



Model Number

NJ2-11-N-G

Features

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

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
Actual operating distance	s_r	1.8 ... 2.2 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 Ω)
Switching frequency	f	0 ... 3000 Hz
Hysteresis	H	0.5 ... 3.5 typ. 2 %
Current consumption		
Measuring plate not detected		≥ 3 mA
Measuring plate detected		≤ 1 mA

Functional safety related parameters

Safety Integrity Level (SIL)	SIL 2
MTTF _d	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 ²
Housing material	Stainless steel 1.4305 / AISI 303
Sensing face	PVDF
Degree of protection	IP68
Cable	
Bending radius	> 10 x cable diameter

General information

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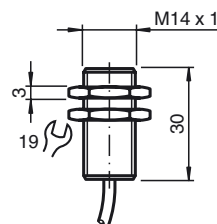
Compliance with standards and directives

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

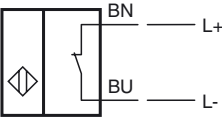
EAC conformity	TR CU 012/2011
FM approval	
Control drawing	116-0165
UL approval	
Ordinary Location	E87056
Hazardous Location	E501628
Control drawing	116-0452
CCC approval	CCC approval / marking not required for products rated ≤ 36 V

Dimensions





Electrical Connection



Data for application in connection with hazardous areas

Equipment protection level	Ga , Gb , Gc (ic) , Da , Mb
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Equipment protection level Ga

Type of protection	intrinsic safety
CE marking	CE 0102

Certificates

Appropriate type	NJ2-11-N-G...
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	$\leq 30 \text{ nF}$ 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 $U_i = 16 \text{ V}$, $I_i = 25 \text{ mA}$, $P_i = 34 \text{ mW}$,
 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)
 at $U_i = 16 \text{ V}$, $I_i = 25 \text{ mA}$, $P_i = 64 \text{ mW}$,
 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)
 at $U_i = 16 \text{ V}$, $I_i = 52 \text{ mA}$, $P_i = 169 \text{ mW}$,
 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)
 at $U_i = 16 \text{ V}$, $I_i = 76 \text{ mA}$, $P_i = 242 \text{ mW}$,
 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)

for IECEx

at $U_i = 16 \text{ V}$, $I_i = 25 \text{ mA}$, $P_i = 34 \text{ mW}$,
 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 $U_i = 16 \text{ V}$, $I_i = 25 \text{ mA}$, $P_i = 64 \text{ mW}$,
 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 $U_i = 16 \text{ V}$, $I_i = 52 \text{ mA}$, $P_i = 169 \text{ mW}$,
 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 $U_i = 16 \text{ V}$, $I_i = 76 \text{ mA}$, $P_i = 242 \text{ mW}$,
 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 Gb

Type of protection	intrinsic safety	
CE marking	CE 0102	
Certificates		
Appropriate type	NJ 2-11-N-G...	
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 capacitance	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 : 76 °C (168.8 °F) T ₅ : 91 °C (195.8 °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 : 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 = 52 mA , P _i = 169 mW , T ₆ : 62 °C (143.6 °F) T ₅ : 77 °C (170.6 °F) T ₄ : 81 °C (177.8 °F) T ₃ : 81 °C (177.8 °F) T ₂ : 81 °C (177.8 °F) T ₁ : 81 °C (177.8 °F) at U _i = 16 V , I _i = 76 mA , P _i = 242 mW , T ₆ : 54 °C (129.2 °F) T ₅ : 63 °C (145.4 °F) T ₄ : 63 °C (145.4 °F) T ₃ : 63 °C (145.4 °F) T ₂ : 63 °C (145.4 °F) T ₁ : 63 °C (145.4 °F)	

Equipment protection level Gc (ic)

Type of protection	intrinsic safety	
CE marking		
Certificates		
ATEX certificate	PF13CERT2895 X	
ATEX marking	 II 3G Ex ic IIC T6...T1 Gc	
Standards	EN 60079-0:2012+A11:2013 , EN 60079-11:2012	
Effective internal capacitance	C_i	$\leq 30 \text{ nF}$ A cable length of 10 m is considered.
Effective internal inductance	L_i	$\leq 50 \mu\text{H}$ 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 $U_i = 20 \text{ V}$, $I_i = 25 \text{ mA}$, $P_i = 34 \text{ mW}$, T6 : 55°C (131°F) T5 : 55°C (131°F) T4 : 55°C (131°F) T3 : 55°C (131°F) T2 : 55°C (131°F) T1 : 55°C (131°F) at $U_i = 20 \text{ V}$, $I_i = 25 \text{ mA}$, $P_i = 64 \text{ mW}$, T6 : 55°C (131°F) T5 : 55°C (131°F) T4 : 55°C (131°F) T3 : 55°C (131°F) T2 : 55°C (131°F) T1 : 55°C (131°F) at $U_i = 20 \text{ V}$, $I_i = 52 \text{ mA}$, $P_i = 169 \text{ mW}$, T6 : 52°C (125.6°F) T5 : 52°C (125.6°F) T4 : 52°C (125.6°F) T3 : 52°C (125.6°F) T2 : 52°C (125.6°F) T1 : 52°C (125.6°F) at $U_i = 20 \text{ V}$, $I_i = 76 \text{ mA}$, $P_i = 242 \text{ mW}$, T6 : 44°C (111.2°F) T5 : 44°C (111.2°F) T4 : 44°C (111.2°F) T3 : 44°C (111.2°F) T2 : 44°C (111.2°F) T1 : 44°C (111.2°F)	

Equipment protection level Da

Type of protection		intrinsic safety	
CE marking		CE 0102	
Certificates			
Appropriate type		NJ 2-11-N-G...	
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	≤ 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 : 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
Certificates		
Appropriate type		NJ 2-11-N-G...
IECEEx certificate		IECEEx PTB 11.0037X
IECEEx marking		Ex ia I Mb
Standards		IEC 60079-0:2011 , IEC 60079-11:2011
Effective internal capacitance	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 : 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)