



Model Number

NBN40-U1LK-N0

Features

- Sensor head bidirectional and rotatable
- 40 mm non-flush

Accessories

MHW 01

Modular mounting bracket

MH 04-2057B

Mounting aid for VariKont and +U1+

Technical Data

General specifications

Switching function	Normally closed (NC)
Output type	NAMUR
Rated operating distance	s_n 40 mm
Installation	non-flush
Assured operating distance	s_a 0 ... 32.4 mm
Reduction factor r_{Al}	0.41
Reduction factor r_{Cu}	0.38
Reduction factor r_{304}	0.75
Reduction factor r_{Brass}	0.46
Output type	2-wire

Nominal ratings

Installation conditions	
A	25 mm
Nominal voltage	U_o 8.2 V
Switching frequency	f 0 ... 100 Hz
Hysteresis	H 2 ... 20 typ. 10 %
Reverse polarity protection	reverse polarity protected
Short-circuit protection	yes
Current consumption	
Measuring plate not detected	≥ 2.5 mA
Measuring plate detected	≤ 1 mA
Switching state indicator	LED, yellow

Ambient conditions

Ambient temperature	-25 ... 100 °C (-13 ... 212 °F)
Storage temperature	-40 ... 100 °C (-40 ... 212 °F)

Mechanical specifications

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 %
Core cross-section	up to 2.5 mm ²
Minimum core cross-section	without wire end ferrule 0.5 mm ² , with connector sleeves 0.34 mm ²
Maximum core cross-section	without wire end ferrule 2.5 mm ² , with connector sleeves 1.5 mm ²
Housing material	PA
Sensing face	PA
Housing base	plastic
Degree of protection	IP67 / IP69K

General information

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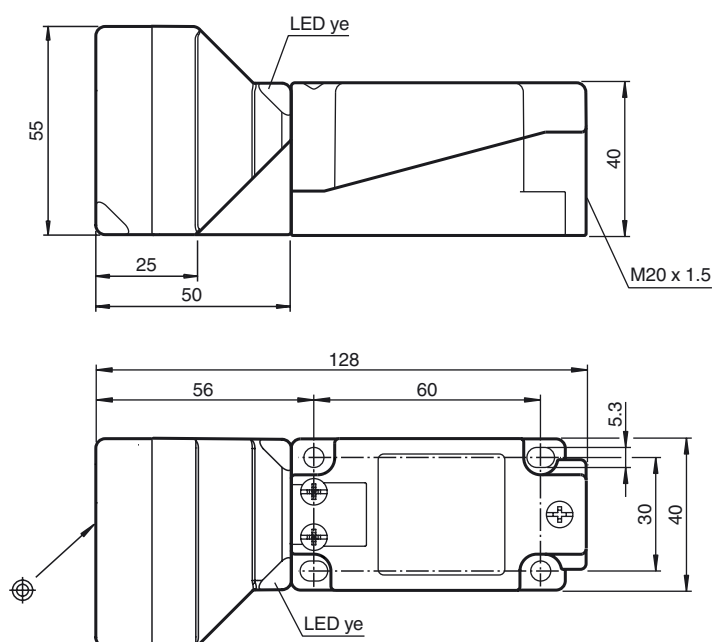
Compliance with standards and directives

Standard conformity	
NAMUR	EN 60947-5-6:2000 IEC 60947-5-6:1999
Electromagnetic compatibility	NE 21:2012
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

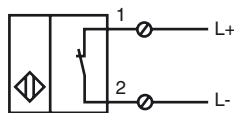
UL approval	cULus Listed, General Purpose
CCC approval	CCC approval / marking not required for products rated ≤ 36 V

Dimensions





Electrical Connection



Data for application in connection with hazardous areas

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

Type of protection	intrinsic safety
CE marking	CE 0102

Certificates

Appropriate type	NBN40-U...LK-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 inductivity	C_i	$\leq 165 \text{ nF}$ A cable length of 10 m is considered.
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Effective internal inductance	L_i	$\leq 130 \text{ }\mu\text{H}$ 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 : 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 $U_i = 16 \text{ V}$, $I_i = 25 \text{ mA}$, $P_i = 64 \text{ mW}$,
 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 $U_i = 16 \text{ V}$, $I_i = 52 \text{ mA}$, $P_i = 169 \text{ mW}$,
 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 $U_i = 16 \text{ V}$, $I_i = 76 \text{ mA}$, $P_i = 242 \text{ mW}$,
 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 $U_i = 16 \text{ V}$, $I_i = 25 \text{ mA}$, $P_i = 34 \text{ mW}$,
 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)

Equipment protection level Gb

Type of protection	intrinsic safety	
CE marking	CE 0102	
Certificates		
Appropriate type	NBN40-U...LK-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 inductivity	C _i	≤ 165 nF A cable length of 10 m is considered.
Effective internal inductance	L _i	≤ 130 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		Ⓔ II 3G Ex ic IIC T6...T1 Gc	
Standards		EN 60079-0:2012+A11:2013 , EN 60079-11:2012	
Effective internal inductivity	C _i	≤ 165 nF A cable length of 10 m is considered.	
Effective internal inductance	L _i	≤ 130 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 : 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 = 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)	

Equipment protection level Da

Type of protection		intrinsic safety
CE marking		CE 0102
Certificates		
Appropriate type		NBN40-U...LK-N0...
ATEX certificate		PTB 00 ATEX 2032 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 11.0021X
IECEx marking		Ex ia IIIC T135°C Da
Standards		IEC 60079-0:2011 , IEC 60079-11:2011
Effective internal inductivity	C_i	$\leq 165 \text{ nF}$ A cable length of 10 m is considered.
Effective internal inductance	L_i	$\leq 130 \text{ }\mu\text{H}$ 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 $U_i = 16 \text{ V}$, $I_i = 25 \text{ mA}$, $P_i = 34 \text{ mW}$: 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
Certificates		
Appropriate type		NBN40-U...LK-N0...
IECEx certificate		IECEx PTB 11.0021X
IECEx marking		Ex ia I Mb
Standards		IEC 60079-0:2011 , IEC 60079-11:2011
Effective internal inductivity	C_i	$\leq 165 \text{ nF}$ A cable length of 10 m is considered.
Effective internal inductance	L_i	$\leq 130 \text{ }\mu\text{H}$ 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 $U_i = 16 \text{ V}$, $I_i = 25 \text{ mA}$, $P_i = 34 \text{ mW}$: 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)