

ICB, M12 short or long body versions



Proximity inductive sensors, standard range, nickel-plated brass housing



Benefits

- Sensing distance: 2 mm
- Flush type
- 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
- Higher resistance to magnetic field
- 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 high sensing range is requested. Output is open collector NPN or PNP transistors.

References

Order code

 ICB12 ☐ F 02 ☐ ☐ ☐

Enter the code entering the corresponding option instead of ☐

Code	Option	Description
ICB	-	Proximity inductive sensors, nickel-plated brass housing
12	-	Housing size
<input type="checkbox"/>	S	Housing length: short
	L	Housing length: long
F	-	Detection principle: flush mounting
02	-	Sensing distance: 2mm
<input type="checkbox"/>	N	Output type: NPN
	P	Output type: PNP
<input type="checkbox"/>	O	Output configuration: normally open
	C	Output configuration: normally closed
<input type="checkbox"/>		Connection: cable
	M1	Connection: plug

Selection guide

Con- nec- tion	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	ICB12SF02NO	ICB12SF02PO	ICB12SF02NC	ICB12SF02PC
Plug	Short	2 mm	ICB12SF02NOM1	ICB12SF02POM1	ICB12SF02NCM1	ICB12SF02PCM1
Cable	Long	2 mm	ICB12LF02NO	ICB12LF02PO	ICB12LF02NC	ICB12LF02PC
Plug	Long	2 mm	ICB12LF02NOM1	ICB12LF02POM1	ICB12LF02NCM1	ICB12LF02PCM1

Sensing

Detection

Assured operating sensing distance (S_a)	$0 \leq S_a \leq 0.81 \times S_n$
Effective operating distance (S_r)	$0.9 \times S_n \leq S_r \leq 1.1 \times S_n$
Usable operating distance (S_u)	$0.9 \times S_r \leq S_u \leq 1.1 \times S_r$
Differential travel (H) (Hysteresis)	1 to 20% of sensing dist.

Correction factors

The specific operating distance S_n refers to defined measuring conditions. The following data have to be considered as general guidelines.

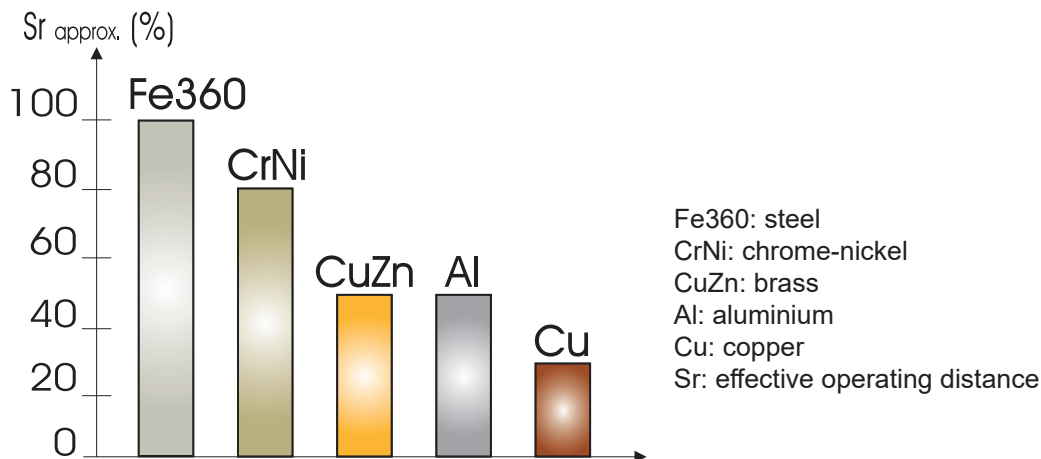


Fig. 1 The rated operating distance is reduced by the use of metals and alloys other than Fe360. The most important reduction factors for inductive proximity sensors are shown in the figure.

