

# Proximity Sensors Capacitive Thermoplastic Polyester Housing Types CD46, DC, Teach-in

**TRIPLESIELD™**



- Thin Profile Capacitive Level Sensor
- Featuring **TRIPLESIELD™** Sensor Protection
- Sensing distance: 1 - 10 mm
- Teach-in of sensing distance via push-button or wire-input
- Selectable make or break switching by means of Teach-in function
- Protection: Short-circuit, transients and reverse polarity
- Alarm output
- 5 years of warranty
- Alarm output when operating current > 250 mA

## Product Description

Capacitive proximity level switch with a sensing distance of 10 mm non-flush mounted. The switching points can be altered by means of the Teach-in function. 3-wire DC output with

selectable make (NO) or break (NC) switching and NPN Alarm. Grey/black polyester housing with 2 m PVC cable. Designed for front, pipe or plane mounting.

## Ordering Key

**CD 46 CNC 10 NP**

Capacitive proximity switch  
 Housing height (mm)  
 Housing material  
 Housing length  
 Detection principle  
 Rated operating dist. (mm)  
 Output type  
 Output configuration

## Type Selection

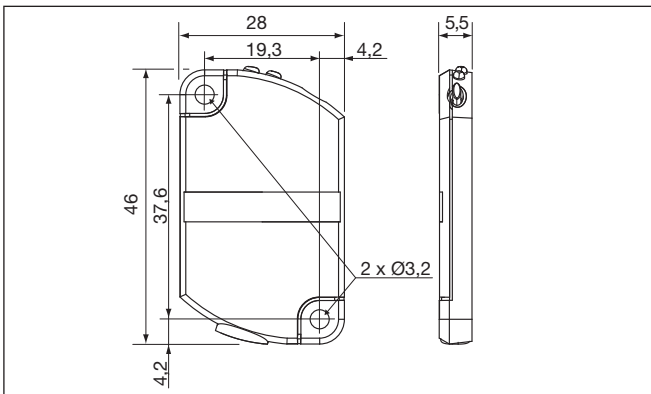
| Housing dimensions | Rated operating distance (S <sub>n</sub> ) | Ordering no. NPN, Cable | Ordering no. PNP, Cable |
|--------------------|--|-------------------------|-------------------------|
| 28x46x5,5 mm       | 10 mm                                      | CD46CNC10NP             | CD46CNC10PP             |

## Specifications

|  |   |  |   |
|--|---|--|---|
| <b>Sensing range (S<sub>d</sub>)</b>             | 1 - 10 mm<br>factory set at 10 mm             | <b>Frequency of operating cycles (f)</b> | 10 Hz   |
| <b>Sensitivity</b>                               | Adjustable (Teach-in)                         | <b>Indication</b>                        | LED, yellow<br>LED, green                                       |
| <b>Effective operating dist. (S<sub>r</sub>)</b> | $0.9 \times S_n \leq S_r \leq 1.1 \times S_n$ | For output ON                            |   |
| <b>Usable operating dist. (S<sub>u</sub>)</b>    | $0.8 \times S_r \leq S_u \leq 1.2 \times S_r$ | For safe/unsafe                          |   |
| <b>Repeat accuracy (R)</b>                       | ≤ 5%  | <b>Environment</b>                       | IP 68<br>Operating temperature<br>Storage temperature           |
| <b>Hysteresis (H)</b>                            | Depending on Teach-in                         |  | -20° to +80°C (-4° to +176°F)<br>-40° to +85°C (-40° to +185°F) |
| <b>Rated operational volt. (U<sub>B</sub>)</b>   | 10 to 30 VDC (ripple incl.)                   | <b>Housing material</b>                  | Grey/black PBT<br>TPE-U   |
| <b>Ripple</b>                                    | ≤ 10%   | Body                                     |   |
| <b>Rated operational current (I<sub>o</sub>)</b> | ≤ 200 mA (continuous)                         | Button and Lightguide                    |   |
| <b>No-load supply current (I<sub>o</sub>)</b>    | ≤ 12 mA                                       | <b>Connection</b>                        |   |
| <b>Voltage drop (U<sub>d</sub>)</b>              | ≤ 2.5 VDC @ max. load                         | Cable                                    | Black, 2 m, 4 x 0.14 mm <sup>2</sup><br>Oil proof, PVC          |
| <b>Protection</b>                                | Short-circuit, reverse polarity, transients   | <b>Weight</b>                            | 50 g  |
| <b>TRIPLESIELD™ protection-EMC</b>               |   | <b>Approvals</b>                         | UL, CSA   |
| IEC 1000-4-2/EN 61000-4-2                        | 30 kV   | <b>CE-marking</b>                        | Yes   |
| IEC 1000-4-3/EN 61000-4-3                        | > 10 V/m                                      |  |   |
| IEC 1000-4-4/EN 61000-4-4                        | 3 kV  |  |   |
| IEC 1000-4-6/EN 61000-4-6                        | > 10 V <sub>rms</sub> *                       |  |   |

\* Not observed around the oscillator frequency: 0.3 - 1.6 MHz

## Dimensions



## Adjustment

The environments in which capacitive sensors are installed can often be unstable regarding temperature, humidity, object distance and industrial (noise) interference. Because of this, Carlo Gavazzi offers as standard features in all

TRIPLESHIELD™ capacitive sensors a user-friendly sensitivity adjustment instead of having a fixed sensing range, extended sensing range to accommodate mechanically demanding areas, temperature stability to ensure minimum

need for adjusting sensitivity if temperature varies and high immunity to electromagnetic interference (EMI).

