

# Proximity Inductive Sensors Extended Range, Nickel-Plated Brass Housing Types ICB, M30

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- Sensing distance: 15 to 22 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, short-circuit and overload
- 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

**ICB30S30F15NOM1**

|                      |  |
|----------------------|--|
| Type                 |  |
| Housing style        |  |
| Housing material     |  |
| Housing size         |  |
| Housing length       |  |
| Thread length        |  |
| Detection principle  |  |
| Sensing distance     |  |
| Output type          |  |
| Output configuration |  |
| Connection           |  |

## Type Selection

| Conne-<br>ction | Body<br>style | Rated<br>operating<br>distance $S_n$ | Ordering no.<br>NPN,<br>Normally open | Ordering no.<br>PNP,<br>Normally open | Ordering no.<br>NPN,<br>Normally closed | Ordering no.<br>PNP,<br>Normally closed |
|-----------------|---------------|--------------------------------------|---------------------------------------|---------------------------------------|-----------------------------------------|-----------------------------------------|
| Cable           | Short         | 15 mm <sup>1)</sup>                  | ICB30S30F15NO                         | ICB30S30F15PO                         | ICB30S30F15NC                           | ICB30S30F15PC                           |
| Cable           | Short         | 22 mm <sup>2)</sup>                  | ICB30S30N22NO                         | ICB30S30N22PO                         | ICB30S30N22NC                           | ICB30S30N22PC                           |
| Plug            | Short         | 15 mm <sup>1)</sup>                  | ICB30S30F15NOM1                       | ICB30S30F15POM1                       | ICB30S30F15NCM1                         | ICB30S30F15PCM1                         |
| Plug            | Short         | 22 mm <sup>2)</sup>                  | ICB30S30N22NOM1                       | ICB30S30N22POM1                       | ICB30S30N22NCM1                         | ICB30S30N22PCM1                         |
| Cable           | Long          | 15 mm <sup>1)</sup>                  | ICB30L50F15NO                         | ICB30L50F15PO                         | ICB30L50F15NC                           | ICB30L50F15PC                           |
| Cable           | Long          | 22 mm <sup>2)</sup>                  | ICB30L50N22NO                         | ICB30L50N22PO                         | ICB30L50N22NC                           | ICB30L50N22PC                           |
| Plug            | Long          | 15 mm <sup>1)</sup>                  | ICB30L50F15NOM1                       | ICB30L50F15POM1                       | ICB30L50F15NCM1                         | ICB30L50F15PCM1                         |
| Plug            | Long          | 22 mm <sup>2)</sup>                  | ICB30L50N22NOM1                       | ICB30L50N22POM1                       | ICB30L50N22NCM1                         | ICB30L50N22PCM1                         |

<sup>1)</sup> For flush mounting in metal

<sup>2)</sup> For non-flush mounting in metal

## Specifications

|                                                     |                                                    |                                                                  |                                                |
|-----------------------------------------------------|----------------------------------------------------|------------------------------------------------------------------|------------------------------------------------|
| <b>Rated operational voltage (<math>U_b</math>)</b> | 10 to 36 VDC (ripple incl.)                        | <b>Indication for output ON</b>                                  | Activated LED, yellow                          |
| <b>Ripple</b>                                       | $\leq 10\%$                                        | NO version                                                       | Target present                                 |
| <b>Output current (<math>I_a</math>)</b>            | $\leq 200$ mA @ 50°C<br>( $\leq 150$ mA @ 50-70°C) | NC version                                                       | Target not present                             |
| <b>OFF-state current (<math>I_i</math>)</b>         | $\leq 50$ $\mu$ A                                  | <b>Indication for short circuit/<br/>overload</b>                | LED blinking (f = 2 Hz)                        |
| <b>No load supply current (<math>I_o</math>)</b>    | $\leq 15$ mA                                       | <b>Assured operating<br/>sensing distance (<math>S_a</math>)</b> | $0 \leq S_a \leq 0.81 \times S_n$              |
| <b>Voltage drop (<math>U_d</math>)</b>              | Max. 2.5 VDC @ 200 mA                              | <b>Effective operating<br/>distance (<math>S_r</math>)</b>       | $0.9 \times S_n \leq S_r \leq 1.1 \times S_n$  |
| <b>Protection</b>                                   | Reverse polarity,<br>short-circuit, transients     | <b>Usable operating distance (<math>S_u</math>)</b>              | $0.85 \times S_r \leq S_u \leq 1.1 \times S_r$ |
| <b>Voltage transient</b>                            | 1 kV/0.5 J                                         | <b>Repeat accuracy (R)</b>                                       | $\leq 5\%$                                     |
| <b>Power ON delay (t<sub>o</sub>)</b>               | 300 ms                                             | <b>Differential travel (H)</b><br>(Hysteresis)                   | 1 to 20% of sensing dist.                      |
| <b>Operating frequency (f)</b>                      | $\leq 1000$ Hz                                     |                                                                  |                                                |

