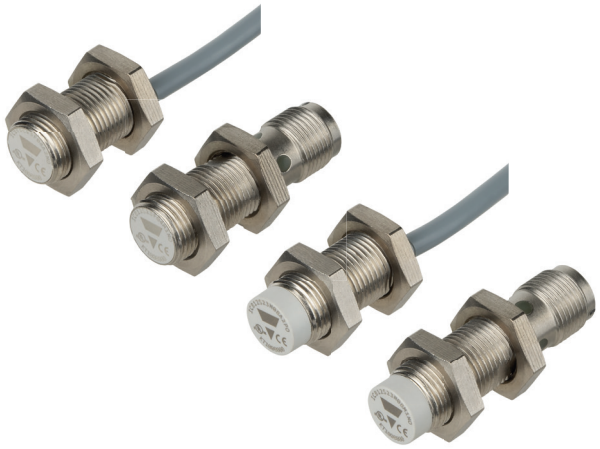
ICB, M12 - Extra short body version

Proximity inductive sensors with extended range and nickel-plated brass housing



Benefits

- Sensing distance: 4 to 8 mm
- Flush or non-flush types
- Extra short 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
- Extended temperature range of -25°C to +70°C

Description

A family of inductive proximity switches in industrial standard nickel-plated brass housings. They are characterized by extremely high performance in a very small design, to satisfy the most demanding applications, also where the space available for the sensor is limited and extended sensing range is requested.
Output is open collector NPN or PNP transistors.

References

Order code

ICB12S23 □ □ □ □ □

Enter the code option instead of □

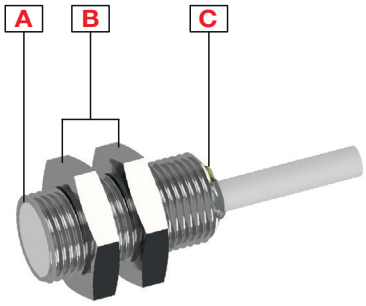
Code	Option	Description
ICB	-	Proximity inductive sensors, nickel-plated brass housing
12	-	Housing size
S	-	Housing length
23	-	Thread length
□	F	Detection principle: flush mounting
	N	Detection principle: non-flush mounting
□	04	Sensing distance: 4mm
	08	Sensing distance: 8mm
□	M1	M12 plug
	A2	2 m PVC cable
□	N	Output type: NPN
	P	Output type: PNP
□	O	Output configuration: normally open
	C	Output configuration: normally closed

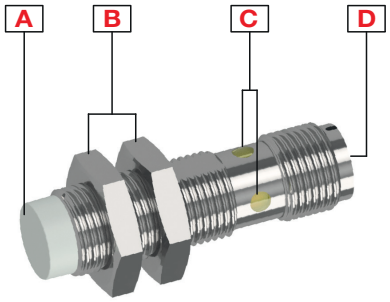
Selection guide

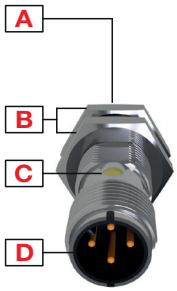
Con-nec-tion	Rated operating distance Sn	Ordering no. NPN, Normally open	Ordering no. PNP, Normally open	Ordering no. NPN, Normally closed	Ordering no. PNP, Normally closed
Cable	4 mm [1]	ICB12S23F04A2NO	ICB12S23F04A2PO	ICB12S23F04A2NC	ICB12S23F04A2PC
Cable	8 mm [2]	ICB12S23N08A2NO	ICB12S23N08A2PO	ICB12S23N08A2NC	ICB12S23N08A2PC
Plug	4 mm [1]	ICB12S23F04M1NO	ICB12S23F04M1PO	ICB12S23F04M1NC	ICB12S23F04M1PC
Plug	8 mm [2]	ICB12S23N08M1NO	ICB12S23N08M1PO	ICB12S23N08M1NC	ICB12S23N08M1PC

