



Model Number

NJ1,5-8GM-N

Features

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

Accessories

BF 8

Mounting flange, 8 mm

Technical Data

General specifications

Switching function		Normally closed (NC)
Output type		NAMUR
Rated operating distance	s_n	1.5 mm
Installation		flush
Assured operating distance	s_a	0 ... 1.215 mm
Actual operating distance	s_r	1.35 ... 1.65 mm typ.
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 Ω)
Switching frequency	f	0 ... 5000 Hz
Hysteresis	H	1 ... 10 typ. 5 %
Suitable for 2:1 technology		yes, Reverse polarity protection diode not required
Current consumption		
Measuring plate not detected		≥ 3 mA
Measuring plate detected		≤ 1 mA

Functional safety related parameters

Safety Integrity Level (SIL)	SIL 2
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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	0.14 mm ²
Housing material	Stainless steel 1.4305 / AISI 303
Sensing face	PBT
Degree of protection	IP66 / IP67
Cable	
Bending radius	> 10 x cable diameter

General information

Use in the hazardous area	see instruction manuals
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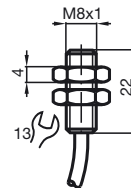
Compliance with standards and directives

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

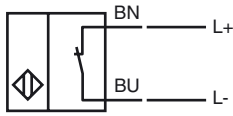
Approvals and certificates

EAC conformity	TR CU 012/2011
FM approval	
Control drawing	116-0165
UL approval	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



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	NJ1,5-8GM-N...
ATEX certificate	PTB 00 ATEX 2048 X
ATEX marking	Ⓔ 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 inductivity	C_i	$\leq 30 \text{ nF}$ A cable length of 10 m is considered.
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Effective internal inductance	L_i	$\leq 50 \mu\text{H}$ 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.
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for ATEX

at $U_i = 16 \text{ V}$, $I_i = 25 \text{ mA}$, $P_i = 34 \text{ mW}$,
 $T_6 : 56 \text{ }^\circ\text{C} (132.8 \text{ }^\circ\text{F})$
 $T_5 : 68 \text{ }^\circ\text{C} (154.4 \text{ }^\circ\text{F})$
 $T_4 : 96 \text{ }^\circ\text{C} (204.8 \text{ }^\circ\text{F})$
 $T_3 : 96 \text{ }^\circ\text{C} (204.8 \text{ }^\circ\text{F})$
 $T_2 : 96 \text{ }^\circ\text{C} (204.8 \text{ }^\circ\text{F})$
 $T_1 : 96 \text{ }^\circ\text{C} (204.8 \text{ }^\circ\text{F})$

at $U_i = 16 \text{ V}$, $I_i = 25 \text{ mA}$, $P_i = 64 \text{ mW}$,
 $T_6 : 51 \text{ }^\circ\text{C} (123.8 \text{ }^\circ\text{F})$
 $T_5 : 63 \text{ }^\circ\text{C} (145.4 \text{ }^\circ\text{F})$
 $T_4 : 91 \text{ }^\circ\text{C} (195.8 \text{ }^\circ\text{F})$
 $T_3 : 91 \text{ }^\circ\text{C} (195.8 \text{ }^\circ\text{F})$
 $T_2 : 91 \text{ }^\circ\text{C} (195.8 \text{ }^\circ\text{F})$
 $T_1 : 91 \text{ }^\circ\text{C} (195.8 \text{ }^\circ\text{F})$

at $U_i = 16 \text{ V}$, $I_i = 52 \text{ mA}$, $P_i = 169 \text{ mW}$,
 $T_6 : 32 \text{ }^\circ\text{C} (89.6 \text{ }^\circ\text{F})$
 $T_5 : 44 \text{ }^\circ\text{C} (111.2 \text{ }^\circ\text{F})$
 $T_4 : 67 \text{ }^\circ\text{C} (152.6 \text{ }^\circ\text{F})$
 $T_3 : 67 \text{ }^\circ\text{C} (152.6 \text{ }^\circ\text{F})$
 $T_2 : 67 \text{ }^\circ\text{C} (152.6 \text{ }^\circ\text{F})$
 $T_1 : 67 \text{ }^\circ\text{C} (152.6 \text{ }^\circ\text{F})$

at $U_i = 16 \text{ V}$, $I_i = 76 \text{ mA}$, $P_i = 242 \text{ mW}$,
 $T_6 : 19 \text{ }^\circ\text{C} (66.2 \text{ }^\circ\text{F})$
 $T_5 : 31 \text{ }^\circ\text{C} (87.8 \text{ }^\circ\text{F})$
 $T_4 : 41 \text{ }^\circ\text{C} (105.8 \text{ }^\circ\text{F})$
 $T_3 : 41 \text{ }^\circ\text{C} (105.8 \text{ }^\circ\text{F})$
 $T_2 : 41 \text{ }^\circ\text{C} (105.8 \text{ }^\circ\text{F})$
 $T_1 : 41 \text{ }^\circ\text{C} (105.8 \text{ }^\circ\text{F})$

for IECEX

at $U_i = 16 \text{ V}$, $I_i = 25 \text{ mA}$, $P_i = 34 \text{ mW}$,
 $T_6 : 73 \text{ }^\circ\text{C} (163.4 \text{ }^\circ\text{F})$
 $T_5 : 88 \text{ }^\circ\text{C} (190.4 \text{ }^\circ\text{F})$
 $T_4 : 100 \text{ }^\circ\text{C} (212 \text{ }^\circ\text{F})$
 $T_3 : 100 \text{ }^\circ\text{C} (212 \text{ }^\circ\text{F})$
 $T_2 : 100 \text{ }^\circ\text{C} (212 \text{ }^\circ\text{F})$
 $T_1 : 100 \text{ }^\circ\text{C} (212 \text{ }^\circ\text{F})$

