



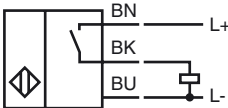
Model Number

NBB4-12GM50-E2-3G-3D

Features

- Increased operating distance
- 4 mm flush
- ATEX-approval for zone 2 and zone 22

Connection



Accessories

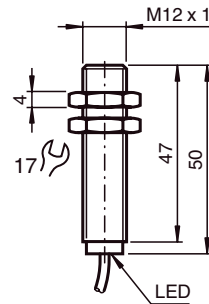
BF 12

Mounting flange, 12 mm

EXG-12

Quick mounting bracket with dead stop

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_{Al}		0.45
Reduction factor r_{Cu}		0.35
Reduction factor r_{304}		0.7

Nominal ratings

Operating voltage	U_B	10 ... 30 V DC
Switching frequency	f	0 ... 1000 Hz
Hysteresis	H	typ. 5 %
Reverse polarity protected		reverse polarity protected
Short-circuit protection		pulsing
Voltage drop	U_d	≤ 3 V
Operating current	I_L	0 ... 150 mA
Off-state current	I_r	0 ... 0.5 mA typ. 0.1 μ A at 25 °C
No-load supply current	I_0	≤ 15 mA
Indication of the switching state		LED, yellow

Functional safety related parameters

MTTF _d	1820 a
Mission Time (T_M)	20 a
Diagnostic Coverage (DC)	0 %

Ambient conditions

Ambient temperature	-25 ... 70 °C (-13 ... 158 °F)
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Mechanical specifications

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

General information

Use in the hazardous area	see instruction manuals
Category	3G; 3D

Compliance with standards and directives

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

Approvals and certificates

UL approval	cULus Listed, General Purpose
CSA approval	cCSAus Listed, General Purpose
CCC approval	Products with a maximum operating voltage of ≤ 36 V do not bear a CCC marking because they do not require approval.

ATEX 3G (nA)

Instruction

Manual electrical apparatus for hazardous areas**Device category 3G (nA)**

Directive conformity

Standard conformity

for use in hazardous areas with gas, vapour and mist

94/9/EG

EN 60079-0:2006, EN 60079-15:2005


Ignition protection category "n"

Use is restricted to the following stated conditions

CE symbol



Ex-identification

 II 3G Ex nA IIC T6 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 observed!

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.

Special conditionsMaximum 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_B max is restricted to the values in the following list. Tolerances are not permissible.

Maximum permissible ambient temperature T_{Umax}

dependant of the load current I_L and the max. operating voltage U_{Bmax} .
Information can be taken from the following list.

at $U_{Bmax}=30$ V, $I_L=150$ mA

45 °C (113 °F)

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

49 °C (120.2 °F)

Protection from mechanical danger

The sensor must not be exposed to **ANY FORM** of mechanical danger.

Protection from UV light

The sensor and the connection cable must be protected from damaging UV-radiation. This can be achieved when the sensor is used in internal areas.

Electrostatic charging

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

Protection of the connection cable

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

ATEX 3D (tD)

Note

This instruction is only valid for products according to EN 61241-0:2006 and EN 61241-1:2004
Note the ex-marking on the sensor or on the enclosed adhesive label

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

for use in hazardous areas with combustible dust

Directive conformity

94/9/EG

Standard conformity

EN 61241-0:2006, EN 61241-1:2004


Protection via housing "tD"

Use is restricted to the following stated conditions

CE symbol



Ex-identification

 II 3D Ex tD A22 IP67 T80°C X

General

The apparatus has to be operated according to the appropriate data in the data sheet and in this instruction manual.
The maximum surface temperature has been determined in accordance with method A without a dust layer on the equipment.

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.

Special conditionsMaximum 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 permissible ambient temperature T_{Umax} dependant of the load current I_L and the max. operating voltage U_{Bmax} .

Information can be taken from the following list.

at $U_{Bmax}=30\text{ V}$, $I_L=150\text{ mA}$

45 °C (113 °F)

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

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Protection from mechanical danger

The sensor must not be exposed to **ANY FORM** of mechanical danger.

Protection from UV light

The sensor and the connection cable must be protected from damaging UV-radiation. This can be achieved when the sensor is used in internal areas.

Electrostatic charging

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

Protection of the connection cable

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

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