

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 versions
- According to IEC 60947-5-2
- Laser engraved on front cap, permanently legible
- Extended temperature range of -25°C to +80°C
- CSA certified for Hazardous Locations

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 entering the corresponding option instead of

| Code | Option | Description |
|--------------------------|--------|--|
| ICB | - | Proximity inductive sensors, nickel-plated brass housing |
| 12 | - | Housing size |
| S | - | Housing length |
| 23 | - | Thread length |
| <input type="checkbox"/> | F | Detection principle: flush mounting |
| <input type="checkbox"/> | N | Detection principle: non-flush mounting |
| <input type="checkbox"/> | 04 | Sensing distance: 4mm |
| <input type="checkbox"/> | 08 | Sensing distance: 8mm |
| <input type="checkbox"/> | N | Output type: NPN |
| <input type="checkbox"/> | P | Output type: PNP |
| <input type="checkbox"/> | O | Output configuration: normally open |
| <input type="checkbox"/> | C | Output configuration: normally closed |

Selection guide

| Con- nection | Body style | Rated operat- ing 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 | 4 mm ¹⁾ | ICB12S23F04NO | ICB12S23F04PO | ICB12S23F04NC | ICB12S23F04PC |
| Cable | Short | 8 mm ²⁾ | ICB12S23N08NO | ICB12S23N08PO | ICB12S23N08NC | ICB12S23N08PC |

- 1) For flush mounting in metal
- 2) For non-flush mounting in metal

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.

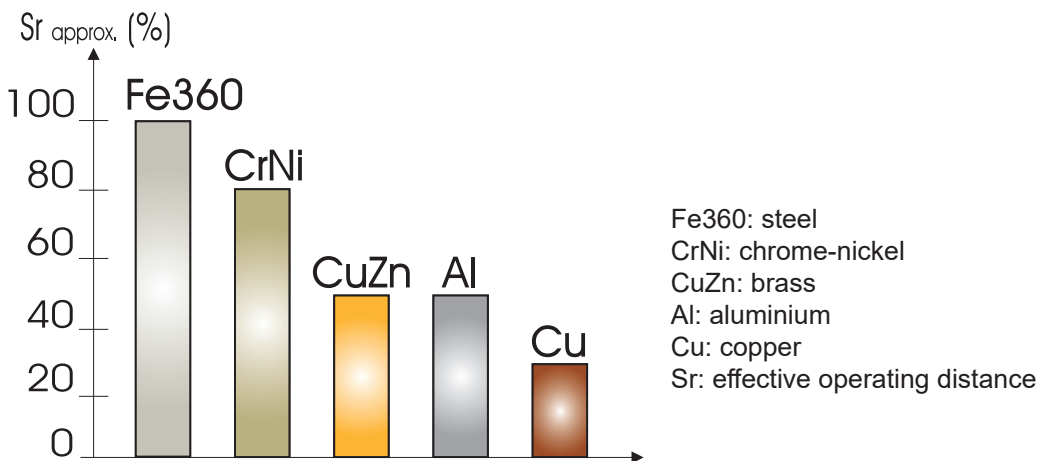


Fig. 1 The rated operating distance is reduced by the use of metals and alloys other than Fe360. The most important reduction factors for inductive proximity sensors are shown in the figure.

Accuracy

| | |
|---------------------|-------|
| Repeat accuracy (R) | ≤ 10% |
|---------------------|-------|

Features

Power Supply

| | |
|-------------------------------------|-----------------------------|
| Rated operational voltage (U_o) | 10 to 36 VDC (ripple incl.) |
| Ripple (U_{rpp}) | $\leq 10\%$ |
| No load supply current (I_o) | ≤ 15 mA |
| Power ON delay (t_v) | ≤ 40 ms |

Outputs

| | |
|-----------------------------|---|
| Output current (I_o) | ≤ 200 mA |
| OFF-state current (I_r) | ≤ 50 μ A |
| 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 +80°C (-13° to +176°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 |
| 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 | 816 years @ 50°C (122°F) |
|-------------------|--------------------------|

| | |
|-----------|---|
| Approvals |    |
| | CCC is not required for products rated ≤ 36 V |

