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

- **Sensing distance: 2 to 4 mm**
- **Flush and non-flush types**
- **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**

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 1)	**ICB 12 SF 02 NO**	**ICB 12 SF 02 PO**	**ICB 12 SF 02 NC**	**ICB 12 SF 02 PC**
Cable	Short	4 mm 2)	**ICB 12 SN 04 NO**	**ICB 12 SN 04 PO**	**ICB 12 SN 04 NC**	**ICB 12 SN 04 PC**
Plug	Short	2 mm 1)	**ICB 12 SF 02 NOM1**	**ICB 12 SF 02 POM1**	**ICB 12 SF 02 NCM1**	**ICB 12 SF 02 PCM1**
Plug	Short	4 mm 2)	**ICB 12 SN 04 NOM1**	**ICB 12 SN 04 POM1**	**ICB 12 SN 04 NCM1**	**ICB 12 SN 04 PCM1**
Cable	Long	2 mm 1)	**ICB 12 LF 02 NO**	**ICB 12 LF 02 PO**	**ICB 12 LF 02 NC**	**ICB 12 LF 02 PC**
Cable	Long	4 mm 2)	**ICB 12 LN 04 NO**	**ICB 12 LN 04 PO**	**ICB 12 LN 04 NC**	**ICB 12 LN 04 PC**
Plug	Long	2 mm 1)	**ICB 12 LF 02 NOM1**	**ICB 12 LF 02 POM1**	**ICB 12 LF 02 NCM1**	**ICB 12 LF 02 PCM1**
Plug	Long	4 mm 2)	**ICB 12 LN 04 NOM1**	**ICB 12 LN 04 POM1**	**ICB 12 LN 04 NCM1**	**ICB 12 LN 04 PCM1**

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 @ 50-70°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

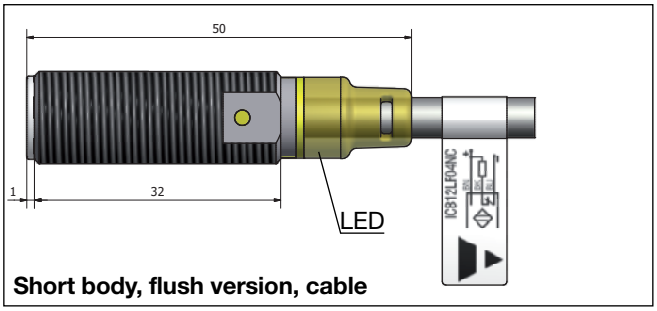
Indication for short circuit	LED blinking
Assured operating sensing distance (S_a)	$0 \le S_a \le 0.81 \times S_n$
Effective operating distance (S_r)	$0.9 \times S_n \le S_r \le 1.1 \times S_n$
Usable operating distance (S_u)	$0.9 \times S_r \le S_u \le 1.1 \times S_r$
Repeat accuracy (R)	≤ 10%
Differential 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.)

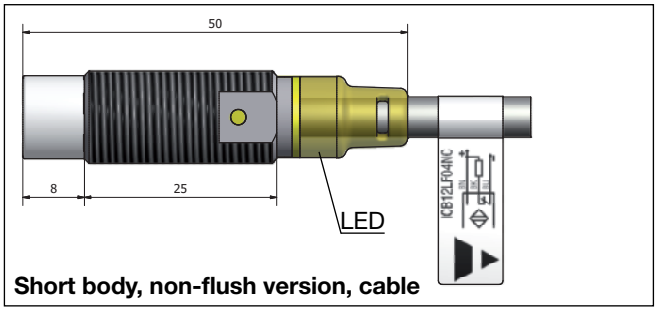
Connection	
Cable	2 m, 3 x 0.3 mm², grey PVC, oil proof
Plug	M12 x 1
Degree of protection	IP 67
Weight (cable/nuts included)	
Cable	Max. 120 g
Plug	Max. 30 g
Dimensions	See diagrams below
Tightening torque	
Distance from sensing face	
from 2 mm to 5 mm	4 Nm
> 5 mm	10 Nm

Approvals	UL (cRUus), CSA
CE-marking	Yes
EMC protection	According to IEC 60947-5-2
IEC 6100-4-2 (ESD)	8 KV air discharge, 4 KV contact discharge
IEC 6100-4-3	3 V/m
IEC 6100-4-4	2 kV
IEC 6100-4-6	3 V
IEC 6100-4-8	30 A/m

