Proximity Inductive Sensors
Standard range, Nickel-Plated Brass Housing
Types ICB, M12

- **Sensing distance: 2 mm**
- **Flush type**
- **Short and long body versions**
- **Rated operational voltage (U_b): 10 - 36 VDC**
- **Output: DC 200 mA, NPN or PNP**
- **Normally open, Normally closed**
- **LED indication for output ON**
- **Protection: reverse polarity, short circuit, transients**
- **Cable and M12 plug versions**
- **According to IEC 60947-5-2**
- **Higher resistance to magnetic field**
- **CSA certified for Hazardous Locations**

Product Description

A family of inductive proximity switches in industrial standard nickel-plated brass housings. They are able to handle applications where high sensing range is requested.
Output is open collector NPN or PNP transistors.

Ordering Key

ICB12SF02NOM1

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

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
Cable	Short	2 mm	**ICB 12 SF 02 NO**	**ICB 12 SF 02 PO**	**ICB 12 SF 02 NC**	**ICB 12 SF 02 PC**
Plug	Short	2 mm	**ICB 12 SF 02 NOM1**	**ICB 12 SF 02 POM1**	**ICB 12 SF 02 NCM1**	**ICB 12 SF 02 PCM1**
Cable	Long	2 mm	**ICB 12 LF 02 NO**	**ICB 12 LF 02 PO**	**ICB 12 LF 02 NC**	**ICB 12 LF 02 PC**
Plug	Long	2 mm	**ICB 12 LF 02 NOM1**	**ICB 12 LF 02 POM1**	**ICB 12 LF 02 NCM1**	**ICB 12 LF 02 PCM1**

Specifications

Rated operational voltage (U_b)	10 to 36 VDC (ripple incl.)
Ripple	≤ 10%
Output current (I_e)	≤ 200 mA @ 50°C (≤ 150 mA @ 50-70°C)
OFF-state current (I_r)	≤ 50 µA
No load supply current (I_O)	≤ 15 mA
Voltage drop (U_d)	Max. 2.5 VDC @ 200 mA
Protection	Reverse polarity, short-circuit, transients
Voltage transient	1 kV/0.5 J
Power ON delay (t_v)	300 ms
Operating frequency (f)	≤ 2000 Hz
Indication for output ON NO version NC version	Activated LED, yellow Target present Target not present

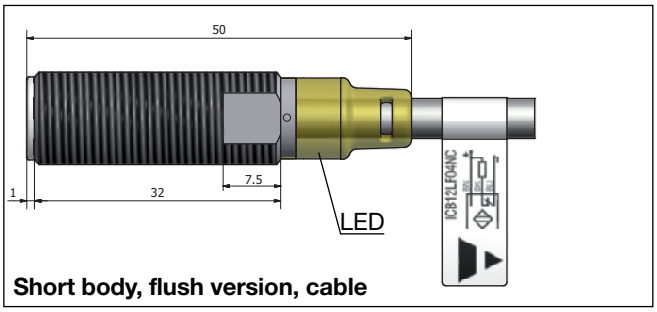
Indication for short circuit/ overload	LED blinking
Assured operating sensing distance (S_a)	$0 \le S_a \le 0.81 \times S_n$
Effective operating distance (S_r)	$0.9 \times S_n \le S_r \le 1.1 \times S_n$
Usable operating distance (S_u)	$0.9 \times S_r \le S_u \le 1.1 \times S_r$
Repeat accuracy (R)	≤ 10%
Differential travel (H) (Hysteresis)	1 to 20% of sensing dist.
Ambient temperature Operating Storage	 -25° to +70°C (-13° to +158°F) -30° to +80°C (-22° to +176°F)
Shock and vibration	IEC 60947-5-2/7.4
Housing material Body Front	 Nickel-plated brass Grey thermoplastic polyester

Specifications (cont.)

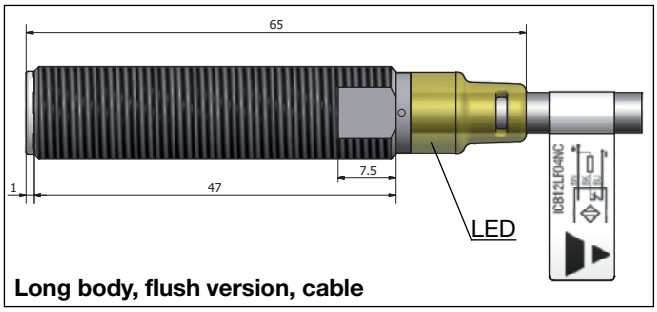
Connection	
Cable	2 m, 3 x 0.25 mm², grey PVC, oil proof
Plug	M12 x 1
Degree of protection	IP 67
Weight (cable/nuts included)	
Cable	Max. 120 g
Plug	Max. 30 g
Dimensions	See diagrams below
Tightening torque	
Distance from sensing face	
from 2 mm to 5 mm	4 Nm
> 5 mm	10 Nm
Approvals	
UL (cULus), CSA	As Industrial Control Equipment - Proximity Switches. Types 1, 4, 4X or 12. Max ambient temperature 40°C.

