



CE

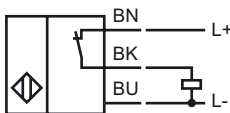
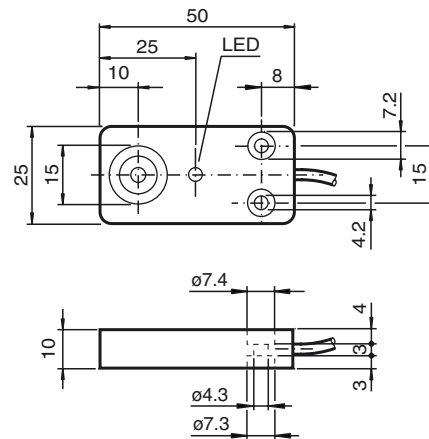
e1

Model Number

NBB8-F33-E3-M

Features

- Extended temperature range - 40 ... +85 °C
- e1-Type approval
- Increased operating distance
- Increased noise immunity 100 V/m

Connection**Dimensions****Technical Data****General specifications**

| | | | |
|----------------------------|-------|---------------|----|
| Switching element function | | PNP | NC |
| Rated operating distance | s_n | 8 mm | |
| Installation | | flush | |
| Output polarity | | DC | |
| Assured operating distance | s_a | 0 ... 6.48 mm | |
| Reduction factor r_{AI} | | 0.3 | |
| Reduction factor r_{Cu} | | 0.2 | |
| Reduction factor r_{304} | | 0.6 | |

Nominal ratings

| | | |
|-----------------------------------|-------|----------------------------|
| Operating voltage | U_B | 5 ... 60 V |
| Switching frequency | f | 0 ... 350 Hz |
| Hysteresis | H | typ. 5 % |
| Reverse polarity protection | | reverse polarity protected |
| Short-circuit protection | | pulsing |
| Voltage drop | U_d | ≤ 2 V |
| Operating current | I_L | 0 ... 200 mA |
| Off-state current | I_r | 0 ... 0.1 mA |
| No-load supply current | I_0 | ≤ 10 mA |
| Time delay before availability | t_v | ≤ 80 ms |
| Indication of the switching state | | LED yellow |

Functional safety related parameters

| | |
|--------------------------|--------|
| MTTF _d | 1140 a |
| Mission Time (T_M) | 20 a |
| Diagnostic Coverage (DC) | 0 % |

Ambient conditions

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

Mechanical specifications

| | |
|--------------------|-------------------------|
| Connection type | cable PUR , 2 m |
| Core cross-section | 0.5 mm ² |
| Housing material | PBT |
| Sensing face | PBT |
| Protection degree | IP67 / IP69K |
| Note | Tightening torque: 5 Nm |

Compliance with standards and directives

| | |
|---------------------|---|
| Standard conformity | |
| Standards | EN 60947-5-2:2007 IEC 60947-5-2:2007 |

Approvals and certificates

| | |
|------------------|------------|
| e1 Type approval | 2006/28/EG |
|------------------|------------|

Installation hint

Emitted interference and interference immunity in accordance with motor vehicle directive 2006/28/EG (e1 Type approval)
 Interference immunity in accordance with DIN ISO 11452-2: 100 V/m
 Frequency band 20 MHz up to 2 GHz

Mains-borne interference in accordance with ISO 7637-2: Pulse

| | | | | | | | |
|-------------------|-----|-----|-----|-----|-----|-----|----|
| | 1 | 2a | 2b | 3a | 3b | 4 | 5 |
| Severity level | III | III | III | III | III | III | IV |
| Failure criterion | C | A | C | A | A | A | C |

| | |
|----------------|------------------------|
| EN 61000-4-2: | CD: 8 kV / AD: 15 kV |
| Severity level | IV IV |
| EN 61000-4-3: | 30 V/m (80...2500 MHz) |
| Severity level | IV |
| EN 61000-4-4: | 2 kV |
| Severity level | III |
| EN 61000-4-6: | 10 V (0.01...80 MHz) |
| Severity level | III |
| EN 55011: | Class A |

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