



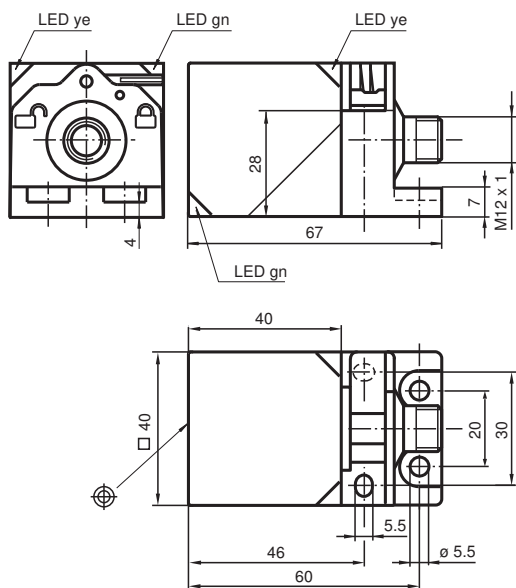
# Inductive sensor

## NBB20-L2-E2-V1

- Sensor head bidirectional and rotatable
- 20 mm flush
- 3-wire DC
- Quick mounting bracket
- 4-way LED indicator



### Dimensions



### Technical Data

| General specifications       |       |                    |  |
|------------------------------|-------|--------------------|--|
| Switching function           |       | Normally open (NO) |  |
| Output type                  |       | PNP                |  |
| Rated operating distance     | $s_n$ | 20 mm              |  |
| Installation                 |       | flush              |  |
| Output polarity              |       | DC                 |  |
| Assured operating distance   | $s_a$ | 0 ... 16.2 mm      |  |
| Actual operating distance    | $s_r$ | 18 ... 22 mm       |  |
| Reduction factor $r_{Al}$    |       | 0.33               |  |
| Reduction factor $r_{Cu}$    |       | 0.31               |  |
| Reduction factor $r_{304}$   |       | 0.74               |  |
| Reduction factor $r_{Brass}$ |       | 0.41               |  |
| Output type                  |       | 3-wire             |  |

## Technical Data

### Nominal ratings

|                                |       |                            |
|--------------------------------|-------|----------------------------|
| Operating voltage              | $U_B$ | 10 ... 30 V DC             |
| Switching frequency            | $f$   | 0 ... 440 Hz               |
| Hysteresis                     | $H$   | typ. 5 %                   |
| Reverse polarity protection    |       | reverse polarity protected |
| Short-circuit protection       |       | pulsing                    |
| Voltage drop                   | $U_d$ | $\leq 2$ V                 |
| Operating current              | $I_L$ | 0 ... 200 mA               |
| Off-state current              | $I_r$ | 0 ... 0.5 mA               |
| No-load supply current         | $I_0$ | $\leq 20$ mA               |
| Time delay before availability | $t_v$ | 80 ms                      |
| Operating voltage indicator    |       | LED, green                 |
| Switching state indicator      |       | LED, yellow                |

### Functional safety related parameters

|                          |  |        |
|--------------------------|--|--------|
| MTTF <sub>d</sub>        |  | 1289 a |
| Mission Time ( $T_M$ )   |  | 20 a   |
| Diagnostic Coverage (DC) |  | 0 %    |

### Compliance with standards and directives

|                     |  |                                                                                             |
|---------------------|--|---------------------------------------------------------------------------------------------|
| Standard conformity |  |                                                                                             |
| Standards           |  | EN 60947-5-2:2007<br>EN 60947-5-2/A1:2012<br>IEC 60947-5-2:2007<br>IEC 60947-5-2 AMD 1:2012 |

### Approvals and certificates

|                                 |           |                                                                    |
|---------------------------------|-----------|--------------------------------------------------------------------|
| EAC conformity                  |           | TR CU 020/2011                                                     |
| Protection class                |           | II                                                                 |
| Rated insulation voltage        | $U_i$     | 253 V                                                              |
| Rated impulse withstand voltage | $U_{imp}$ | 4000 V                                                             |
| UL approval                     |           | cULus Listed, General Purpose                                      |
| CCC approval                    |           | CCC approval / marking not required for products rated $\leq 36$ V |

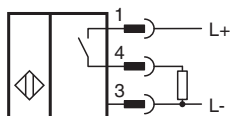
### Ambient conditions

|                     |  |                                |
|---------------------|--|--------------------------------|
| Ambient temperature |  | -25 ... 85 °C (-13 ... 185 °F) |
| Storage temperature |  | -40 ... 85 °C (-40 ... 185 °F) |

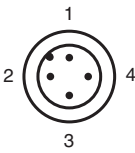
### Mechanical specifications

|                      |  |                                |
|----------------------|--|--------------------------------|
| Connection type      |  | Connector plug M12 x 1 , 4-pin |
| Housing material     |  | PA                             |
| Sensing face         |  | PA                             |
| Degree of protection |  | IP69K                          |
| Cable                |  |                                |
| Cable diameter       |  | 3.3 mm $\pm$ 0.15 mm           |
| Mass                 |  | 130 g                          |

## Connection



Connection Assignment



Wire colors in accordance with EN 60947-5-2

|   |    |         |
|---|----|---------|
| 1 | BN | (brown) |
| 2 | WH | (white) |
| 3 | BU | (blue)  |
| 4 | BK | (black) |

Accessories

|                                                                                     |                    |                                       |
|-------------------------------------------------------------------------------------|--------------------|---------------------------------------|
|    | <b>V1-G-2M-PUR</b> | Female cordset, M12, 4-pin, PUR cable |
|    | <b>V1-W-2M-PUR</b> | Female cordset, M12, 4-pin, PUR cable |
|   | <b>MHW 01</b>      | Modular mounting bracket              |
|  | <b>MH 02-L</b>     | Mounting aid                          |

Release date: 2020-03-20 Date of issue: 2020-03-30 Filename: 187481\_eng.pdf