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

CARLO GAVAZZI

- **Sensing distance: 2 to 4 mm**
- **Flush or non-flush types**
- **Short or long 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 or M12 plug versions**
- **According to IEC 60947-5-2**
- **Laser engraved on front cap, permanently legible**
- **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

ICB12S30F02NOM1

- **Type**
- **Housing style**
- **Housing material**
- **Housing size**
- **Housing length**
- **Thread 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]	**ICB12S30F02NO**	**ICB12S30F02PO**	**ICB12S30F02NC**	**ICB12S30F02PC**
Cable	Short	4 mm [2]	**ICB12S30N04NO**	**ICB12S30N04PO**	**ICB12S30N04NC**	**ICB12S30N04PC**
Plug	Short	2 mm [1]	**ICB12S30F02NOM1**	**ICB12S30F02POM1**	**ICB12S30F02NCM1**	**ICB12S30F02PCM1**
Plug	Short	4 mm [2]	**ICB12S30N04NOM1**	**ICB12S30N04POM1**	**ICB12S30N04NCM1**	**ICB12S30N04PCM1**
Cable	Long	2 mm [1]	**ICB12L50F02NO**	**ICB12L50F02PO**	**ICB12L50F02NC**	**ICB12L50F02PC**
Cable	Long	4 mm [2]	**ICB12L50N04NO**	**ICB12L50N04PO**	**ICB12L50N04NC**	**ICB12L50N04PC**
Plug	Long	2 mm [1]	**ICB12L50F02NOM1**	**ICB12L50F02POM1**	**ICB12L50F02NCM1**	**ICB12L50F02PCM1**
Plug	Long	4 mm [2]	**ICB12L50N04NOM1**	**ICB12L50N04POM1**	**ICB12L50N04NCM1**	**ICB12L50N04PCM1**

[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)	≤ 20 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 (f = 2 Hz)
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

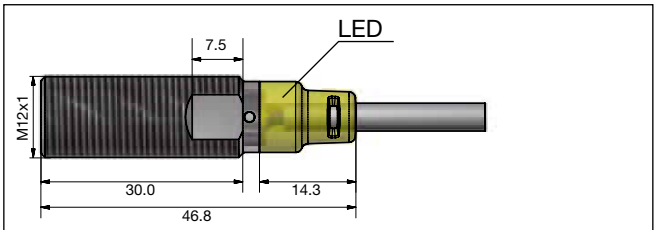
Specifications (cont.)

Housing material	
Body	Nickel-plated brass
Front	Grey thermoplastic polyester
Connection	
Cable	Ø4.1 x 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	10 Nm
Approvals **cULus**	(UL508)
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

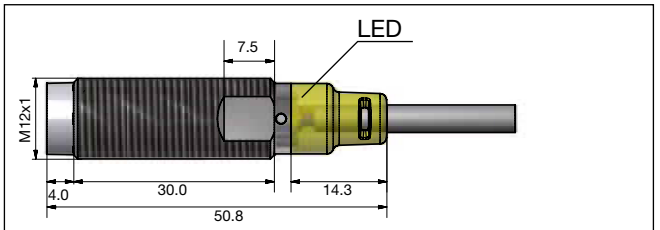
Note: The terminal connector (version ...M1) was not evaluated. The suitability of the terminal connector should be determined in the end-use application.

Approvals (cont.)	CCC is not required for products with a maximum operating voltage of ≤ 36 V
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
MTTF$_d$	750 years @ 50°C (122°F)

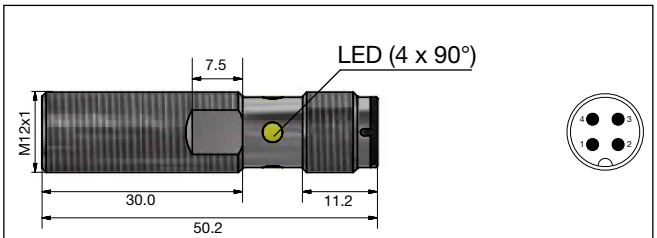
Dimensions (mm)



