



## Model Number

NJ2-12GM-N

## Features

- 2 mm flush
- Usable up to SIL 2 acc. to IEC 61508

## Accessories

### BF 12

Mounting flange, 12 mm

### EXG-12

Quick mounting bracket with dead stop

## Technical Data

### General specifications

Switching function		Normally closed (NC)
Output type		NAMUR
Rated operating distance	$s_n$	2 mm
Installation		flush
Assured operating distance	$s_a$	0 ... 1.62 mm
Reduction factor $r_{AI}$		0.4
Reduction factor $r_{Cu}$		0.3
Reduction factor $r_{304}$		0.85
Output type		2-wire

### Nominal ratings

Nominal voltage	$U_o$	8.2 V ( $R_i$ approx. 1 k $\Omega$ )
Operating voltage	$U_B$	5 ... 25 V
Switching frequency	f	0 ... 2000 Hz
Hysteresis	H	3 %
Suitable for 2:1 technology		yes, Reverse polarity protection diode not required
Current consumption		
Measuring plate not detected		$\geq 3$ mA at nominal voltage
Measuring plate detected		$\leq 1$ mA at nominal voltage

### Functional safety related parameters

Safety Integrity Level (SIL)	SIL 2
MTTF <sub>d</sub>	5887 a
Mission Time ( $T_M$ )	20 a
Diagnostic Coverage (DC)	0 %

### Ambient conditions

Ambient temperature	-25 ... 100 °C (-13 ... 212 °F)
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### Mechanical specifications

Connection type	cable PVC, 2 m
Core cross-section	0,34 mm <sup>2</sup>
Housing material	Stainless steel 1.4305 / AISI 303
Sensing face	PBT
Degree of protection	IP66 / IP67
Cable	
Cable diameter	4.8 mm $\pm$ 0.2 mm
Bending radius	> 10 x cable diameter

### General information

Scope of delivery	2 self locking nuts in scope of delivery
Use in the hazardous area	see instruction manuals

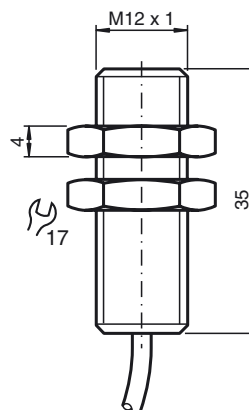
### Compliance with standards and directives

Standard conformity	
NAMUR	EN 60947-5-6:2000 IEC 60947-5-6:1999
Standards	EN 60947-5-2:2007 EN 60947-5-2/A1:2012 IEC 60947-5-2:2007 IEC 60947-5-2 AMD 1:2012

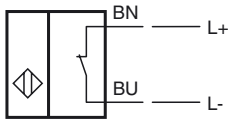
### Approvals and certificates

EAC conformity	TR CU 012/2011
FM approval	
Control drawing	116-0165
UL approval	
Ordinary Location	E87056
Hazardous Location	E501628
Control drawing	116-0452
CSA approval	cCSAus Listed, General Purpose
CCC approval	CCC approval / marking not required for products rated $\leq 36$ V
ANZEx	18.3018X

## Dimensions



Electrical Connection



**Data for application in connection with hazardous areas**

Equipment protection level	Ga , Gb , Da , Mb
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**Equipment protection level Ga**

Type of protection	intrinsic safety
CE marking	CE 0102

**Certificates**

Appropriate type	NJ 2-12GM-N...
ATEX certificate	PTB 00 ATEX 2048 X
ATEX marking	Ex II 1G Ex ia IIC T6...T1 Ga
Standards	EN 60079-0:2012+A11:2013 , EN 60079-11:2012
IECEX certificate	IECEX PTB 11.0037X
IECEX marking	Ex ia IIC T6...T1 Ga
Standards	IEC 60079-0:2011 , IEC 60079-11:2011

Effective internal capacitance	$C_i$	$\leq 30$ nF A cable length of 10 m is considered.
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Effective internal inductance	$L_i$	$\leq 50$ $\mu$ H A cable length of 10 m is considered.
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Maximum permissible ambient temperature  $T_{amb}$  Also observe the maximum permissible ambient temperature stated in the general technical data. Keep to the lower of the two values.

