Inductive Proximity Sensor

Increased sensing distance

ICB12xxxx6/10xxx

- Available in M12 in a robust nickel-plated brass housing
- Sensing range: 6… 10 mm quasi-flush or non-flush
- Short or long body versions
- Supply voltage: 10 to 36 VDC
- Output: PNP / NPN, DC 200 mA
- Normally open or Normally closed
- LED indication for output ON, short-circuit and overload
- Setup indicator
- Protection: reverse polarity, short circuit and transients
- Cable and plug versions
- CSA certified for Hazardous Locations

Description

A family of inductive proximity switches in industrial standard nickel-plated brass housings. They are able to handle applications where very long operating distance is requested.

Output is open collector NPN or PNP transistors.
Less machine downtime thanks to lower risk of mechanical damage.

Part selection key

I	-	Inductive sensor
C	-	Cylindrical housing with threaded barrel
B		Nickel-Plated brass housing
12	-	Housing diameter (mm)
X	S30	Short housing, 30 mm thread lenght
	L50	Long housing, 50 mm thread lenght
X	F	Quasi-flush installation
	N	Non-Flush installation
X	06	Rated operating distance: 6 mm
	10	Rated operating distance: 10 mm
X	N	NPN output
	P	PNP output
X	O	Normally open
	C	Normally closed
X		Cable, 2 m
	M1	Plug, M12, 4 pins

Part selection

Con-nec-tion	Body style	Rated operating distance	Ordering no. NPN, Normally open	Ordering no. PNP, Normally open	Ordering no. NPN, Normally closed	Ordering no. PNP, Normally closed
Cable	Short	6 mm [1]	ICB12S30F06NO	ICB12S30F06PO	ICB12S30F06NC	ICB12S30F06PC
		10 mm [2]	ICB12S30N10NO	ICB12S30N10PO	ICB12S30N10NC	ICB12S30N10PC
Plug	Short	6 mm [1]	ICB12S30F06NOM1	ICB12S30F06POM1	ICB12S30F06NCM1	ICB12S30F06PCM1
		10 mm [2]	ICB12S30N10NOM1	ICB12S30N10POM1	ICB12S30N10NCM1	ICB12S30N10PCM1
Cable	Long	6 mm [1]	ICB12L50F06NO	ICB12L50F06PO	ICB12L50F06NC	ICB12L50F06PC
		10 mm [2]	ICB12L50N10NO	ICB12L50N10PO	ICB12L50N10NC	ICB12L50N10PC
Plug	Long	6 mm [1]	ICB12L50F06NOM1	ICB12L50F06POM1	ICB12L50F06NCM1	ICB12L50F06PCM1
		10 mm [2]	ICB12L50N10NOM1	ICB12L50N10POM1	ICB12L50N10NCM1	ICB12L50N10PCM1

