

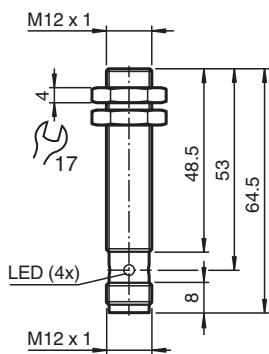


## Inductive sensor NBB2-12GM50-E2-V1

- Use in harsh environments
- High shock resistance
- Extended temperature range  
-40 ... +85 °C
- Extended operating voltage range
- Extremely high switching frequency



### Dimensions



### Technical Data

#### General specifications

|                              |       |                                                                             |
|------------------------------|-------|-----------------------------------------------------------------------------|
| Switching function           |       | Normally open (NO)                                                          |
| Output type                  |       | PNP                                                                         |
| Rated operating distance     | $s_n$ | 2 mm                                                                        |
| Installation                 |       | flush                                                                       |
| Output polarity              |       | DC                                                                          |
| Assured operating distance   | $s_a$ | 0 ... 1.62 mm                                                               |
| Actuating element            |       | mild steel, e. g. 1.0037, SR235JR (formerly St37-2)<br>12 mm x 12 mm x 1 mm |
| Reduction factor $r_{Al}$    |       | 0.29                                                                        |
| Reduction factor $r_{Cu}$    |       | 0.23                                                                        |
| Reduction factor $r_{304}$   |       | 0.78                                                                        |
| Reduction factor $r_{Brass}$ |       | 0.42                                                                        |
| Output type                  |       | 3-wire                                                                      |

#### Nominal ratings

|                             |       |                            |
|-----------------------------|-------|----------------------------|
| Operating voltage           | $U_B$ | 6 ... 36 V                 |
| Switching frequency         | $f$   | 0 ... 3500 Hz              |
| Hysteresis                  | $H$   | typ. 5 %                   |
| Reverse polarity protection |       | reverse polarity protected |
| Short-circuit protection    |       | pulsing                    |
| Voltage drop                | $U_d$ | $\leq 1$ V                 |

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

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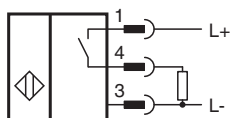
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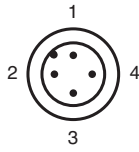
## Technical Data

|                                                 |           |                                                                                                                                                                                         |
|-------------------------------------------------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operating current                               | $I_L$     | 0 ... 200 mA                                                                                                                                                                            |
| Off-state current                               | $I_r$     | max. 20 $\mu$ A                                                                                                                                                                         |
| No-load supply current                          | $I_0$     | $\leq 10$ mA                                                                                                                                                                            |
| Time delay before availability                  | $t_v$     | $\leq 10$ ms                                                                                                                                                                            |
| Switching state indicator                       |           | Multihole-LED, yellow                                                                                                                                                                   |
| <b>Safety-relevant product characteristics</b>  |           |                                                                                                                                                                                         |
| MTTF <sub>d</sub>                               |           | 1607 a                                                                                                                                                                                  |
| Mission Time (T <sub>M</sub> )                  |           | 20 a                                                                                                                                                                                    |
| Diagnostic Coverage (DC)                        |           | 0 %                                                                                                                                                                                     |
| <b>Conformity</b>                               |           |                                                                                                                                                                                         |
| PWIS conformity                                 |           | VDMA 24364-A1/B2/C1/T100°C-W                                                                                                                                                            |
| <b>Compliance with standards and directives</b> |           |                                                                                                                                                                                         |
| Standard conformity                             |           |                                                                                                                                                                                         |
| Standards                                       |           | EN IEC 60947-5-2                                                                                                                                                                        |
| <b>Approvals and certificates</b>               |           |                                                                                                                                                                                         |
| Protection class                                |           | II                                                                                                                                                                                      |
| Rated insulation voltage                        | $U_i$     | 36 V                                                                                                                                                                                    |
| Rated impulse withstand voltage                 | $U_{imp}$ | 500 V                                                                                                                                                                                   |
| 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: 36 V DC<br>Output Switching Current: 200 mA |
| CCC approval                                    |           | CCC approval / marking not required for products rated $\leq 36$ V                                                                                                                      |
| Marine approval                                 |           | DNVGL TAA00003AK                                                                                                                                                                        |
| <b>Ambient conditions</b>                       |           |                                                                                                                                                                                         |
| Ambient temperature                             |           | -40 ... 85 °C (-40 ... 185 °F)                                                                                                                                                          |
| Storage temperature                             |           | -40 ... 85 °C (-40 ... 185 °F)                                                                                                                                                          |
| <b>Mechanical specifications</b>                |           |                                                                                                                                                                                         |
| Connection type                                 |           | Connector plug                                                                                                                                                                          |
| Housing material                                |           | brass , white bronze coated                                                                                                                                                             |
| Sensing face                                    |           | PBT , green                                                                                                                                                                             |
| Degree of protection                            |           | IP65 / IP66 / IP67 / IP68 / IP69                                                                                                                                                        |
| Connector                                       |           |                                                                                                                                                                                         |
| Threading                                       |           | M12 x 1                                                                                                                                                                                 |
| Number of pins                                  |           | 3                                                                                                                                                                                       |
| Mass                                            |           | 29 g                                                                                                                                                                                    |
| Dimensions                                      |           |                                                                                                                                                                                         |
| Length                                          |           | 64.5 mm                                                                                                                                                                                 |
| Diameter                                        |           | 12 mm                                                                                                                                                                                   |
| Mounting                                        |           | with nuts, M12                                                                                                                                                                          |
| Tightening torque                               |           | $\leq 10$ Nm                                                                                                                                                                            |
| <b>General information</b>                      |           |                                                                                                                                                                                         |
| Scope of delivery                               |           | 2 self locking nuts in scope of delivery                                                                                                                                                |

