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

TRIPLESHIELD™

CARLO GAVAZZI

- Thin Profile Capacitive Level Sensor
- Featuring *TRIPLESHIELD*™ 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 hight (mm)
Housing material
Housing length
Detection principle
Rated operating dist. (mm)
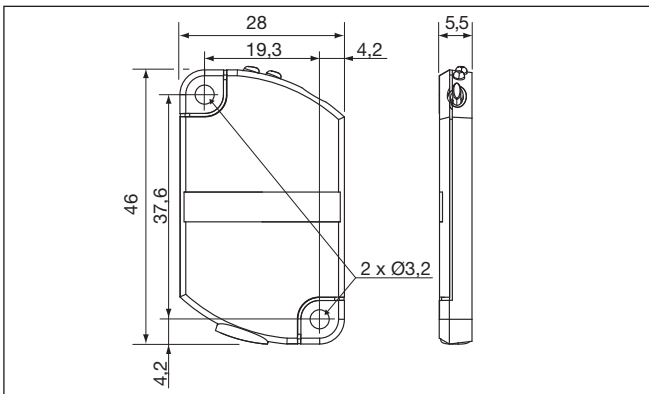Output type
Output configuration

Type Selection

Housing dimensions	Rated operating distance (S_n)	Ordering no. NPN, Cable	Ordering no. PNP, Cable
28x46x5,5 mm	10 mm	**CD46CNC10NP**	**CD46CNC10PP**

Specifications

Sensing range (S_d)	1 - 10 mm factory set at 10 mm	Frequency of operating cycles (f)	10 Hz
Sensitivity Effective operating dist. (S_r)	Adjustable (Teach-in) $0.9 \times S_n \leq S_r \leq 1.1 \times S_n$	Indication For output ON For safe/unsafe	LED, yellow LED, green
Usable operating dist. (S_u)	$0.8 \times S_r \leq S_u \leq 1.2 \times S_r$	Environment Degree of protection Operating temperature Storage temperature	IP 68 -20° to +80°C (-4° to +176°F) -40° to +85°C (-40° to +185°F)
Repeat accuracy (R)	$\leq 5\%$		
Hysteresis (H)	Depending on Teach-in		
Rated operational volt. (U_B)	10 to 30 VDC (ripple incl.)	Housing material Body Button and Lightguide	Grey/black PBT TPE-U
Ripple	$\leq 10\%$		
Rated operational current (I_e)	≤ 200 mA (continuous)	Connection Cable	Black, 2 m, 4 x 0.14 mm² Oil proof, PVC
No-load supply current (I_o)	≤ 12 mA		
Voltage drop (U_d)	≤ 2.5 VDC @ max. load		
Protection	Short-circuit, reverse polarity, transients	Weight	50 g
		Approvals	UL, CSA
TRIPLESHIELD™ protection-EMC IEC 1000-4-2/EN 61000-4-2 IEC 1000-4-3/EN 61000-4-3 IEC 1000-4-4/EN 61000-4-4 IEC 1000-4-6/EN 61000-4-6	30 kV > 10 V/m 3 kV > 10 V_{rms}*	CE-marking	Yes

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

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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**
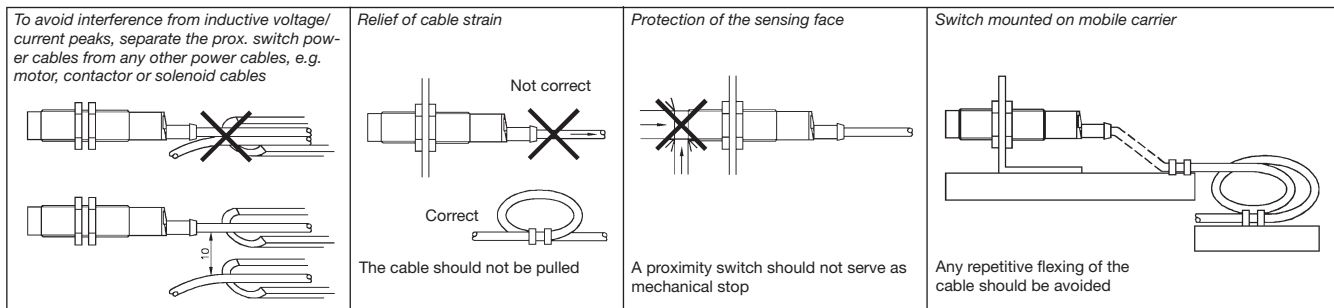 Cleansers, fertilisers, liquid soaps, corrosives and petrochemicals.

