



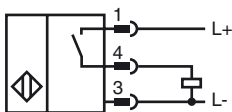
Model Number

NBB4-12GM45-E2-V1-M

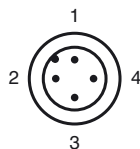
Features

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

Connection



Pinout



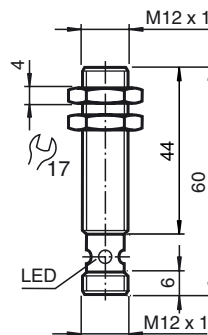
Wire colors in accordance with EN 60947-5-2

1	BN	(brown)
2	WH	(white)
3	BU	(blue)
4	BK	(black)

Accessories

- EXG-12**
Quick mounting bracket with dead stop
- V1-W**
4-pin, M12 female field-attachable connector
- V1-G**
4-pin, M12 female field-attachable connector

Dimensions



Technical Data

General specifications

Switching element function	PNP	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}		0.39
Reduction factor r_{Cu}		0.35
Reduction factor r_{304}		0.75

Nominal ratings

Operating voltage	U_B	10 ... 60 V
Switching frequency	f	0 ... 800 Hz
Hysteresis	H	typ. 5 %
Reverse polarity protection		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	≤ 11 mA
Time delay before availability	t_v	≤ 5 ms
Switching state indication		Multihole-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	Device connector M12 x 1, 4-pin
Housing material	brass, nickel-plated
Sensing face	PBT
Protection degree	IP68 / 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
e1 Type approval	2006/28/EG

Release date: 2013-02-20 16:59 Date of issue: 2013-02-20 211901_eng.xml

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: 4 kV / AD: 8 kV

Severity level II III

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