



CE

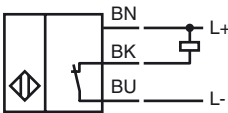
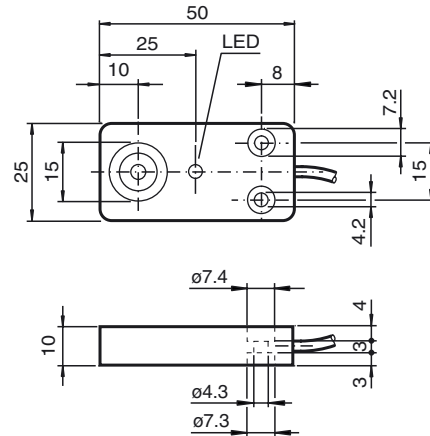
e1

**Model Number**

NBB8-F33-E1-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		NPN	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	$U_d$	$\leq 2$ V
Operating current	$I_L$	0 ... 200 mA
Off-state current	$I_r$	0 ... 0.1 mA
No-load supply current	$I_0$	$\leq 10$ mA
Time delay before availability	$t_v$	$\leq 80$ ms
Indication of the switching state		LED yellow

**Functional safety related parameters**

MTTF <sub>d</sub>	1150 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 <sup>2</sup>
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
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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