## Installation Hints

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:

- **Plastics Industry**

Resins, regrinds or moulded products.

- **Chemical Industry**

Cleansers, fertilisers, liquid soaps, corrosives and petrochemicals.

- **Wood Industry**

Saw dust, paper products, door and window frames.

- **Ceramic & Glass Industry**

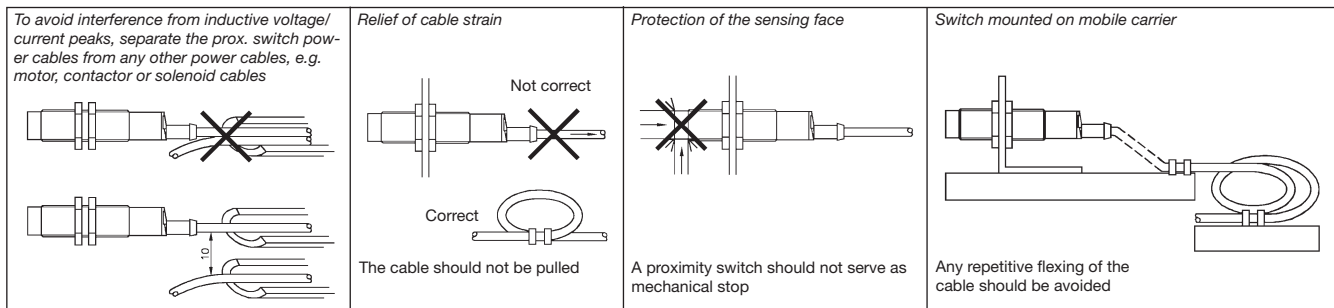
Raw material, clay or finished products, bottles.

- **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 capaci-

tive sensor is referenced to a grounded metal plate (ST37). For additional information regarding dielectric ratings of materials please refer to Technical Information.



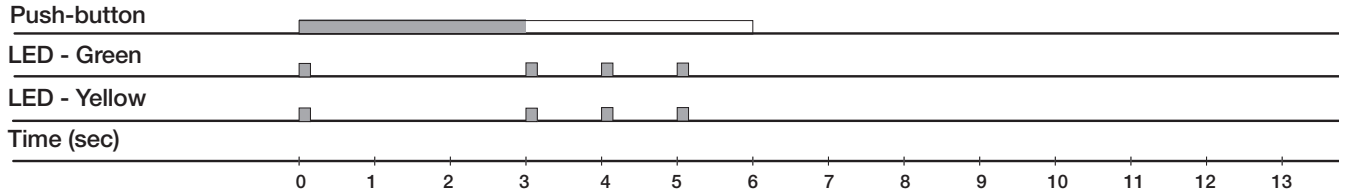
## Delivery Contents

- Capacitive switch
- Packaging: Cardboard box
- Installation & Adjustment Guide

## Teach-in Guide

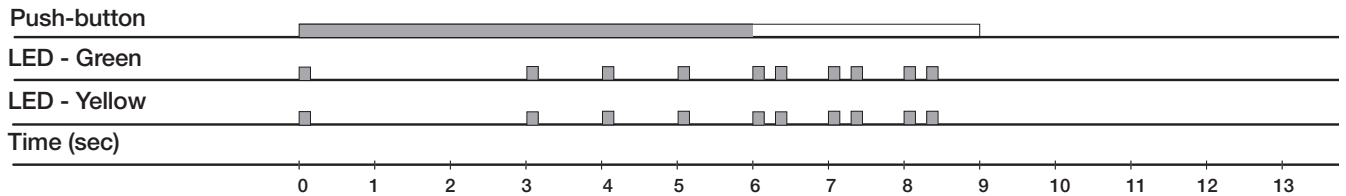
### Adjustment - Background No target present

Press push-button >3 seconds until LED's are flashing one time per second. The background will be calibrated when the push-button is released during the following 3 seconds



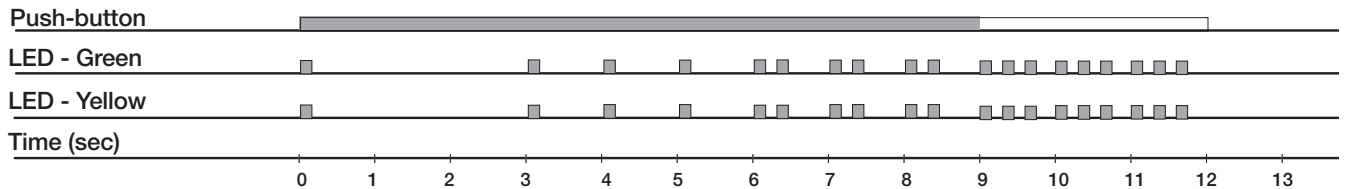
### Adjustment - Object Target present

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



### Adjustment - NO - NC

Press push-button >9 sec. 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



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

## Wiring Diagrams

By means of the Teach-in wire, the functions described in the Teach-in Guide can be setup.

It is possible to Teach-in more sensors at the same time by connecting the WH-wires in parallel to the common "-" supply.

(#): Plug connections

**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