

# Proximity Sensors Capacitive Thermoplastic Polyester Housing Types CA, M12, DC, Teach-in

TRIPLESIELD™

CARLO GAVAZZI



- Featuring **TRIPLESIELD™** Sensor Protection
- Sensing distance: 0.5 - 8 mm
- Teach-in of sensing distance via push-button or COM-input
- Automatic detection of NPN or PNP load
- Selectable make or break switching by means of Teach-in function
- Protection: Short-circuit, transients and reverse polarity
- Humidity compensation
- Alarm output
- 5 years of warranty
- On request: Delay on output. New line autotune to compensate for heavy dirt build-up

## Product Description

Capacitive proximity switches with a sensing distance of either 6 mm flush mounted in metal or 8 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 polyester housing with 2 m PVC cable or M12 plug.

## Ordering Key

**CA12CLC08BPM1**

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

## Type Selection

Housing diameter	Rated operating distance (S <sub>n</sub> )	Ordering no. Cable	Ordering no. Plug
M12	8 mm	CA12CLC08BP	CA12CLC08BPM1

## Specifications

<b>Sensing range (S<sub>a</sub>)</b>	0.5 - 8 mm factory set at 8 mm	<b>Indication</b>	For output ON For safe/unsafe	LED, yellow LED, green
<b>Sensitivity</b>	Adjustable (Teach-in)	<b>Environment</b>	Degree of protection Operating temperature Max. temperature on sensing face Storage temperature	IP 68 -20 to +85°C (-4 to +185°F) 120°C (248°F) -40 to +85°C (-40 to +176°F)
<b>Effective operating dist. (S<sub>r</sub>)</b>	0.9 x S <sub>n</sub> ≤ S <sub>r</sub> ≤ 1.1 x S <sub>n</sub>	<b>Housing material</b>	Body Cable end Nuts	Grey, thermoplastic polyester Polyester, softened Black, PA12 Grilamid
<b>Usable operating dist. (S<sub>u</sub>)</b>	0.8 x S <sub>r</sub> ≤ S <sub>u</sub> ≤ 1.2 x S <sub>r</sub>	<b>Connection</b>	Cable  Plug (M1) Cable for plug (M1)	Grey, 2 m, 4 x 0.25 mm <sup>2</sup> Oil proof, PVC M12 x 1 CON.1A-series
<b>Repeat accuracy (R)</b>	≤ 5%	<b>Weight</b>	Cable version Plug version	110 g 30 g
<b>Hysteresis (H)</b>	Depending on Teach-in	<b>Approvals</b>	UL, CSA	
<b>Rated operational volt. (U<sub>B</sub>)</b>	10 to 40 VDC (ripple incl.)	<b>CE-marking</b>	Yes	
<b>Ripple</b>	≤ 10%			
<b>Rated operational current (I<sub>a</sub>)</b>	≤ 250 mA (continuous)			
<b>No-load supply current (I<sub>o</sub>)</b>	≤ 12 mA			
<b>Voltage drop (U<sub>d</sub>)</b>	≤ 2.5 VDC @ max. load			
<b>Protection</b>	Short-circuit, reverse polarity, transients			
<b>TRIPLESIELD™ protection</b>	Electrostatic discharge Burst Airborne HF Wire-conducted noise			
<b>Frequency of operating cycles (f)</b>	15 Hz			



## Adjustment Guide

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

**TRIPLESIELD™** 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).

**Note:** Sensors are factory set (default) to nominal sensing range  $S_n$ .

## 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 pe-  
trochemicals.
- **Wood Industry**  
Saw dust, paper products,  
door and window frames.
- **Ceramic & Glass  
Industry**  
Raw material, clay or  
finished products, bottles.

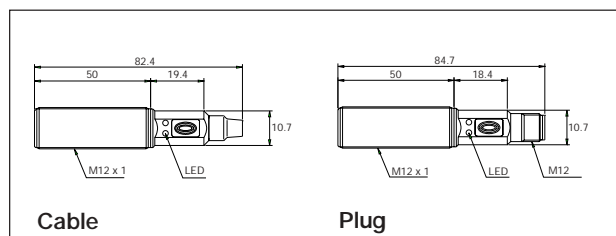
- **Packaging Industry**  
Package inspection for level  
or contents, dry goods,  
fruits and vegetables, dairy  
products.

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.

<p><i>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</i></p>	<p><i>Relief of cable strain</i></p> <p>Not correct Correct The cable should not be pulled</p>	<p><i>Protection of the sensing face</i></p> <p>A proximity switch should not serve as mechanical stop</p>	<p><i>Switch mounted on mobile carrier</i></p> <p>Any repetitive flexing of the cable should be avoided</p>
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## Dimensions



## Accessories

- Plugs CON.1A.. series.

For further information please refer to "Accessories."

## Delivery Contents

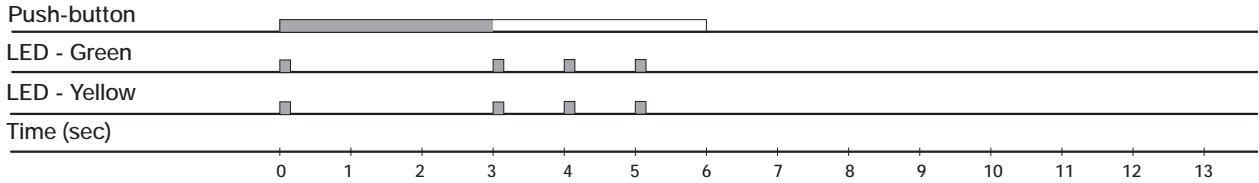
- Capacitive switch: CA..CLC..BP.
- **Packaging:** Cardboard box
- Installation & Adjustment Guide (MAN CAP ENG/GER)

## Teach-in Guide

### Adjustment - Background

#### No target present

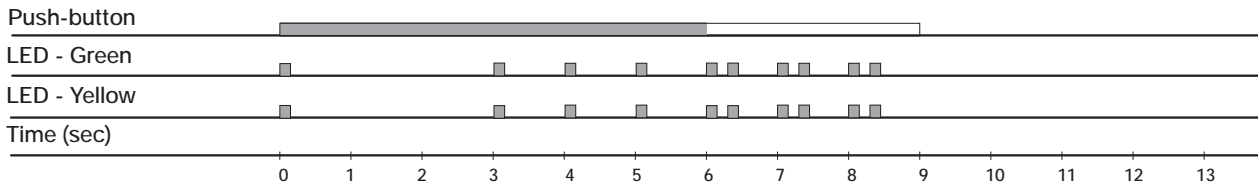
Press push-button >3 seconds until LED's are flashing one time per second. The background will be calibrated when the push-button is released during the following 3 seconds



### Adjustment - Object

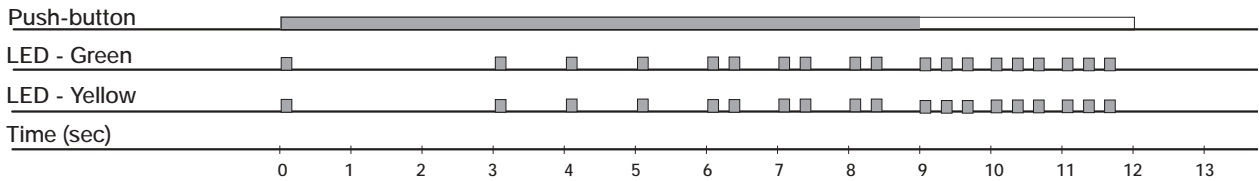
#### Target present

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 Diagram