## Specifications (cont.)

|                                     |                                                            |
|-------------------------------------|------------------------------------------------------------|
| <b>Ambient temperature</b>          |                                                            |
| Operating                           |                                                            |
| Cable                               | -25° to +70°C (-13° to +158°F)                             |
| Plug                                | -40° to +70°C (-40° to +158°F)                             |
| Storage                             | -40° to +80°C (-40° to +176°F)                             |
| <b>Shock and vibration</b>          | IEC 60947-5-2/7.4                                          |
| <b>Housing material</b>             |                                                            |
| Body                                | Nickel-plated brass                                        |
| Front cap                           | Grey thermoplastic polyester                               |
| <b>Connection</b>                   |                                                            |
| Cable                               | Ø5.2 x 2 m, 3 x 0.34 mm <sup>2</sup> , grey PVC, oil proof |
| Plug                                | M12 x 1                                                    |
| <b>Degree of protection</b>         | IP 67                                                      |
| <b>Weight</b> (cable/nuts included) |                                                            |
| ICB30 S                             | Max. 185 g                                                 |
| ICB30 L                             | Max. 195 g                                                 |
| <b>Dimensions</b>                   | See diagrams below                                         |
| <b>Tightening torque</b>            | 25 Nm                                                      |
| <b>Approvals</b>                    | cULus (UL508)                                              |

## Approvals (cont.)

### cCSAus

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

As Process Control Equipment for Hazardous Locations.  
 - Class I, Division 2, Groups A, B, C and D.  
 - T5 up to 150 mA, T4A for a load current > 150 mA and up to 200 mA, Enclosure Type 4.  
 Ambient temperature  
 Ta: -25° to +60°C.  
 CCC is not required for products with a maximum operating voltage of ≤ 36 V

## EMC protection

IEC 61000-4-2 (ESD)