## Connection Assignment



## Connection Assignment

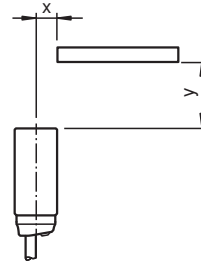
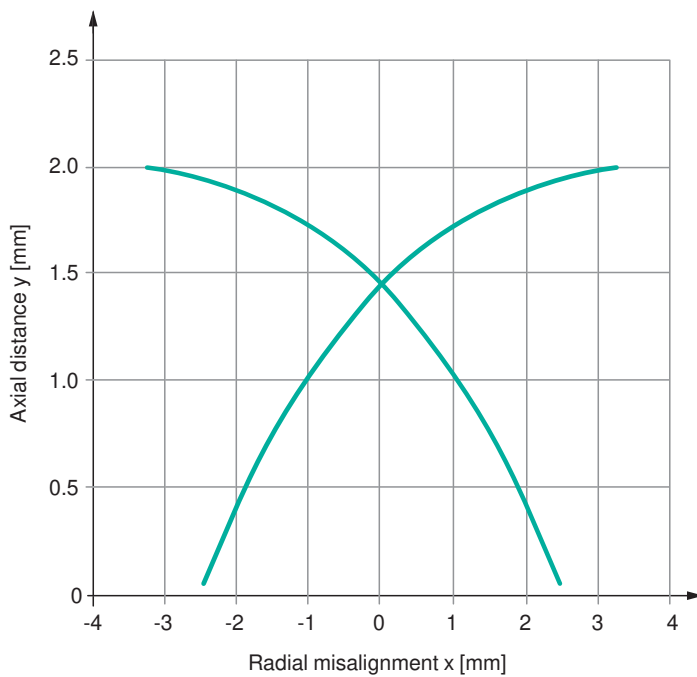


Wire colors in accordance with EN 60947-5-2

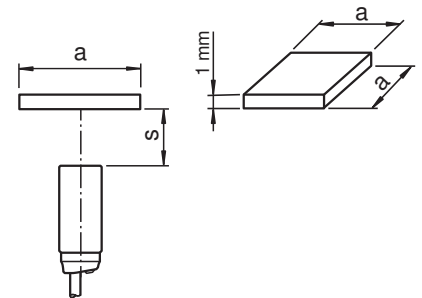
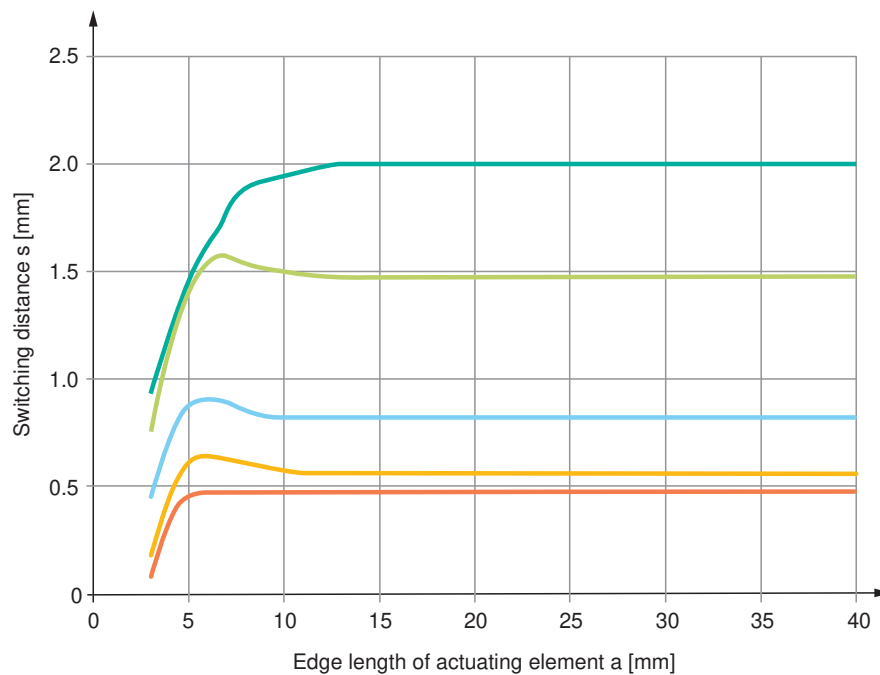
|   |    |         |
|---|----|---------|
| 1 | BN | (brown) |
| 2 | WH | (white) |
| 3 | BU | (blue)  |
| 4 | BK | (black) |

## Characteristic Curve

### Actuation by radial approach (standard target)



### Switching distance depending on the actuating element



- Steel
- Stainless steel
- Brass
- Aluminum
- Copper