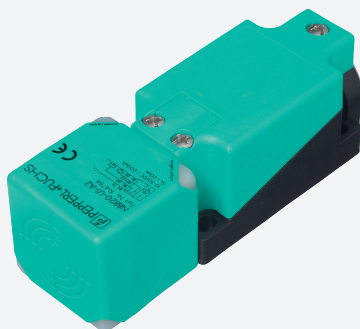




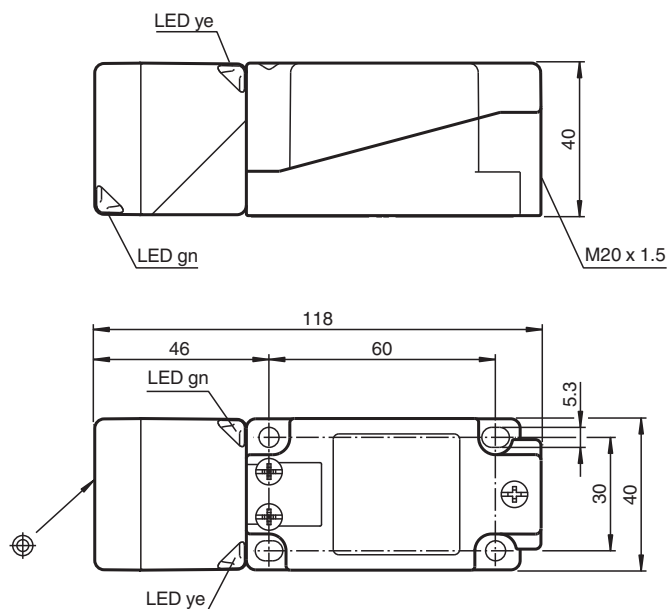
## Inductive sensor

### NBB20-U1-E0

- Sensor head bidirectional and rotatable
- 20 mm flush
- 3-wire DC
- 4 LEDs indicator for 360° visibility



## Dimensions



## Technical Data

### General specifications

|                              |       |                         |
|------------------------------|-------|-------------------------|
| Switching function           |       | Normally open (NO)      |
| Output type                  |       | NPN                     |
| 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 typ. 20 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 typ. 0.1 $\mu$ A at 25 °C |
| 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> | 1510 a |
|-------------------|--------|

### Safety-relevant product characteristics

|                          |        |
|--------------------------|--------|
| MTTF <sub>d</sub>        | 1510 a |
| Mission Time ( $T_M$ )   | 20 a   |
| Diagnostic Coverage (DC) | 0 %    |

### Compliance with standards and directives

|                     |                  |
|---------------------|------------------|
| Standard conformity |                  |
| Standards           | EN IEC 60947-5-2 |

### Approvals and certificates

|              |                                                                                                                                                                                         |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UL approval  | cULus Listed<br>Load Type: General Purpose<br>Circuitry: Class 2 Power Source<br>Enclosure Type Rating: Type 1<br>Supply/Switching Voltage: 30 V DC<br>Output Switching Current: 200 mA |
| CCC approval | CCC approval / marking not required for products rated $\leq 36$ V                                                                                                                      |

### Ambient conditions

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

### Mechanical specifications

|                            |                                                                                                                                            |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| Connection type            | screw terminals                                                                                                                            |
| Information for connection | A maximum of two conductors with the same core cross section may be mounted on one terminal connection!<br>tightening torque 1.2 Nm + 10 % |
| Core cross section         | up to 2.5 mm <sup>2</sup>                                                                                                                  |
| Minimum core cross-section | without wire end ferrules 0.5 mm <sup>2</sup> , with connector sleeves 0.34 mm <sup>2</sup>                                                |
| Maximum core cross-section | without wire end ferrules 2.5 mm <sup>2</sup> , with connector sleeves 1.5 mm <sup>2</sup>                                                 |
| Housing material           | PA/metal with epoxy powder coating                                                                                                         |
| Sensing face               | PA                                                                                                                                         |
| Housing base               | plastic                                                                                                                                    |
| Degree of protection       | IP68 / IP69K                                                                                                                               |
| Mass                       | 225 g                                                                                                                                      |
| Dimensions                 |                                                                                                                                            |
| Height                     | 40 mm                                                                                                                                      |
| Width                      | 40 mm                                                                                                                                      |
| Length                     | 118 mm                                                                                                                                     |
| Note                       | Tightening torque: 1.8 Nm (housing)                                                                                                        |

## Connection Assignment

