

# Proximity Inductive Sensors Extended Range, Nickel-Plated Brass Housing Types ICB, M12 - Extra short body version

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- Sensing distance: 4 to 8 mm
- Flush or non-flush types
- Extra short body versions
- Rated operational voltage ( $U_b$ ): 10 - 36 VDC
- Output: DC 200 mA, NPN or PNP
- Normally open or Normally closed
- LED indication for output ON
- Protection: reverse polarity, short circuit, transients
- Cable versions
- According to IEC 60947-5-2
- Laser engraved on front cap, permanently legible
- Extended temperature range of  $-25^{\circ}\text{C} \dots +80^{\circ}\text{C}$
- CSA certified for Hazardous Locations



## Product Description

A family of inductive proximity switches in industrial standard nickel-plated brass housings. They are characterized by extremely high performance in a very small design, to satisfy the most

demanding applications, also where the space available for the sensor is limited and extended sensing range is requested. Output is open collector NPN or PNP transistors.

## Ordering Key

**ICB12S23F04NO**

Type \_\_\_\_\_  
Housing style \_\_\_\_\_  
Housing material \_\_\_\_\_  
Housing size \_\_\_\_\_  
Housing length \_\_\_\_\_  
Thread length \_\_\_\_\_  
Detection principle \_\_\_\_\_  
Sensing distance \_\_\_\_\_  
Output type \_\_\_\_\_  
Output configuration \_\_\_\_\_

## Type Selection

Conne- ction	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
Cable	Short	4 mm <sup>1)</sup>	ICB12S23F04NO	ICB12S23F04PO	ICB12S23F04NC	ICB12S23F04PC
Cable	Short	8 mm <sup>2)</sup>	ICB12S23N08NO	ICB12S23N08PO	ICB12S23N08NC	ICB12S23N08PC

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

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

## Specifications

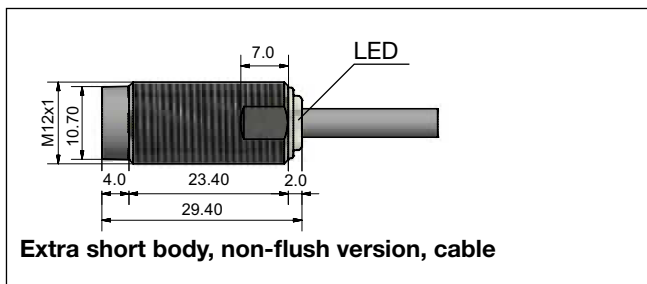
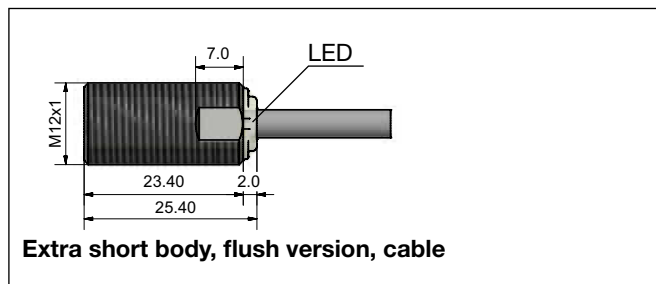
<b>Rated operational voltage (<math>U_b</math>)</b>	10 to 36 VDC (ripple incl.)	<b>Effective operating distance (<math>S_r</math>)</b>	$0.9 \times S_n \leq S_r \leq 1.1 \times S_n$
<b>Ripple</b>	$\leq 10\%$	<b>Usable operating distance (<math>S_u</math>)</b>	$0.9 \times S_r \leq S_u \leq 1.1 \times S_r$
<b>Output current (<math>I_o</math>)</b>	$\leq 200 \text{ mA @ } 50^{\circ}\text{C}$	<b>Repeat accuracy (R)</b>	$\leq 10\%$
<b>OFF-state current (<math>I_r</math>)</b>	$\leq 50 \mu\text{A}$	<b>Differential travel (H) (Hysteresis)</b>	1 to 20% of sensing dist.
<b>No load supply current (<math>I_o</math>)</b>	$\leq 15 \text{ mA}$	<b>Ambient temperature</b>	
<b>Voltage drop (<math>U_d</math>)</b>	Max. 2.5 VDC @ 200 mA	Operating	$-25^{\circ}$ to $+80^{\circ}\text{C}$ ( $-13^{\circ}$ to $+176^{\circ}\text{F}$ )
<b>Protection</b>	Reverse polarity, short-circuit, transients	Storage	$-25^{\circ}$ to $+80^{\circ}\text{C}$ ( $-13^{\circ}$ to $+176^{\circ}\text{F}$ )
<b>Voltage transient</b>	1 kV/0.5 J	<b>Shock and vibration</b>	IEC 60947-5-2/7.4
<b>Power ON delay (<math>t_v</math>)</b>	$\leq 40 \text{ ms}$	<b>Housing material</b>	
<b>Max. operating frequency (f)</b>	$\leq 2000 \text{ Hz}$	Body	Nickel-plated brass
<b>Indication for output ON</b>	Activated LED, yellow	Front	Grey thermoplastic polyester
NO version	Target present	<b>Connection</b>	
NC version	Target not present	Cable	$\varnothing 4.1 \times 2 \text{ m}$ , $3 \times 0.25 \text{ mm}^2$ , grey PVC, oil proof
<b>Indication for short circuit/ overload</b>	LED blinking (f = 2 Hz)	<b>Degree of protection</b>	IP 67
<b>Assured operating sensing distance (<math>S_a</math>)</b>	$0 \leq S_a \leq 0.81 \times S_n$	<b>Weight (cable/nuts included)</b>	Max. 70 g



