

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, IP68, 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 Celsius. 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	0 - 16 mm	CA30CAF16NA		
M 30	Flush	NPN	NO+NC	M12 Plug	0 - 16 mm	CA30CAF16NAM1		
M 30	Flush	PNP	NO+NC	Cable	0 - 16 mm	CA30CAF16PA		
M 30	Flush	PNP	NO+NC	M12 Plug	0 - 16 mm	CA30CAF16PAM1		
M 30	Flush	PNP	NO	Cable	0 - 16 mm		CA30CAF16PODU	CA30CAF16POTA
M 30	Flush	PNP	NC	Cable	0 - 16 mm		CA30CAF16PCDU	CA30CAF16PCTA
M 30	Flush	PNP	NC	M12 Plug	0 - 16 mm		CA30CAF16PCM1DU	
M 30	Non-Flush	NPN	NO+NC	Cable	0 - 25 mm	CA30CAN25NA		
M 30	Non-Flush	NPN	NO+NC	M12 Plug	0 - 25 mm	CA30CAN25NAM1		
M 30	Non-Flush	PNP	NO+NC	Cable	0 - 25 mm	CA30CAN25PA		
M 30	Non-Flush	PNP	NO+NC	M12 Plug	0 - 25 mm	CA30CAN25PAM1		
M 30	Non-Flush	PNP	NO	Cable	0 - 25 mm		CA30CAN25PODU	CA30CAN25POTA
M 30	Non-Flush	PNP	NC	Cable	0 - 25 mm		CA30CAN25PCDU	CA30CAN25PCTA

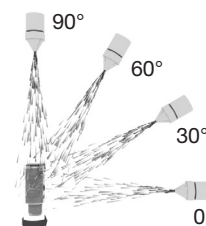
Specifications EN 60947-5-2

Rated operating distance (S_n) Non-flush mounted sensor	0 - 25 mm (factory setting 25 mm), (ref. target 75x75 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
Flush mounted sensor	0 - 16 mm (factory setting 16 mm - non-flush mounted) (ref. target 48x48 mm ST37, 1 mm thick, grounded)	Effective operating dist. (S_r)	0.9 x S _n ≤ S _r ≤ 1.1 x S _n
		Usable operating dist. (S_u)	0.85 x S _r ≤ S _u ≤ 1.15 x S _r

Specifications (cont.) EN 60947-5-2

Repeat accuracy (R)	≤ 5%	Temperature alarm output Response time examples $T_A = 25^\circ\text{C}$	60°C ± 5°C
Hysteresis (H)	3 - 20%		16 sec @ $T_{\text{EXC}} = 800^\circ\text{C}$ 390 sec @ $T_{\text{EXC}} = 80^\circ\text{C}$
Rated operational volt. (U_B)	10 to 40 VDC (ripple incl.)	TRIPLESHIELD™ Exceeding the norms for capacitive sensors Electrostatic discharge (EN61000-4-2) Contact discharge Air discharge Electrical fast transients/burst (EN 61000-4-4) Surge (EN 61000-4-5) Power-supply Sensor output Wire conducted disturbances (EN 61000-4-6) Power-frequency magnetic fields (EN 61000-4-8) Continuous Short-time Radiated RF electromagnetic fields (EN 61000-4-3) Shock (IEC 60068-2-32) Rough handling shocks (IEC 60068-2-31) Vibration (IEC 60068-2-6) Housing material Body Cable gland Fingernuts Trimmershaft Weight Cable version Plug version Approvals CE-marking MTTF_d	> 40 kV > 40 kV
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			
Target detected	LED, yellow		
Power and detection 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		
Plug (M1)	M12 x 1 - 4 pin		

* 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.



