



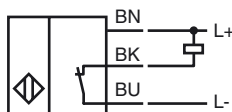
## Model Number

NBB4-12GM45-E1-M

## Features

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

## Connection

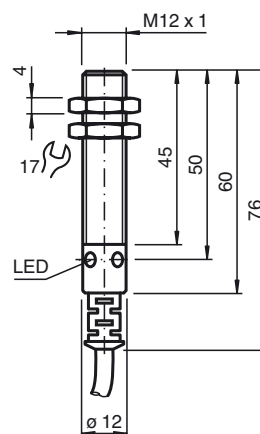


## Accessories

### EXG-12

Quick mounting bracket with dead stop

## Dimensions



## Technical Data

### General specifications

Switching element function		NPN	NC
Rated operating distance	$s_n$	4 mm	
Installation		flush	
Output polarity		DC	
Assured operating distance	$s_a$	0 ... 3.24 mm	
Reduction factor $r_{AI}$		0.45	
Reduction factor $r_{Cu}$		0.35	
Reduction factor $r_{304}$		0.7	

### Nominal ratings

Operating voltage	$U_B$	10 ... 60 V
Switching frequency	$f$	0 ... 800 Hz
Hysteresis	$H$	typ. 5 %
Reverse polarity protected		reverse polarity protected
Short-circuit protection		pulsing
Voltage drop	$U_d$	$\leq 2.5$ V
Rated insulation voltage	$U_{BIS}$	60 V
Operating current	$I_L$	0 ... 200 mA
Off-state current	$I_r$	0 ... 0.5 mA typ. 0.1 $\mu$ A
No-load supply current	$I_0$	$\leq 15$ mA
Indication of the switching state		LED, yellow

### Functional safety related parameters

MTTF <sub>d</sub>	1530 a
Mission Time ( $T_M$ )	20 a
Diagnostic Coverage (DC)	0 %

### Ambient conditions

Ambient temperature	-40 ... 85 °C (-40 ... 185 °F)
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### Mechanical specifications

Connection type	cable PUR, 2 m
Core cross-section	0.75 mm <sup>2</sup>
Housing material	brass, nickel-plated
Sensing face	PBT
Protection degree	IP69K
Mass	120 g

### Compliance with standards and directives

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

### Approvals and certificates

Protection class	II
Rated insulation voltage	$U_i$ 60 V
Design-impulse-voltage withstand	$U_{imp}$ 800 V
UL approval	cULus Listed, General Purpose
CSA approval	cCSAus Listed, General Purpose
CCC approval	Certified by China Compulsory Certification (CCC)
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 3 a 3b 4  
 Severity level III III III III III III  
 Failure criterion C A C A A A

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

Release date: 2012-05-04 09:47 Date of issue: 2012-05-04 233860\_eng.xml