## Specifications (cont.)

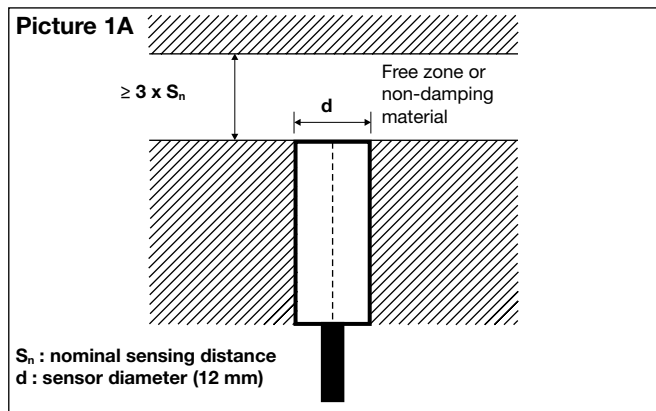
<b>Dimensions</b>	See diagrams below		<b>Approvals (cont.)</b>	CCC is not required for products with a maximum operating voltage of $\leq 36\text{ V}$
<b>Tightening torque</b> Distance from sensing face from 0 mm to 4 mm > 4 mm	10 Nm 15 Nm		<b>EMC protection</b> IEC 61000-4-2 (ESD)	According to IEC 60947-5-2 8 KV air discharge, 4 KV contact discharge 3 V/m 2 kV 3 V 30 A/m
<b>Approvals</b>	<b>cULus</b>	(UL508)	IEC 61000-4-3 IEC 61000-4-4 IEC 61000-4-6 IEC 61000-4-8	
	<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	<b>MTTF<sub>d</sub></b>	816 years @ 50°C (122°F)

## Dimensions (mm)

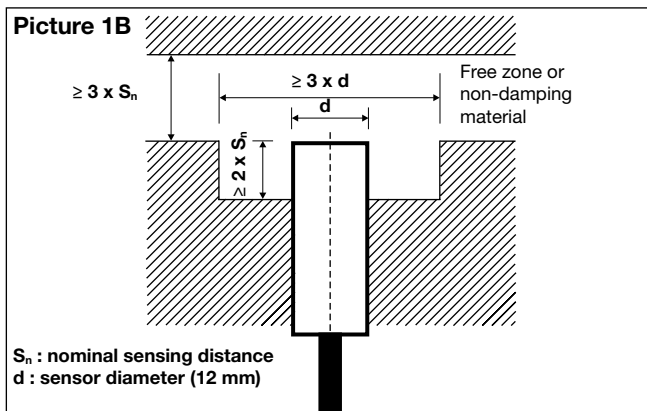


## Installation

Flush sensor, when installed in damping material, must be according to Picture 1A.

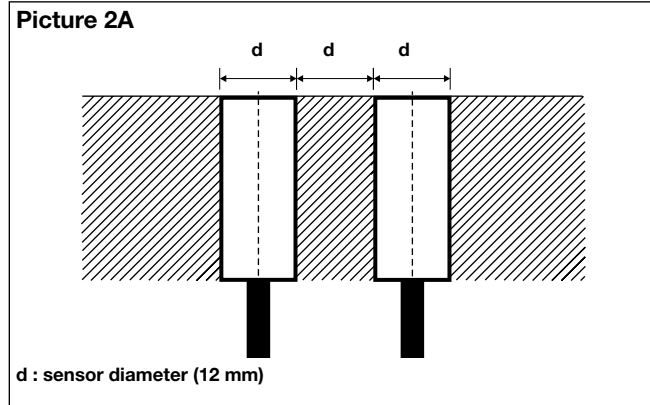


Non-flush sensor, when installed in damping material, must be according to Picture 1B.

