

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



- Sensing distance: 2 to 8 mm
- Flush or non-flush mountable
- Long body version
- Rated operational voltage (U<sub>b</sub>): 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

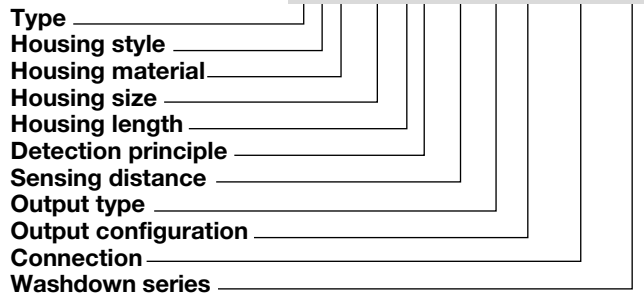


## Product Description

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 Selection

Connec- tion	Body style	Rated operating distance S <sub>n</sub>	Ordering no. NPN, Normally open	Ordering no. PNP, Normally open	Ordering no. NPN, Normally closed	Ordering no. PNP, Normally closed
<b>Standard range</b>						
Plug	Long	2 mm <sup>1)</sup>	ICS12LF02NOM1-FB	ICS12LF02POM1-FB	ICS12LF02NCM1-FB	ICS12LF02PCM1-FB
Plug	Long	4 mm <sup>2)</sup>	ICS12LN04NOM1-FB	ICS12LN04POM1-FB	ICS12LN04NCM1-FB	ICS12LN04PCM1-FB
<b>Extended range</b>						
Plug	Long	4 mm <sup>1)</sup>	ICS12LF04NOM1-FB	ICS12LF04POM1-FB	ICS12LF04NCM1-FB	ICS12LF04PCM1-FB
Plug	Long	8 mm <sup>2)</sup>	ICS12LN08NOM1-FB	ICS12LN08POM1-FB	ICS12LN08NCM1-FB	ICS12LN08PCM1-FB

<sup>1)</sup> For flush mounting in metal

<sup>2)</sup> For non-flush mounting in metal

## Specifications

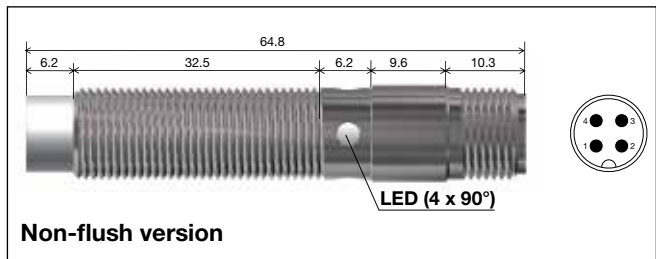
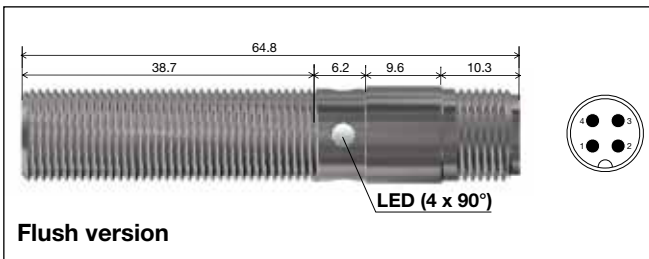
<b>Rated operational voltage (U<sub>b</sub>)</b>	10 to 36 VDC (ripple incl.)	<b>Indication for output ON</b>	Activated LED, yellow (4x90°)
<b>Ripple</b>	≤ 10%	NO version	Target present
<b>Output current (I<sub>a</sub>)</b>	≤ 200 mA @ 50°C (≤ 150 mA @ 50-80°C)	NC version	Target not present
<b>OFF-state current (I<sub>o</sub>)</b>	≤ 10 µA	<b>Indication for short circuit/ overload</b>	LED blinking (f = 2 Hz)
<b>No load supply current (I<sub>o</sub>)</b>	≤ 15 mA	<b>Assured operating sensing distance (S<sub>a</sub>)</b>	0 ≤ S <sub>a</sub> ≤ 0.81 × S <sub>n</sub>
<b>Voltage drop (U<sub>d</sub>)</b>	Max. 2 VDC @ 200 mA	<b>Effective operating distance (S<sub>r</sub>)</b>	0.9 × S <sub>n</sub> ≤ S <sub>r</sub> ≤ 1.1 × S <sub>n</sub>
<b>Protection</b>	Reverse polarity, short-circuit, transients	<b>Usable operating distance (S<sub>u</sub>)</b>	0.9 × S <sub>r</sub> ≤ S <sub>u</sub> ≤ 1.1 × S <sub>r</sub>
<b>Voltage transient</b>	1 kV/0.5 J	<b>Repeat accuracy (R)</b>	≤ 5%
<b>Power ON delay (t<sub>o</sub>)</b>	≤ 20 ms	<b>Differential travel (H)</b>	(Hysteresis)
<b>Operating frequency (f)</b>	≤ 2000 Hz		1 to 20% of sensing dist.