- **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.


To avoid interference from inductive voltage/current peaks, separate the prox. switch power cables from any other power cables, e.g. motor, contactor or solenoid cables

Relief of cable strain

Not correct

Correct

The cable should not be pulled

Protection of the sensing face

A proximity switch should not serve as mechanical stop

Switch mounted on mobile carrier

Any repetitive flexing of the cable should be avoided

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
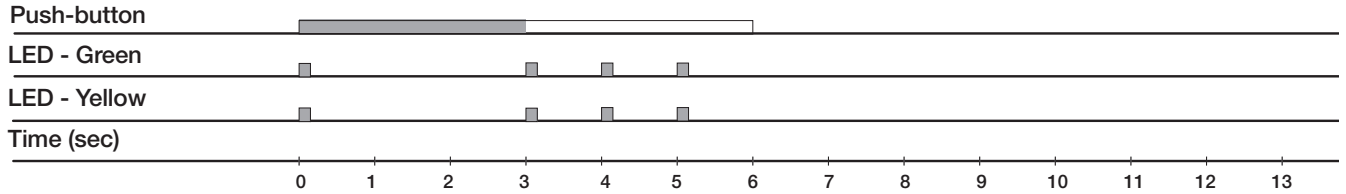

Adjustment - Object
Target present

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
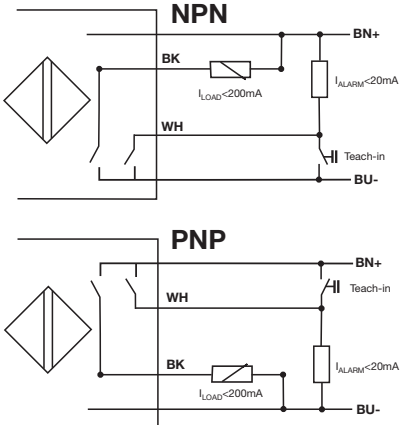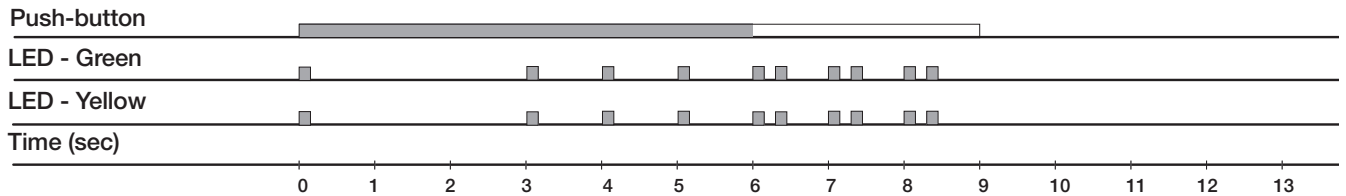

Adjustment - NO - NC

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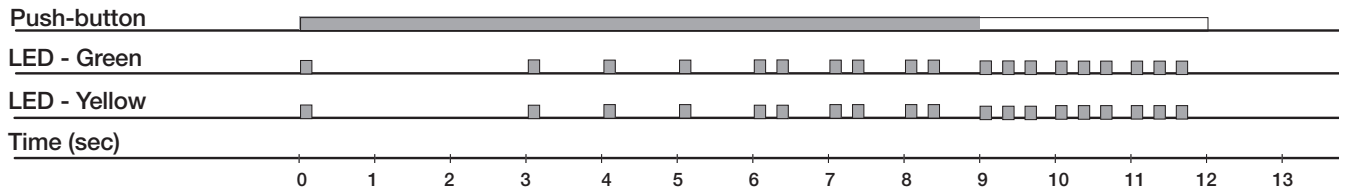
Releasing the push-button after 12 sec. returns the sensor to factory settings.

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