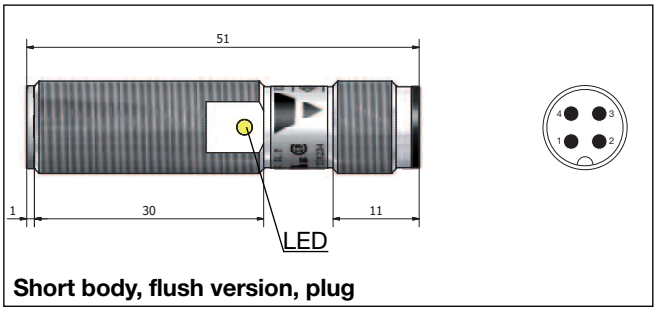
Dimensions



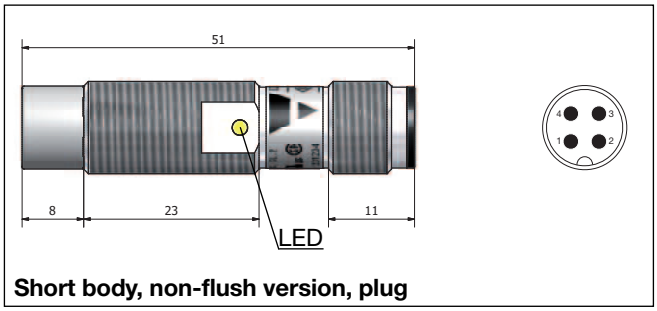
Short body, flush version, cable



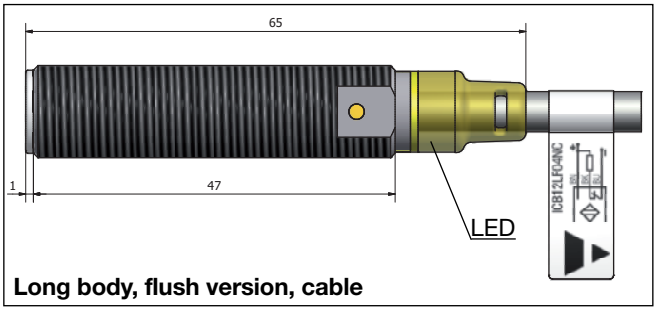
Short body, non-flush version, cable



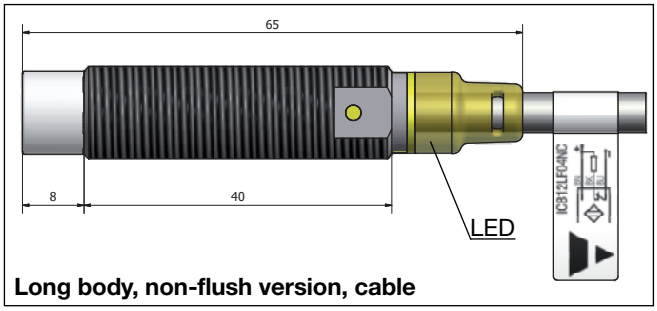
Short body, flush version, plug



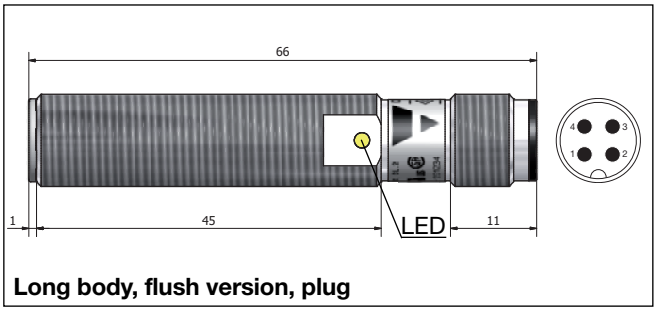
Short body, non-flush version, plug



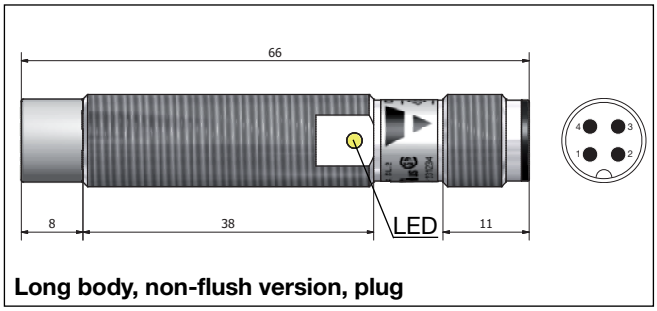
Long body, flush version, cable



Long body, non-flush version, cable

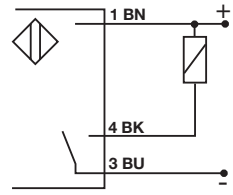


Long body, flush version, plug

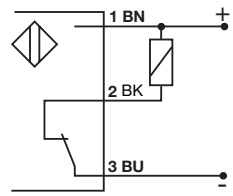


Long body, non-flush version, plug

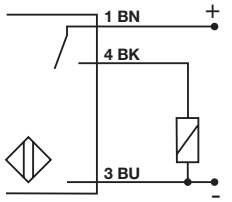
Wiring Diagrams



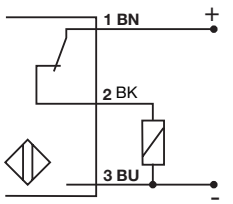
NPN - Normally open



NPN - Normally closed



PNP - Normally open

