Model Number

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

Features

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

Accessories

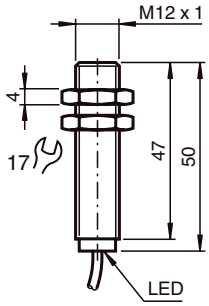
BF 12
Mounting flange, 12 mm

EXG-12
Quick mounting bracket with dead stop

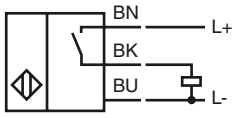
Technical Data

General specifications		
Switching function		Normally open (NO)
Output type		PNP
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 protection		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 µA at 25 °C
Off-state current T_U =40 °C, switching element off		≤
No-load supply current	I_0	≤ 15 mA
Time delay before availability	t_v	≤ 5 ms
Switching state indicator		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)
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
Degree of protection		IP67
Cable		
Bending radius		> 10 x cable diameter
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		CCC approval / marking not required for products rated ≤36 V

Dimensions



Electrical Connection



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Equipment protection level Gc (nA)

Instruction	**Manual electrical apparatus for hazardous areas**
Device category 3G (nA)	for use in hazardous areas with gas, vapour and mist
Certificate of Compliance	PF 15CERT3754 X
CE marking	CE
ATEX marking	Ex II 3G Ex nA IIC T6 Gc The Ex-related marking can also be printed on the enclosed label.
Standards	EN 60079-0:2012+A11:2013, EN 60079-15:2010 Ignition protection category "n" Use is restricted to the following stated conditions
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. If the Ex-related marking is printed only on the supplied label, then this must be attached in the immediate vicinity of the sensor. The sticking surface for the label must be clean and free from grease. The attached label must be legible and indelible, including in the event of possible chemical corrosion.
Maintenance	No changes can be made to apparatus, which are operated in hazardous areas. Repairs to these apparatus are not possible.

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 UB 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.
Protection of the connection cable	The connection cable must be prevented from being subjected to tension and torsional loading.
Protection against transients	Ensure transient protection is provided and that the maximum value of the transient protection (140% of 85 V) is not exceeded.
Electrostatic charge	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.
Material selection accessories	When selecting accessories, ensure that the material allows the temperature of the enclosure to rise to up to 70 °C.

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Equipment protection level Dc (tc)

Instruction	**Manual electrical apparatus for hazardous areas**
Device category 3D	for use in hazardous areas with combustible dust
Certificate of Compliance	PF 15CERT3774 X
CE marking	CE
ATEX marking	Ex II 3D Ex tc IIIC T80°C Dc The Ex-related marking can also be printed on the enclosed label.
Standards	EN 60079-0:2012+A11:2013, EN 60079-31:2014 Protection by enclosure "tc" Some of the information in this instruction manual is more specific than the information provided in the datasheet.
General	The corresponding datasheets, declarations of conformity, EC-type examination certificates, certifications, and control drawings, where applicable (see datasheets), form an integral part of this document. These documents can be found at www.pepperl-fuchs.com. The maximum surface temperature of the device was determined without a layer of dust on the apparatus. Some of the information in this instruction manual is more specific than the information provided in the datasheet.
Installation, commissioning	Laws and/or regulations and standards governing the use or intended usage goal must be observed. If the Ex-relevant identification is printed exclusively on the adhesive label provided, this label must be affixed in the immediate vicinity of the sensor! The background surface to which the adhesivelabel is to be applied must be clean and free from grease! The applied label must be durable and remain legible, with due consideration of the possibility of chemical corrosion!
Maintenance	No changes can be made to apparatus, which are operated in hazardous areas. Repairs to these apparatus are not possible.

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 UBmax 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 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.
Protection of the connection cable	The connection cable must be prevented from being subjected to tension and torsional loading.
Electrostatic charge	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. Do not attach the nameplate provided in areas where electrostatic charge can build up.

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