[1] For quasi-flush mounting in metal
[2] For non-flush mounting in metal

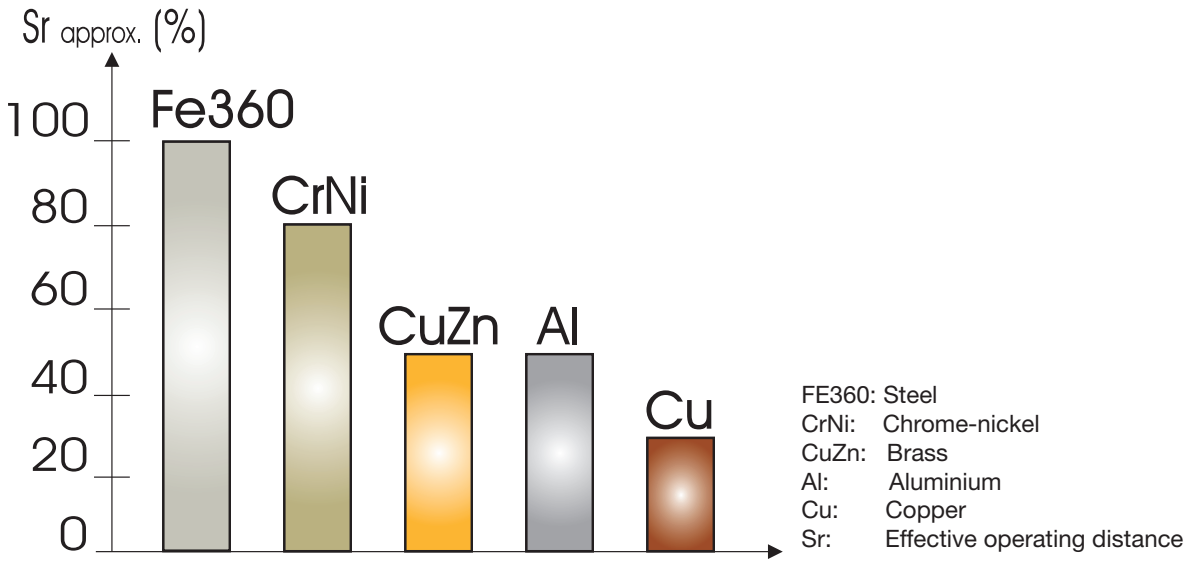
Features

Main operational data

Functional principle	Inductive sensor
Functional principle details	• Quasi-flush • Non-flush
Sensing	
Rated operating distance (S_n)	6 mm Quasi-flush 10 mm Non-flush
Effective operating distance (S_r)	$0.9 \times S_n \leq S_r \leq 1.1 \times S_n$
Usable operating dist. (S_u)	$0.9 \times S_r \leq S_u \leq 1.1 \times S_r$
Assured operating distance (S^a)	$0 \leq S_a \leq 0.81 \times S_n$
Hysteresis	0 to 20 % of sensing distance
Operating frequency	Quasi-flush ≤ 1300 Hz Non-flush ≤ 2000 Hz
Repeat accuracy (R)	≤ 10 %

Correction factors

The rated operating distance is reduced by the use of metals and alloys other than Fe360. The most important reductions factors for inductive proximity sensors are shown below.
The specific operating distance S_n refers to defined measuring conditions. The following data have to be considered as general guidelines.



Electrical data

Power supply	
Operating voltage range (U_B)	10 - 36 VDC (Ripple included)
Ripple (U_{rpp})	≤ 10%
No load supply current (I_o)	≤ 15 mA
Power-ON delay	20 ms
Output	
Rated operational current (I_e)	≤ 200 mA @ 50° C (≤ 150 mA @ 50-70° C)
OFF-state current (I_r)	≤ 50 µA
Voltage drop (U_d)	Max 2.5 VDC @ 200 mA

Environmental data

Ambient temperatures	
Operating	-25°C... +70°C (-13°F... +158°F)*
Storage	-30°C ... +80°C (-22°F ... +176°F)*
Ambient humidity range	
Operating	≤ 95%**
Storage	≤ 95%**
Mechanical influences	
Vibration	In accordance with EN IEC 60947-5-2 / 8.4
Shock	In accordance with EN IEC 60947-5-2 / 8.4
Categorization	
Degree of protection	IP67 (EN IEC 60529; EN IEC 60947-1)
EMC	
Protections	Short circuits, reverse polarity and transients
Voltage transient	1 kV / 0.5 J
EMC immunity standard	EN IEC 60947-5-2 / EN IEC 61000-6-2
EMC immunity test	
Electrostatic discharge immunity	>± 8 kV @ air discharge or >± 4 kV @ contact discharge (IEC 61000-4-2, EN IEC 60947-1)
Electromagnetic field immunity	3 V/m (IEC 61000-4-3, EN IEC 60947-1)
Fast transient immunity	2 kV / 5 kHz (IEC 61000-4-4, EN IEC 60947-1)
Wire conducted noise immunity	3 Vrms (IEC 61000-4-6, EN IEC 60947-1)
Magnetic field immunity	30 A/m (IEC 61000-4-8, EN IEC 60947-1)

* Do not bend the cable in temperatures below -10°C
** With no icing or condensation