## Specifications (cont.)

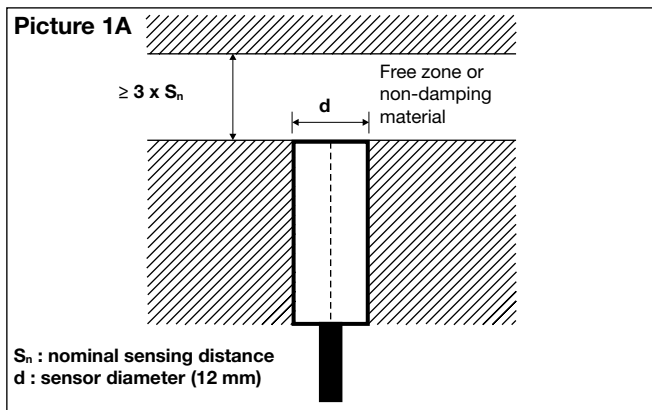
<b>Ambient temperature</b> Operating	-40° to +80°C (-40° to +176°F) short exposure (15') to 100°C during cleaning process	<b>Approvals</b>  Note: The terminal connector (version ...M1) was not evaluated. The suitability of the terminal connector should be determined in the end-use application.	<b>cULus</b>  <b>cCSAus</b>  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 CCC is not required for products with a maximum operating voltage of ≤ 36 V
Storage	-40° to +80°C (-40° to +176°F)		
<b>Shock and vibration</b>	IEC 60947-5-2/7.4	<b>EMC protection</b> IEC 61000-4-2 (ESD)  IEC 61000-4-3 IEC 61000-4-4 IEC 61000-4-6 IEC 61000-4-8	According to IEC 60947-5-2 8 kV air discharge, 4 kV contact discharge 3 V/m 2 kV 3 V 30 A/m
<b>Housing material</b> Body Front	Stainless steel (AISI 316L) Grey PPS - FDA-certified		
<b>Connection</b> Plug	M12 x 1		
<b>Degree of protection</b>	IP67, IP68 (1 m, 7 days), IP69K		
<b>Weight</b> (cable/nuts included)	Max. 35 g		
<b>Dimensions</b>	See diagrams below		
<b>Tightening torque</b>	25 Nm	<b>MTTF<sub>d</sub></b>	770 years @ 50°C (122°F)

## Dimensions (mm)

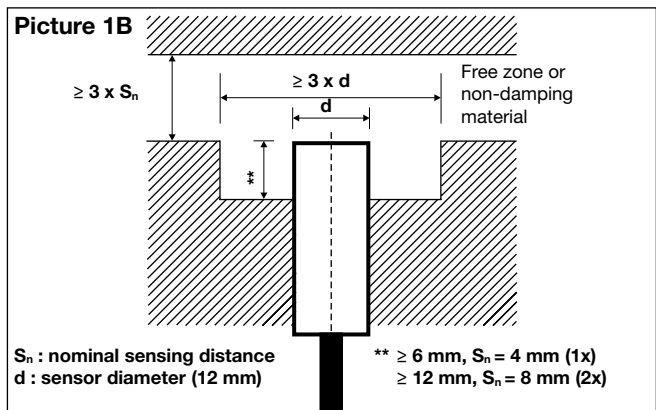


## Installation

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



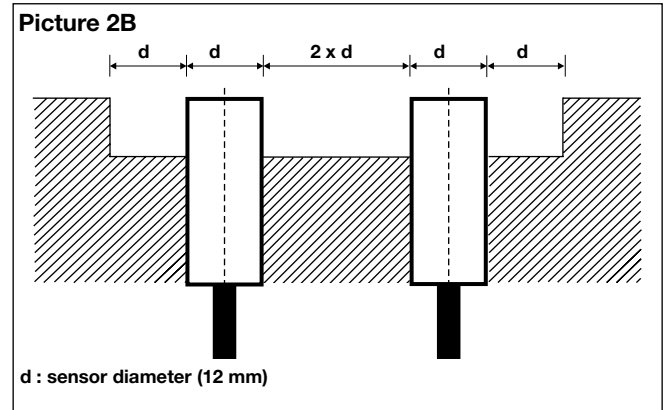
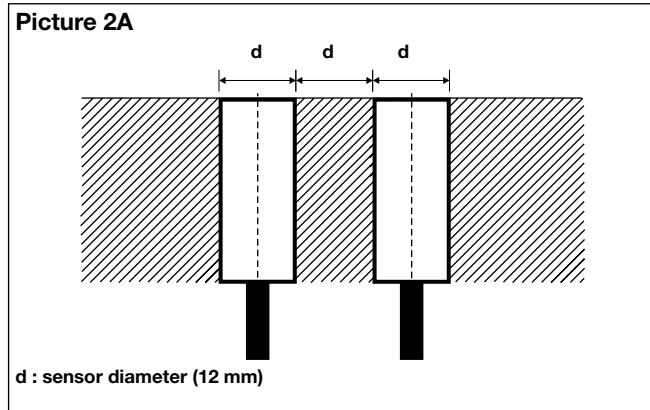
Non-flush mountable proximity switches, when installed in damping material, must be according to Picture 1B.



