



Model Number

NBB8-F33-E2-M

Features

- 8 mm flush
- E1-Type approval
- Extended temperature range
-40 ... +85 °C
- Increased operating distance
- Increased noise immunity 100 V/m

Technical Data

General specifications

| | | |
|----------------------------|-------|--------------------|
| Switching function | | Normally open (NO) |
| Output type | | PNP |
| 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 |
| Output type | | 3-wire |

Nominal ratings

| | | |
|--------------------------------|-------|----------------------------|
| Operating voltage | U_B | 5 ... 60 V DC |
| 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 |
| Switching state indicator | | 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 |
| Degree of protection | IP67 / IP69K |
| Cable | |
| Cable diameter | 4.8 mm \pm 0.2 mm |
| Bending radius | > 10 x cable diameter |
| Note | Tightening torque: 5 Nm |

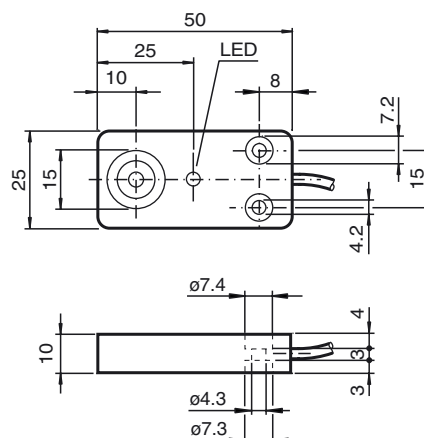
Compliance with standards and directives

| | |
|---------------------|---------------------------------------------------------------------------------------------|
| Standard conformity | |
| Standards | EN 60947-5-2:2007 EN 60947-5-2/A1:2012 IEC 60947-5-2:2007 IEC 60947-5-2 AMD 1:2012 |

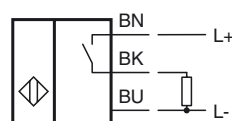
Approvals and certificates

| | |
|------------------|---------------------------------------------------|
| CCC approval | Certified by China Compulsory Certification (CCC) |
| E1 Type approval | 10R-04 |

Dimensions



Electrical Connection



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 | 3 a | 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 |