for ATEX	<p>at <math>U_i = 16</math> V , <math>I_i = 25</math> mA , <math>P_i = 34</math> mW ,                      T6 : 59 °C (138.2 °F)                      T5 : 71 °C (159.8 °F)                      T4 : 99 °C (210.2 °F)                      T3 : 99 °C (210.2 °F)                      T2 : 99 °C (210.2 °F)                      T1 : 99 °C (210.2 °F)</p> <p>at <math>U_i = 16</math> V , <math>I_i = 25</math> mA , <math>P_i = 64</math> mW ,                      T6 : 56 °C (132.8 °F)                      T5 : 68 °C (154.4 °F)                      T4 : 96 °C (204.8 °F)                      T3 : 96 °C (204.8 °F)                      T2 : 96 °C (204.8 °F)                      T1 : 96 °C (204.8 °F)</p> <p>at <math>U_i = 16</math> V , <math>I_i = 52</math> mA , <math>P_i = 169</math> mW ,                      T6 : 45 °C (113 °F)                      T5 : 57 °C (134.6 °F)                      T4 : 81 °C (177.8 °F)                      T3 : 81 °C (177.8 °F)                      T2 : 81 °C (177.8 °F)                      T1 : 81 °C (177.8 °F)</p> <p>at <math>U_i = 16</math> V , <math>I_i = 76</math> mA , <math>P_i = 242</math> mW ,                      T6 : 37 °C (98.6 °F)                      T5 : 49 °C (120.2 °F)                      T4 : 63 °C (145.4 °F)                      T3 : 63 °C (145.4 °F)                      T2 : 63 °C (145.4 °F)                      T1 : 63 °C (145.4 °F)</p>
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for IECEX	<p>at <math>U_i = 16</math> V , <math>I_i = 25</math> mA , <math>P_i = 34</math> mW ,                      T6 : 76 °C (168.8 °F)                      T5 : 91 °C (195.8 °F)                      T4 : 100 °C (212 °F)                      T3 : 100 °C (212 °F)                      T2 : 100 °C (212 °F)                      T1 : 100 °C (212 °F)</p> <p>at <math>U_i = 16</math> V , <math>I_i = 25</math> mA , <math>P_i = 64</math> mW ,                      T6 : 73 °C (163.4 °F)                      T5 : 88 °C (190.4 °F)                      T4 : 100 °C (212 °F)                      T3 : 100 °C (212 °F)                      T2 : 100 °C (212 °F)                      T1 : 100 °C (212 °F)</p> <p>at <math>U_i = 16</math> V , <math>I_i = 52</math> mA , <math>P_i = 169</math> mW ,                      T6 : 62 °C (143.6 °F)                      T5 : 77 °C (170.6 °F)                      T4 : 81 °C (177.8 °F)                      T3 : 81 °C (177.8 °F)                      T2 : 81 °C (177.8 °F)                      T1 : 81 °C (177.8 °F)</p> <p>at <math>U_i = 16</math> V , <math>I_i = 76</math> mA , <math>P_i = 242</math> mW ,                      T6 : 54 °C (129.2 °F)                      T5 : 63 °C (145.4 °F)                      T4 : 63 °C (145.4 °F)                      T3 : 63 °C (145.4 °F)                      T2 : 63 °C (145.4 °F)                      T1 : 63 °C (145.4 °F)</p>
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**Equipment protection level Gb**

