

ICS, M12, IP69K, Ecolab certified



Proximity inductive sensors, standard and extended range, stainless steel housing



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.

Benefits

- 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

References

Order code

ICS 12 L M1 - FB

Enter the code entering the corresponding option instead of

Code	Option	Description
ICS	-	Proximity inductive sensors, stainless steel housing
12	-	Housing size
L	-	Housing length: long
<input type="checkbox"/>	F	Detection principle: flush mounting
	N	Detection principle: non-flush mounting
<input type="checkbox"/>	02	Sensing distance: 2mm
	04	Sensing distance: 4mm
	08	Sensing distance: 8mm
<input type="checkbox"/>	N	Output type: NPN
	P	Output type: PNP
<input type="checkbox"/>	O	Output configuration: normally open
	C	Output configuration: normally closed
M1	-	Connection: plug
- FB	-	Washdown series

Selection guide

Standard range

Con- nec- tion	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
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

Con- nec- tion	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
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

Sensing

Detection

Assured operating sensing distance (S_a)	$0 \leq S_a \leq 0.81 \times S_n$
Effective operating distance (S_r)	$0.9 \times S_n \leq S_r \leq 1.1 \times S_n$
Usable operating distance (S_u)	$0.9 \times S_r \leq S_u \leq 1.1 \times S_r$
Differential travel (H) (Hysteresis)	1 to 20% of sensing dist.

Correction factors

The specific operating distance S_n refers to defined measuring conditions. The following data have to be considered as general guidelines.

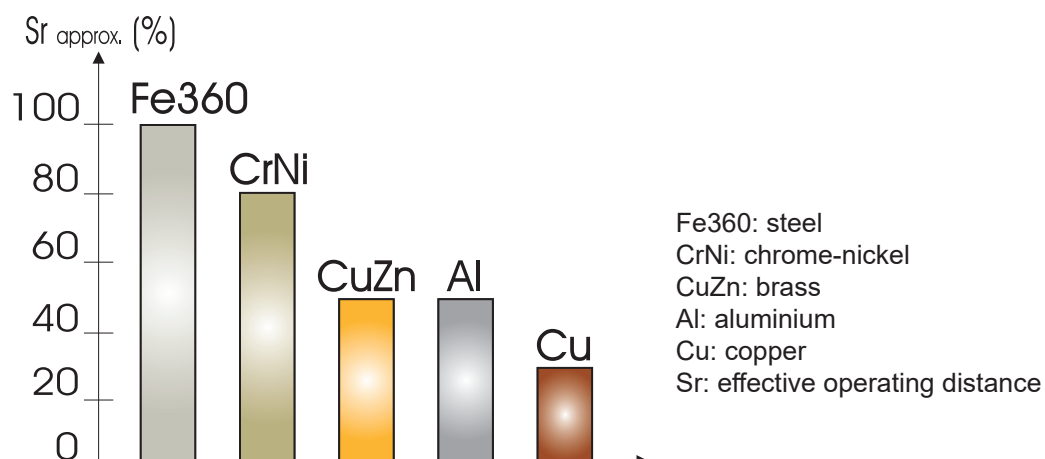


Fig. 1 The rated operating distance is reduced by the use of metals and alloys other than Fe360. The most important reduction factors for inductive proximity sensors are shown in the figure.

Accuracy

Repeat accuracy (R)	≤ 5%
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Features

Power Supply

Rated operational voltage (U_b)	10 to 36 VDC (ripple incl.)
Ripple (U_{rip})	≤ 10%
No load supply current (I_o)	≤ 15 mA
Power ON delay (t_o)	≤ 20 ms

Outputs

Output current (I_o)	≤ 200 mA @ 50°C (≤ 150 mA @ 50-70°C)
OFF-state current (I_o)	≤ 10 μA
Voltage drop (U_d)	Max. 2 VDC @ 200 mA
Protection	Reverse polarity, short-circuit, transients
Voltage transient	1 kV/0.5 J

Response times

Max. operating frequency (f)	≤ 2000 Hz
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Indication

Indication for output ON NO version NC version	Activated LED, yellow (4x90°) Target present Target not present
Indication for short circuit/ overload	LED blinking (f = 2 Hz)