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

Structure







Element	Component	Function
A	Sensing face	Flush or non-flush
B	2 nuts	For sensor mounting
C	LED	Yellow LED: Output flashing: short circuit or overload indication
D	M12 x 1, 4 pin, male connector	For plug versions only

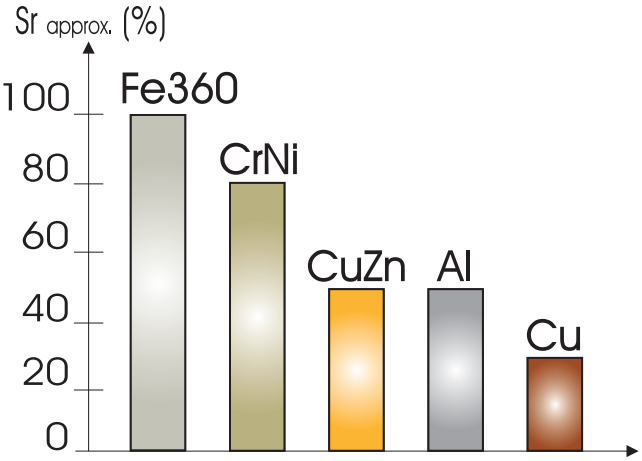
Sensing

Detection

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)	$0.9 \times S_r \le S_u \le 1.1 \times S_r$
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.



Fe360: steel
CrNi: chrome-nickel
CuZn: brass
Al: aluminium
Cu: copper
Sr: effective operating distance

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)	≤ 10%

Features

Power Supply

Rated operational voltage (U_b)	10 to 36 VDC (ripple incl.)
Ripple (U_{rpp})	≤ 10%
No load supply current (I_o)	≤ 16 mA
Power ON delay (t_v)	≤ 40 ms

Outputs

Output current (I_e)	≤ 200 mA
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

Indication

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)

Environmental

Ambient temperature **Operating** **Storage**	 -25° to +70°C (-13° to +158°F) -25° to +80°C (-13° to +176°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

$MTTF_d$	3090 years @ 50°C (122°F)

Approvals	CE cULus LISTED
	CCC is not required for products rated ≤ 36 V

Mechanical data

Weight (cable/nuts included)	Max. 68 g
Mounting	Flush or non flush mountable
Material	Body: nickel-plated brass Front: grey thermoplastic polyester
Tightening torque	10 Nm

