

Proximity Sensors Capacitive Thermoplastic Polyester Housing Types CA30CAN/CAF.....

CARLO GAVAZZI



- **4TH Generation TRIPLESIELD™**
- Adjustable sensing distance: 2 - 20 mm Flush or 4-30 mm Non-flush
- Protection: short-circuit, transients and reverse polarity
- Dust and humidity compensation
- Dust or Temperature alarm output
- Rated operational voltage: 10-40 VDC
- Output: DC 200 mA, NPN or PNP
- Standard Output: NO and NC
- LED indications for Power-supply, Output and Stability
- IP67, IP69K, Nema 1, 2, 4, 4X, 5, 6, 6P, 12
- Cable and M12 connector versions available



Product Description

The CA30CA.. capacitive proximity switches feature an improved 4TH Generation TRIPLESIELD™ technology. Furthermore, these sensors feature increased immunity to electromagnetic interference (EMI), especially to frequency drives. Not only does 4TH Generation TRIPLESIELD™ feature an increased EMI, but it also increases the immunity to humidity and dust. The implementation of stability indication eases the setup procedure as both Stable ON and Stable OFF positions are

indicated by the Green and yellow LEDs.

The sensing distance is increased by 20 - 25 % allowing room for additional stable detection.

The Dust Alarm function gives an early warning that the sensing surroundings have to be cleaned.

The Temperature alarm function raises an alarm if the sensing surface goes beyond 60 degree celcius.

The sensor housing is featuring IP69K as well as approval by ECOLAB for cleaning- and disinfection agents.

Ordering Key

CA30CAN25NAM1

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	Sensor type	Output type	Output function	Connection	Rated operating distance (S _n)	Ordering no. Standard	Ordering no. Dust alarm	Ordering no. Temperature alarm
M 30	Flush	NPN	NO+NC	Cable	2 - 16 mm	CA30CAF16NA		
M 30	Flush	NPN	NO+NC	M12 Plug	2 - 16 mm	CA30CAF16NAM1		
M 30	Flush	PNP	NO+NC	Cable	2 - 16 mm	CA30CAF16PA		
M 30	Flush	PNP	NO+NC	M12 Plug	2 - 16 mm	CA30CAF16PAM1		
M 30	Flush	PNP	NO	Cable	2 - 16 mm		CA30CAF16P0DU	CA30CAF16P0TA
M 30	Flush	PNP	NC	Cable	2 - 16 mm		CA30CAF16PCDU	CA30CAF16PCTA
M 30	Non-Flush	NPN	NO+NC	Cable	4 - 25 mm	CA30CAN25NA		
M 30	Non-Flush	NPN	NO+NC	M12 Plug	4 - 25 mm	CA30CAN25NAM1		
M 30	Non-Flush	PNP	NO+NC	Cable	4 - 25 mm	CA30CAN25PA		
M 30	Non-Flush	PNP	NO+NC	M12 Plug	4 - 25 mm	CA30CAN25PAM1		
M 30	Non-Flush	PNP	NO	Cable	4 - 25 mm		CA30CAN25P0DU	CA30CAN25P0TA
M 30	Non-Flush	PNP	NC	Cable	4 - 25 mm		CA30CAN25PCDU	CA30CAN25PCTA

Specifications EN 60947-5-2

Rated operating distance (S_n)

Non-flush mounted sensor

4 - 25 mm (factory setting 25 mm),
(ref. target 75x75 mm ST37, 1 mm thick, grounded)

Flush mounted sensor

2 - 16 mm (factory setting 16 mm - non-flush mounted)
(ref. target 48x48 mm ST37, 1 mm thick, grounded)

Sensitivity control

Electrical adjustment
Mechanical adjustment
Adjustable distance
Flush types
Non-flush types

Adjustable by potentiometer

11 turns
16 turns

2 to 20 mm
4 to 30 mm

Effective operating dist. (S_r)

$0.9 \times S_n \leq S_r \leq 1.1 \times S_n$

Usable operating dist. (S_u)