Accuracy

Repeat accuracy (R)	$\leq 10\%$
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Features

Power Supply

Rated operational voltage (U_b)	10 to 36 VDC (ripple incl.)
Ripple (U_{rpp})	$\leq 10\%$
No load supply current (I_o)	≤ 15 mA
Power ON delay (t_v)	≤ 300 ms

Outputs

Output current (I_o)	≤ 200 mA @ 50°C (≤ 150 mA @ $50\text{--}70^\circ\text{C}$)
OFF-state current (I_r)	≤ 50 μA
Voltage drop (U_d)	Max. 2.5 VDC @ 200 mA
Protection	Reverse polarity, short-circuit, transients
Voltage transient	1 kV/0.5 J

Response times

Max. operating frequency (f)	≤ 2000 Hz
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Indication




Indication for output ON NO version NC version	Activated LED, yellow Target present Target not present
Indication for short circuit/ overload	LED blinking

Environmental

Ambient temperature Operating Storage	-25° to $+70^\circ\text{C}$ (-13° to $+158^\circ\text{F}$) -30° to $+80^\circ\text{C}$ (-22° to $+176^\circ\text{F}$)
Shock and vibration	IEC 60947-5-2/7.4
Degree of protection	IP67

Compatibility and conformity

EMC protection - According to IEC 60947-5-2	
Electrostatic discharge (ESD)	IEC 61000-4-2 8 kV air discharge, 4 kV contact discharge
Radiated radio frequency	IEC 61000-4-3 3 V/m
Burst immunity	IEC 61000-4-4 2 kV
Conducted radio frequency	IEC 61000-4-6 3 V
Power frequency magnetic fields	IEC 61000-4-8 30 A/m

Approvals	  
	CCC is not required for products rated ≤ 36 V

Mechanical data

Weight (cable/nuts included)	
Cable	Max. 120 g
Plug	Max. 30 g
Mounting	Flush
Material	Body: nickel-plated brass Front: grey thermoplastic polyester
Tightening torque	Distance from sensing face From 2 mm to 5 mm: 4 Nm > 5 mm: 10 Nm

Electrical connection

Cable	2 m, 3 x 0.25 mm ² , grey PVC, oil proof
Plug	M12 x 1



Connection Diagrams

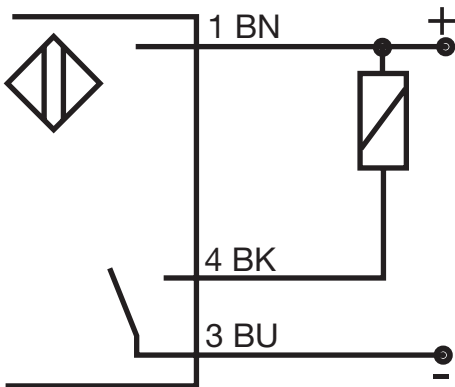


Fig. 2 NPN - Normally open

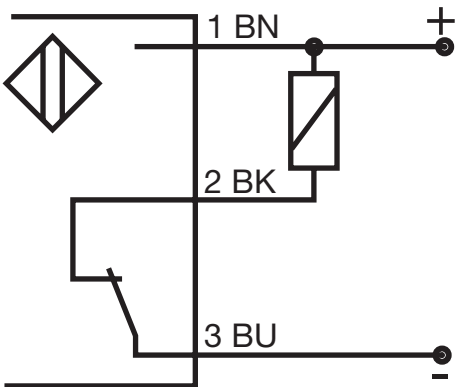


Fig. 3 NPN - Normally closed

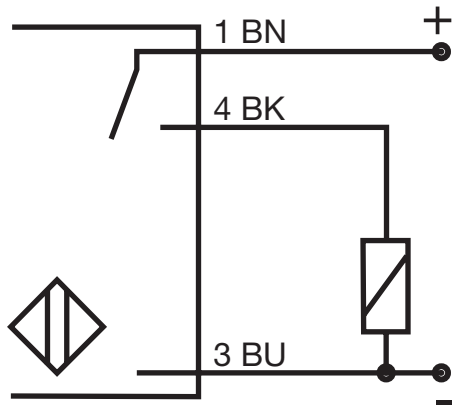


Fig. 4 PNP - Normally open

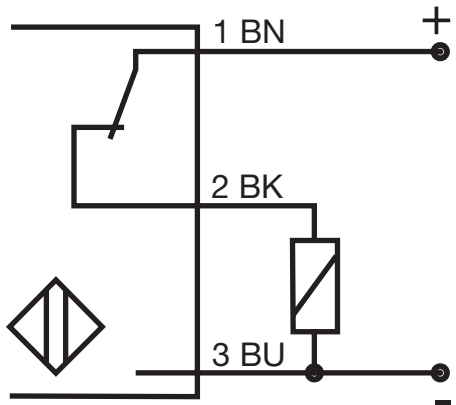


Fig. 5 PNP - Normally closed

Colour code		
BN: brown	BK: black	BU: blue

Dimensions [mm]

