

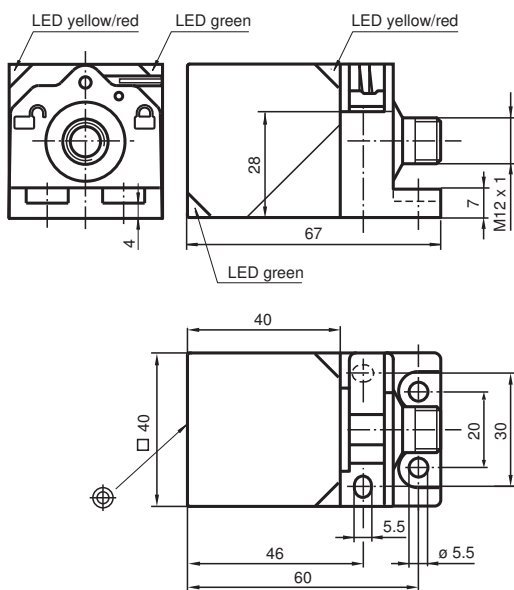


## Inductive sensor NBB20-L2-B3B-V1

- Sensor head bidirectional and rotatable
- 20 mm flush
- A/B slave with extended addressing possibility for up to 62 slaves
- NO/NC programmable
- Oscillator monitoring
- On/Off delay (disconnectable)



### Dimensions



### Technical Data

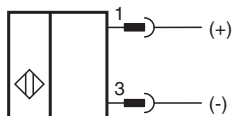
#### General specifications

|                               |       |                                           |
|-------------------------------|-------|-------------------------------------------|
| Switching function            |       | Normally open/closed (NO/NC) programmable |
| Output type                   |       | AS-Interface                              |
| Rated operating distance      | $s_n$ | 20 mm                                     |
| Installation                  |       | flush                                     |
| Assured operating distance    | $s_a$ | 0 ... 16.2 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                                      |
| Slave type                    |       | A/B slave                                 |
| AS-Interface specification    |       | V3.0                                      |
| Required master specification |       | $\geq V2.1$                               |

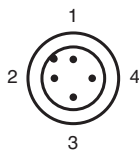
## Technical Data

|                                          |                |                                                              |
|------------------------------------------|----------------|--------------------------------------------------------------|
| Output type                              |                | 2-wire                                                       |
| Nominal ratings                          |                |                                                              |
| Operating voltage                        | U <sub>B</sub> | 26.5 ... 31.9 V via AS-i bus system                          |
| Switching frequency                      | f              | 0 ... 150 Hz                                                 |
| Hysteresis                               | H              | typ. 5 %                                                     |
| Reverse polarity protection              |                | reverse polarity protected                                   |
| No-load supply current                   | I <sub>0</sub> | ≤ 40 mA                                                      |
| Time delay before availability           | t <sub>v</sub> | ≤ 1000 ms                                                    |
| Operating voltage indicator              |                | LED, green                                                   |
| Switching state indicator                |                | LED, yellow                                                  |
| Error indicator                          |                | LED, red                                                     |
| Functional safety related parameters     |                |                                                              |
| MTTF <sub>d</sub>                        |                | 1330 a                                                       |
| Mission Time (T <sub>M</sub> )           |                | 20 a                                                         |
| Diagnostic Coverage (DC)                 |                | 0 %                                                          |
| Compliance with standards and directives |                |                                                              |
| Standard conformity                      |                |                                                              |
| Standards                                |                | EN 60947-5-2:2007<br>IEC 60947-5-2:2007                      |
| Approvals and certificates               |                |                                                              |
| UL approval                              |                | cULus Listed, General Purpose                                |
| CSA approval                             |                | cCSAus Listed, General Purpose                               |
| CCC approval                             |                | CCC approval / marking not required for products rated ≤36 V |
| Ambient conditions                       |                |                                                              |
| Ambient temperature                      |                | -25 ... 70 °C (-13 ... 158 °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                                                        |
| Mass                                     |                | 130 g                                                        |

## Connection



## Connection Assignment



## Additional Information

### Programming Instructions

Address 00    preset, alterable  
                   via Busmaster  
                   or programming units  
 IO-Code    0  
 ID-Code    A  
 ID1-Code   7  
 ID2-Code   E

### Data bit

#### Bit    Function

D0    switching state<sup>1)</sup>  
       (0 = damped; 1 = undamped)  
 D1    not used  
 D2    oscillator monitoring  
       (0= oscillator defective,  
       1=normal operation)  
 D3    not used

### Parameter bit

#### Bit    Function

P0    ON / Off delay  
       activated\* / deactivated  
 P1    switching element function<sup>2)</sup>  
       (0 = NC; 1 = NO)  
 P2    not used  
 P3    not used

- <sup>1)</sup> Applies to NO function (P1 = 1; preset),  
 with NC function (P1 = 0) reversed characteristics  
<sup>2)</sup> Default setting: NO

## 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                          |

## Operation

### Indication depending on the operation mode

| Symptoms          | green LED<br>(POWER) | red LED<br>(FAULT) | Data bit<br>D2 |
|-------------------|----------------------|--------------------|----------------|
| normal operation  | on                   | off                | 1              |
| Oscillator defect | flashing             | flashing           | 0              |
| no communication  | off                  | on                 | 1              |

### On/off delay:

The on/off delay is preset and switched on (P0=1). On delay approx.15 ms, when P0=1 and NO function (P1=1). Off delay approx.15 ms, when P0=1 and NC function (P1=0).