Mechanical data

| | |
|------------------------------|---|
| Weight (cable/nuts included) | Max. 70 g |
| Mounting | Flush or non flush mountable |
| Material | Body: nickel-plated brass Front: grey thermoplastic polyester |
| Tightening torque | Distance from sensing face From 0 mm to 4 mm: 10 Nm > 4 mm: 15 Nm |

Electrical connection

| | |
|-------|---|
| Cable | Ø 4.1 x 2 m, 3 x 0.25 mm ² , grey PVC, oil proof |
|-------|---|

Connection Diagrams

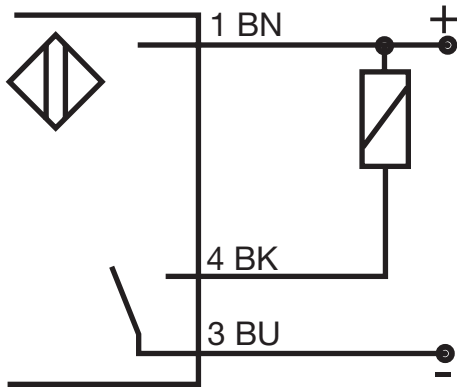


Fig. 2 NPN - Normally open

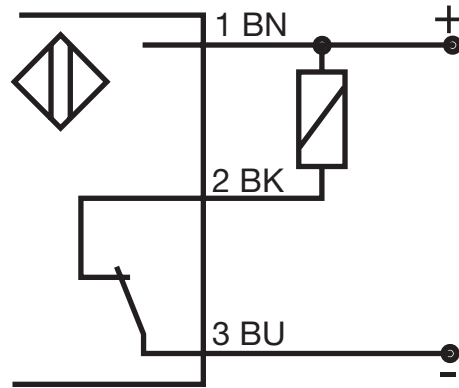


Fig. 3 NPN - Normally closed

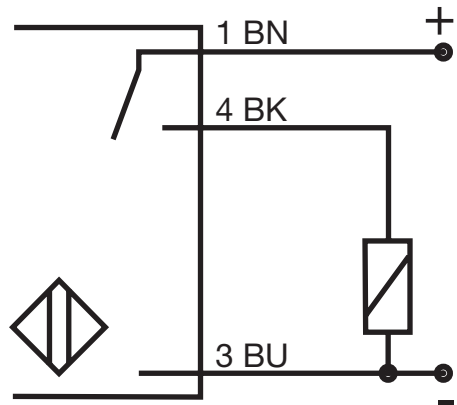


Fig. 4 PNP - Normally open

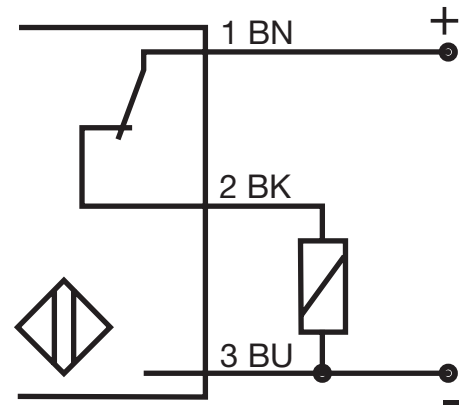


Fig. 5 PNP - Normally closed

| Colour code | | |
|-------------|-----------|----------|
| BN: brown | BK: black | BU: blue |

