



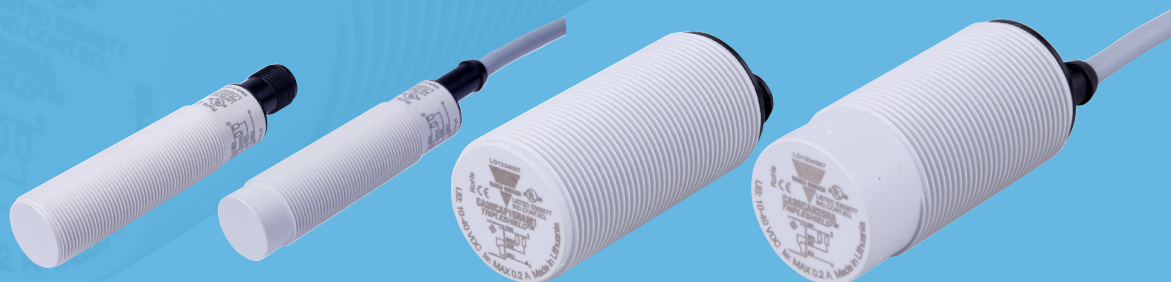
## CA18/30 CAN/CAF - Capacitive Sensors

**Sensors**

# CA18/30 CAN/CAF

## Capacitive sensors

Carlo Gavazzi is renowned for the *TRIPLESHIELD™* 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.



### 4<sup>th</sup> Generation *TRIPLESHIELD™* technology

#### Maximum EMC performance

Carlo Gavazzi's innovative 4<sup>th</sup> generation *TRIPLESHIELD™* 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.