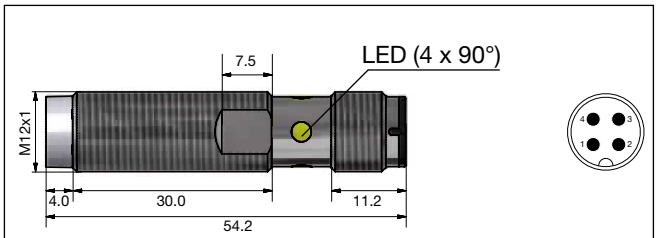
Short body, flush version, cable



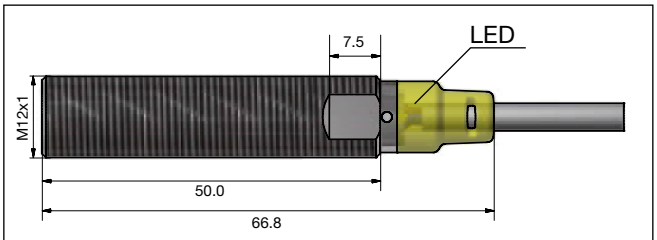
Short body, non-flush version, cable



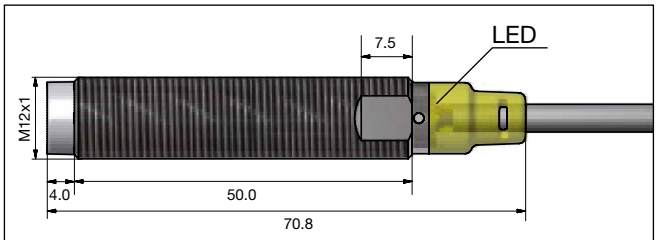
Short body, flush version, plug



Short body, non-flush version, plug

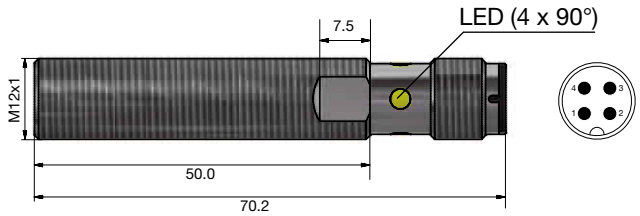


Long body, flush version, cable

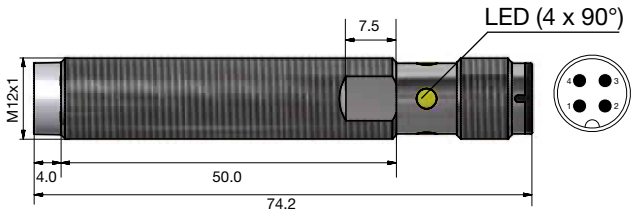


Long body, non-flush version, cable

Dimensions (mm) (cont.)



Long body, flush version, plug

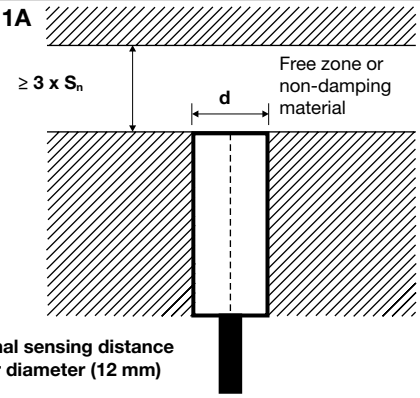


Long body, non-flush version, plug

Installation

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

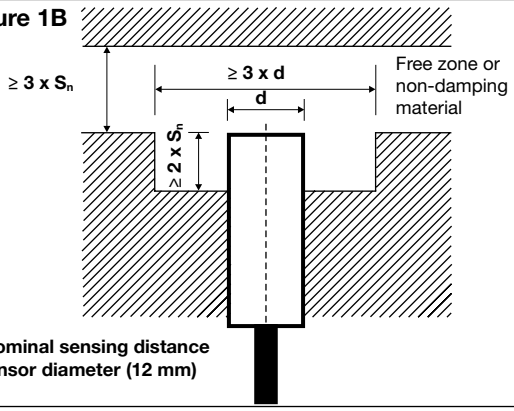
Picture 1A



S_n : nominal sensing distance
d : sensor diameter (12 mm)