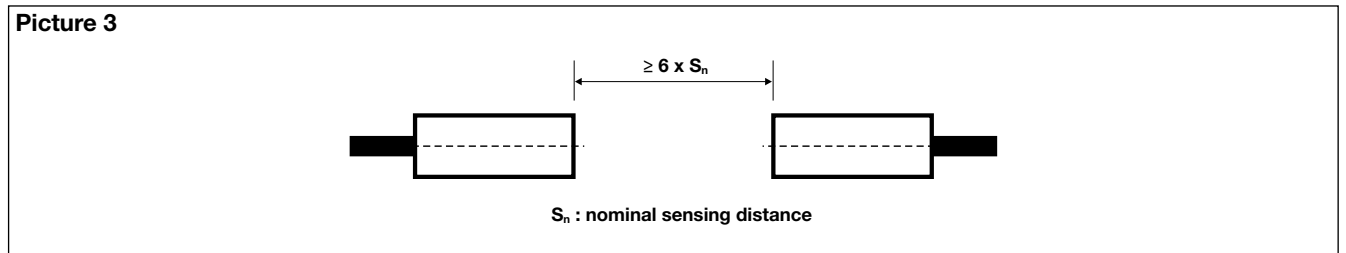
## Installation (cont.)

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

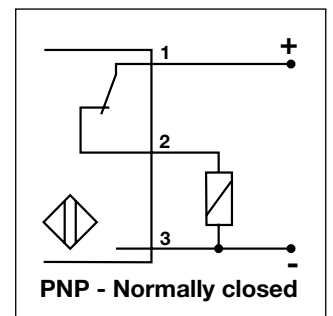
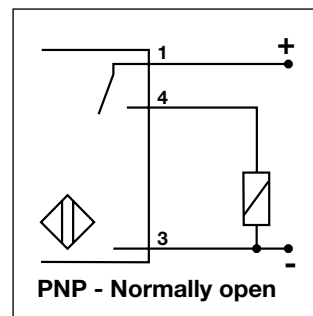
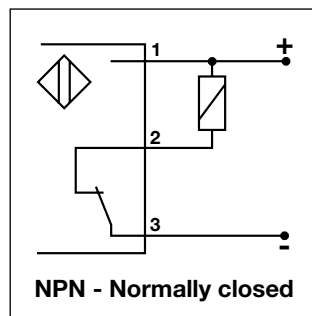
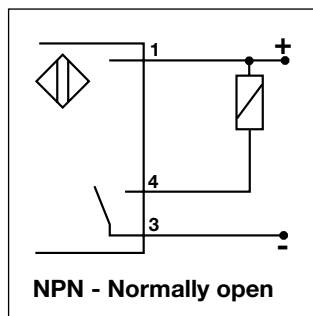
Non-flush mountable proximity switches, when installed together in damping material, must be according to Picture 2B.



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



## Wiring Diagram

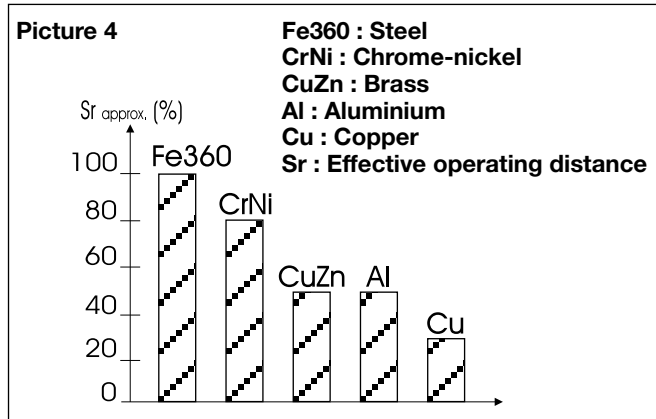




## Reduction Factors

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.



## IP69K Connector Cables

4-wire angled connector, 2 m cable	<b>CONB14NF-AP2W</b>
4-wire angled connector, 5 m cable	<b>CONB14NF-AP5W</b>
4-wire straight connector, 2 m cable	<b>CONB14NF-SP2W</b>
4-wire straight connector, 5 m cable	<b>CONB14NF-SP5W</b>

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