Proximity Inductive Sensors - Ecolab certified
Standard and Extended Range, Stainless Steel Housing
Types ICS, IP69K, M12

CARLO GAVAZZI

- **Sensing distance: 2 to 8 mm**
- **Flush or non-flush mountable**
- **Long body version**
- **Rated operational voltage (U_b): 10 - 36 VDC**
- **Output: DC 200 mA, NPN or PNP**
- **Normally open or normally closed**
- **4 x 90° LED indication for output ON, short-circuit and overload**
- **Protection: reverse polarity, short circuit, transients**
- **M12 plug version**
- **According to IEC 60947-5-2**
- **High-pressure washdown resistant**
- **Ecolab certified, FDA-certified plastic**
- **Laser engraved on the housing, permanently legible**
- **Extended temperature range: -40°C...+80°C**
- **CSA certified for Hazardous Locations**

Product Description

A family of inductive proximity switches in stainless steel (AISI 316L) ideal for food and beverage applications where sensors are exposed to high pressure and high temperature cleaning processes. They are fully sealed and resistant to all common acid and alkaline cleaning agents and disinfectants (Ecolab certified). IP68 and IP69K-rated products. Output is open collector NPN or PNP transistors.

Ordering Key

ICS12LF04NOM1-FB

- **Type**
- **Housing style**
- **Housing material**
- **Housing size**
- **Housing length**
- **Detection principle**
- **Sensing distance**
- **Output type**
- **Output configuration**
- **Connection**
- **Washdown series**

Type Selection

Connection	Body style	Rated operating distance S_n	Ordering no. NPN, Normally open	Ordering no. PNP, Normally open	Ordering no. NPN, Normally closed	Ordering no. PNP, Normally closed
Standard range						
Plug	Long	2 mm [1]	**ICS12LF02NOM1-FB**	**ICS12LF02POM1-FB**	**ICS12LF02NCM1-FB**	**ICS12LF02PCM1-FB**
Plug	Long	4 mm [2]	**ICS12LN04NOM1-FB**	**ICS12LN04POM1-FB**	**ICS12LN04NCM1-FB**	**ICS12LN04PCM1-FB**
Extended range						
Plug	Long	4 mm [1]	**ICS12LF04NOM1-FB**	**ICS12LF04POM1-FB**	**ICS12LF04NCM1-FB**	**ICS12LF04PCM1-FB**
Plug	Long	8 mm [2]	**ICS12LN08NOM1-FB**	**ICS12LN08POM1-FB**	**ICS12LN08NCM1-FB**	**ICS12LN08PCM1-FB**

[1] For flush mounting in metal

[2] For non-flush mounting in metal

Specifications

Rated operational voltage (U_b)	10 to 36 VDC (ripple incl.)
Ripple	≤ 10%
Output current (I_e)	≤ 200 mA @ 50°C (≤ 150 mA @ 50-80°C)
OFF-state current (I_r)	≤ 10 µA
No load supply current (I_o)	≤ 15 mA
Voltage drop (U_d)	Max. 2 VDC @ 200 mA
Protection	Reverse polarity, short-circuit, transients
Voltage transient	1 kV/0.5 J
Power ON delay (t_v)	≤ 20 ms
Operating frequency (f)	≤ 2000 Hz

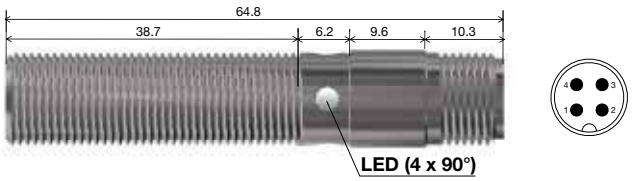
Indication for output ON	Activated LED, yellow (4x90°)
NO version	Target present
NC version	Target not present
Indication for short circuit/ overload	LED blinking (f = 2 Hz)
Assured operating sensing distance (S_a)	$0 \le S_a \le 0.81 \times S_n$
Effective operating distance (S_r)	$0.9 \times S_n \le S_r \le 1.1 \times S_n$
Usable operating distance (S_u)	$0.9 \times S_r \le S_u \le 1.1 \times S_r$
Repeat accuracy (R)	≤ 5%
Differential travel (H) (Hysteresis)	1 to 20% of sensing dist.

