconds.

Restore factory settings
Releasing the push-button after 12 seconds returns the sensor to factory settings.

Wiring Diagram



By means of the Teach-in wire, the functions described in the Teach-in Guide can be set up.
It is possible to Teach-in more sensors at the same time by connecting the WH-wires in parallel to the common "-" supply.
Important NPN: If alarm output (WH-wire) is unused, it has to be terminated to + supply.
Important PNP: If alarm output (WH-wire) is unused, it has to be terminated to ÷ supply.

MAINTENANCE
Upon final installation of the Series NCS-10 Capacitive Level Sensor, no routine maintenance is required. A periodic check of the system calibration is recommended. The Series NCS-10 is not field serviceable and should be returned if repair is needed (field repair should not be attempted and may void warranty). Be sure to include a brief description of the problem plus any relevant application notes. Contact customer service to receive a return good authorization number before shipping.

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