

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



- 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



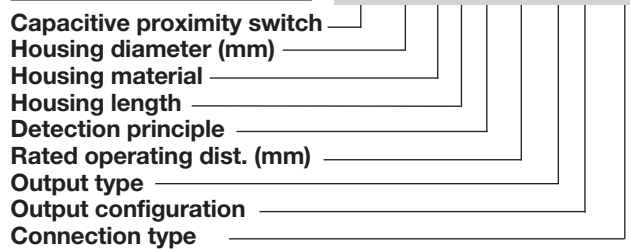
Product Description

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




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 |

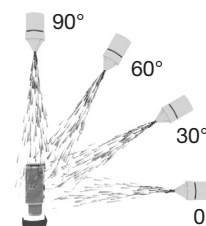
Specifications EN 60947-5-2

| | | | |
|---|---|---|---|
| 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 | 60°C ± 5°C |
| Hysteresis (H) | 3 - 20% | Response time examples T _A = 25°C | 16 sec @ T _{EXC} = 800°C 390 sec @ T _{EXC} = 80°C |
| Rated operational volt. (U_B) | 10 to 40 VDC (ripple incl.) | TRIPLESHIELD™ | |
| Ripple | ≤ 10% | Exceeding the norms for capacitive sensors | |
| Output function | NPN or PNP | Electrostatic discharge (EN61000-4-2) | |
| Output switching function | N.O. and N.C. | Contact discharge | > 40 kV |
| Rated operational current (I_a) | ≤ 200 mA (continuous) | Air discharge | > 40 kV |
| Capacitive load | 100 nF | Electrical fast transients/burst (EN 61000-4-4) | ±4kV |
| No-load supply current (I_o) | ≤ 12 mA | Surge (EN 61000-4-5) | |
| Voltage drop (U_d) | ≤ 2.0 VDC @ 200 mA DC | Power-supply | > 2kV (with 500 Ω) |
| Minimum operational current (I_m) | ≥ 0.5 mA | Sensor output | > 2kV (with 500 Ω) |
| OFF state current (I_i) | ≤ 100 μA | Wire conducted disturbances (EN 61000-4-6) | > 20 Vrms |
| Protection | Short-circuit, reverse polarity, transients | Power-frequency magnetic fields (EN 61000-4-8) | |
| Frequency of operating cycles (f) | 50 Hz | Continuous | > 60 A/m, 75.9 μ tesla |
| Response time OFF-ON (t_{on}) | ≤ 10 ms | Short-time | > 600 A/m, 759 μ tesla |
| Response time ON-OFF (t_{off}) | ≤ 10 ms | Radiated RF electromagnetic fields (EN 61000-4-3) | > 20 V/m |
| Power ON delay (t_v) | ≤ 200 ms | Shock (IEC 60068-2-32) | 30 G / 11ms, 3 pos, 3 neg per axis |
| Indication | | Rough handling shocks (IEC 60068-2-31) | twice from 1 m 100 times from 0.5 m |
| Target detected | LED, yellow | Vibration (IEC 60068-2-6) | 10 to 150 Hz, 1 mm / 15 G |
| Power and detection stability | LED, green | Housing material | |
| Environment | | Body | PBT, grey, 30% glass reinforced |
| Installation category | III (IEC 60664, 60664A; 60947-1) | Cable gland | PA12, black |
| Degree of pollution | 3 (IEC 60664, 60664A; 60947-1) | Fingernuts | PA12, black |
| Degree of protection | IP 67, IP 68/60 min., IP69K* (IEC 60529; 60943-1) | Trimmershaft | Nylon |
| NEMA type | 1, 2, 4, 4X, 5, 6, 6P, 12 | Weight | |
| Operating temperature | -30 to +85°C (-22 to +185°F) | Cable version | 190 g |
| Max. temperature on sensing face | 120°C (248°F) | Plug version | 106 g |
| Storage temperature | -40 to +85°C (-40 to +185°F) | Approvals | cULus (UL508), ECOLAB |
| Rated insulation voltage | 1 kVAC (rms) IEC protection class III  | CE-marking | Yes |
| Tightening torque | ≤ 7.5 Nm | MTTF_d | 829 years @ 40°C (+104°F) |
| 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