Electrical connection

Cable	Ø 4.1 x 2 m, 3 x 0.25 mm^2, grey PVC, oil proof
Plug	M12 x 1

Connection Diagrams

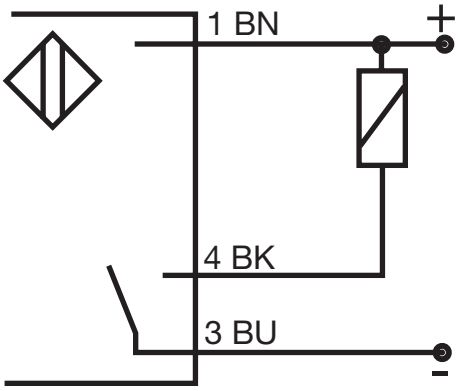


Fig. 2 *NPN - Normally open*

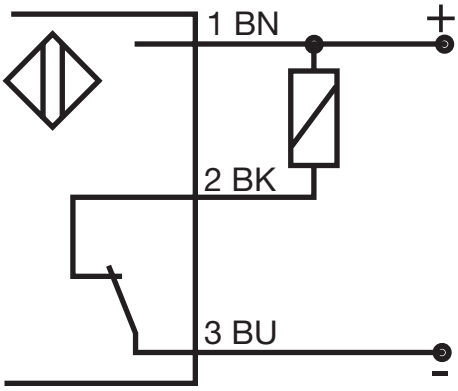


Fig. 3 *NPN - Normally closed*

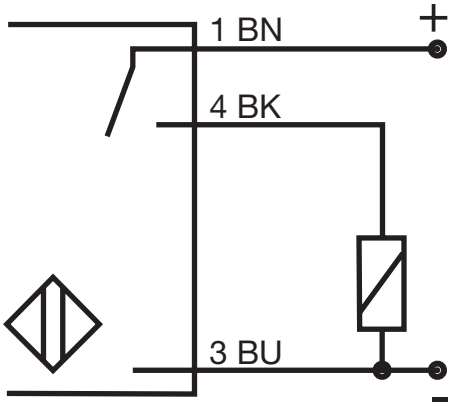


Fig. 4 *PNP - Normally open*

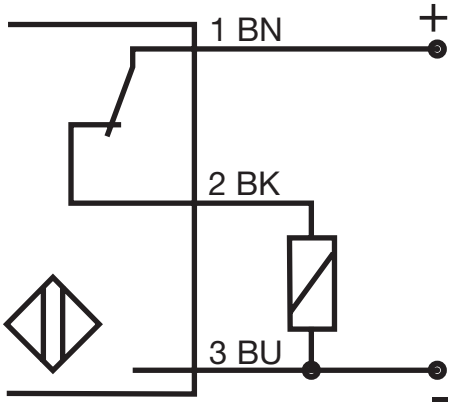


Fig. 5 *PNP - Normally closed*

Colour code		
BN: brown	**BK:** black	**BU:** blue

Dimensions

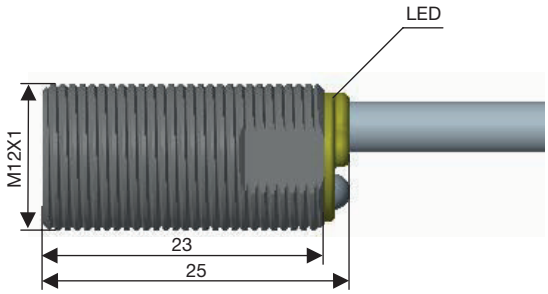


Fig. 6 *Short body, flush version, cable*

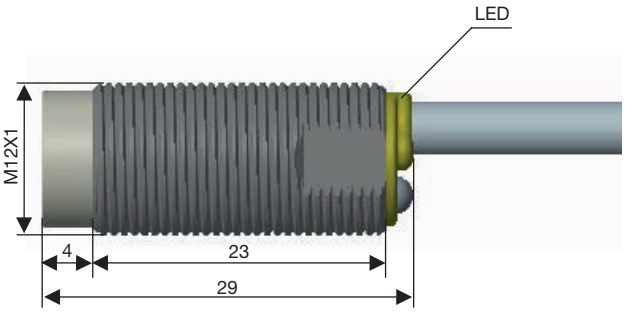


Fig. 7 *Short body, non-flush version, cable*

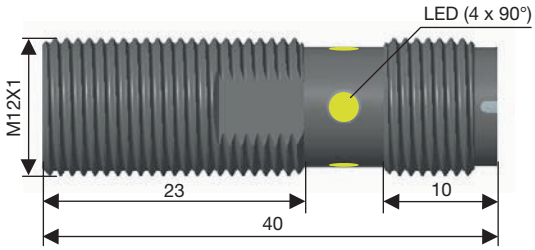


Fig. 8 *Short body, flush version, plug*

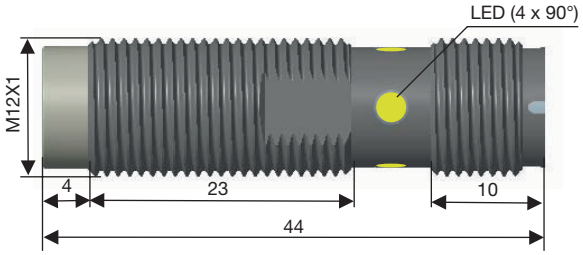
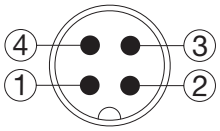
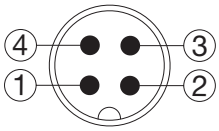