Specifications (cont.)

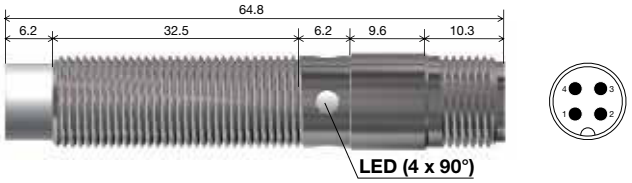
Ambient temperature	
Operating	-40° to +80°C (-40° to +176°F) short exposure (15') to 100°C during cleaning process
Storage	-40° to +80°C (-40° to +176°F)
Shock and vibration	IEC 60947-5-2/7.4
Housing material	
Body	Stainless steel (AISI 316L)
Front	Grey PPS - FDA-certified
Connection	
Plug	M12 x 1
Degree of protection	IP67, IP68 (1 m, 7 days), IP69K
Weight (cable/nuts included)	Max. 35 g
Dimensions	See diagrams below
Tightening torque	25 Nm

Approvals **cULus**	(UL508)
cCSAus	As Process Control Equipment for Hazardous Locations. - Class I, Division 2, Groups A, B, C and D. - T5, Enclosure Type 4. Ambient temperature Ta: -25° to +60°C
Note: The terminal connector (version ...M1) was not evaluated. The suitability of the terminal connector should be determined in the end-use application.	CCC is not required for products with a maximum operating voltage of ≤ 36 V
EMC protection	According to IEC 60947-5-2
IEC 61000-4-2 (ESD)	8 KV air discharge, 4 KV contact discharge
IEC 61000-4-3	3 V/m
IEC 61000-4-4	2 kV
IEC 61000-4-6	3 V
IEC 61000-4-8	30 A/m
$MTTF_d$	770 years @ 50°C (122°F)

Dimensions (mm)



Flush version

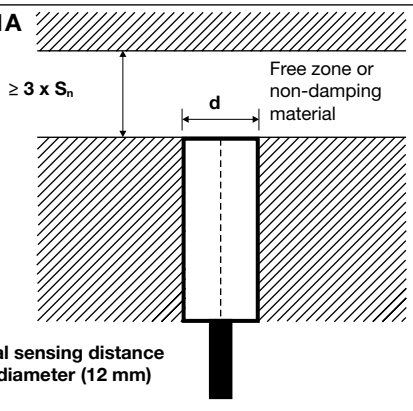


Non-flush version

Installation

Flush mountable proximity switches, when installed in damping material, must be according to Picture 1A.

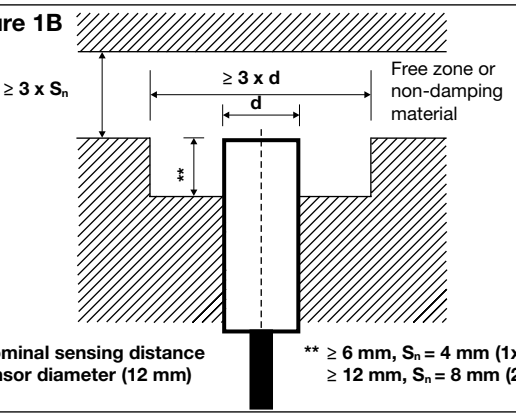
Picture 1A



S_n : nominal sensing distance
d : sensor diameter (12 mm)

Non-flush mountable proximity switches, when installed in damping material, must be according to Picture 1B.

Picture 1B



S_n : nominal sensing distance
d : sensor diameter (12 mm)

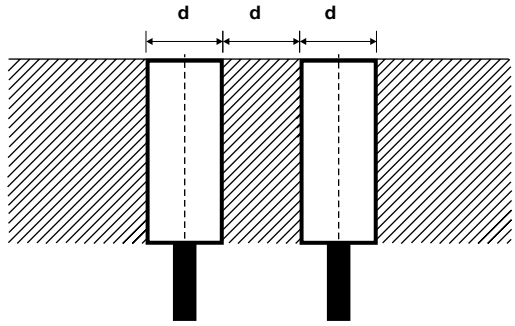
** ≥ 6 mm, S_n = 4 mm (1x)
≥ 12 mm, S_n = 8 mm (2x)

Installation (cont.)