Structure

Housing

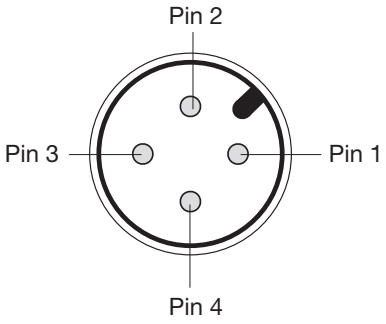
Housing	
Housing	Cylindrical with threaded barrel
Body	Nickel-plated brass
Sensing face	Grey thermoplastic polyester
LED	1, Yellow
Dimensions	M12 x 1
Thread length	30 mm (Short body) 50 mm (Long body)
Total length	≤ 81 mm cable version ≤ 74 mm plug version
Weight	≤ 85 g, cable version ≤ 45 g, plug version
Connection	
Cable	2 m 3 wire, 3 x 0.25 mm^2, Ø 4.1 mm, Oil proof PVC, grey
Plug	M12 x 1
Tightening torque	Distance from sensing face 2 - 4 mm: 4 Nm > 7 mm: 10 Nm

LED indication

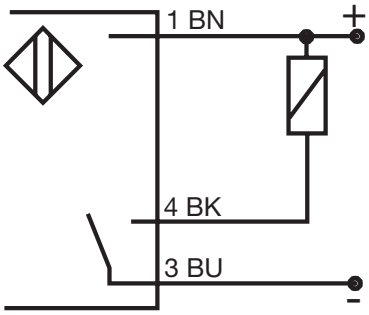
LED ON	N.O. version	Target present
	N.C. version	Target not present
LED flashing @ 2 Hz	Short circuit/overload	
Setup function N.O. version	LED flashing @ 0,67 Hz	$0.8 \times S_n < S_r \leq S_n$
	LED ON	$0 \leq S_r \leq 0.8 \times S_n$ (safer installation)
Setup function N.C. version	LED flashing @ 0.67 Hz	$0.8 \times S_n < S_r \leq S_n$
	LED OFF	$0 \leq S_r \leq 0.8 \times S_n$ (safer installation)

Connection and wiring

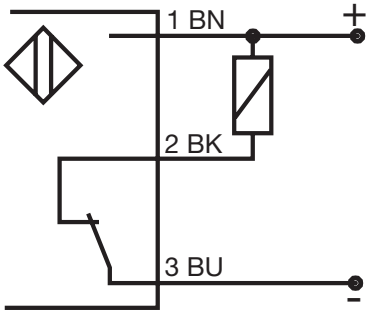
Plug version



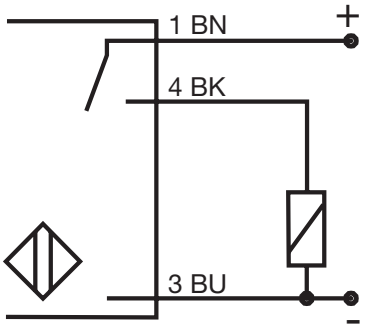
NPN - Normally open



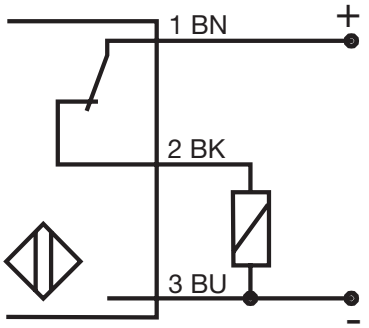
NPN - Normally closed



PNP - Normally open



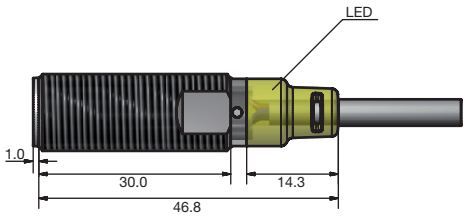
PNP - Normally closed



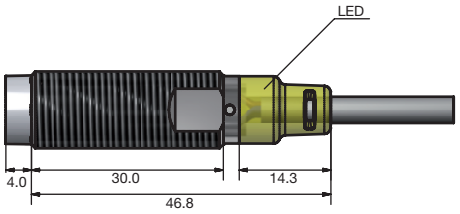
BN = Brown
BK = Black
BU = Blue

Dimensions in mm (inches)

