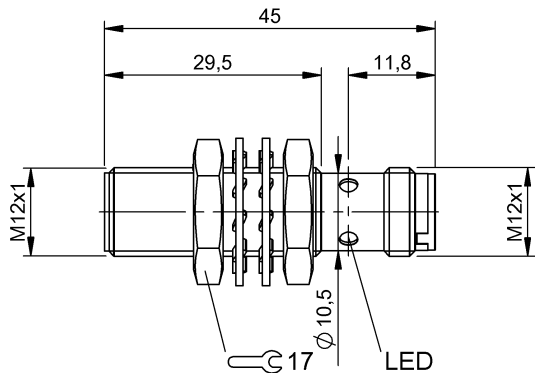




#### Basic features

|                        |                     |
|------------------------|---------------------|
| Approval/Conformity    | CE<br>cULus<br>WEEE |
| Basic standard         | IEC 60947-5-2       |
| Principle of operation | Inductive sensor    |

#### Display/Operation

|                    |     |
|--------------------|-----|
| Function indicator | yes |
| Power indicator    | no  |

#### Electrical connection

|                                   |                            |
|-----------------------------------|----------------------------|
| Connection                        | M12x1-Male, 3-pin, A-coded |
| Polarity reversal protected       | yes                        |
| Protection against device mix-ups | yes                        |
| Short-circuit protection          | yes                        |

#### Electrical data

|                                               |                   |
|-----------------------------------------------|-------------------|
| Load capacitance max. at Ue                   | 1.5 $\mu$ F       |
| Min. operating current I <sub>m</sub>         | 0 mA              |
| No-load current I <sub>o</sub> max., damped   | 11 mA             |
| No-load current I <sub>o</sub> max., undamped | 7 mA              |
| Operating voltage U <sub>b</sub>              | 10...30 VDC       |
| Output resistance R <sub>a</sub>              | 47.0 k $\Omega$ m |
| Protection class                              | II                |
| Rated insulation voltage U <sub>i</sub>       | 250 V AC          |
| Rated operating current I <sub>e</sub>        | 200 mA            |
| Rated operating voltage U <sub>e</sub> DC     | 24 V              |
| Rated short circuit current                   | 100 A             |
| Ready delay t <sub>v</sub> max.               | 35 ms             |
| Residual current I <sub>r</sub> max.          | 100 $\mu$ A       |
| Ripple max. (% of U <sub>e</sub> )            | 15 %              |
| Switching frequency                           | 600 Hz            |
| Utilization category                          | DC -13            |
| Voltage drop static max.                      | 1.3 V             |

#### Environmental conditions

|                         |                                       |
|-------------------------|---------------------------------------|
| Ambient temperature     | -25...85 °C                           |
| Contamination scale     | 3                                     |
| EN 60068-2-27, Shock    | Half-sinus, 30 g <sub>n</sub> , 11 ms |
| EN 60068-2-6, Vibration | 55 Hz, amplitude 1 mm, 3x30 min       |
| IP rating               | IP68, according to BWN Pr 20          |

#### Functional safety

|              |       |
|--------------|-------|
| MTTF (40 °C) | 625 a |
|--------------|-------|

#### Interface

|                  |                        |
|------------------|------------------------|
| Switching output | NPN normally open (NO) |
|------------------|------------------------|

Inductive Sensors  
BES M12MD1-NSC60B-S04G  
Order Code: BES02WL

**BALLUFF**

Material

|                          |                           |
|--------------------------|---------------------------|
| Housing material         | Brass, Nickel-free coated |
| Material sensing surface | PBT                       |

Mechanical data

|                   |              |
|-------------------|--------------|
| Dimension         | Ø 12 x 45 mm |
| Installation      | quasi-flush  |
| Mounting length   | 25.00 mm     |
| Size              | M12x1        |
| Tightening torque | 10 Nm        |

Range/Distance

|                                  |        |
|----------------------------------|--------|
| Assured operating distance Sa    | 4.8 mm |
| Hysteresis H max. (% of Sr)      | 15.0 % |
| Rated operating distance Sn      | 6 mm   |
| Real switching distance sr       | 6 mm   |
| Repeat accuracy max. (% of Sr)   | 5.0 %  |
| Switching distance marking       | ■■■    |
| Temperature drift max. (% of Sr) | 10 %   |
| Tolerance Sr                     | ±10 %  |

Remarks

The sensor is functional again after the overload has been eliminated.  
For more information about MTTF and B10d see MTTF / B10d Certificate

Indication of the MTTF- / B10d value does not represent a binding composition and/or life expectancy assurance; these are simply experiential values with no warranty implications. These declared values also do not extend the expiration period for defect claims or affect it in any way.

Connector Drawings



Wiring Diagrams (Schematic)

