# Proximity Sensors Capacitive Thermoplastic Polyester Housing Type EC, M30, AC

TRIPLESHIELD™

CARLO GAVAZZI



- Featuring ***TRIPLESHIELD***™ Sensor Protection
- Rated operational voltage: 20-250 VAC
- Adjustable sensing distance 2-16 mm or 4-25 mm
- Output: SCR
- Make and break switching function
- LED indication
- High noise immunity
- Flush and non-flush types
- Plug and Cable versions available
- DC versions in the same housing

## Product Description

Capacitive proximity switches with either sensing distance 16 mm flush mounted or 25 mm sensing distance non-flush mounted. 2-wire AC output with a switch for choosing NO and NC switching. Grey M30 polyester housing with 2 m PVC cable or plug. Ideal for use in level and plastic machinery applications. Both types are available in metal housings.

## Ordering Key

**EC 3025 TBA P L-6**

- **Capacitive proximity switch**
- **Housing diameter (mm)**
- **Rated operating dist. (mm)**
- **Output type**
- **Housing material**
- **Housing type**
- **Connection type**

## Type Selection

| Housing diameter | Rated operating dist. ($S_n$) [1] | Mounting | Ordering no. SCR, cable Make & break switching | Ordering no. SCR, plug Make & break switching |
|---|---|---|---|---|
| M30 | 16 mm | Flush (built-in) | **EC 3016 TBAPL** | **EC 3016 TBAPL-6** |
| M30 | 25 mm | Non-flush | **EC 3025 TBAPL** | **EC 3025 TBAPL-6** |

[1] Object: Grounded steel plate

## Specifications

| | |
|---|---|
| **Rated operating dist.** ($S_n$) | |
| **3016:** | 2 to 16 mm<br>factory set at 16 mm |
| **3025:** | 4 to 25 mm<br>factory set at 25 mm |
| **Sensitivity** | Adj. multiturn pot.meter |
| **Effective operating dist.** ($S_r$) | $0.9 \times S_n \leq S_r \leq 1.1 \times S$ |
| **Usable operating dist.** ($S_u$) | $0.8 \times S_r \leq S_n > 1.2 \times S_r$ |
| **Repeat accuracy** (R) | ≤ 5% |
| **Hysteresis** (H) | 4 to 20% of sensing distance |
| **Rated operational volt.** ($U_B$) | 20 to 250 VAC<br>(ripple included) |
| **Ripple** | ≤ 10% |
| **Rated operational current** ($I_e$) | |
| Continuous | ≤ 500 mA |
| Short-time | < 2.5 A (max. 20 ms) |
| **Min. load current** | 10 mA |
| **OFF-state current** ($I_r$) | < 2.5 mA (@ 240 VAC)<br>1.7 mA (@ 120 VAC) |
| **Voltage drop** ($U_d$) | ≤ 10 VAC (at loads ≥ 20 mA) |
| **Protection** | Transients |

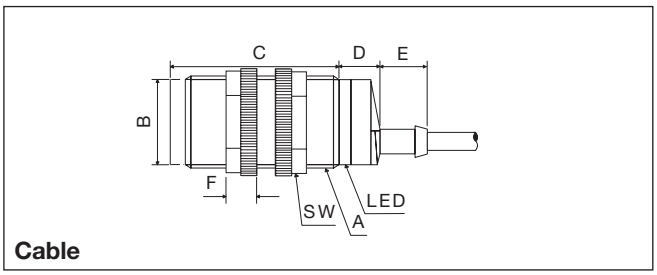
| | |
|---|---|
| **Power ON delay** | ≤ 100 ms |
| **Frequency of operating cycles** (f) | 10 Hz |
| **Indication for output ON** | LED, yellow |
| **Environment** | |
| Degree of protection | IP 67 (Nema 1, 2, 12) |
| **Temperature** | |
| Operating temperature | -25° to +80°C ( -13° to +176°F) |
| Storage temperature | -40° to +85°C (-40° to +185°F) |
| **Housing material** | |
| Body | Grey, thermoplastic polyester |
| Cable end | Polyester |
| Nuts | Black reinforced nylon |
| **Connection** | |
| Cable | Grey, 2 m, 2 x 0.5 $mm^2$<br>Oil proof, PVC |
| Plug (-6) | M12 x 1 double keyed |
| Cable for plug (-6) | CON.6A-.. series |
| **Weight** (incl. nuts) | **3016:** 140 g<br>**3025:** 150 g |
| **Approvals** | UL, CSA |
| **CE-marking** | Yes |



