

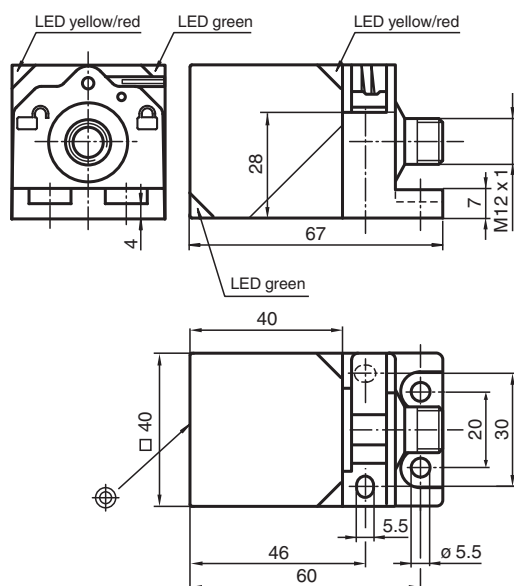


## Inductive sensor NBB20-L2-B3B-V1

- Sensor head bidirectional and rotatable
- 20 mm flush
- A/B node with extended addressing possibility for up to 62 nodes
- 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                                      |               |
| Node type                      | A/B node                                  |               |
| AS-Interface specification     | V3.0                                      |               |
| Required gateway specification | $\geq V2.1$                               |               |
| Output type                    | 2-wire                                    |               |

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Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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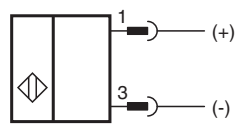
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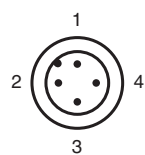
Technical Data

|                                          |                |                                                              |
|------------------------------------------|----------------|--------------------------------------------------------------|
| 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 IEC 60947-5-2                                             |
| Approvals and certificates               |                |                                                              |
| UL approval                              |                | cULus 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                                                        |
| Dimensions                               |                |                                                              |
| Height                                   |                | 40 mm                                                        |
| Width                                    |                | 40 mm                                                        |
| Length                                   |                | 67 mm                                                        |

Connection



Connection Assignment



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## 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><br>(0 = damped; 1 = undamped)               |
| D1 | not used                                                                  |
| D2 | oscillator monitoring<br>(0= oscillator defective,<br>1=normal operation) |
| D3 | not used                                                                  |

### Parameter bit

| Bit | Function |
|-----|----------|
|-----|----------|

|    |                                                              |
|----|--------------------------------------------------------------|
| P0 | ON / Off delay<br>activated* / deactivated                   |
| P1 | switching element function <sup>2)</sup><br>(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

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).

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