Environmental

Ambient temperature Operating Storage	-40° to +80°C (-40° to +176°F) short exposure (15') to 100°C during cleaning process -40° to +80°C (-40° to +176°F)
Shock and vibration	IEC 60947-5-2/7.4
Degree of protection	IP67, IP68 (1 m, 7 days), IP69K

Compatibility and conformity

EMC protection - According to IEC 60947-5-2	
Electrostatic discharge (ESD)	IEC 61000-4-2 8 kV air discharge, 4 kV contact discharge
Radiated radio frequency	IEC 61000-4-3 3 V/m
Burst immunity	IEC 61000-4-4 2 kV
Conducted radio frequency	IEC 61000-4-6 3 V
Power frequency magnetic fields	IEC 61000-4-8 30 A/m
MTTF _d	770 years @ 50°C (122°F)
Approvals	   
	CCC is not required for products rated ≤ 36 V

Mechanical data

Weight (cable/nuts included)	Max. 35g
Mounting	Flush or non flush mountable
Material	Body: stainless steel (AISI 316L) Front: grey PPS - FDA-certified
Tightening torque	25 Nm

Electrical connection

Plug	M12 x 1
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Connection Diagrams

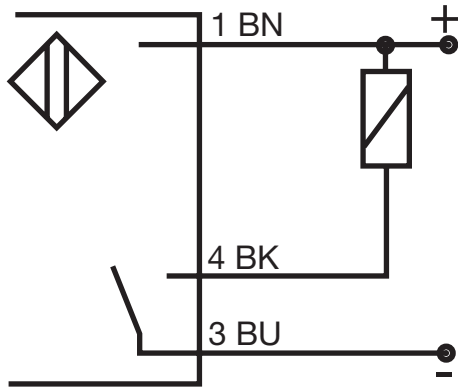


Fig. 2 NPN - Normally open

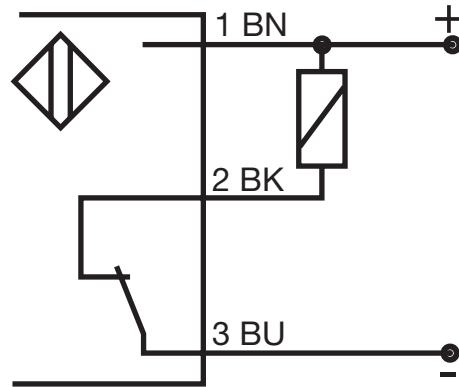


Fig. 3 NPN - Normally closed

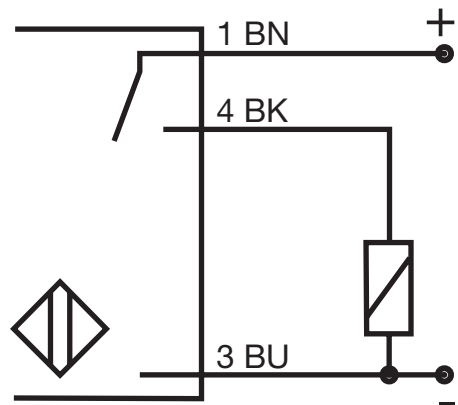


Fig. 4 PNP - Normally open

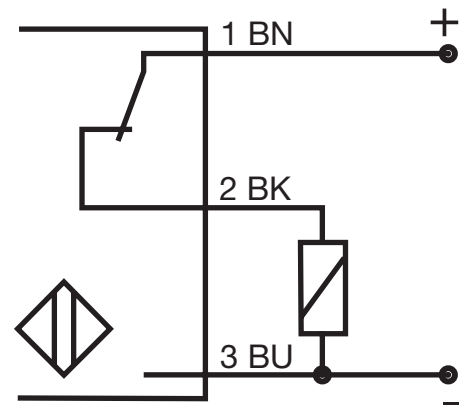


Fig. 5 PNP - Normally closed

Colour code		
BN: brown	BK: black	BU: blue

Dimensions [mm]