Approvals (cont.)	
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. CCC is not required for products with a maximum operating voltage of ≤ 36 V
Note: The terminal connector (version ...M1) was not evaluated. The suitability of the terminal connector should be determined in the end-use application.	
CE-marking	Yes
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

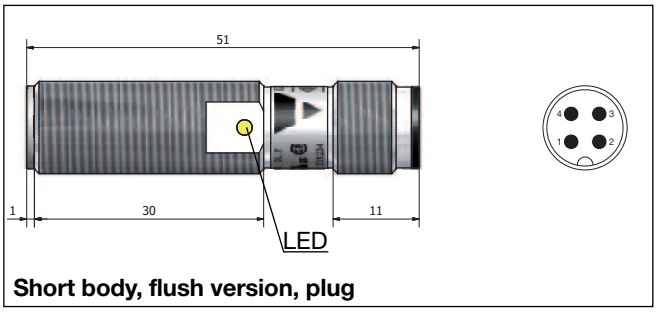
Dimensions



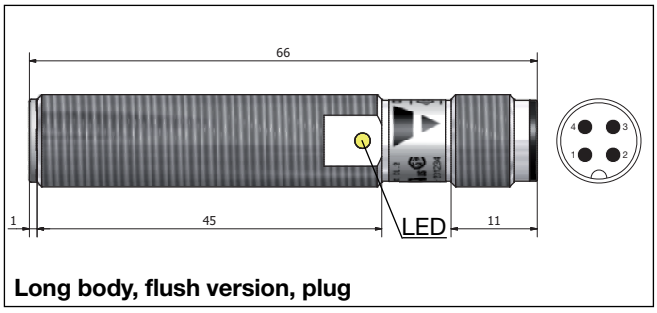
Short body, flush version, cable



Long body, flush version, cable



Short body, flush version, plug

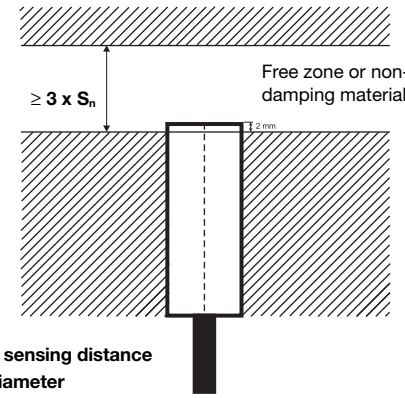


Long body, flush version, plug

Installation

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

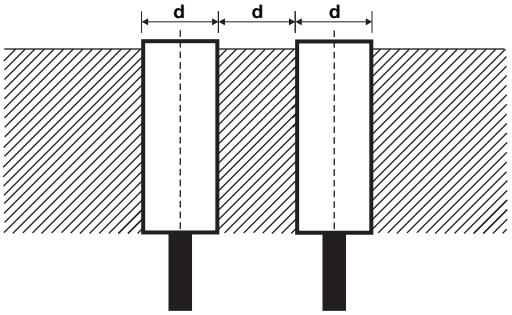
Picture 1A



S_n : nominal sensing distance
d : sensor diameter

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

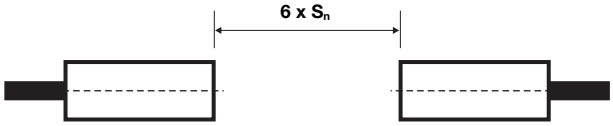
Picture 2A



d : sensor diameter

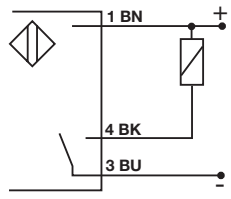
For sensors installed opposite each other, a minimum space of 6 x Sn (the nominal sensing distance) must be observed (See Picture 3).

Picture 3

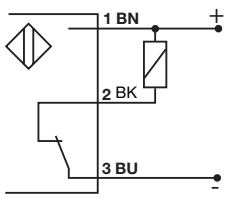


S_n : nominal sensing distance

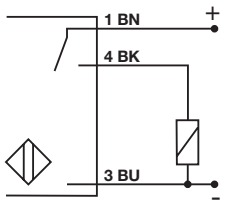
Wiring Diagrams



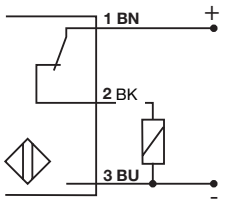
NPN - Normally open



NPN - Normally closed



PNP - Normally open



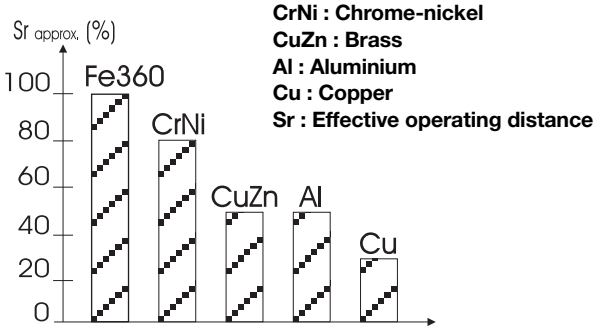
PNP - Normally closed

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

Delivery Contents

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

Accessories for Plug Versions

	PVC	PUR
3-wire angled connector, 2 m cable	**CONB13NF-A2**	**CONB13NF-A2P**
3-wire angled connector, 5 m cable	**CONB13NF-A5**	**CONB13NF-A5P**
3-wire angled connector, 10 m cable	**CONB13NF-A10**	**CONB13NF-A10P**
3-wire angled connector, 15 m cable	**CONB13NF-A15**	**CONB13NF-A15P**
3-wire straight connector, 2m cable	**CONB13NF-S2**	**CONB13NF-S2P**
3-wire straight connector, 5m cable	**CONB13NF-S5**	**CONB13NF-S5P**
3-wire straight connector, 10m cable	**CONB13NF-S10**	**CONB13NF-S10P**
3-wire straight connector, 15m cable	**CONB13NF-S15**	**CONB13NF-S15P**

For any additional information or different options, please refer to the "General Accessories - Connector Cables -Type CONB1..." datasheets.