Dimensions

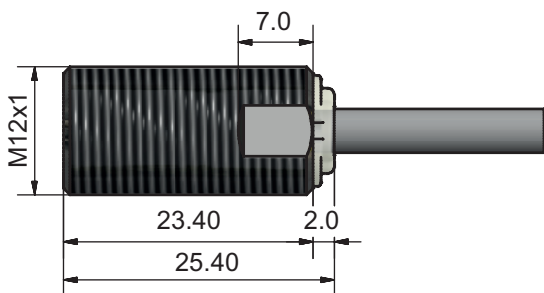


Fig. 6 Extra short body, flush version, cable

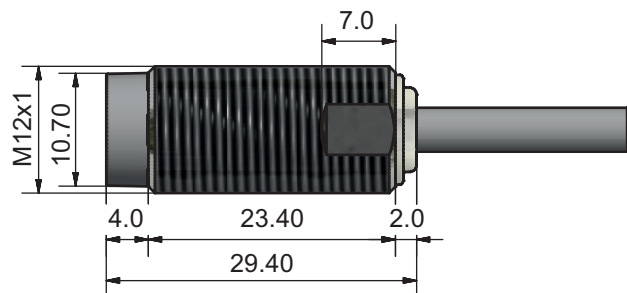


Fig. 7 Extra short body, non-flush version, cable

Installation

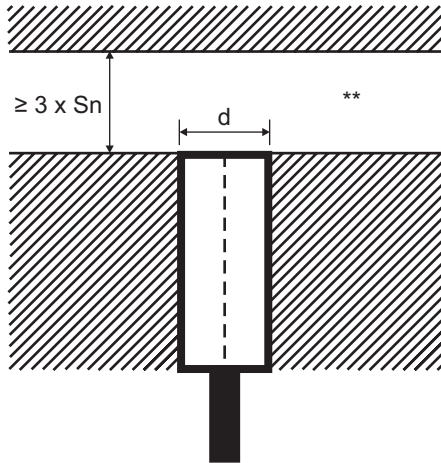


Fig. 8 Flush sensor, when installed in damping material

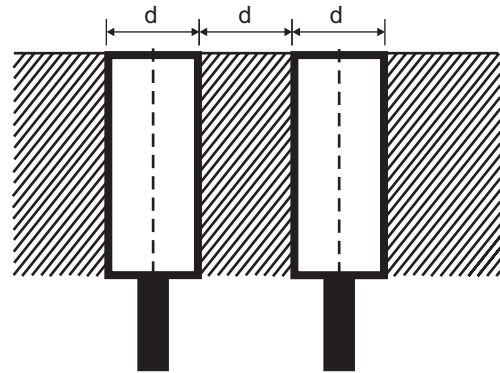


Fig. 9 Flush sensors, when installed together in damping material

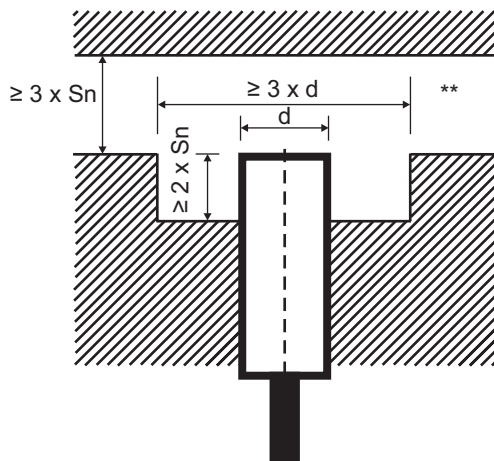


Fig. 10 Non-flush sensor, when installed in damping material

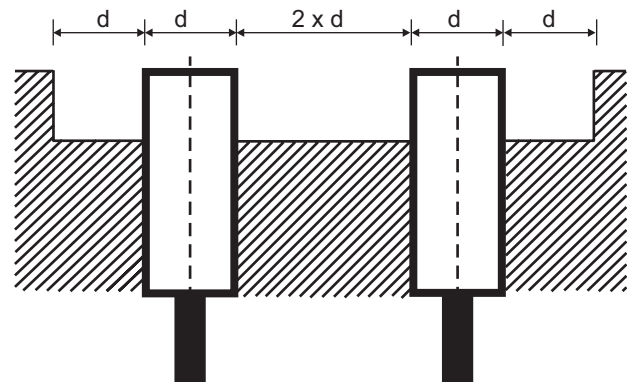


Fig. 11 Non-flush sensors, when installed together in damping material

** Free zone or non-damping material

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


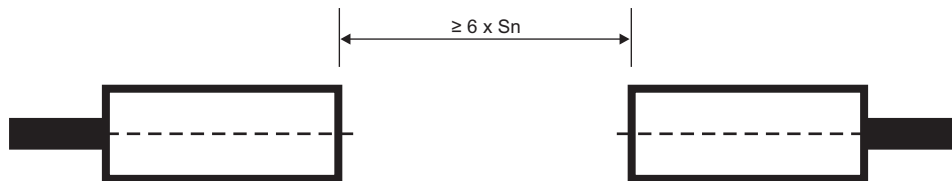
 Sensors installed opposite each other

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

Delivery contents

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



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