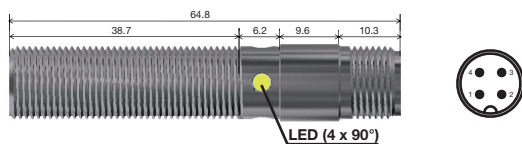


Fig. 6 Flush version

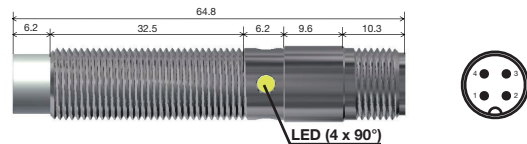


Fig. 7 Non-flush version

Installation

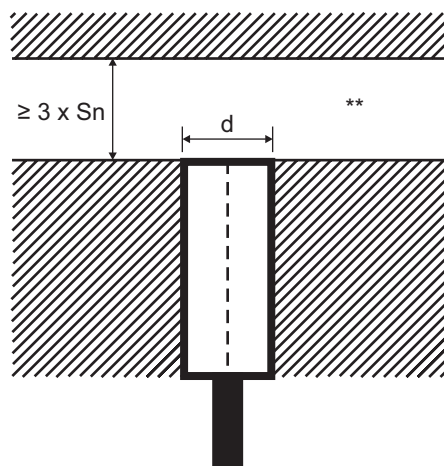


Fig. 8 Flush sensor, when installed in damping material

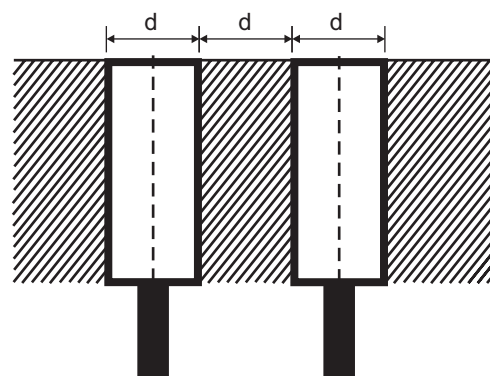


Fig. 9 Flush sensors, when installed together in damping material

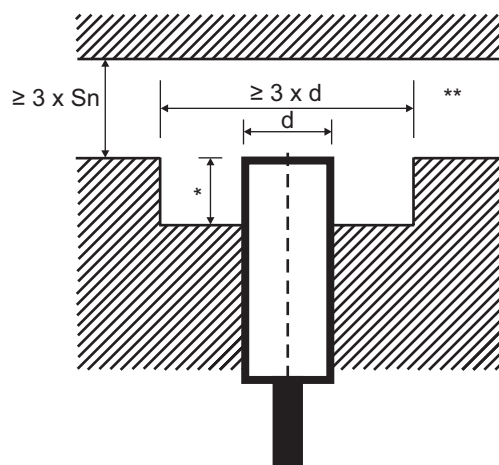


Fig. 10 Non-flush sensor, when installed in damping material

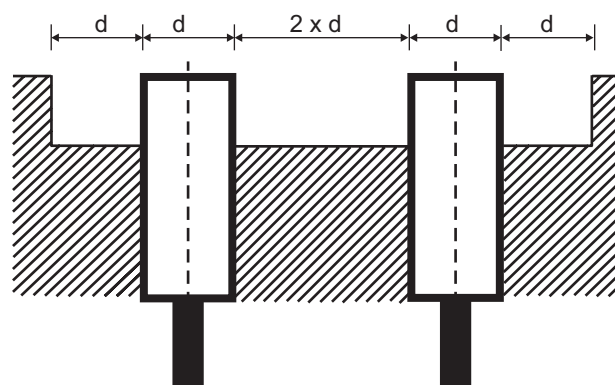


Fig. 11 Non-flush sensors, when installed together in damping material

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

** Free zone or non-damping material

S_n : nominal sensing distance

d: sensor diameter: 12 mm

Sensors installed opposite each other

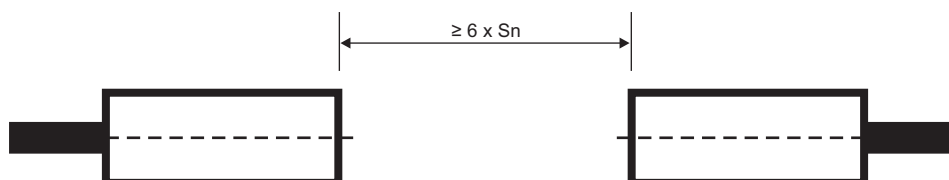


Fig. 12 For sensors installed opposite each other, a minimum space of $6 \times S_n$ (the nominal sensing distance) must be observed

Delivery contents and compatible components

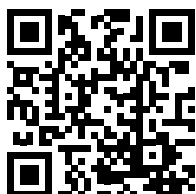
Delivery contents

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

CARLO GAVAZZI compatible components

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

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



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