#### 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.

#### 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.

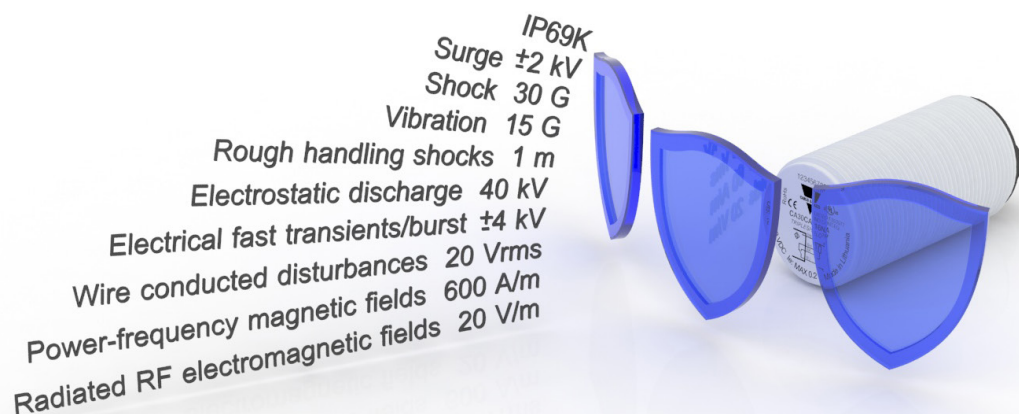
#### Approvals

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



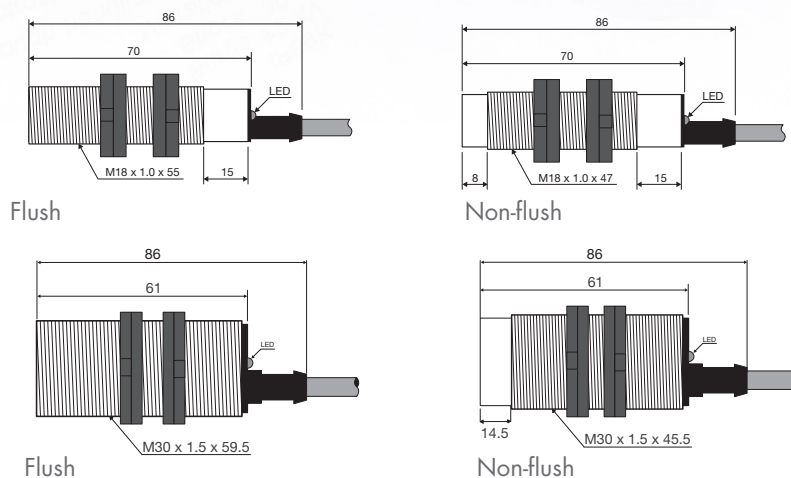
## Features and functions

### 4<sup>th</sup> Generation **TRIPLESIELD™** 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

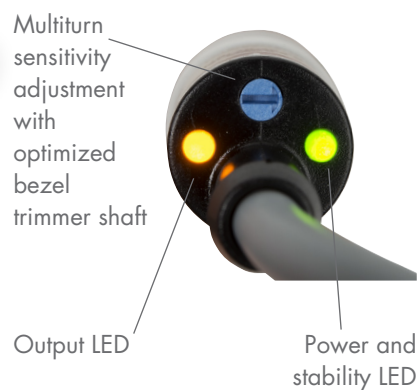


#### CA18CAN... Non-Flush



All versions are available as cable or M12 plug versions.

#### Back part of the sensor



#### CA30CAF... Flush

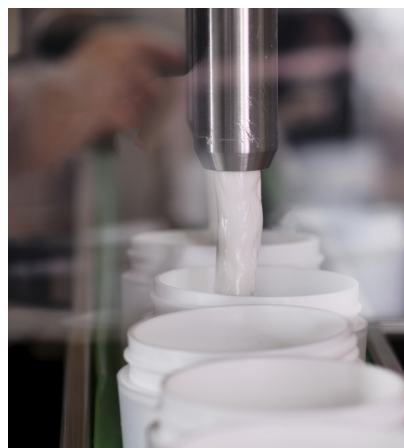
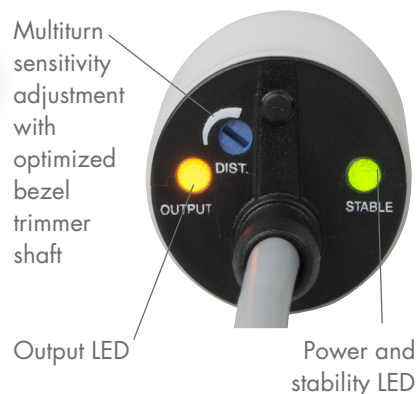


#### CA30CAN... Non-Flush



All versions are available as cable or M12 plug versions.

#### Back part of the sensor



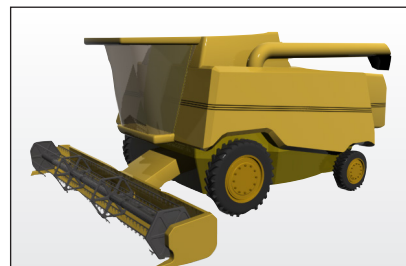


## Applications

### 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.

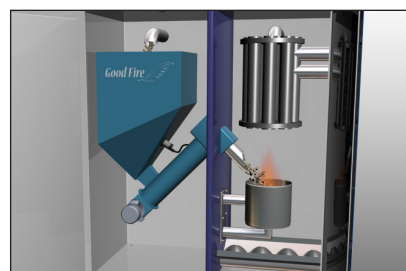
Knowing these areas makes it easy to adjust the amount of fertilizers and herbicides in exactly the right way. As a result, cost can be reduced and the environmental impact minimized.



### 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 process-

ing 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,

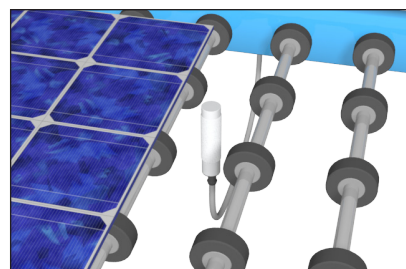
the CA18 and CA30 CAN/CAF sensors are excellent for use in the food packaging industry.



### Solar cell manufacturing

Where other sensor types like the ultrasonic and photoelectric sensors fall 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.