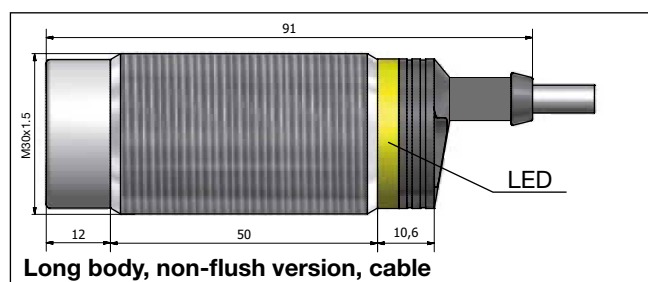
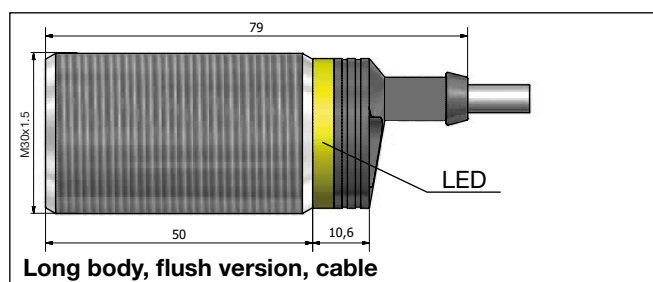
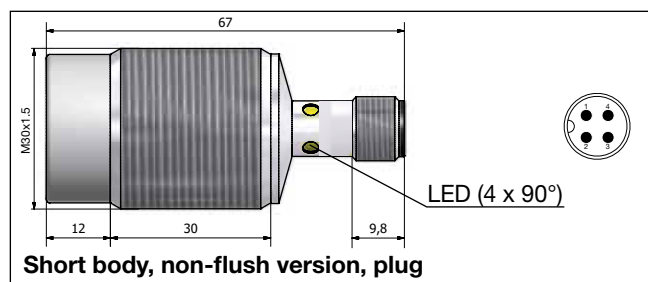
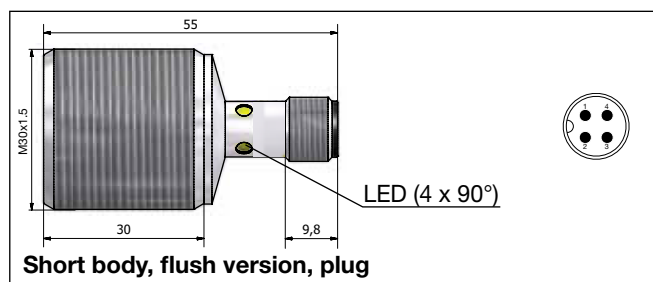
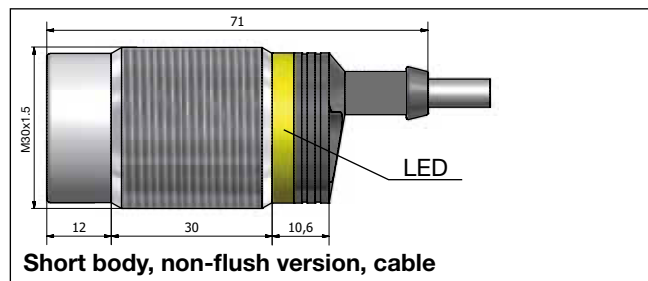
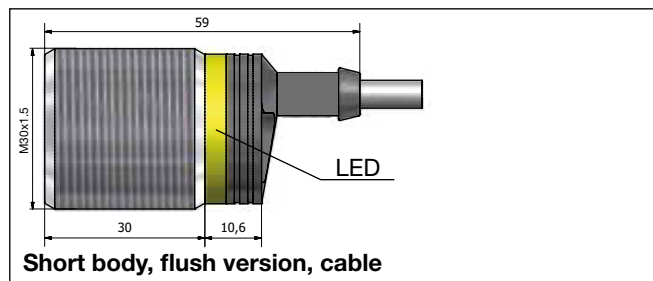
IEC 61000-4-3  
 IEC 61000-4-4  
 IEC 61000-4-6  
 IEC 61000-4-8

According to IEC 60947-5-2  
 8 kV air discharge,  
 4 kV contact discharge  
 12 V/m  
 4 kV  
 10 V  
 30 A/m

