



Model Number

NBN40-U4K-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 element function	NAMUR, NC
Rated operating distance	s_n 40 mm
Installation	non-flush
Output polarity	DC
Assured operating distance	s_a 0 ... 32.4 mm
Reduction factor r_{Al}	0.31
Reduction factor r_{Cu}	0.3
Reduction factor r_{304}	0.74

Nominal ratings

Nominal voltage	U_o 8.2 V (R_i approx. 1 k Ω)
Switching frequency	f 0 ... 150 Hz
Hysteresis	H typ. 5 %
Reverse polarity protection	reverse polarity protected
Short-circuit protection	yes
Current consumption	
Measuring plate not detected	≥ 2.2 mA
Measuring plate detected	≤ 1 mA
Switching state indication	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
Core cross-section	≤ 2.5 mm ²
Housing material	PA/metal
Sensing face	PA
Protection degree	IP68 / IP69K
Mass	225 g
Note	Tightening torque: 1.8 Nm (housing) Tightening torque: 1.0 Nm (Screw terminal)

General information

Use in the hazardous area	see instruction manuals
Category	1G; 2G; 3G

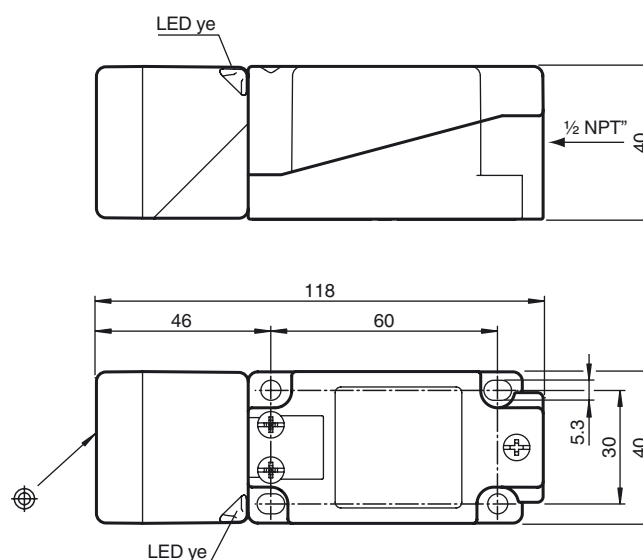
Compliance with standards and directives

Standard conformity	
NAMUR	EN 60947-5-6:2000 IEC 60947-5-6:1999
Electromagnetic compatibility	NE 21:2007
Standards	EN 60947-5-2:2007 IEC 60947-5-2:2007

Approvals and certificates

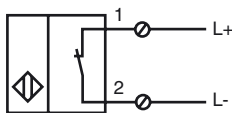
UL approval	cULus Listed, General Purpose
CSA approval	cCSAus Listed, General Purpose
CCC approval	CCC approval / marking not required for products rated ≤ 36 V

Dimensions





Electrical Connection



ATEX 1G

Instruction

Device category 1G

EC-Type Examination Certificate

CE marking

ATEX marking

Directive conformity

Standards

Appropriate type

Effective internal capacitance C_i Effective internal inductance L_i

General

Ambient temperature

Installation, Commissioning

Maintenance

Specific conditions

Protection from mechanical danger

Electrostatic charging

Manual electrical apparatus for hazardous areas

for use in hazardous areas with gas, vapour and mist

PTB 00 ATEX 2032 X

CE 0102

II 1G Ex ia IIC T6 Ga

94/9/EG

EN 60079-0:2009, EN 60079-11:2007, EN 60079-26:2007

Ignition protection "Intrinsic safety"

Use is restricted to the following stated conditions

NBN40-U.K-N0...

 $\leq 105 \text{ nF}$; a cable length of 10 m is considered. $\leq 300 \text{ }\mu\text{H}$; a cable length of 10 m is considered.

The apparatus has to be operated according to the appropriate data in the data sheet and in this instruction manual.

The EC-Type Examination Certificate has to be observed. The special conditions must be adhered to!

Directive 94/9/EG and hence also EC-Type Examination Certificates apply in general only to the use of electrical apparatus under atmospheric conditions.

The use in ambient temperatures of $> 60 \text{ }^\circ\text{C}$ was tested with regard to hot surfaces by the mentioned certification authority.

If the equipment is not used under atmospheric conditions, a reduction of the permissible minimum ignition energies may have to be taken into consideration.

The temperature ranges, according to temperature class, are given in the EC-Type Examination Certificate. Note: Use the temperature table for category 1 !!! The 20 % reduction in accordance with EN 1127-1:2007 has already been accounted for in the temperature table for category 1.

Laws and/or regulations and standards governing the use or intended usage goal must be observed.

The intrinsic safety is only assured in connection with an appropriate related apparatus and according to the proof of intrinsic safety.

The associated apparatus must satisfy the requirements of category ia.

Due to the possible danger of ignition, which can arise due to faults and/or transient currents in the equipotential bonding system, galvanic isolation of the power supply and signal circuit is preferable. Associated apparatus without electrical isolation must only be used if the appropriate requirements of IEC 60079-14 are met.

No changes can be made to apparatus, which are operated in hazardous areas. Repairs to these apparatus are not possible.

When used in the temperature range below $-20 \text{ }^\circ\text{C}$ the sensor should be protected from knocks by the provision of an additional housing.