# CA18/30 CAN/CAF

## Capacitive sensors

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

			M18-DC 4 <sup>TH</sup> Generation TRIPLESIELD™					
			Flush mountable			Non-flush mountable		
Con- nection	Out- put	Output function	Standard	Dust alarm	Temperature alarm	Standard	Dust alarm	Temperature alarm
Cable	NPN	NO + NC	CA18CAF08NA			CA18CAN12NA		
		NO						
		NC						
	PNP	NO + NC	CA18CAF08PA			CA18CAN12PA		
		NO		CA18CAF08PODU	CA18CAF08POTA		CA18CAN12PODU	CA18CAN12POTA
		NC		CA18CAF08PCDU	CA18CAF08PCTA		CA18CAN12PCDU	CA18CAN12PCTA
Plug	NPN	NO + NC	CA18CAF08NAM1			CA18CAN12NAM1		
		NO						
		NC						
	PNP	NO + NC	CA18CAF08PAM1			CA18CAN12PAM1		
		NO						
		NC						
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 <sub>o</sub> )			10 to 40 V DC (ripple included)					
No load supply current (I <sub>o</sub> )			≤ 12 mA					
Minimum operational current (I <sub>m</sub> )			≤ 0,5 mA					
Off-State current (I <sub>s</sub> )			≤ 100 µA					
Voltage drop, digital (U <sub>d</sub> )			≤ 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 <sub>ON</sub> or t <sub>OFF</sub>			≤ 10 ms					
Power on delay (t <sub>r</sub> )			≤ 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			Continous: > 60 A/m, 75.9 µ tesla. Short-time: > 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 ± 41°F)		-	60°C ± 5°C (140°F ± 41°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)					
MTTF <sub>d</sub>			825 years @ 40°C (104°F )					
Vibration			10 to 150 Hz, (1,0 mm/15G; IEC 60068-2-6) in X,Y and Z direction					
Shock			30G /11 ms. 3 positive and 3 negative in X,Y and Z direction (IEC 60068-2-27)					
Rough handling shocks			2 times from 1m, 100 times from 0,5m (IEC 60068-2-31)					
Material			Body: PBT light grey, 30% glass reinforced. Trimmer shaft: Nylon. Backpart: PA12 black					
Tightening torque			≤ 2.6 Nm					
Cable			PCV, grey, 2 m, 4 x 0.34 mm², Ø=5.2 mm					
Connector			M12, 4-pin					
Dimensions			Cable and Plug: M18 x 61 mm					
Weight incl. packaging			Cable version ≤ 150 g, Plug version ≤ 75 g					
Accessories, additional			Connectors: CONM14NF... Types. Mounting brackets: AMB18-A...					

## The CA30CAN/CAF Family, DC power supply

			M30-DC 4 <sup>TH</sup> Generation TRIPLESIELD™					
			Flush mountable			Non-flush mountable		
Conne- ction	Out- put	Output function	Standard	Dust alarm	Temperature alarm	Standard	Dust alarm	Temperature alarm
Cable	NPN	NO + NC	CA30CAF16NA			CA30CAN25NA		
		NO						
		NC						
	PNP	NO + NC	CA30CAF16PA			CA30CAN25PA		
		NO		CA30CAF16PODU	CA30CAF16POTA		CA30CAN25PODU	CA30CAN25POTA
		NC		CA30CAF16PCDU	CA30CAF16PCTA		CA30CAN25PCDU	CA30CAN25PCTA
Plug	NPN	NO + NC	CA30CAF16NAM1			CA30CAN25NAM1		
		NO						
		NC						
	PNP	NO + NC	CA30CAF16PAM1			CA30CAN25PAM1		
		NO						
		NC						
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 <sub>a</sub> )			10 to 40 V DC (ripple included)					
No load supply current (I <sub>o</sub> )			≤ 12 mA					
Minimum operational current (I <sub>m</sub> )			≤ 0,5 mA					
Off-State current (I <sub>i</sub> )			≤ 100 µA					
Voltage drop, digital (U <sub>d</sub> )			≤ 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 <sub>ON</sub> or t <sub>OFF</sub>			≤ 10 mS					
Power on delay (t <sub>i</sub> )			≤ 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. Short-time: > 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 ± 41°F)	-	60°C ± 5°C (140°F ± 41°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)					
MTTF <sub>d</sub>			829 years @ 40°C (104°F )					
Vibration			10 to 150 Hz, (1,0 mm/15G; IEC 60068-2-6) in X,Y and Z direction					
Shock			30G /11 ms. 3 positive and 3 negative in X,Y and Z direction (IEC 60068-2-27)					
Rough handling shocks			2 times from 1m, 100 times from 0,5m (IEC 60068-2-31)					
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...					

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