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

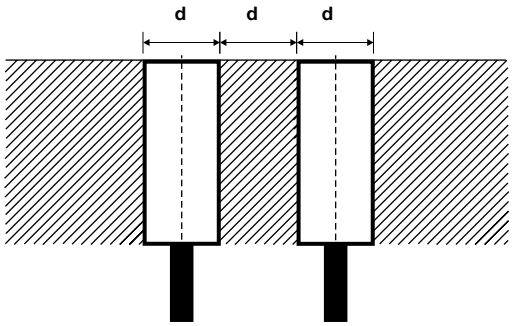
Picture 1B



S_n : nominal sensing distance
d : sensor diameter (12 mm)

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

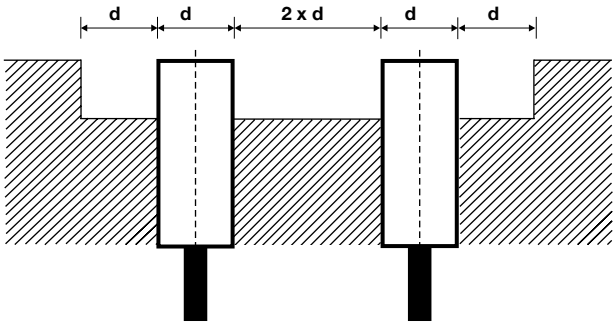
Picture 2A



d : sensor diameter (12 mm)

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

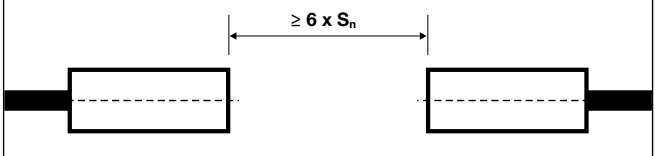
Picture 2B



d : sensor diameter (12 mm)

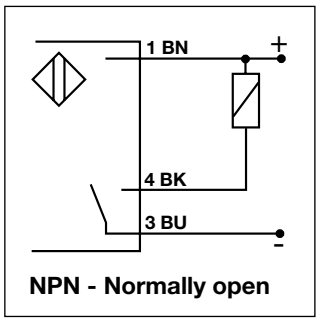
For sensors installed opposite each other, a minimum space of 6 x S_n (the nominal sensing distance) must be observed (See Picture 3).

Picture 3

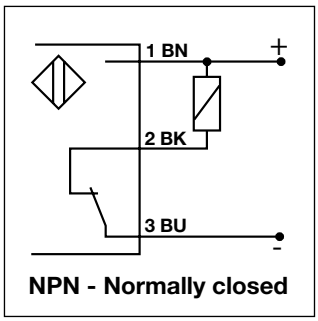


S_n : nominal sensing distance

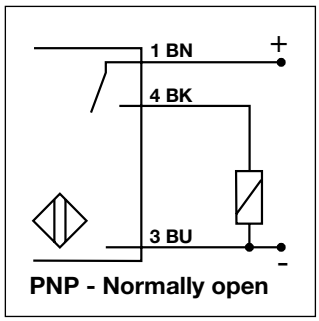
Wiring Diagram



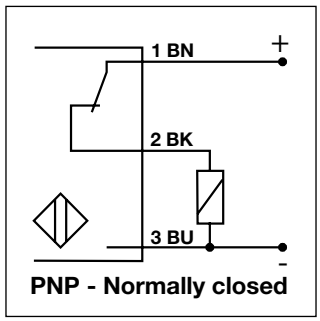
NPN - Normally open



NPN - Normally closed



PNP - Normally open



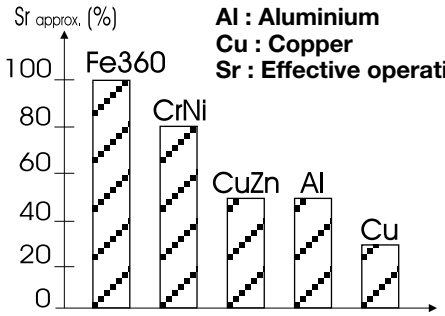
PNP - Normally closed

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

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, 2 m cable	**CONB13NF-S2**	**CONB13NF-S2P**
3-wire straight connector, 5 m cable	**CONB13NF-S5**	**CONB13NF-S5P**
3-wire straight connector, 10 m cable	**CONB13NF-S10**	**CONB13NF-S10P**
3-wire straight connector, 15 m cable	**CONB13NF-S15**	**CONB13NF-S15P**

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

Delivery Contents

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