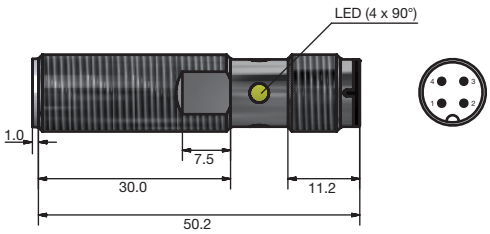
Short body, quasi-flush, cable



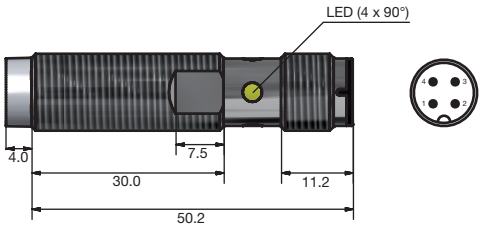
Short body, non-flush, cable



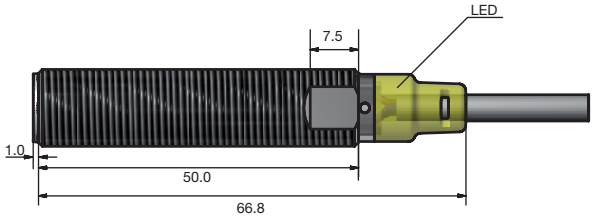
Short body, quasi-flush, plug



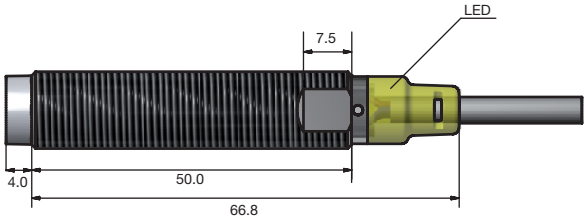
Short body, non-flush, plug



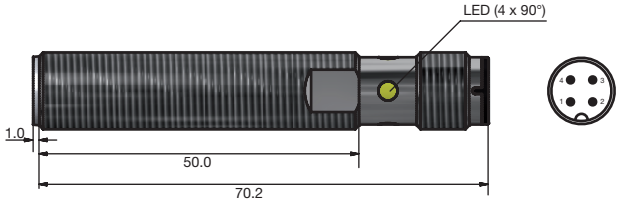
Long body, quasi-flush, cable



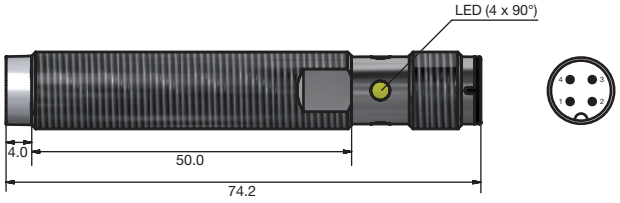
Long body, non-flush, cable



Long body, quasi-flush, plug



Long body, non-flush, plug

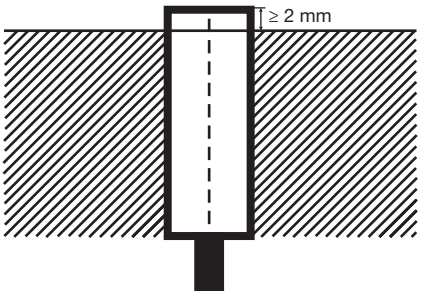


Compatibility and conformity

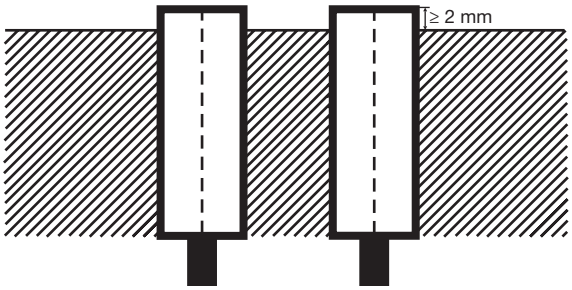
Approvals and markings

General reference	Sensor designed according to EN IEC 60947-5-2 and EN IEC 60947-1. CCC is not required for products rated ≤ 36 V
$MTTF_d$	750 years @ 50°C (+122°F) (EN ISO 13849-1, SN 29500)
CE-marking	CE
Approvals	c UL us LISTED
CSA	C SA US