Flush mountable proximity switches, when installed together in damping material, must be according to Picture 2A.

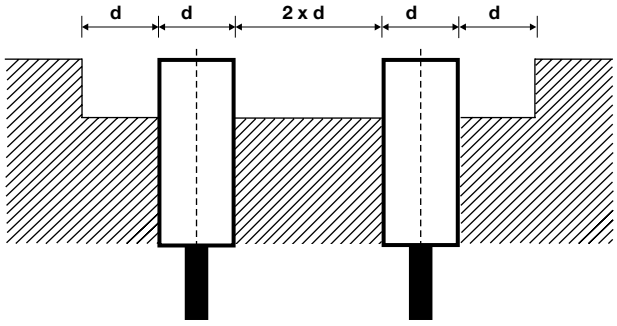
Non-flush mountable proximity switches, when installed together in damping material, must be according to Picture 2B.

Picture 2A



d : sensor diameter (12 mm)

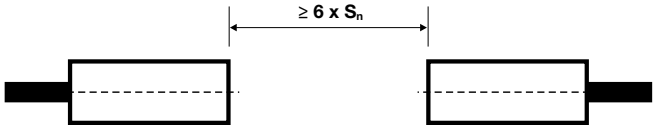
Picture 2B



d : sensor diameter (12 mm)

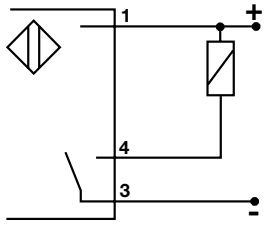
For sensors installed opposite each other, a minimum space of 6 x S_n (the nominal sensing distance) must be observed (See Picture 3).

Picture 3

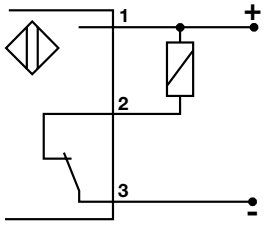


S_n : nominal sensing distance

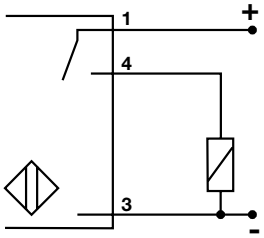
Wiring Diagram



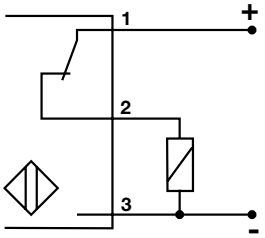
NPN - Normally open



NPN - Normally closed



PNP - Normally open



PNP - Normally closed

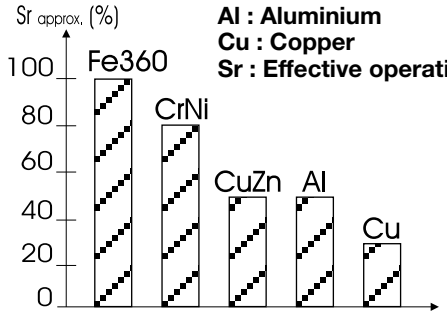
Reduction Factors

The rated operating distance is reduced by the use of metals and alloys other than Fe360.

The most important reduction factors for inductive proximity sensors are shown in Picture 4.

Picture 4

Fe360 : Steel
CrNi : Chrome-nickel
CuZn : Brass
Al : Aluminium
Cu : Copper
Sr : Effective operating distance



IP69K Connector Cables

4-wire angled connector, 2 m cable	**CONB14NF-A2W**
4-wire angled connector, 5 m cable	**CONB14NF-A5W**
4-wire straight connector, 2 m cable	**CONB14NF-S2W**
4-wire straight connector, 5 m cable	**CONB14NF-S5W**

For any additional information or different options, please refer to the "General Accessories" datasheets.

Delivery Contents

- Inductive proximity switch ICS.
- 2 nuts stainless steel
- Packaging: plastic bag