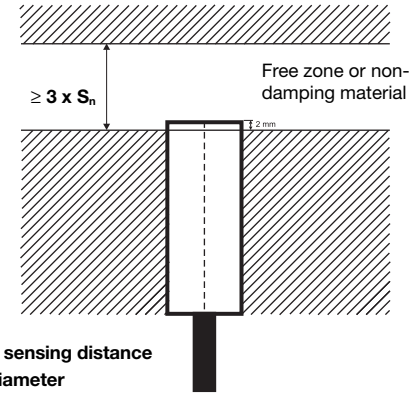


PNP - Normally closed

Installation

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

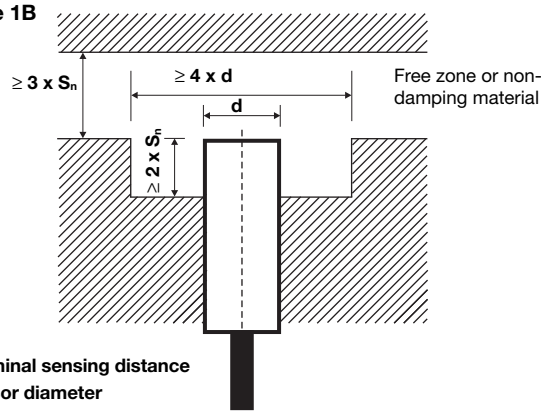
Picture 1A



S_n : nominal sensing distance
d : sensor diameter

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

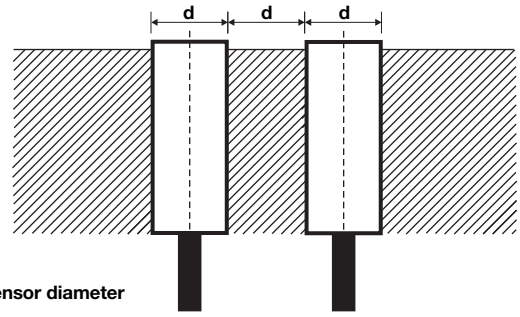
Picture 1B



S_n : nominal sensing distance
d : sensor diameter

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

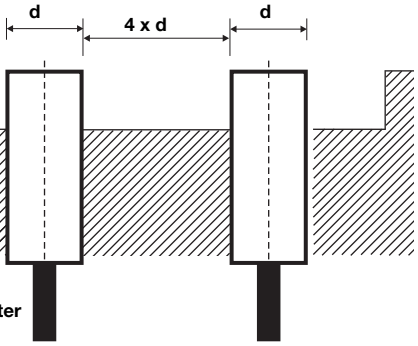
Picture 2A



d : sensor diameter

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

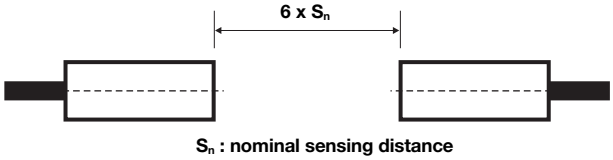
Picture 2B



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



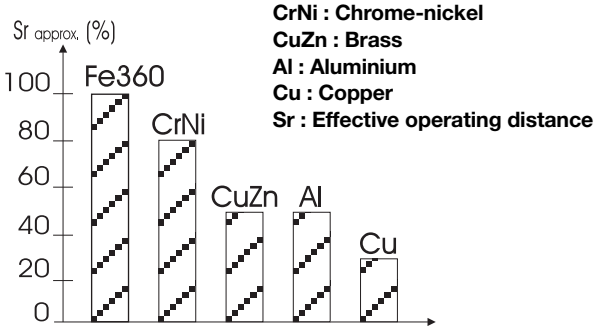
S_n : nominal sensing distance

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