



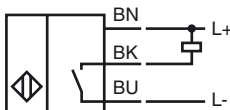
Model Number

NBB4-12GM45-E0-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

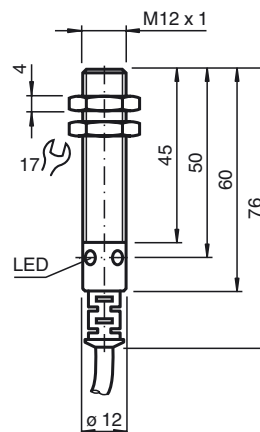


Accessories

EXG-12

Quick mounting bracket with dead stop

Dimensions



Technical Data

General specifications

Switching element function		NPN	NO
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	≤ 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 μ A	
No-load supply current	I_0	≤ 15 mA	
Indication of the switching state		LED, yellow	

Functional safety related parameters

MTTF _d	1560 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 ²
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

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