CA18/30 CAN/CAF - Capacitive Sensors
Carlo Gavazzi is renowned for the TRIPLESIELD™ capacitive proximity sensors with an outstanding electromagnetic immunity. Now, the bar has been raised. The new series of CA18 and CA30 CAN/CAF capacitive proximity DC sensors features several significant upgrades including superior electromagnetic immunity and refined sensitivity adjustment with stability indication. The sensors come in flush or non-flush, cable or plug versions, with NPN or PNP output types and NO and/or NC output functions. They are available with a dust or temperature alarm function. Featuring an ECOLAB certified sensor housing rated to IP69K standard, these sensors are exceptionally well suited for reliable detection in environments subject to high temperatures, harsh chemicals, steam and high-pressure cleaning. The CA18 and CA30 CAN/CAF sensors are ideal for a wide range of applications that require dependable measurements or monitoring of solid material or fluids.

Maximum EMC performance
Carlo Gavazzi’s innovative 4th generation TRIPLESIELD™ technology has taken the concept of electromagnetic immunity to new heights! These sensors withstand larger amounts of electrostatic disturbances such as airborne noise (e.g. cellular phones), wire conducted noise (e.g. frequency drives), surge (lightnings), electrostatic discharge, burst (contact noise) or interference from magnetic fields (such as welding transformers).

IP69K - top class protection
Tested according to the strictest protection ratings, the CA18 and CA30 CAN/CAF sensors have proven able to withstand steam and high-pressure cleaning without suffering any damaging effects in appearance and function.

Enhanced sensing overhead
In order to achieve a considerably better stability, the sensing range has been improved by 20 - 25% allowing room for additional stable detection.

Improved dust and humidity compensation
An improved ability to compensate for dust build-up and humidity makes the CA18 and CA30 CAN/CAF sensors very well suited for a wide variety of applications.

ECOLAB certified
Being resistant to aggressive cleansing agents and disinfecting chemicals, the CA18 and CA30 CAN/CAF sensors operate impeccably in applications requiring high hygienic standards.

Approvals
CE (EN60947-5-2)
cULus (UL508)
ECOLAB certified

CARLO GAVAZZI Automation Components. Specifications are subject to change without notice. Illustrations are for example only.
Features and functions

4th Generation TRIPLESHEILD™ technology

Interchangeable housing length

For flexibility and compatibility, the new sensors, whether flush or non-flush, share the same length. Moreover, thread length for the new sensors is identical to that of the previous generation of CA18 and CA30 sensors.

Dust alarm output

Intended for use in dusty environments, the dust alarm version gives an early warning if the dust accumulation is approaching a critical level. Consequently, the user is given time to clean the sensor before it stops working, and costly downtime for associated systems is prevented.

Temperature alarm output

The temperature alarm version will give an alarm if the temperature reaches out of range levels. This sensor version is very applicable in heating systems.

Stability indication

The setup procedure for stability is easy as both the green and yellow signal LEDs give information regarding stable ON and stable OFF positions. The LEDs are visible from the rear and the side, and when they both are ON, the detection is stable. Furthermore, the increased temperature stability ensures a reliable detection.
**CA18/30 CAN/CAF**

**Capacitive sensors**

**Features and functions**

**CA18CAF.... Flush**
- M12 plug
- 30% glass reinforced PBT housing
- 120°C on sensing face

**CA18CAN... Non-Flush**
- Cable
- Multturn sensitivity adjustment with optimized bezel trimmer shaft

All versions are available as cable or M12 plug versions.

**CA30CAF.... Flush**
- M12 plug
- 30% glass reinforced PBT housing
- 120°C on sensing face

**CA30CAN.... Non-Flush**
- Cable
- Multturn sensitivity adjustment with optimized bezel trimmer shaft

All versions are available as cable or M12 plug versions.

**Back part of the sensor**

- Output LED
- Power and stability LED

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Sensors

CARLO GAVAZZI Automation Components. Specifications are subject to change without notice. Illustrations are for example only.
Applications

**Agriculture**
The new CA18 and CA30 CAN/CAF sensors are excellent for accurate measurement of dry grain regardless of degree of humidity. The sensor provides a stable and precise signal of yield per unit area. Knowing these areas makes it easy to adjust the amount of fertilizers and herbicides in exactly the right way. As a result, cost can be reduced and the environmental impact minimized.