Fig. 9 *Short body, non-flush version, plug*





Installation

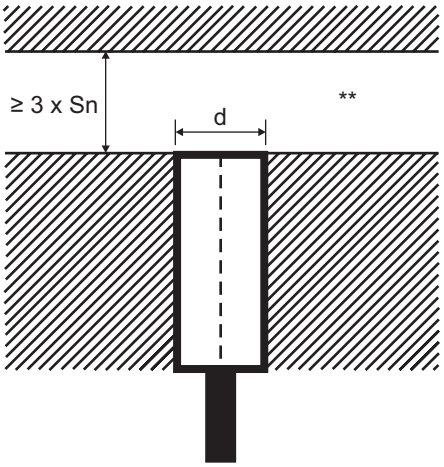


Fig. 10 *Flush sensor, when installed in damping material*

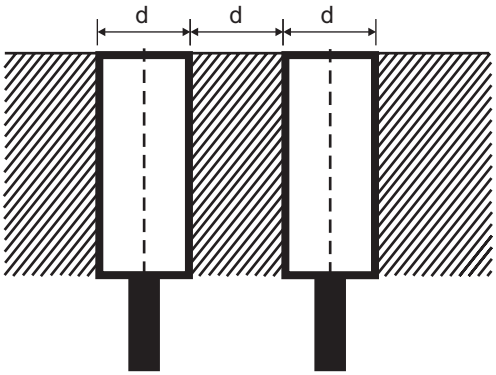


Fig. 11 *Flush sensors, when installed together in damping material*

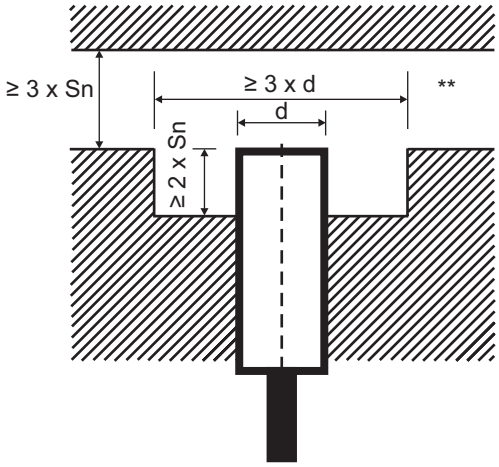


Fig. 12 *Non-flush sensor, when installed in damping material*

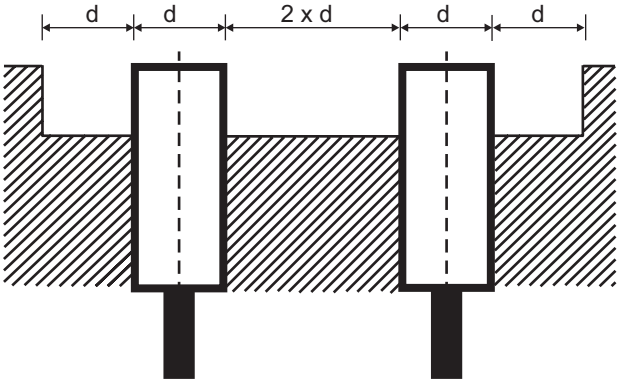


Fig. 13 *Non-flush sensors, when installed together in damping material*

** Free zone or non-damping material

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

Sensors installed opposite each other

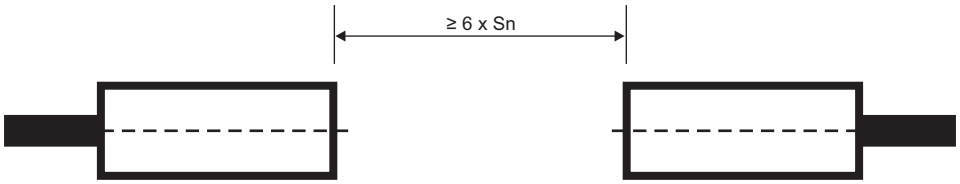


Fig. 14 *For sensors installed opposite each other, a minimum space of 6 x Sn (the nominal sensing distance) must be observed*

Delivery contents

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

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