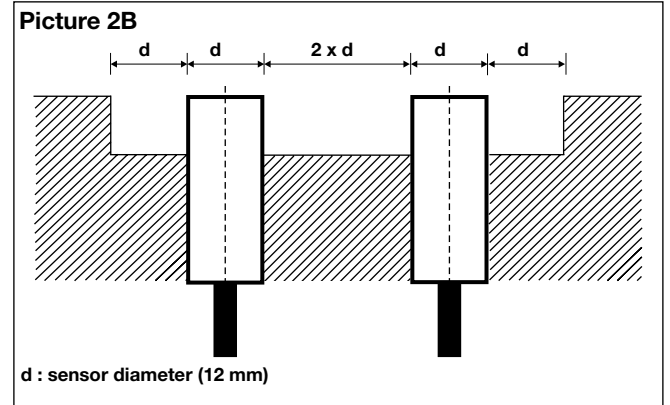


## Installation (cont.)

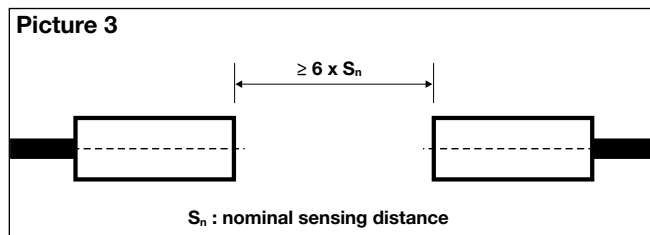
Flush sensors, when installed together in damping material, must be according to Picture 2A.



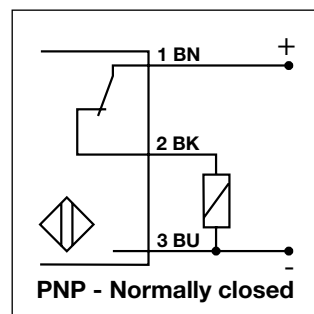
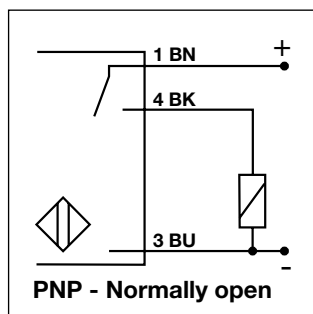
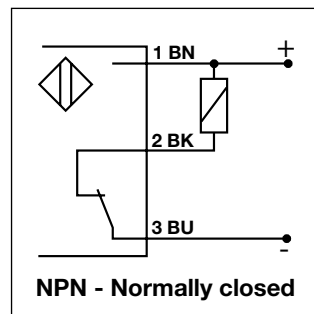
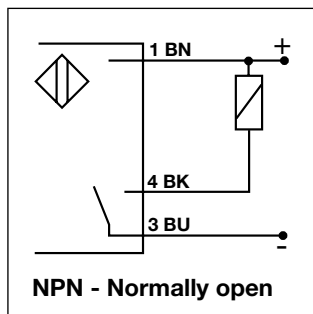
Non-flush sensors, when installed together in damping material, must be according to Picture 2B.



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



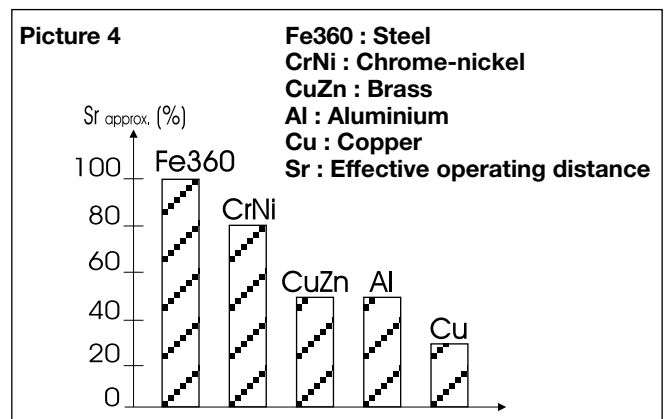
## Wiring Diagram



## Reduction Factors

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

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



## Delivery Contents

- Inductive proximity switch ICB.
- 2 nuts NPB
- Packaging: plastic bag