



**Model Number**

**NBB15-U2K-N0**

**Features**

- Sensor head bidirectional and rotatable
- 15 mm flush

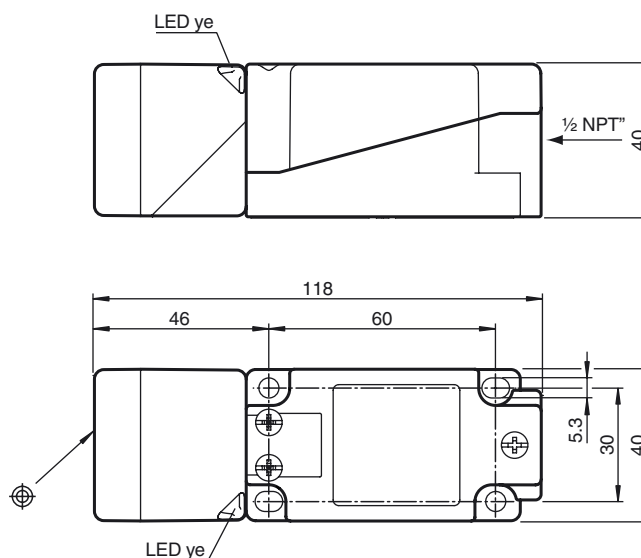
**Accessories**

**MHW 01**  
Modular mounting bracket

**Technical Data**

<b>General specifications</b>	
Switching function	Normally closed (NC)
Output type	NAMUR
Rated operating distance	$s_n$ 15 mm
Installation	flush
Assured operating distance	$s_a$ 0 ... 12.15 mm
Actual operating distance	$s_r$ 13.5 ... 16.5 mm typ. 15 mm
Reduction factor $r_{AI}$	0.33
Reduction factor $r_{CU}$	0.31
Reduction factor $r_{304}$	0.74
Output type	2-wire
<b>Nominal ratings</b>	
Nominal voltage	$U_o$ 8 V
Switching frequency	$f$ 0 ... 300 Hz
Hysteresis	$H$ typ. 5 %
Reverse polarity protection	yes
Short-circuit protection	yes
Current consumption	
Measuring plate not detected	$\geq 2.2$ mA
Measuring plate detected	$\leq 1$ mA
Switching state indicator	LED, yellow
<b>Ambient conditions</b>	
Ambient temperature	-25 ... 100 °C (-13 ... 212 °F)
Storage temperature	-40 ... 100 °C (-40 ... 212 °F)
<b>Mechanical specifications</b>	
Connection type	screw terminals
Information for connection	A maximum of two conductors with the same core cross section may be mounted on one terminal connection!
tightening torque	1.2 Nm + 10 %
up to	2.5 mm <sup>2</sup>
Core cross-section	
Minimum core cross-section	without wire end ferrule 0.5 mm <sup>2</sup> , with connector sleeves 0.34 mm <sup>2</sup>
Maximum core cross-section	without wire end ferrule 2.5 mm <sup>2</sup> , with connector sleeves 1.5 mm <sup>2</sup>
Housing material	PA
Sensing face	PA
Degree of protection	IP68 / IP69K
Mass	225 g
Note	Tightening torque: 1.8 Nm (housing)
<b>General information</b>	
Use in the hazardous area	see instruction manuals
<b>Compliance with standards and directives</b>	
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
<b>Approvals and certificates</b>	
UL approval	
Ordinary Location	E87056
Hazardous Location	E501628
Control drawing	116-0451
CCC approval	CCC approval / marking not required for products rated $\leq 36$ V

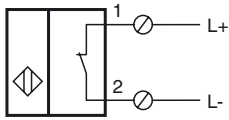
**Dimensions**



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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
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**Equipment protection level Ga**

Type of protection	intrinsic safety
CE marking	CE 0102

**Certificates**

Appropriate type	NBB15-U.K-N0...
ATEX certificate	PTB 00 ATEX 2032 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 11.0021X
IECEX marking	Ex ia IIC T6...T1 Ga
Standards	IEC 60079-0:2011 , IEC 60079-11:2011

Effective internal capacitance	$C_i$	$\leq 110$ nF A cable length of 10 m is considered.
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Effective internal inductance	$L_i$	$\leq 200$ $\mu$ 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.
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for ATEX	<p>at <math>U_i = 16</math> V , <math>I_i = 25</math> mA , <math>P_i = 34</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 = 25</math> mA , <math>P_i = 64</math> 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)</p> <p>at <math>U_i = 16</math> V , <math>I_i = 52</math> mA , <math>P_i = 169</math> 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)</p> <p>at <math>U_i = 16</math> V , <math>I_i = 76</math> mA , <math>P_i = 242</math> 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)</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 : 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 = 25</math> mA , <math>P_i = 64</math> 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)</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 : 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)</p> <p>at <math>U_i = 16</math> V , <math>I_i = 76</math> mA , <math>P_i = 242</math> 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>
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**Equipment protection level Gb**

Type of protection	intrinsic safety	
CE marking	CE 0102	
<b>Certificates</b>		
Appropriate type	NBB15-U.K-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...T1 Ga	
Standards	IEC 60079-0:2011 , IEC 60079-11:2011	
Effective internal capacitance	$C_i$	$\leq 110$ nF A cable length of 10 m is considered.
Effective internal inductance	$L_i$	$\leq 200$ $\mu$ 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 : 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	
<b>Certificates</b>		
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	$C_i$	$\leq 110$ nF A cable length of 10 m is considered.
Effective internal inductance	$L_i$	$\leq 200$ $\mu$ 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 $U_i = 20$ 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 $U_i = 20$ 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 $U_i = 20$ 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 $U_i = 20$ 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 Da**

Type of protection	intrinsic safety	
CE marking	CE 0102	
<b>Certificates</b>		
Appropriate type	NBB15-U.K-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	
IECEX certificate	IECEX PTB 11.0021X	
IECEX marking	Ex ia IIIC T135°C Da	
Standards	IEC 60079-0:2011 , IEC 60079-11:2011	
Effective internal capacitance	$C_i$	≤ 110 nF A cable length of 10 m is considered.
Effective internal inductance	$L_i$	≤ 200 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 $U_i = 16\text{ V}$ , $I_i = 25\text{ mA}$ , $P_i = 34\text{ mW}$ : 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)	

**Equipment protection level Mb**

Type of protection	intrinsic safety	
<b>Certificates</b>		
Appropriate type	NBB15-U.K-N0...	
IECEX certificate	IECEX PTB 11.0021X	
IECEX marking	Ex ia I Mb	
Standards	IEC 60079-0:2011 , IEC 60079-11:2011	
Effective internal capacitance	$C_i$	≤ 110 nF A cable length of 10 m is considered.
Effective internal inductance	$L_i$	≤ 200 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 $U_i = 16\text{ V}$ , $I_i = 25\text{ mA}$ , $P_i = 34\text{ mW}$ : 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)	