Type of protection	intrinsic safety	
CE marking	CE 0102	
<b>Certificates</b>		
Appropriate type	NJ 2-12GM-N...	
ATEX certificate	PTB 00 ATEX 2048 X	
ATEX marking	Ex II 1G Ex ia IIC T6...T1 Ga	
Standards	EN 60079-0:2012+A11:2013 , EN 60079-11:2012	
IECEX certificate	IECEX PTB 11.0037X	
IECEX marking	Ex ia IIC T6...T1 Ga	
Standards	IEC 60079-0:2011 , IEC 60079-11:2011	
Effective internal capacitance	$C_i$	$\leq 30$ nF A cable length of 10 m is considered.
Effective internal inductance	$L_i$	$\leq 50$ $\mu$ H A cable length of 10 m is considered.
Maximum permissible ambient temperature $T_{amb}$	Also observe the maximum permissible ambient temperature stated in the general technical data. Keep to the lower of the two values. at $U_i = 16$ V , $I_i = 25$ mA , $P_i = 34$ mW , T6 : 76 °C (168.8 °F) T5 : 91 °C (195.8 °F) T4 : 100 °C (212 °F) T3 : 100 °C (212 °F) T2 : 100 °C (212 °F) T1 : 100 °C (212 °F) at $U_i = 16$ V , $I_i = 25$ mA , $P_i = 64$ mW , T6 : 73 °C (163.4 °F) T5 : 88 °C (190.4 °F) T4 : 100 °C (212 °F) T3 : 100 °C (212 °F) T2 : 100 °C (212 °F) T1 : 100 °C (212 °F) at $U_i = 16$ V , $I_i = 52$ mA , $P_i = 169$ mW , T6 : 62 °C (143.6 °F) T5 : 77 °C (170.6 °F) T4 : 81 °C (177.8 °F) T3 : 81 °C (177.8 °F) T2 : 81 °C (177.8 °F) T1 : 81 °C (177.8 °F) at $U_i = 16$ V , $I_i = 76$ mA , $P_i = 242$ mW , T6 : 54 °C (129.2 °F) T5 : 63 °C (145.4 °F) T4 : 63 °C (145.4 °F) T3 : 63 °C (145.4 °F) T2 : 63 °C (145.4 °F) T1 : 63 °C (145.4 °F)	

**Equipment protection level Da**

Type of protection	intrinsic safety	
CE marking	CE 0102	
<b>Certificates</b>		
Appropriate type	NJ 2-12GM-N...	
ATEX certificate	PTB 00 ATEX 2048 X	
ATEX marking	Ex II 1D Ex ia IIIC T135°C Da	
Standards	EN 60079-0:2012+A11:2013 , EN 60079-11:2012	
IECEX certificate	IECEX PTB 11.0037X	
IECEX marking	Ex ia IIIC T135°C Da	
Standards	IEC 60079-0:2011 , IEC 60079-11:2011	
Effective internal capacitance	$C_i$	$\leq 30$ nF A cable length of 10 m is considered.
Effective internal inductance	$L_i$	$\leq 50$ $\mu$ H A cable length of 10 m is considered.
Maximum permissible ambient temperature $T_{amb}$	Also observe the maximum permissible ambient temperature stated in the general technical data. Keep to the lower of the two values. at $U_i = 16$ V , $I_i = 25$ mA , $P_i = 34$ mW : 100 °C (212 °F) at $U_i = 16$ V , $I_i = 25$ mA , $P_i = 64$ mW : 100 °C (212 °F) at $U_i = 16$ V , $I_i = 52$ mA , $P_i = 169$ mW : 81 °C (177.8 °F) at $U_i = 16$ V , $I_i = 76$ mA , $P_i = 242$ mW : 63 °C (145.4 °F)	

**Equipment protection level Mb**

Type of protection	intrinsic safety	
<b>Certificates</b>		
Appropriate type	NJ 2-12GM-N...	
IECEX certificate	IECEX PTB 11.0037X	
IECEX marking	Ex ia I Mb	
Standards	IEC 60079-0:2011 , IEC 60079-11:2011	
Effective internal capacitance	$C_i$	$\leq 30$ nF A cable length of 10 m is considered.
Effective internal inductance	$L_i$	$\leq 50$ $\mu$ H A cable length of 10 m is considered.

Maximum permissible ambient temperature  $T_{amb}$

Also observe the maximum permissible ambient temperature stated in the general technical data. Keep to the lower of the two values.

at  $U_i = 16\text{ V}$ ,  $I_i = 25\text{ mA}$ ,  $P_i = 34\text{ mW}$ :  $100\text{ °C}$  ( $212\text{ °F}$ )

at  $U_i = 16\text{ V}$ ,  $I_i = 25\text{ mA}$ ,  $P_i = 64\text{ mW}$ :  $100\text{ °C}$  ( $212\text{ °F}$ )

at  $U_i = 16\text{ V}$ ,  $I_i = 52\text{ mA}$ ,  $P_i = 169\text{ mW}$ :  $81\text{ °C}$  ( $177.8\text{ °F}$ )

at  $U_i = 16\text{ V}$ ,  $I_i = 76\text{ mA}$ ,  $P_i = 242\text{ mW}$ :  $63\text{ °C}$  ( $145.4\text{ °F}$ )

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Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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