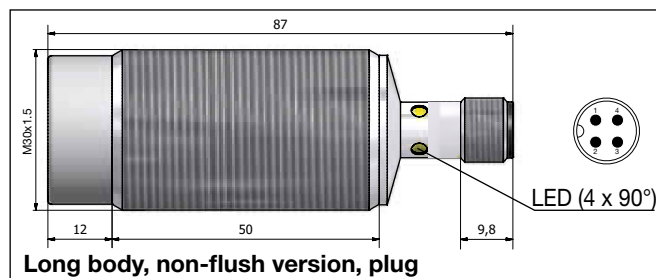
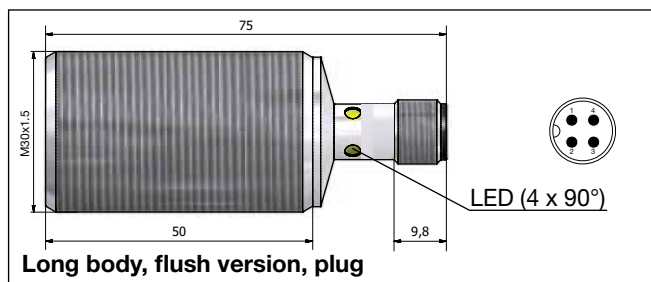
## MTTF<sub>d</sub>

850 years @ 50°C (122°F)

## Dimensions (mm)

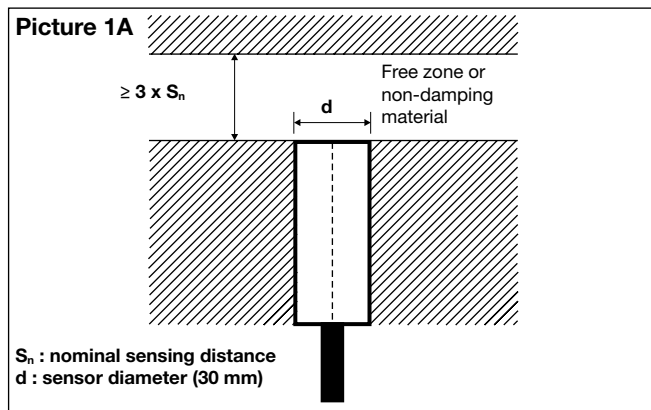


## Dimensions (mm) (cont.)

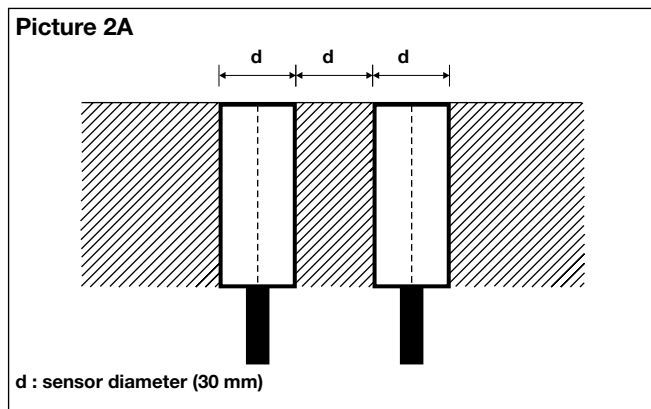


## Installation

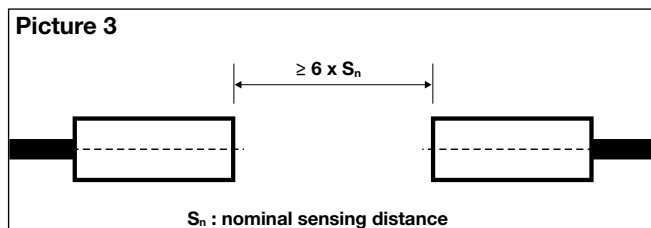
Flush sensor, when installed in damping material, must be according to Picture 1A.



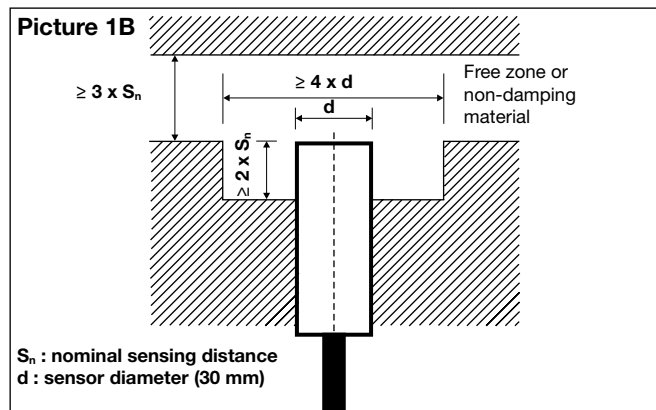
Flush sensors, when installed together in damping material, must be according to Picture 2A.