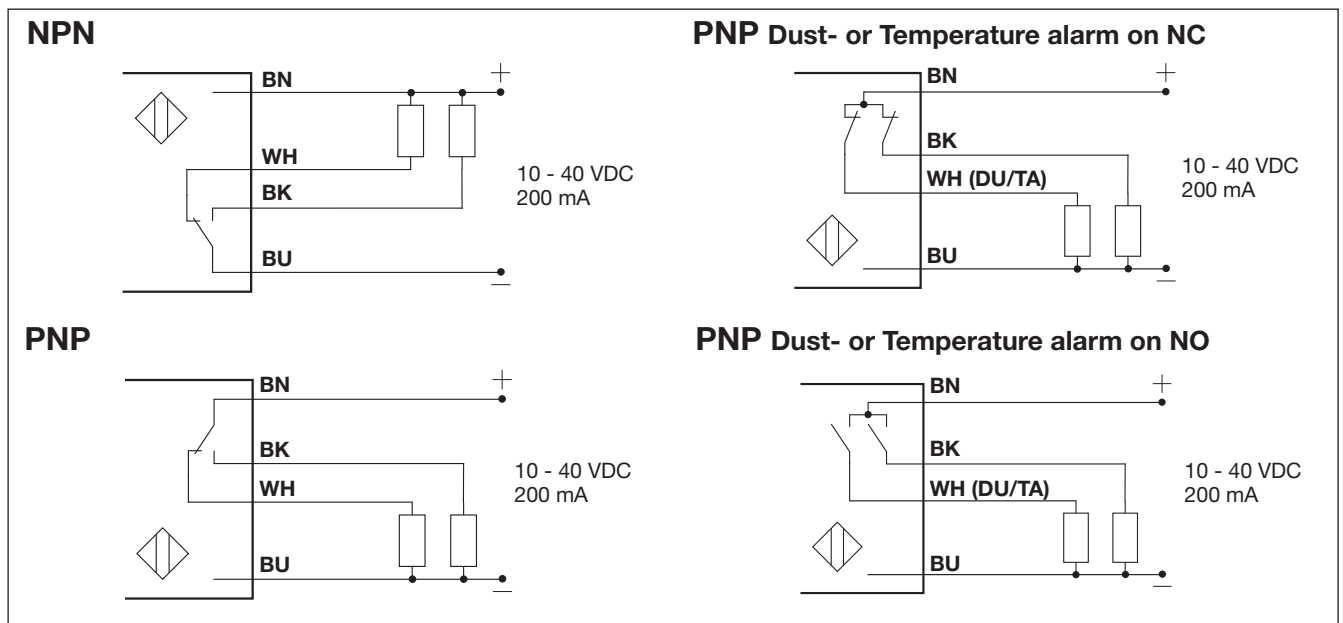
The environments in which capacitive sensors are installed can often be unstable as regards temperature, humidity, object distance and industrial (noise) interference. This is why Carlo Gavazzi offers, as a stand-

