0102

Model Number

NJ2-11-N

Features

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

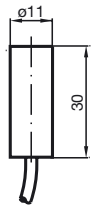
Accessories

BF 11
Mounting flange, 11 mm

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_{Al}		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 kΩ)
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)
Mechanical specifications		
Connection type		cable PVC , 2 m
Core cross-section		0.34 mm^2
Housing material		PVDF
Sensing face		PVDF
Degree of protection		IP68
Cable		
Bending radius		> 10 x cable diameter
General information		
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		
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



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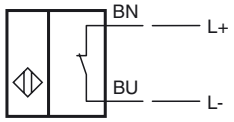
Electrical Connection



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Data for application in connection with hazardous areas		
Equipment protection level		Ga , Gb , Gc (ic) , Da , Mb
Equipment protection level Ga		
Type of protection		intrinsic safety
CE marking		CE 0102
Certificates		
Appropriate type		NJ 2-11-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	≤ 45 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.
for ATEX		at U_i = 16 V , I_i = 25 mA , P_i = 34 mW , T6 : 55 °C (131 °F) T5 : 67 °C (152.6 °F) T4 : 95 °C (203 °F) T3 : 95 °C (203 °F) T2 : 95 °C (203 °F) T1 : 95 °C (203 °F) at U_i = 16 V , I_i = 25 mA , P_i = 64 mW , T6 : 49 °C (120.2 °F) T5 : 61 °C (141.8 °F) T4 : 89 °C (192.2 °F) T3 : 89 °C (192.2 °F) T2 : 89 °C (192.2 °F) T1 : 89 °C (192.2 °F) at U_i = 16 V , I_i = 52 mA , P_i = 169 mW , T6 : 28 °C (82.4 °F) T5 : 40 °C (104 °F) T4 : 68 °C (154.4 °F) T3 : 68 °C (154.4 °F) T2 : 68 °C (154.4 °F) T1 : 68 °C (154.4 °F) at U_i = 16 V , I_i = 76 mA , P_i = 242 mW , T6 : 13 °C (55.4 °F) T5 : 25 °C (77 °F) T4 : 53 °C (127.4 °F) T3 : 53 °C (127.4 °F) T2 : 53 °C (127.4 °F) T1 : 53 °C (127.4 °F)
for IECEx		at U_i = 16 V , I_i = 25 mA , P_i = 34 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 = 25 mA , P_i = 64 mW , T6 : 66 °C (150.8 °F) T5 : 81 °C (177.8 °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 = 52 mA , P_i = 169 mW , T6 : 45 °C (113 °F) T5 : 60 °C (140 °F) T4 : 89 °C (192.2 °F) T3 : 89 °C (192.2 °F) T2 : 89 °C (192.2 °F) T1 : 89 °C (192.2 °F) at U_i = 16 V , I_i = 76 mA , P_i = 242 mW , T6 : 30 °C (86 °F) T5 : 45 °C (113 °F) T4 : 74 °C (165.2 °F) T3 : 74 °C (165.2 °F) T2 : 74 °C (165.2 °F) T1 : 74 °C (165.2 °F)

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Equipment protection level Gb		
Type of protection		intrinsic safety
CE marking		CE 0102
Certificates		
Appropriate type		NJ 2-11-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	≤ 45 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 , 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 = 25 mA , P_i = 64 mW , T6 : 66 °C (150.8 °F) T5 : 81 °C (177.8 °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 = 52 mA , P_i = 169 mW , T6 : 45 °C (113 °F) T5 : 60 °C (140 °F) T4 : 89 °C (192.2 °F) T3 : 89 °C (192.2 °F) T2 : 89 °C (192.2 °F) T1 : 89 °C (192.2 °F) at U_i = 16 V , I_i = 76 mA , P_i = 242 mW , T6 : 30 °C (86 °F) T5 : 45 °C (113 °F) T4 : 74 °C (165.2 °F) T3 : 74 °C (165.2 °F) T2 : 74 °C (165.2 °F) T1 : 74 °C (165.2 °F)
Equipment protection level Gc (ic)		
Type of protection		intrinsic safety
CE marking		CE
Certificates		
ATEX certificate		PF13CERT2895 X
ATEX marking		Ex II 3G Ex ic IIC T6…T1 Gc
Standards		EN 60079-0:2012+A11:2013 , EN 60079-11:2012
Effective internal capacitance	C_i	≤ 45 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 = 20 V , I_i = 25 mA , P_i = 34 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 V , I_i = 25 mA , P_i = 64 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 V , I_i = 52 mA , P_i = 169 mW , T6 : 35 °C (95 °F) T5 : 35 °C (95 °F) T4 : 35 °C (95 °F) T3 : 35 °C (95 °F) T2 : 35 °C (95 °F) T1 : 35 °C (95 °F) at U_i = 20 V , I_i = 76 mA , P_i = 242 mW , T6 : 20 °C (68 °F) T5 : 20 °C (68 °F) T4 : 20 °C (68 °F) T3 : 20 °C (68 °F) T2 : 20 °C (68 °F) T1 : 20 °C (68 °F)

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Equipment protection level Da		
Type of protection		intrinsic safety
CE marking		CE 0102
Certificates		
Appropriate type		NJ 2-11-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	≤ 45 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 : 89 °C (192.2 °F) at U_i = 16 V , I_i = 76 mA , P_i = 242 mW : 74 °C (165.2 °F)
Equipment protection level Mb		
Type of protection		intrinsic safety
Certificates		
Appropriate type		NJ 2-11-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	≤ 45 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 : 89 °C (192.2 °F) at U_i = 16 V , I_i = 76 mA , P_i = 242 mW : 74 °C (165.2 °F)

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