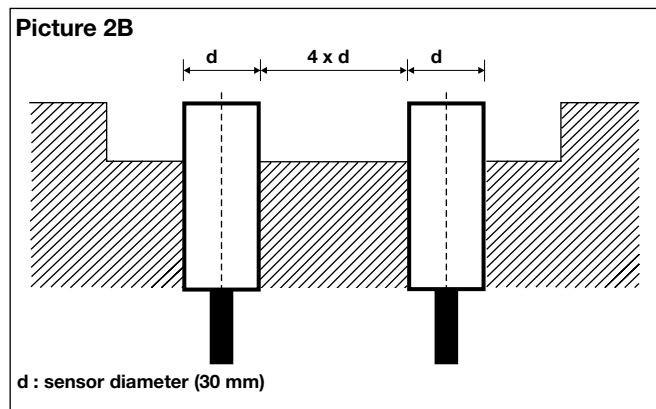
For sensors installed opposite each other, a minimum space of  $6 \times S_n$  (the nominal sensing distance) must be observed (See Picture 3).



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

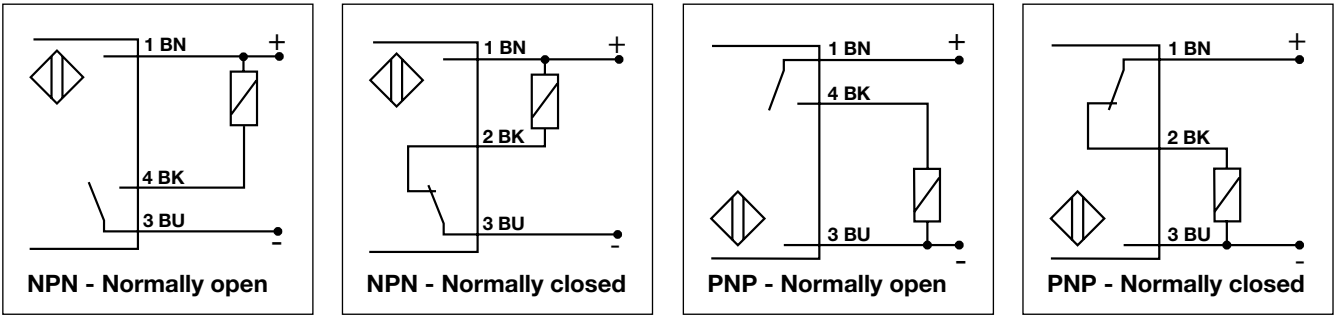


Non-flush sensors, when installed together in damping material, must be according to Picture 2B.





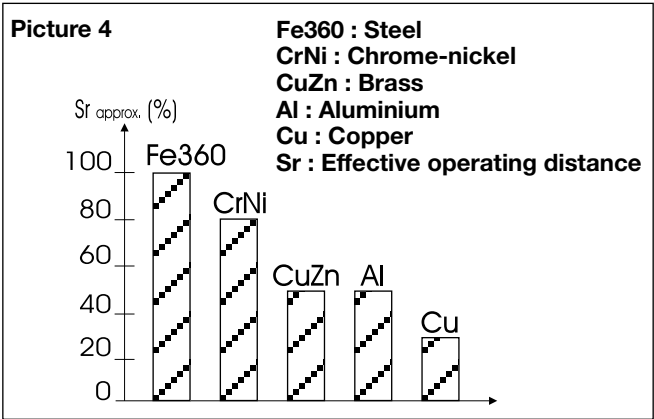
Wiring Diagram



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.



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