Adjustment Guide

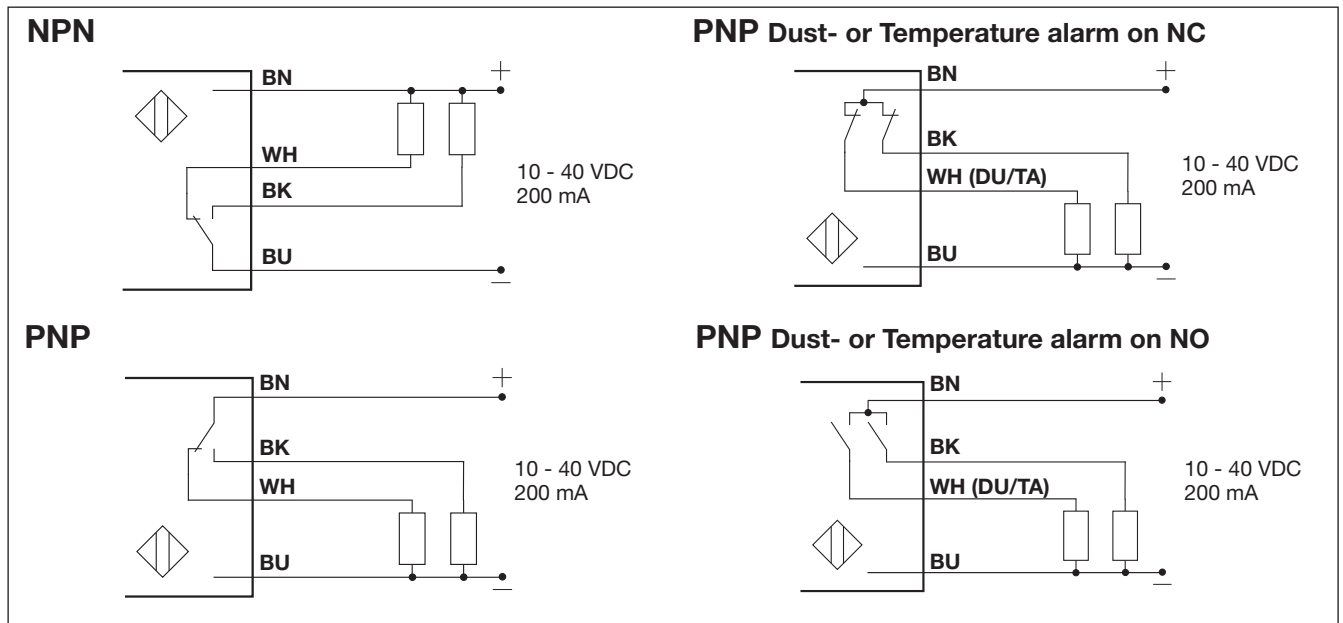
The environments in which capacitive sensors are installed can often be unstable as regards temperature, humidity, object distance and industrial (noise) interference. This is why Carlo Gavazzi offers, as a stand-

ard feature in all TRIPLESHIELD™ capacitive sensors, a user-friendly sensitivity adjustment instead of a fixed sensing range. Likewise, these sensors provide an extended sensing range to accommodate mechanically

