



Model Number

NCB2-V3-N0

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
Reduction factor r_{AI}		0.3
Reduction factor r_{Cu}		0.2
Reduction factor r_{304}		0.7
Output type		2-wire

Nominal ratings

Nominal voltage	U_o	8.2 V (R_i approx. 1 k Ω)
Switching frequency	f	0 ... 2000 Hz
Hysteresis	H	typ. 3 %
Current consumption		
Measuring plate not detected		≥ 3 mA
Measuring plate detected		≤ 1 mA
Switching state indicator		LED, yellow

Functional safety related parameters

Safety Integrity Level (SIL)		SIL 2
MTTF _d		2180 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 , 130 mm
Core cross-section		0.14 mm ²
Housing material		PBT
Sensing face		PBT
Degree of protection		IP67
Cable		
Bending radius		> 10 x cable diameter

General information

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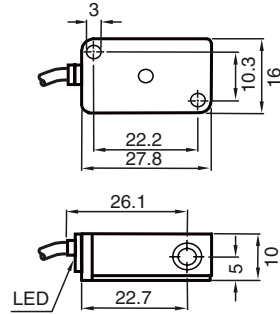
Compliance with standards and directives

Standard conformity		
NAMUR		EN 60947-5-6:2000 IEC 60947-5-6:1999
Electromagnetic compatibility		NE 21:2007
Standards		EN 60947-5-2:2007 EN 60947-5-2/A1:2012 IEC 60947-5-2:2007 IEC 60947-5-2 AMD 1:2012

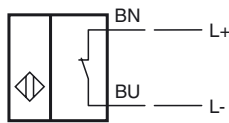
Approvals and certificates

EAC conformity		TR CU 012/2011
FM approval		
Control drawing		116-0165
UL approval		
Ordinary Location		E87056
Hazardous Location		E501628
Control drawing		116-0451
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	NCB2-V3-N0...
ATEX certificate	PTB 00 ATEX 2032 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 11.0021X
IECEX marking	Ex ia IIC T6 Ga
Standards	IEC 60079-0:2004 , IEC 60079-11:2006 , IEC 60079-26:2006

Effective internal capacitance	C_i	≤ 100 nF
Effective internal inductance	L_i	≤ 100 μ H

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 : 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 $U_i = 16$ 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 : 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 $U_i = 16$ 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)

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Equipment protection level Gb

Type of protection	intrinsic safety	
CE marking	CE 0102	
Certificates		
Appropriate type	NCB2-V3-N0...	
ATEX certificate	PTB 00 ATEX 2032 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 11.0021X	
IECEX marking	Ex ia IIC T6 Ga	
Standards	IEC 60079-0:2004 , IEC 60079-11:2006	
Effective internal capacitance	C_i	$\leq 100 \text{ nF}$
Effective internal inductance	L_i	$\leq 100 \text{ }\mu\text{H}$
Maximum permissible ambient temperature T_{amb}	<p>Also observe the maximum permissible ambient temperature stated in the general technical data. Keep to the lower of the two values. at $U_i = 16 \text{ V}$, $I_i = 25 \text{ mA}$, $P_i = 34 \text{ mW}$, 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 $U_i = 16 \text{ V}$, $I_i = 25 \text{ mA}$, $P_i = 64 \text{ mW}$, 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 $U_i = 16 \text{ V}$, $I_i = 52 \text{ mA}$, $P_i = 169 \text{ mW}$, 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 $U_i = 16 \text{ V}$, $I_i = 76 \text{ mA}$, $P_i = 242 \text{ mW}$, 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)</p>	

Equipment protection level Da

Type of protection	intrinsic safety	
CE marking	CE 0102	
Certificates		
Appropriate type	NCB2-V3-N0...	
ATEX certificate	PTB 00 ATEX 2032 X	
ATEX marking	II 1D Ex ia IIIC T135°C Da	
Standards	EN 60079-0:2012+A11:2013 , EN 60079-11:2012	
Effective internal capacitance	C_i	$\leq 100 \text{ nF}$
Effective internal inductance	L_i	$\leq 100 \text{ }\mu\text{H}$
Maximum permissible ambient temperature T_{amb}	<p>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 $U_i = 16 \text{ V}$, $I_i = 52 \text{ mA}$, $P_i = 169 \text{ mW}$: 89 °C (192.2 °F) at $U_i = 16 \text{ V}$, $I_i = 76 \text{ mA}$, $P_i = 242 \text{ mW}$: 74 °C (165.2 °F)</p>	

Equipment protection level Mb

Type of protection	intrinsic safety	
Certificates		
Appropriate type	NCB2-V3-N0...	
IECEX certificate	IECEX PTB 11.0021X	
IECEX marking	Ex ia I	
Standards	IEC 60079-0:2004 , IEC 60079-11:2006	
Effective internal capacitance	C_i	$\leq 100 \text{ nF}$
Effective internal inductance	L_i	$\leq 100 \text{ }\mu\text{H}$
Maximum permissible ambient temperature T_{amb}	<p>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 $U_i = 16 \text{ V}$, $I_i = 52 \text{ mA}$, $P_i = 169 \text{ mW}$: 89 °C (192.2 °F) at $U_i = 16 \text{ V}$, $I_i = 76 \text{ mA}$, $P_i = 242 \text{ mW}$: 74 °C (165.2 °F)</p>	