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

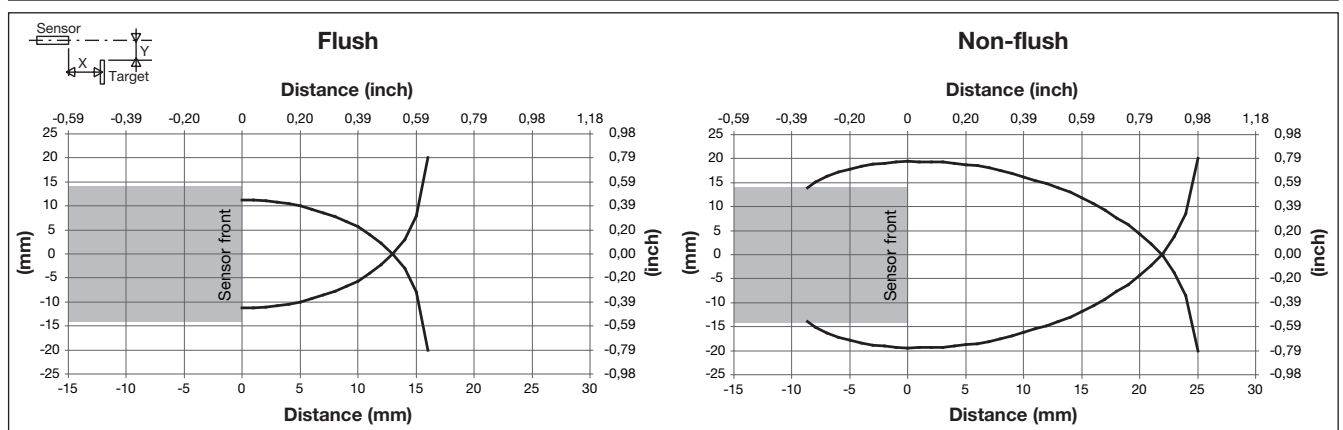
demanding areas and temperature stability to ensure high immunity to electromagnetic interference (EMI) and a minimum need for adjusting sensitivity if the temperature varies.

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

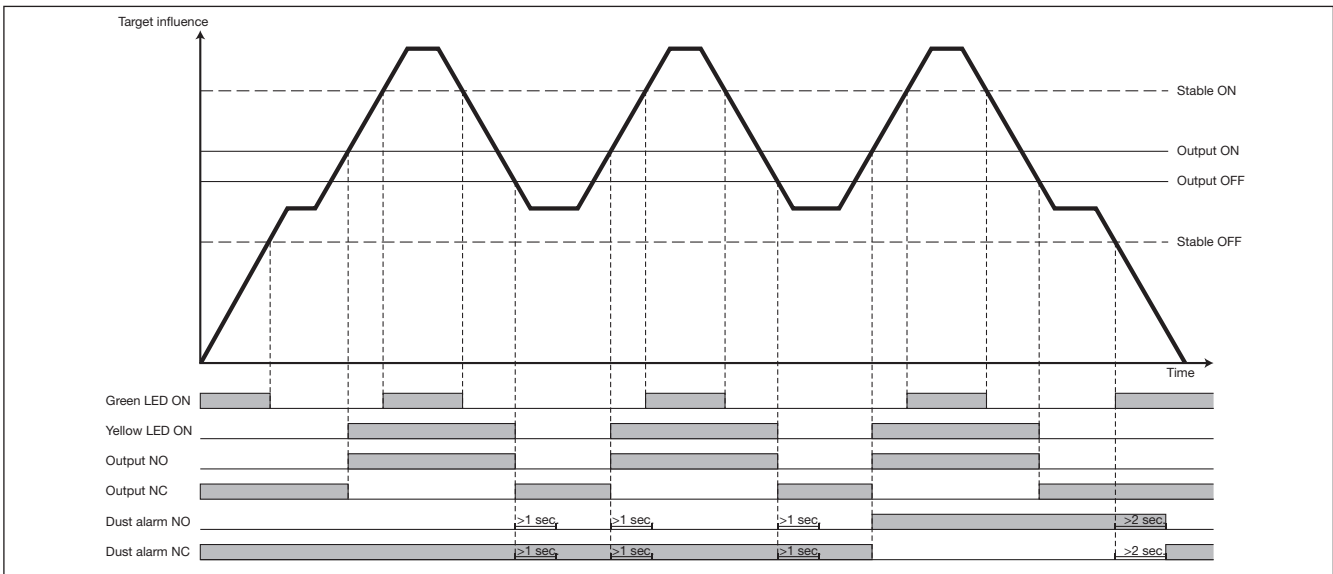
Wiring Diagram



Detection Diagram



Detection Stability Indication



Dimensions

