

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

TRIPLESIELD™

CARLO GAVAZZI



- 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 _n)	Ordering no. NPN, Cable	Ordering no. PNP, Cable
28x46x5,5 mm	10 mm	CD46CNC10NP	CD46CNC10PP

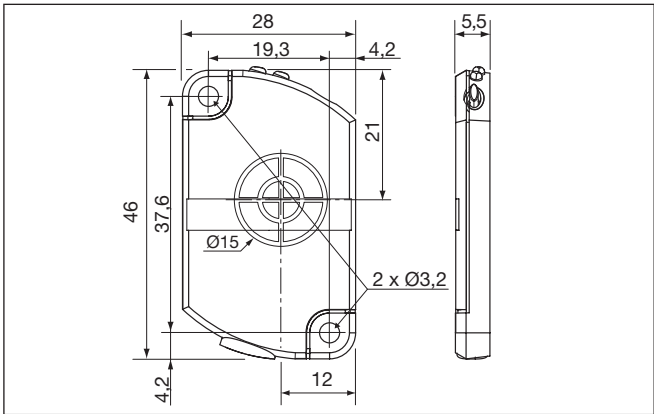
Specifications

Sensing range (S_d)	1 - 10 mm factory set at 10 mm	Frequency of operating cycles (f)	10 Hz
Sensitivity	Adjustable (Teach-in)	Indication	LED, yellow LED, green
Effective operating dist. (S_r)	$0.9 \times S_n \leq S_r \leq 1.1 \times S_n$	For output ON For safe/unsafe	
Usable operating dist. (S_u)	$0.8 \times S_r \leq S_u \leq 1.2 \times S_r$	Environment	IP 68 Operating temperature Storage temperature
Repeat accuracy (R)	≤ 5%	Degree of protection	-20° to +80°C (-4° to +176°F) -40° to +85°C (-40° to +185°F)
Hysteresis (H)	Depending on Teach-in	Housing material	Grey/black PBT TPE-U
Rated operational volt. (U_B)	10 to 30 VDC (ripple incl.)	Body Button and Lightguide	
Ripple	≤ 10%	Connection	Cable
Rated operational current (I_B)	≤ 200 mA (continuous)		Black, 2 m, 4 x 0.14 mm ² , Ø = 3.2 mm. Oil proof, PVC
No-load supply current (I₀)	≤ 12 mA	Weight	50 g
Voltage drop (U_d)	≤ 2.5 VDC @ max. load	Approvals	UL, CSA
Protection	Short-circuit, reverse polarity, transients	CE-marking	Yes
TRIPLESIELD™ protection-EMC			
IEC 1000-4-2/EN 61000-4-2	30 kV		
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 _{rms} *		

* 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 mould-

- ed 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 eas-

ier it is to detect the object. Nominal sensing distance for a capacitive 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
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Delivery Contents

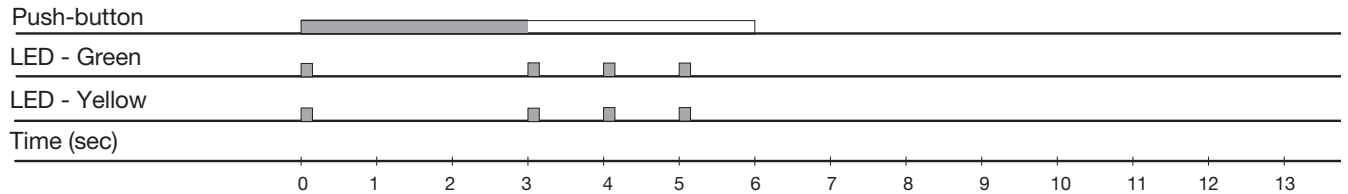
- Capacitive switch
- Packaging: Cardboard box
- Installation & Adjustment Guide

Teach-in Guide

Adjustment - Background

No target present

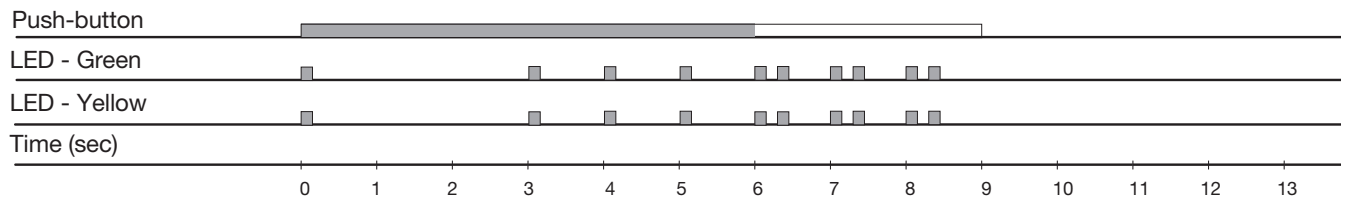
Press push-button >3 seconds until LED's are flashing one time per second. The background will be calibrated when the push-button is released during the following 3 seconds



Adjustment - Object

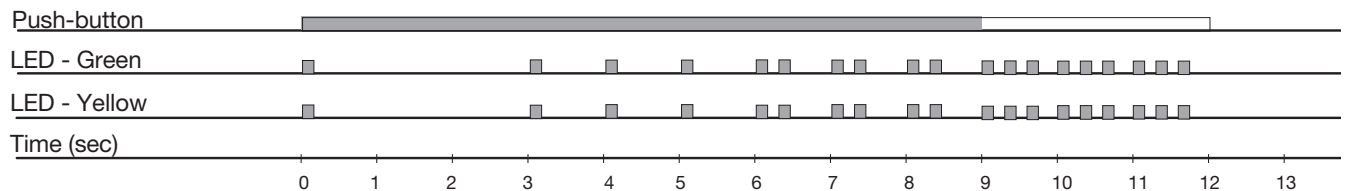
Target present

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



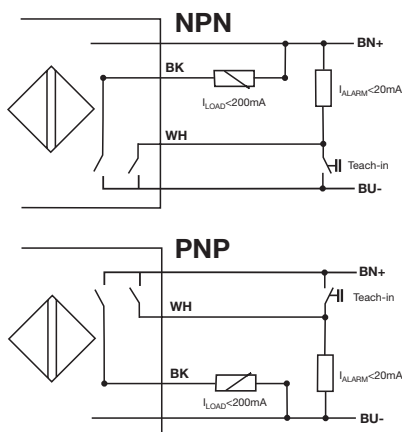
Adjustment - NO - NC

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