



1) Sensing surface



### Basic features

|                     |                    |
|---------------------|--------------------|
| Approval/Conformity | CE<br>UKCA<br>WEEE |
| Basic standard      | IEC 60947-5-2      |

### Display/Operation

|                    |     |
|--------------------|-----|
| Function indicator | yes |
| Power indicator    | yes |

### Electrical connection

|                                   |     |
|-----------------------------------|-----|
| Polarity reversal protected       | yes |
| Protection against device mix-ups | yes |
| Short-circuit protection          | yes |

### Electrical data

|                                      |                             |
|--------------------------------------|-----------------------------|
| Load capacitance max. at $U_e$       | 1 $\mu$ F                   |
| Min. operating current $I_m$         | 0 mA                        |
| No-load current $I_o$ max., damped   | 20 mA                       |
| No-load current $I_o$ max., undamped | 12 mA                       |
| Operating voltage $U_b$              | 10...55 VDC                 |
| Output resistance $R_a$              | 33.0 kOhm + D/33.0 kOhm + D |
| Protection class                     | II                          |
| Rated insulation voltage $U_i$       | 250 V AC                    |
| Rated operating current $I_e$        | 200 mA                      |
| Rated operating voltage $U_e$ DC     | 24 V                        |
| Rated short circuit current          | 100 A                       |
| Ready delay $t_v$ max.               | 10 ms                       |
| Residual current $I_r$ max.          | 80 $\mu$ A                  |
| Ripple max. (% of $U_e$ )            | 15 %                        |
| Switching frequency                  | 50 Hz                       |
| Utilization category                 | DC -13                      |
| Voltage drop static max.             | 2.5 V                       |

Inductive Sensors  
**BES 517-139-M4-H**  
Order Code: **BES023P**

**BALLUFF**

**Environmental conditions**

|                         |                                       |
|-------------------------|---------------------------------------|
| Ambient temperature     | -15...70 °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               | IP67                                  |

**Functional safety**

|              |       |
|--------------|-------|
| MTTF (40 °C) | 455 a |
|--------------|-------|

**Interface**

|                            |   |
|----------------------------|---|
| Cable fitting, thread size | M20x1.5                                   |
| Switching output           | PNP normally open/normally closed (NO/NC) |

**Material**

|                          |     |
|--------------------------|-----|
| Housing material         | PBT |
| Material sensing surface | PBT |

**Mechanical data**

|                                  |                     |
|----------------------------------|---------------------|
| Connection cross-section         | 2.5 mm <sup>2</sup> |
| Dimension                        | 80 x 80 x 40 mm     |
| Installation                     | for flush mounting  |
| Size                             | 80x80               |
| Tightening torque                | 4...5 Nm (M20x1.5)  |
| Tightening torque clamping screw | 0.8 Nm              |

**Range/Distance**

|                                  |        |
|----------------------------------|--------|
| Assured operating distance Sa    | 32 mm  |
| Hysteresis H max. (% of Sr)      | 20.0 % |
| Rated operating distance Sn      | 40 mm  |
| Real switching distance sr       | 40 mm  |
| Repeat accuracy max. (% of Sr)   | 5.0 %  |
| Temperature drift max. (% of Sr) | 10 %   |
| Tolerance Sr                     | ±10 %  |

**Remarks**

LED 1: Function  
LED 2: Operating voltage  
Installation cut-out for flush mount in steel: 80 x 80 mm.  
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.

**Wiring Diagrams**