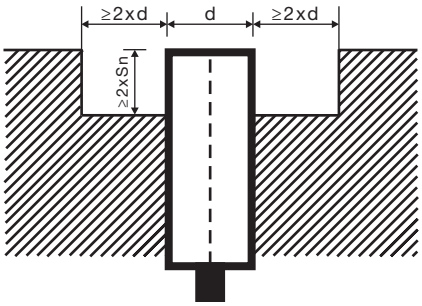
Installation



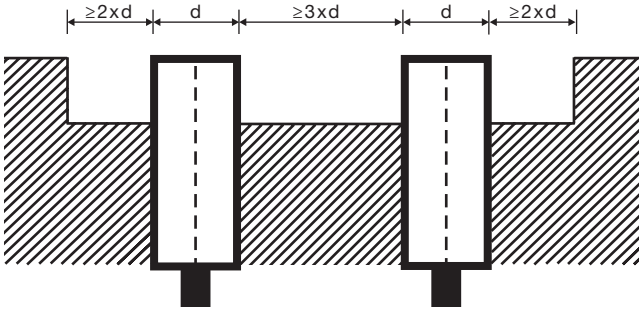
Quasi-flush sensor when installed in damping material



Quasi-flush sensors when installed together in damping material

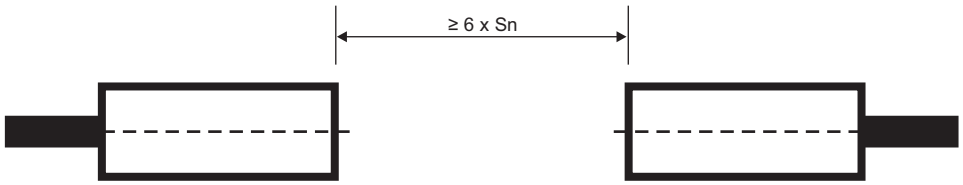


Non-flush sensor when installed in damping material
d = sensor diameter
S_n = rated operating distance



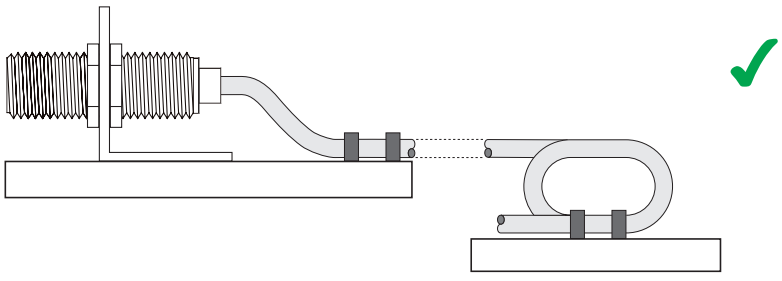
Non-flush sensors when installed together in damping material
d = sensor diameter
S_n = rated operating distance

Sensors installed opposite each other



For sensors installed opposite each other, a minimum space of 6 x S_n (The nominal sensing distance) must be observed

Cable version



Delivery contents and accessories

Delivery contents

- Inductive proximity switch
- 2 finger nuts
- 2 washers
- Packaging: Plastic bag

Accessories

- Connector type CONx...-series to be purchased separately.
- Mounting Brackets AMB... to be purchased separately.

Further information

User manual	http://cga.pub/?f19ed4	
Mounting brackets	http://cga.pub/?68adbc	
Connectors	http://cga.pub/?ed457b	
Carlo Gavazzi website	www.gavazziautomation.com	

Please refer to the user manual for in-depth explanations.