



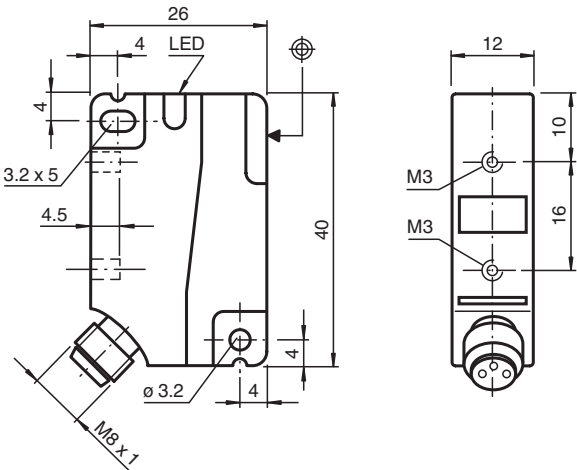
# Inductive sensor

## NBB2-F1-E2-V3

- 2 mm flush
- 3-wire DC



### Dimensions



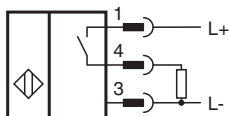
### Technical Data

| General specifications           |                |                    |
|----------------------------------|----------------|--------------------|
| Switching function               |                | Normally open (NO) |
| Output type                      |                | PNP                |
| Rated operating distance         | S <sub>n</sub> | 2 mm               |
| Installation                     |                | flush              |
| Output polarity                  |                | DC                 |
| Assured operating distance       | S <sub>a</sub> | 0 ... 1.62 mm      |
| Reduction factor r <sub>Al</sub> |                | 0.35               |
| Reduction factor r <sub>Cu</sub> |                | 0.25               |

## Technical Data

|                                                 |           |                                                                    |
|-------------------------------------------------|-----------|--------------------------------------------------------------------|
| Reduction factor $r_{304}$                      |           | 0.75                                                               |
| Reduction factor $r_{Brass}$                    |           | 0.45                                                               |
| <b>Nominal ratings</b>                          |           |                                                                    |
| Operating voltage                               | $U_B$     | 10 ... 30 V DC                                                     |
| Switching frequency                             | $f$       | 0 ... 1400 Hz                                                      |
| Hysteresis                                      | $H$       | typ. 5%                                                            |
| Reverse polarity protection                     |           | reverse polarity protected                                         |
| Short-circuit protection                        |           | pulsing                                                            |
| Voltage drop                                    | $U_d$     | $\leq 2.5$ V                                                       |
| Rated insulation voltage                        | $U_{BIS}$ | 60 V                                                               |
| Operating current                               | $I_L$     | 0 ... 250 mA                                                       |
| Off-state current                               | $I_r$     | 0 ... 0.01 mA typ. 0.1 $\mu$ A at 25 °C                            |
| No-load supply current                          | $I_0$     | $\leq 15$ mA                                                       |
| Switching state indicator                       |           | LED, yellow                                                        |
| <b>Functional safety related parameters</b>     |           |                                                                    |
| MTTF <sub>d</sub>                               |           | 1640 a                                                             |
| Mission Time ( $T_M$ )                          |           | 20 a                                                               |
| Diagnostic Coverage (DC)                        |           | 0 %                                                                |
| <b>Compliance with standards and directives</b> |           |                                                                    |
| Standard conformity                             |           |                                                                    |
| Standards                                       |           | EN 60947-5-2:2007<br>IEC 60947-5-2:2007                            |
| <b>Approvals and certificates</b>               |           |                                                                    |
| Protection class                                |           | II                                                                 |
| Rated insulation voltage                        | $U_i$     | 60 V                                                               |
| Rated impulse withstand voltage                 | $U_{imp}$ | 800 V                                                              |
| UL approval                                     |           | cULus Listed, General Purpose                                      |
| CSA approval                                    |           | cCSAus Listed, General Purpose                                     |
| CCC approval                                    |           | CCC approval / marking not required for products rated $\leq 36$ V |
| <b>Ambient conditions</b>                       |           |                                                                    |
| Ambient temperature                             |           | -25 ... 70 °C (-13 ... 158 °F)                                     |
| <b>Mechanical specifications</b>                |           |                                                                    |
| Connection type                                 |           | Connector M8 x 1 , 3-pin                                           |
| Housing material                                |           | PA                                                                 |
| Sensing face                                    |           | PA                                                                 |
| Degree of protection                            |           | IP67                                                               |
| Tightening torque, fastening screws             |           | Threading M3 max: 1.1 Nm                                           |

## Connection



Connection Assignment



Wire colors in accordance with EN 60947-5-2

|   |    |         |
|---|----|---------|
| 1 | BN | (brown) |
| 3 | BU | (blue)  |
| 4 | BK | (black) |

Accessories

|                                                                                   |              |                                                   |
|-----------------------------------------------------------------------------------|--------------|---------------------------------------------------|
|  | V3-WM-2M-PUR | Female cordset single-ended, M8, 3-pin, PUR cable |
|-----------------------------------------------------------------------------------|--------------|---------------------------------------------------|

Release date: 2020-03-23 Date of issue: 2020-03-30 Filename: 184363\_eng.pdf