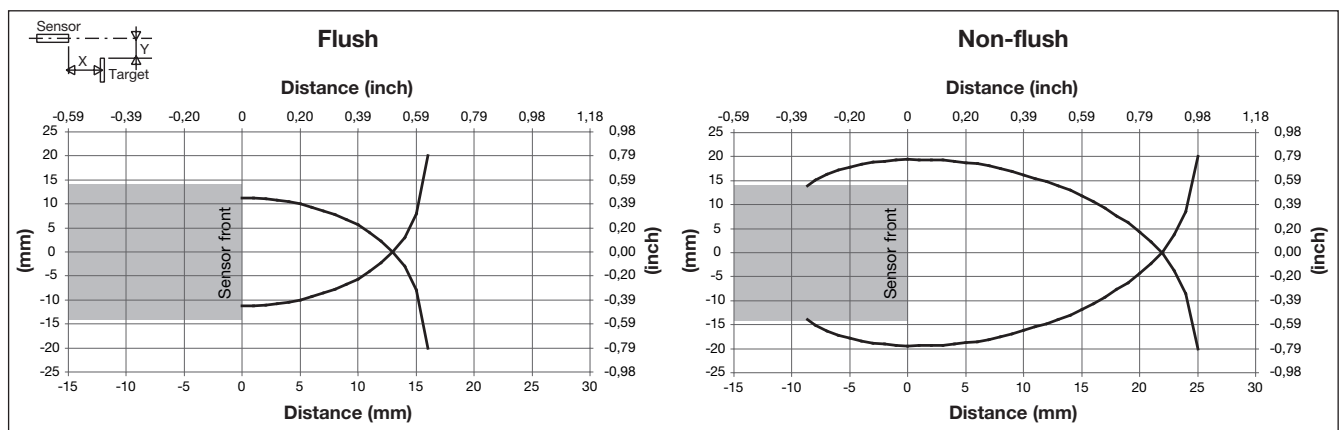
demanding areas and temperature stability to ensure high immunity to electromagnetic interference (EMI) and a minimum need for adjusting sensitivity if the temperature varies.

Note:
The sensors are factory set (default) to nominal sensing range S_n .

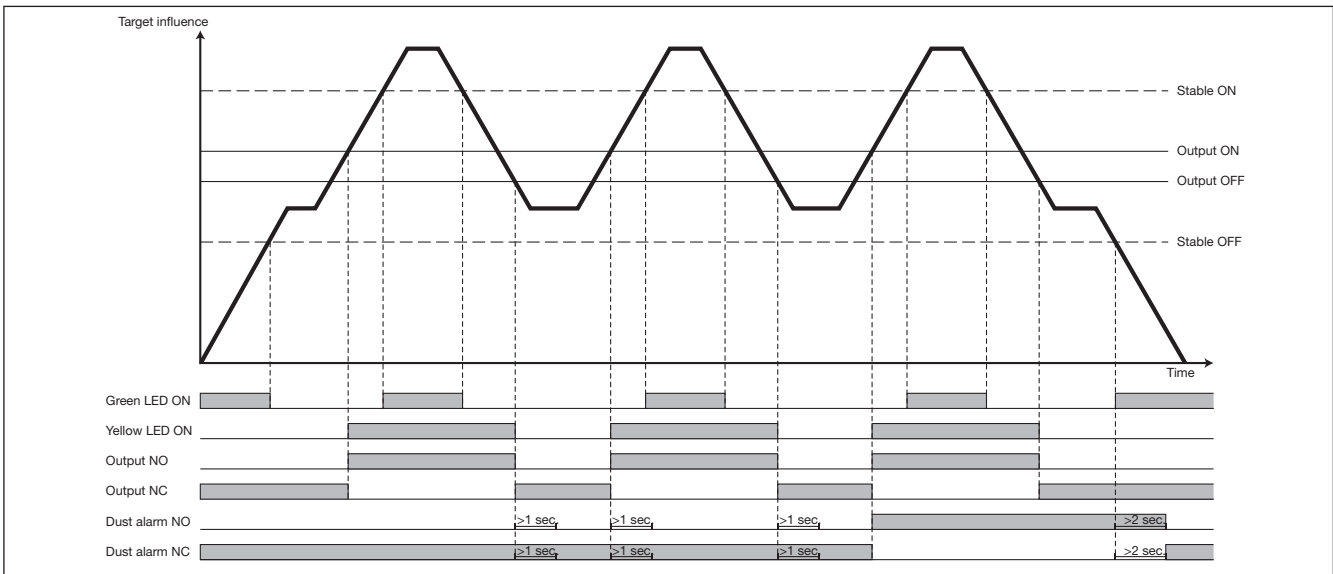
Wiring Diagram



Detection Diagram



Detection Stability Indication



Dimensions