**Pellet burners**
In pellet burners, environmental conditions represent a major challenge to detection. The level of pellets has to be measured in dry and dusty surroundings. The dust alarm output sensor offers the user the possibility to be notified when the sensor needs cleaning, and, via the temperature alarm output sensor, to be warned if the temperature is exceeding a set level (e.g. 60°C).

**Plastic manufacturing**
Designed to provide an accurate detection unaffected by electrostatic discharge and dust build-up, the CA18 and CA30 CAN/CAF sensors are ideal in the monitoring and processing of plastic granules in for instance a hopper or in drying machines where the temperature often rises to high levels. The sensors are designed to tolerate temperatures up to 120°C.

**Food and beverage industry**
Because of their unique ability to detect level of contents inside boxes and bottles as well as their extraordinary resilience to detergents, the CA18 and CA30 CAN/CAF sensors are excellent for use in the food packaging industry.

**Solar cell manufacturing**
Where other sensor types like the ultrasonic and photoelectric sensors fail short because of the glossy surface of the solar panels, the CA18 and CA30 CAN/CAF sensors provide a reliable and efficient detection of the position or presence of metallized glass panels in the assembly line.
### Capacitive sensors

#### The CA18CAN/CAF Family, DC power supply

<table>
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<tr>
<th>Connection</th>
<th>Output function</th>
<th>Standard</th>
<th>Dust alarm</th>
<th>Temperature alarm</th>
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<tbody>
<tr>
<td><strong>Cable</strong></td>
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<td>CA18CAF08POTA</td>
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<tr>
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<td>CA18CAN12NAM1</td>
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</tbody>
</table>

- **Sensing distance**: 0 - 8 mm, 0 - 12 mm
- **Adjustable distance**: 2 - 10 mm, 3 - 15 mm
- **Sensitivity control**: Adjustable by multiturn potentiometer. Electrical: 11 turns. Mechanical: 16 turns
- **Rated operational voltage ($U_e$)**: 10 to 40 V DC (ripple included)
- **No load supply current ($I_0$)**: $\leq$ 12 mA
- **Minimum operational current ($I_m$)**: $\leq$ 0.5 mA
- **Off-State current ($I_r$)**: $\leq$ 100 µA
- **Voltage drop, digital ($U_d$)**: $\leq$ 2.0 V DC @ 200 mA DC
- **Rated operational voltage (Ue)**: 10 to 40 V DC (ripple included)
- **No load supply current (Io)**: $\leq$ 12 mA
- **Minimum operational current (Im)**: $\leq$ 0.5 mA
- **Off-State current (Ir)**: $\leq$ 100 µA
- **Voltage drop, digital (Ud)**: $\leq$ 2.0 V DC @ 200 mA DC
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- **Voltage drop, digital (Ud)**: $\leq$ 2.0 V DC @ 200 mA DC

#### CE marking
- According to EN 60947-5-2

#### Approvals
- cULus (UL508), ECOLAB

#### Installation category
- III (IEC60664-60664A; 60947-1)

#### Pollution degree
- 3 (IEC60664-60664A; 60947-1)

#### MTTFd
- 825 years @ 40°C (104°F)

#### Vibration
- 10 to 150 Hz, (1,0 mm/15G; IEC 6068-2-6) in X, Y and Z direction

#### Shock
- 30G /11 ms, 3 positive and 3 negative in X, Y and Z direction (IEC 6068-2-27)

#### Rough handling shocks
- 2 times from 1m, 100 times from 0.5m (IEC 6068-2-31)

#### Material
- Body: PBT light grey, 30% glass reinforced. Trimmer shaft: Nylon. Backpart: PA12 black

#### Tightening torque
- $\leq$ 2.6 Nm

#### Cable
- PCV, grey, 2 m, $4 \times 0.34$ mm²; Ø=5.2 mm

#### Connector
- M12, 4-pin

#### Dimensions
- Cable and Plug: M18 x 61 mm

#### Weight incl. packaging
- Cable version $\leq$ 150 g, Plug version $\leq$ 75 g

#### Accessories, additional
- Connectors: CONM14NF... Types. Mounting brackets: AMB18-A...
## The CA30CAN/CAF Family, DC power supply