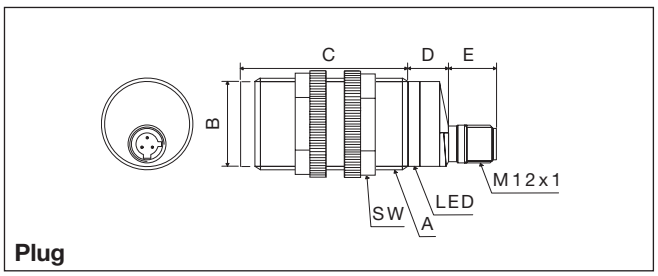
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## Dimensions



Cable



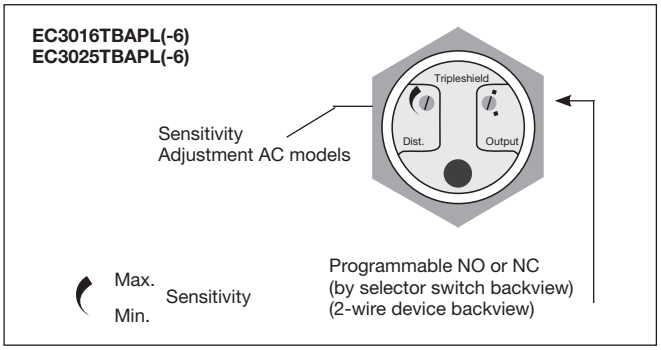
Plug

| Type | A | B Ø mm | C mm | D mm | E mm | F mm | SW mm |
|---|---|---|---|---|---|---|---|
| **EC 3016TBAPL(-6)** 36 | M30 x 1.5 x 50 | 28 | 50 | 13.6 | 15.4 | 10 | |
| **EC 3025TBAPL(-6)** | M30 x 1.5 x 50 | 28 | 62 | 13.6 | 15.4 | 10 | 36 |

## 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 *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).

**Note:**
Sensors are factory set (default) to maximum rated sensing range.



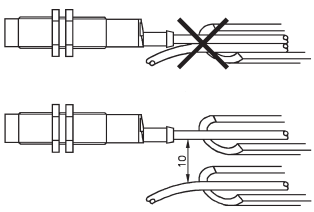

## Installation Hints

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:

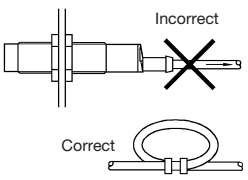
- **Plastic Industry**
  Resins, regrinds or moulded products.
- **Chemical Industry**
  Cleansers, fertilisers, liquid soaps, corrosives and pe--trochemicals.
- **Wood Industry**
  Saw dust, paper products, door and window frames.
- **Ceramic & Glass Industry**
  Raw material, clay or finished products, 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 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*

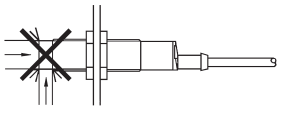



*Relief of cable strain*

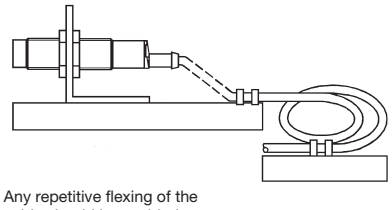


The cable should not be pulled

*Protection of the sensing face*


A proximity switch should not serve as mechanical stop

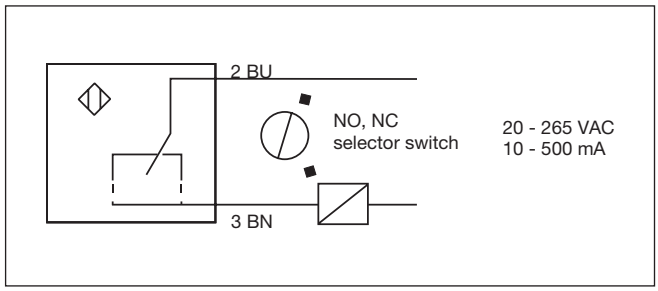
*Switch mounted on mobile carrier*


Any repetitive flexing of the cable should be avoided



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## Wiring Diagram




## Delivery Contents

- Capacitive switch: EC 30.. TBAPL(-6)
- Screw driver
- 2 nuts
- **Packaging:** Cardboard box
- Installation & Adjustment Guide (MAN CAP ENG/GER)

## Accessories

- Plugs CON.6A-.. series.



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