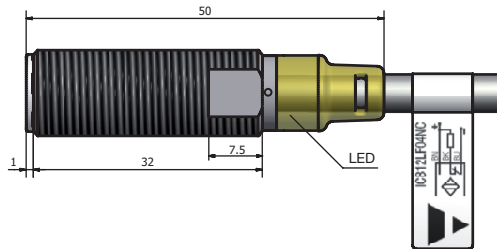


Fig. 6 Short body, flush version, cable

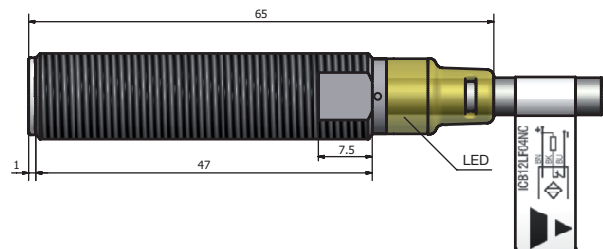


Fig. 7 Long body, flush version, cable

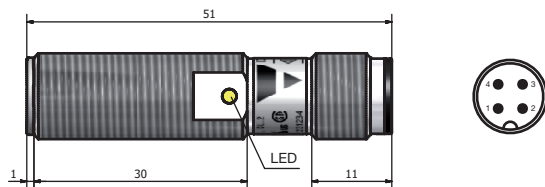


Fig. 8 Short body, flush version, plug

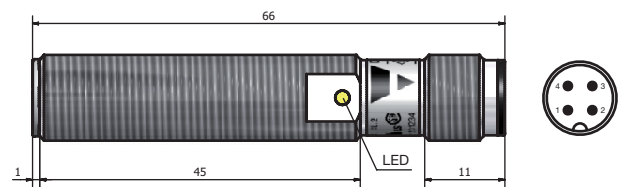


Fig. 9 Long body, flush version, plug

Installation

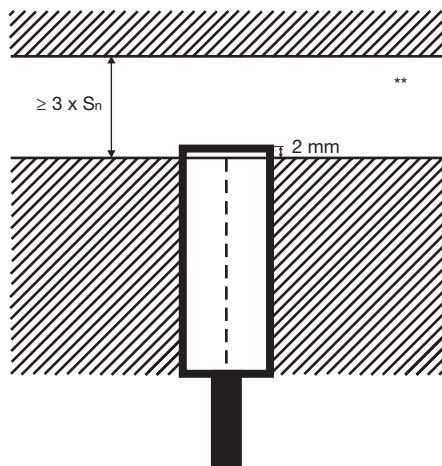


Fig. 10 Flush sensor, when installed in damping material

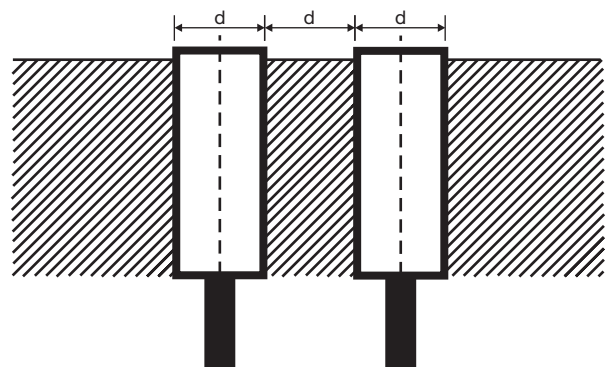


Fig. 11 Flush sensors, when installed together in damping material

** Free zone or non-damping material

S_n : nominal sensing distance

d: sensor diameter: 12 mm

Sensors installed opposite each other

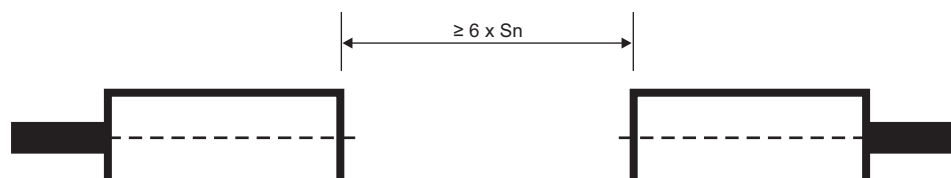


Fig. 12 For sensors installed opposite each other, a minimum space of $6 \times S_n$ (the nominal sensing distance) must be observed

Delivery contents and compatible components

Delivery contents

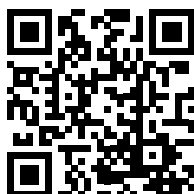
- Inductive proximity switch
- 2 nuts
- Packaging: plastic bag

CARLO GAVAZZI compatible components

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.



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