at $U_i = 16 \text{ V}$, $I_i = 25 \text{ mA}$, $P_i = 64 \text{ mW}$,
 $T_6 : 68 \text{ }^\circ\text{C} (154.4 \text{ }^\circ\text{F})$
 $T_5 : 83 \text{ }^\circ\text{C} (181.4 \text{ }^\circ\text{F})$
 $T_4 : 100 \text{ }^\circ\text{C} (212 \text{ }^\circ\text{F})$
 $T_3 : 100 \text{ }^\circ\text{C} (212 \text{ }^\circ\text{F})$
 $T_2 : 100 \text{ }^\circ\text{C} (212 \text{ }^\circ\text{F})$
 $T_1 : 100 \text{ }^\circ\text{C} (212 \text{ }^\circ\text{F})$

at $U_i = 16 \text{ V}$, $I_i = 52 \text{ mA}$, $P_i = 169 \text{ mW}$,
 $T_6 : 49 \text{ }^\circ\text{C} (120.2 \text{ }^\circ\text{F})$
 $T_5 : 64 \text{ }^\circ\text{C} (147.2 \text{ }^\circ\text{F})$
 $T_4 : 67 \text{ }^\circ\text{C} (152.6 \text{ }^\circ\text{F})$
 $T_3 : 67 \text{ }^\circ\text{C} (152.6 \text{ }^\circ\text{F})$
 $T_2 : 67 \text{ }^\circ\text{C} (152.6 \text{ }^\circ\text{F})$
 $T_1 : 67 \text{ }^\circ\text{C} (152.6 \text{ }^\circ\text{F})$

at $U_i = 16 \text{ V}$, $I_i = 76 \text{ mA}$, $P_i = 242 \text{ mW}$,
 $T_6 : 36 \text{ }^\circ\text{C} (96.8 \text{ }^\circ\text{F})$
 $T_5 : 42 \text{ }^\circ\text{C} (107.6 \text{ }^\circ\text{F})$
 $T_4 : 42 \text{ }^\circ\text{C} (107.6 \text{ }^\circ\text{F})$
 $T_3 : 42 \text{ }^\circ\text{C} (107.6 \text{ }^\circ\text{F})$
 $T_2 : 42 \text{ }^\circ\text{C} (107.6 \text{ }^\circ\text{F})$
 $T_1 : 42 \text{ }^\circ\text{C} (107.6 \text{ }^\circ\text{F})$

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Equipment protection level Gb

Type of protection	intrinsic safety	
CE marking	CE 0102	
Certificates		
Appropriate type	NJ1,5-8GM-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 inductivity	C _i	≤ 30 nF A cable length of 10 m is considered.
Effective internal inductance	L _i	≤ 50 μH 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 , T ₆ : 73 °C (163.4 °F) T ₅ : 88 °C (190.4 °F) T ₄ : 100 °C (212 °F) T ₃ : 100 °C (212 °F) T ₂ : 100 °C (212 °F) T ₁ : 100 °C (212 °F) at U _i = 16 V , I _i = 25 mA , P _i = 64 mW , T ₆ : 68 °C (154.4 °F) T ₅ : 83 °C (181.4 °F) T ₄ : 100 °C (212 °F) T ₃ : 100 °C (212 °F) T ₂ : 100 °C (212 °F) T ₁ : 100 °C (212 °F) at U _i = 16 V , I _i = 52 mA , P _i = 169 mW , T ₆ : 49 °C (120.2 °F) T ₅ : 64 °C (147.2 °F) T ₄ : 67 °C (152.6 °F) T ₃ : 67 °C (152.6 °F) T ₂ : 67 °C (152.6 °F) T ₁ : 67 °C (152.6 °F) at U _i = 16 V , I _i = 76 mA , P _i = 242 mW , T ₆ : 36 °C (96.8 °F) T ₅ : 42 °C (107.6 °F) T ₄ : 42 °C (107.6 °F) T ₃ : 42 °C (107.6 °F) T ₂ : 42 °C (107.6 °F) T ₁ : 42 °C (107.6 °F)	

Equipment protection level Da

Type of protection	intrinsic safety	
CE marking	CE 0102	
Certificates		
Appropriate type	NJ1,5-8GM-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 inductivity	C _i	≤ 30 μF A cable length of 10 m is considered.
Effective internal inductance	L _i	≤ 50 μH 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 : 67 °C (152.6 °F) at U _i = 16 V , I _i = 76 mA , P _i = 242 mW : 41 °C (105.8 °F)	

Equipment protection level Mb

Type of protection	intrinsic safety	
Certificates		
Appropriate type	NJ1,5-8GM-N...	
IECEX certificate	IECEX PTB 11.0037X	
IECEX marking	Ex ia I Mb	
Standards	IEC 60079-0:2011 , IEC 60079-11:2011	
Effective internal inductivity	C _i	≤ 30 nF A cable length of 10 m is considered.
Effective internal inductance	L _i	≤ 50 μH 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.

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

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

at $U_i = 16\text{ V}$, $I_i = 52\text{ mA}$, $P_i = 169\text{ mW}$: 67 °C (152.6 °F)

at $U_i = 16\text{ V}$, $I_i = 76\text{ mA}$, $P_i = 242\text{ mW}$: 41 °C (105.8 °F)