$0.85 \times S_r \leq S_u \leq 1.15 \times S_r$

Specifications (cont.) EN 60947-5-2

Repeat accuracy (R)	≤ 5%
Hysteresis (H)	3 - 20%
Rated operational volt. (U_B)	10 to 40 VDC (ripple incl.)
Ripple	≤ 10%
Output function	NPN or PNP
Output switching function	N.O. and N.C.
Rated operational current (I_a)	≤ 200 mA (continuous)
Capacitive load	100 nF
No-load supply current (I_o)	≤ 12 mA
Voltage drop (U_d)	≤ 2.0 VDC @ 200 mA DC
Minimum operational current (I_m)	≥ 0.5 mA
OFF state current (I_i)	≤ 100 µA
Protection	Short-circuit, reverse polarity, transients
Frequency of operating cycles (f)	50 Hz
Response time OFF-ON (t_{on})	≤ 10 ms
Response time ON-OFF (t_{off})	≤ 10 ms
Power ON delay (t_v)	≤ 200 ms
Indication	
For output ON	LED, yellow
Power and signal stability	LED, green
Environment	
Installation category	III (IEC 60664, 60664A; 60947-1)
Degree of pollution	3 (IEC 60664, 60664A; 60947-1)
Degree of protection	IP 67, IP 68/60 min., IP69K* (IEC 60529; 60943-1)
NEMA type	1, 2, 4, 4X, 5, 6, 6P, 12
Operating temperature	-30 to +85°C (-22 to +185°F)
Max. temperature on sensing face	120°C (248°F)
Storage temperature	-40 to +85°C (-40 to +185°F)
Rated insulation voltage	1 kVAC (rms) IEC protection class III 
Tightening torque	≤ 7.5 Nm
Connection	
Cable	PVC, Ø5.2 x 2 m, 4 x 0.34 mm ² Oil proof, grey M12 x 1, - 4 pin
Plug (M1)	

Temperature alarm output
Response time examples
T_A = 25°C

60°C ± 5°C

16 sec @ T_{EXC} = 800°C
390 sec @ T_{EXC} = 80°C

TRIPLESHIELD™**Exceeding the norms for capacitive sensors**

Electrostatic discharge
(EN61000-4-2)

Contact discharge

Air discharge

> 40 kV

> 40 kV

Electrical fast transients/burst
(EN 61000-4-4)

±4kV

Surge

(EN 61000-4-5)

Power-supply

Sensor output

> 2kV (with 500 Ω)

> 2kV (with 500 Ω)

Wire conducted disturbances
(EN 61000-4-6)

> 20 Vrms

Power-frequency magnetic
fields (EN 61000-4-8)

Continuous

Short-time

> 60 A/m, 75.9 µ tesla

> 600 A/m, 759 µ tesla

Radiated RF electromagnetic
fields (EN 61000-4-3)

> 20 V/m

Shock (IEC 60068-2-27)

30 G / 11ms, 3 pos, 3 neg
per axis

Rough handling shocks
(IEC 60068-2-31)

2 times from 1m
100 times from 0,5m

Vibration (IEC 60068-2-6)

10 to 150 Hz, 1 mm / 15 G

Housing material

Body

PBT, grey,
30% glass reinforced
PA12, black
PA12, black
Nylon

Cable gland

Fingernuts

Trimmershaft

Weight

Cable version

Plug version

190 g

106 g

Approvals

cULus (UL508)

CE-marking

Yes

MTTF_d

829 years @ 40°C (+104°F)

* The IP69K test according to DIN 40050-9 for high-pressure, high-temperature wash-down applications. The sensor must not only be dust tight (IP6X), but also able to withstand high-pressure and steam cleaning. The sensor is exposed to high pressure water from a spray nozzle that is fed with 80°C water at 8'000–10'000 KPa (80–100bar) and a flow rate of 14–6L/min. The nozzle is held 100–150 mm from the sensor at angles of 0°, 30°, 60° and 90° for 30s each. The test device sits on a turntable that rotates with a speed of 5 times per minute. The sensor must not suffer any damaging effects from the high pressure water in appearance and function.

