

# Proximity Sensors Capacitive Thermoplastic Polyester Housing Types CA, M18, M30, DC, Teach-in

**TRIPLESHIELD™**

**CARLO GAVAZZI**



- Featuring **TRIPLESHIELD™** Sensor Protection
- Sensing distance: 0.5 - 12 mm (M18) and 1.0 - 30 mm (M30)
- 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 8 mm flush mounted in metal or 12 mm non-flush mounted for the M18 version, and either 16 mm flush mounted in metal or 30 mm non-flush mounted for the M30 version. 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

**CA18CLC12BPM1**

Capacitive proximity switch	CA
Housing diameter (mm)	18
Housing material	CLC
Housing length	12
Detection principle	B
Rated operating dist. (mm)	12
Output type	P
Output configuration	M
Connection type	1

## Type Selection

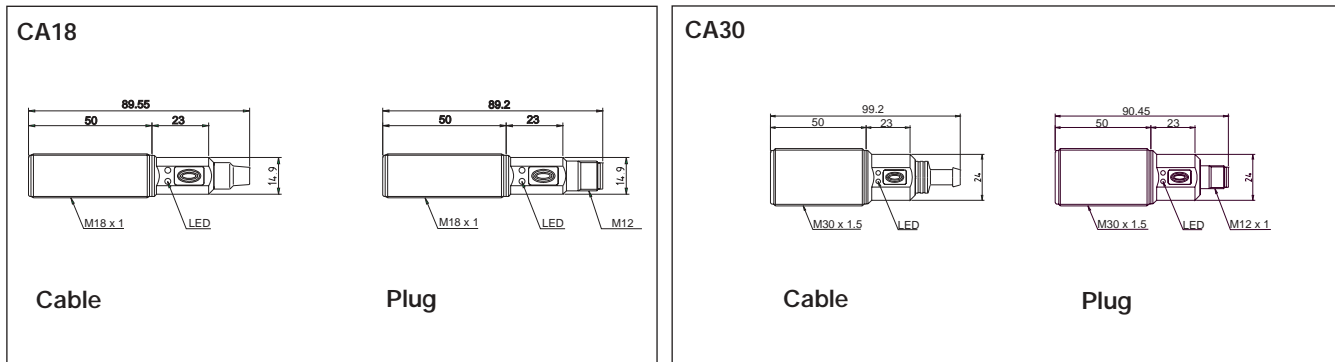
Housing diameter	Rated operating distance (S <sub>n</sub> )	Ordering no. Cable	Ordering no. Plug
M18	12 mm	CA18CLC12BP	CA18CLC12BPM1
M30	30 mm	CA30CLC30BP	CA30CLC30BPM1

## Specifications

<b>Sensing range (S<sub>d</sub>)</b> CA18CLC12	0.5 - 12 mm factory set at 8 mm	<b>Frequency of operating cycles (f)</b>	15 Hz
CA30CLC30	1.0 - 30 mm factory set at 15 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 Storage temperature	IP 68 -20° to +85°C (-4° to +185°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	Grey, 2 m, 4 x 0.25 mm <sup>2</sup> Oil proof, PVC
<b>Repeat accuracy (R)</b>	≤ 5%	Plug (M1) Cable for plug (M1)	M12 x 1 CON.1A-series
<b>Hysteresis (H)</b>	Depending on Teach-in	<b>Weight</b> Cable version - M18 / M30 Plug version - M18 / M30	110 g/160 g 30 g/70 g
<b>Rated operational volt. (U<sub>B</sub>)</b>	10 to 40 VDC (ripple incl.)	<b>Approvals</b>	UL, CSA
<b>Ripple</b>	≤ 10%	<b>CE-marking</b>	Yes
<b>Rated operational current (I<sub>e</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>TRIPLESHIELD™ protection-EMC</b> 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 > 15 V/m 3 kV > 10 V <sub>rms</sub>		



## Dimensions



## 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

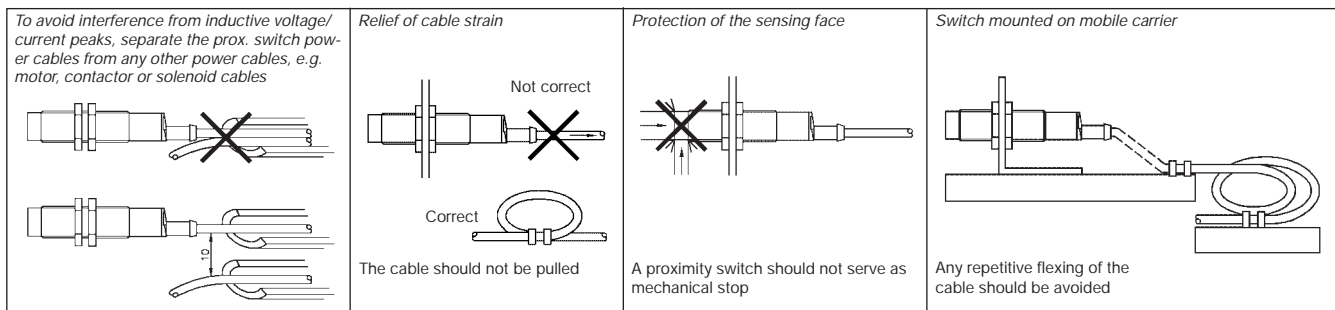
Capacitive sensors have the unique ability to detect almost all materials, either in liquid or solid form. Capacitive sensors can detect metallic as well as non-metallic objects, however, their traditional use is for non-metallic materials such as:

- **Plastics Industry**  
Resins, regrinds or 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: CA..CLC..BP.
- **Packaging:** Cardboard box
- Installation & Adjustment Guide (MAN CAP ENG/GER)

## Accessories

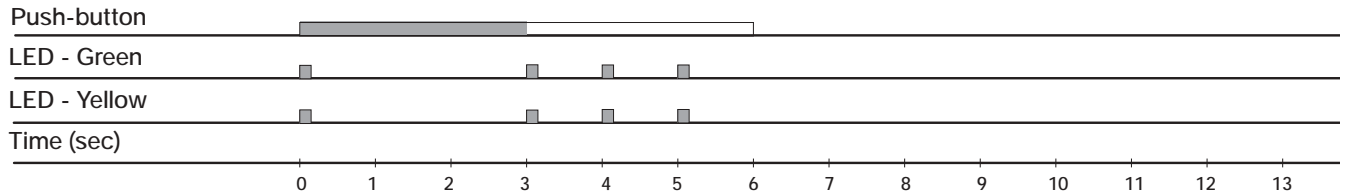
- Plugs CON.1A.. series.

For further information please refer to "Accessories."

## Teach-in Guide

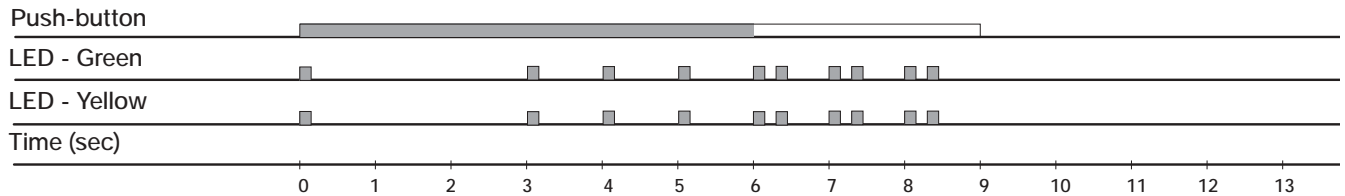
### Adjustment - Background No target present

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



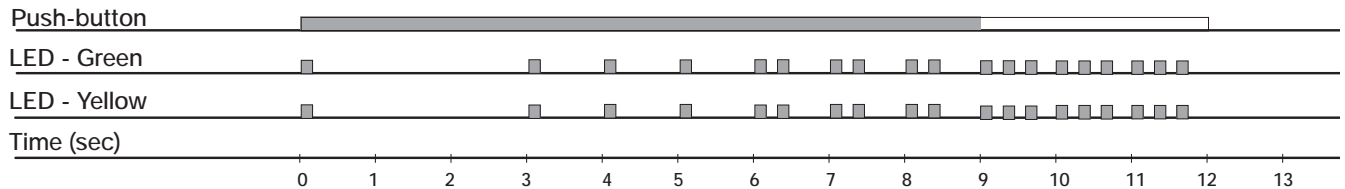
### Adjustment - Object Target present

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



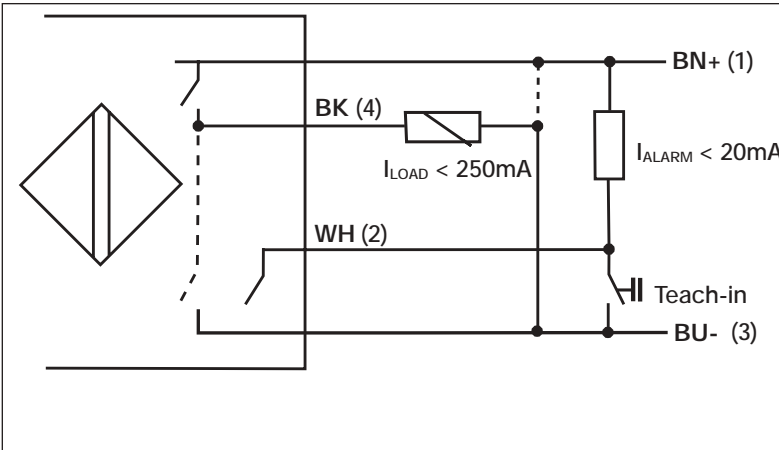
### Adjustment - NO - NC

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



The PNP- or NPN-load will automatically be detected.

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.

(#): Plug connections

**Important:** If alarm output (WH-wire) is unused, it has to be terminated to +supply