



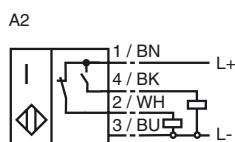
### Model Number

NBB2-12GM60-A2-3D

### Features

- Basic series
- 2 mm embeddable

### Connection



### Accessories

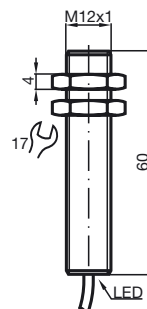
#### BF 12

Mounting flange

#### EXG-12

Mounting aid

## Dimensions



## Technical Data

### General specifications

Switching element function	PNP	Antivalent
Rated operating distance	$s_n$	2 mm
Installation	embeddable	
Output polarity	DC	
Assured operating distance	$s_a$	0 ... 1.62 mm
Reduction factor $r_{AI}$	0.25	
Reduction factor $r_{Cu}$	0.15	
Reduction factor $r_{V2A}$	0.66	

### Nominal ratings

Operating voltage	$U_B$	10 ... 30 V
Switching frequency	$f$	0 ... 1000 Hz
Reverse polarity protection	protected against reverse polarity	
Short-circuit protection	pulsing	
Voltage drop	$U_d$	$\leq 3$ V
Operating current	$I_L$	0 ... 200 mA
Off-state current	$I_r$	0 ... 0.5 mA typ. 0.1 $\mu$ A at 25 °C
No-load supply current	$I_0$	$\leq 20$ mA
Indication of the switching state	LED, yellow	

### Standard conformity

Standards	IEC / EN 60947-5-2:2004
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### Ambient conditions

Ambient temperature	-25 ... 70 °C (248 ... 343 K)
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### Mechanical specifications

Connection type	2 m, PVC cable
Core cross-section	0.14 mm <sup>2</sup>
Housing material	brass, nickel-plated
Sensing face	PBT
Protection degree	IP67

### General information

Use in the hazardous area	see instruction manuals
Category	3D

**ATEX 3D**

Instruction

**Manual electrical apparatus for hazardous areas****Device category 3D**

Directive conformity

Standard conformity

for use in hazardous areas with non-conducting combustible dust

94/9/EG

EN 50281-1-1

Protection via housing

Use is restricted to the following stated conditions

CE symbol



Ex-identification

II 3D IP67 T 98 X

General

The apparatus has to be operated according to the appropriate data in the data sheet and in this instruction manual.

The data stated in the data sheet are restricted by this operating instruction! The special conditions must be adhered to!

Installation, Commissioning

Laws and/or regulations and standards governing the use or intended usage goal must be observed.

Maintenance

No changes can be made to apparatus, which are operated in hazardous areas.

Repairs to these apparatus are not possible.

[Fett]Special conditions

Maximum operating current  $I_L$ 

The maximum permissible load current must be restricted to the values given in the following list.

High load currents and load short-circuits are not permitted.

Maximum operating voltage  $U_{Bmax}$ The maximum permissible operating voltage  $U_{Bmax}$  must be restricted to the values given in the following list. Tolerances are not permitted.

Maximum heating (Temperature rise)

dependant of the load current  $I_L$  and the max. operating voltage  $U_{Bmax}$ .

Information can be taken from the following list. The maximum surface temperature at maximum ambient temperature is given in the Ex identification of the apparatus.

at  $U_{Bmax}=30\text{ V}$ ,  $I_L=200\text{ mA}$ 

28 °C

at  $U_{Bmax}=30\text{ V}$ ,  $I_L=100\text{ mA}$ 

23 °C

at  $U_{Bmax}=30\text{ V}$ ,  $I_L=50\text{ mA}$ 

21 °C

Protection from mechanical danger

The sensor must not be mechanically damaged.

Electrostatic charging

Electrostatic charges on the metal housing components must be avoided. Dangerous electrostatic charges on the metal housing components can be avoided by incorporating these components in the equipotential bonding.

Protection of the connection cable

The connection cable must be prevented from being subjected to tension and torsional loading.