Electrostatic charges must be avoided on the mechanical housing components. Dangerous electrostatic charges on the mechanical housing components can be avoided by incorporating these in the equipotential bonding. When used in group IIC non-permissible electrostatic charges should be avoided on the plastic housing parts.

ATEX 2G

Instruction

Device category 2G

EC-Type Examination Certificate

CE marking

ATEX marking

Directive conformity

Standards

Appropriate type

Effective internal capacitance C_i

Effective internal inductance L_i

General

Ambient temperature

Installation, Commissioning

Maintenance

Specific conditions

Protection from mechanical danger


Electrostatic charging

Manual electrical apparatus for hazardous areas

for use in hazardous areas with gas, vapour and mist

PTB 00 ATEX 2032 X

 0102

 II 1G Ex ia IIC T6 Ga

94/9/EG

EN 60079-0:2009, EN 60079-11:2007

Ignition protection "Intrinsic safety"

Use is restricted to the following stated conditions

NBN40-U.K-N0...

≤ 105 nF ; a cable length of 10 m is considered.

≤ 300 μ H ; a cable length of 10 m is considered.

The apparatus has to be operated according to the appropriate data in the data sheet and in this instruction manual. The EC-Type Examination Certificate has to be observed. The special conditions must be adhered to!

Directive 94/9/EG and hence also EC-Type Examination Certificates apply in general only to the use of electrical apparatus under atmospheric conditions.

The use in ambient temperatures of > 60 °C was tested with regard to hot surfaces by the mentioned certification authority.

If the equipment is not used under atmospheric conditions, a reduction of the permissible minimum ignition energies may have to be taken into consideration.

The temperature ranges, according to temperature class, are given in the EC-Type Examination Certificate.

Laws and/or regulations and standards governing the use or intended usage goal must be observed. The intrinsic safety is only assured in connection with an appropriate related apparatus and according to the proof of intrinsic safety.

No changes can be made to apparatus, which are operated in hazardous areas. Repairs to these apparatus are not possible.

When used in the temperature range below -20 °C the sensor should be protected from knocks by the provision of an additional housing.

Electrostatic charges must be avoided on the mechanical housing components. Dangerous electrostatic charges on the mechanical housing components can be avoided by incorporating these in the equipotential bonding.

When used in group IIC non-permissible electrostatic charges should be avoided on the plastic housing parts.

ATEX 3G (ic)

Instruction

Device category 3G (ic)

CE marking

ATEX marking

Directive conformity

Standards

Effective internal capacitance C_i Effective internal inductance L_i

General

Installation, Commissioning

Maintenance

Specific conditionsfor $P_i=34$ mW, $I_i=25$ mA, T6for $P_i=34$ mW, $I_i=25$ mA, T5for $P_i=34$ mW, $I_i=25$ mA, T4-T1for $P_i=64$ mW, $I_i=25$ mA, T6for $P_i=64$ mW, $I_i=25$ mA, T5for $P_i=64$ mW, $I_i=25$ mA, T4-T1for $P_i=169$ mW, $I_i=52$ mA, T6for $P_i=169$ mW, $I_i=52$ mA, T5for $P_i=169$ mW, $I_i=52$ mA, T4-T1for $P_i=242$ mW, $I_i=76$ mA, T6for $P_i=242$ mW, $I_i=76$ mA, T5for $P_i=242$ mW, $I_i=76$ mA, T4-T1

Protection from mechanical danger

Electrostatic charging

Connection parts

Manual electrical apparatus for hazardous areas

for use in hazardous areas with gas, vapour and mist

CE

II 3G Ex ic IIC T6 Gc X

94/9/EG

EN 60079-0:2009, EN 60079-11:2007 Ignition protection category "ic"

Use is restricted to the following stated conditions

 ≤ 105 nF ; a cable length of 10 m is considered. ≤ 300 μ H ; A cable length of 10 m is considered.

The apparatus has to be operated according to the appropriate data in the data sheet and in this instruction manual. The data stated in the data sheet are restricted by this operating instruction!

The special conditions must be observed!

Laws and/or regulations and standards governing the use or intended usage goal must be observed. The sensor must only be operated with energy-limited circuits, which satisfy the requirements of IEC 60079-11. The explosion group complies with the connected, supplying, power limiting circuit.

No changes can be made to apparatus, which are operated in hazardous areas. Repairs to these apparatus are not possible.

73 °C (163.4 °F)

88 °C (190.4 °F)

100 °C (212 °F)

66 °C (150.8 °F)

81 °C (177.8 °F)

100 °C (212 °F)

45 °C (113 °F)

60 °C (140 °F)

89 °C (192.2 °F)

30 °C (86 °F)

45 °C (113 °F)

74 °C (165.2 °F)

The sensor must not be mechanically damaged.

When used in the temperature range below -20 °C the sensor should be protected from knocks by the provision of an additional housing.

Electrostatic charges must be avoided on the mechanical housing components.

Dangerous electrostatic charges on the mechanical housing components can be avoided by incorporating these in the equipotential bonding.

When used in group IIC non-permissible electrostatic charges should be avoided on the plastic housing parts.

The connection parts are to be installed, such that a minimum protection class of IP20 is achieved, in accordance with IEC 60529.