### M30-DC 4th Generation TRIPLESHIELD™

<table>
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<th>Connection</th>
<th>Output function</th>
<th>Standard</th>
<th>Dust alarm</th>
<th>Temperature alarm</th>
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<tbody>
<tr>
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</tbody>
</table>

- **Sensing distance**: 0 - 16 mm, 0 - 25 mm
- **Adjustable distance**: 2 - 20 mm, 4 - 30 mm
- **Sensitivity control**: Adjustable by multiturn potentiometer. Electrical: 11 turns. Mechanical: 16 turns
- **Rated operational voltage** ($U_e$): 10 to 40 V DC (ripple included)
- **No load supply current** ($I_o$): ≤ 12 mA
- **Minimum operational current** ($I_{m}$): ≤ 0,5 mA
- **Off-State current** ($I_r$): ≤ 100 μA
- **Voltage drop, digital** ($U_d$): ≤ 2.0 V DC @ 200 mA DC
- **Output function**: NPN or PNP
- **Capacitive load**: 100 nF @ 200 mA
- **Sensor protection**: Shortcircuit (A), reverse polarity (B) and transients (C)
- **Frequency of operating cycles** ($f$): 50 Hz
- **Response time** $t_{on}$ or $t_{off}$: ≤ 10 ms
- **Power on delay** ($t_v$): ≤ 200 ms
- **Hysteresis**: 3 - 20%
- **Led indications**: Output ON: Yellow LED. Power and signal stability: Green LED
- **Degree of protection**: IP 67, IP 68, IP 69K (IEC 60529; 60943-1)
- **NEMA type**: 1, 2, 4, 4X, 5, 6, 6P, 12
- **Electrostatic discharge**: Contact discharge: > 40 kV. Air discharge: > 40 kV (EN 61000-4-2)
- **Electrical fast transients/burst**: ±4kV (EN 61000-4-4)
- **Surge**: Power-supply: > 2kV (with 500 Ω). Sensor output: > 2kV (with 500 Ω) (EN 61000-4-5)
- **Wire conducted disturbances**: > 20 Vrms (EN 61000-4-6)
- **Power - frequency magnetic fields**: Continuous: > 60 A/m, 75.9 μ tesla. Shorttime: > 600 A/m, 759 μ tesla (EN 61000-4-8)
- **Radiated RF electromagnetic fields**: > 20 V/m (EN 61000-4-3)
- **Ambient temperature**: Operating: -30 to +85°C (-22 to +185°F). Storage: -40 to +85°C (-40 to +185°F)
- **Max. temperature on sensing face**: 120°C (248°F)
- **Temperature alarm output**: - - 60°C ± 5°C (140°F ± 9°F)
- **Ambient temperature**: 120°C (248°F)
- **CE marking**: According to EN 60947-5-2
- **Approvals**: cULus (UL508), ECOLAB
- **Installation category**: III (IEC60664/60664A; 60947-1)
- **Pollution degree**: 3 (IEC60664/60664A; 60947-1)
- **MTTFd**: 829 years @ 40°C (104°F)
- **Vibration**: 10 to 150 Hz, 1,0 mm/15G; IEC 60668-2-6) in X,Y and Z direction
- **Shock**: 30G /11 mS. 3 positive and 3 negative in X,Y and Z direction (IEC 60668-2-27)
- **Rough handling shocks**: 2 times from 1m, 100 times from 0,5m (IEC 60668-2-31)
- **Material**: Body: PBT light grey, 30% glass reinforced. Trimmer shaft: Nylon. Backpart: PA12 black
- **Tightening torque**: ≤ 7.5 Nm
- **Cable**: PCV, grey, 2 m, 4 x 0.34 mm², Ø=5.2 mm
- **Connector**: M12, 4 pin
- **Dimensions**: Cable and Plug: M30 x 61 mm
- **Weight incl. packaging**: Cable version ≤ 190 g, Plug version ≤ 106 g
- **Accessories, additional**: Connectors: CONM14NF-... Types. Mounting brackets: AMB30-A...