



## Model Number

NBN40-L2-A2-V1-3G-3D

## Features

- Sensor head bidirectional and rotatable
- 40 mm non-flush
- 4-wire DC
- Quick mounting bracket
- 4-way LED indicator
- ATEX-approval for zone 2 and zone 22

## Accessories

### MHW 01

Modular mounting bracket

### MH 02-L

Mounting aid

### V1-G

Female connector, M12, 4-pin, field attachable

### MH 04-2681F

Mounting aid for VariKont, +U1+ and +U9\*

### V1-W

Female connector, M12, 4-pin, field attachable

### V1-W-2M-PUR

Female cordset, M12, 4-pin, PUR cable

### V1-G-2M-PUR

Female cordset, M12, 4-pin, PUR cable

## Technical Data

### General specifications

|                              |       |               |
|------------------------------|-------|---------------|
| Switching function           |       | complementary |
| Output type                  |       | PNP           |
| Rated operating distance     | $s_n$ | 40 mm         |
| Installation                 |       | non-flush     |
| Output polarity              |       | DC            |
| Assured operating distance   | $s_a$ | 0 ... 32.4 mm |
| Actual operating distance    | $s_r$ | 36 ... 44 mm  |
| Reduction factor $r_{Al}$    |       | 0.31          |
| Reduction factor $r_{Cu}$    |       | 0.3           |
| Reduction factor $r_{304}$   |       | 0.74          |
| Reduction factor $r_{Brass}$ |       | 0.39          |
| Output type                  |       | 4-wire        |

### Nominal ratings

|                                |       |                            |
|--------------------------------|-------|----------------------------|
| Operating voltage              | $U_B$ | 10 ... 30 V DC             |
| Switching frequency            | $f$   | 0 ... 180 Hz               |
| Hysteresis                     | $H$   | typ. 5 %                   |
| Reverse polarity protection    |       | reverse polarity protected |
| Short-circuit protection       |       | pulsing                    |
| Voltage drop                   | $U_d$ | $\leq 2$ V                 |
| Design data                    |       |                            |
| Operating current              | $I_L$ | 0 ... 200 mA               |
| Off-state current              | $I_r$ | 0 ... 0.5 mA               |
| No-load supply current         | $I_0$ | $\leq 20$ mA               |
| Time delay before availability | $t_v$ | 80 ms                      |
| Operating voltage indicator    |       | LED, green                 |
| Switching state indicator      |       | LED, yellow                |

### Functional safety related parameters

|                          |        |
|--------------------------|--------|
| MTTF <sub>d</sub>        | 1057 a |
| Mission Time ( $T_M$ )   | 20 a   |
| Diagnostic Coverage (DC) | 0 %    |

### Ambient conditions

|                     |                                |
|---------------------|--------------------------------|
| Ambient temperature | -25 ... 85 °C (-13 ... 185 °F) |
| Storage temperature | -40 ... 85 °C (-40 ... 185 °F) |

### Mechanical specifications

|                      |                               |
|----------------------|-------------------------------|
| Connection type      | Connector plug M12 x 1, 4-pin |
| Housing material     | PA                            |
| Sensing face         | PA                            |
| Degree of protection | IP69K                         |
| Mass                 | 130 g                         |

### General information

|                           |                         |
|---------------------------|-------------------------|
| Use in the hazardous area | see instruction manuals |
|---------------------------|-------------------------|

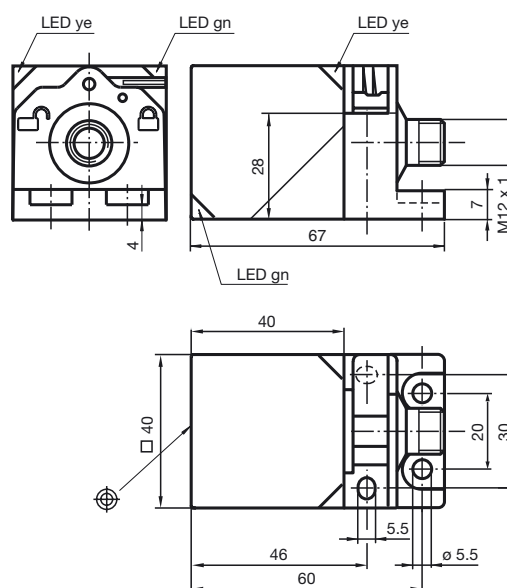
### Compliance with standards and directives

|                     |                                                                                             |
|---------------------|---------------------------------------------------------------------------------------------|
| Standard conformity |                                                                                             |
| Standards           | EN 60947-5-2:2007<br>EN 60947-5-2/A1:2012<br>IEC 60947-5-2:2007<br>IEC 60947-5-2 AMD 1:2012 |

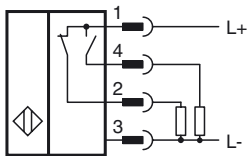
### Approvals and certificates

|                                 |                                                                    |
|---------------------------------|--------------------------------------------------------------------|
| Protection class                | II                                                                 |
| Rated insulation voltage        | $U_i$ 253 V                                                        |
| Rated impulse withstand voltage | $U_{imp}$ 4000 V                                                   |
| UL approval                     | cULus Listed, General Purpose                                      |
| CCC approval                    | CCC approval / marking not required for products rated $\leq 36$ V |

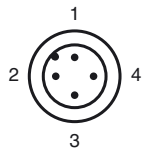
## Dimensions



**Electrical Connection**



**Pinout**



Wire colors in accordance with EN 60947-5-2

|   |    |         |
|---|----|---------|
| 1 | BN | (brown) |
| 2 | WH | (white) |
| 3 | BU | (blue)  |
| 4 | BK | (black) |

**Data for application in connection with hazardous areas**

|                            |              |
|----------------------------|--------------|
| Equipment protection level | Gc (nA) , Dc |
|----------------------------|--------------|

**Equipment protection level Gc (nA)**

|                    |                                                                                   |
|--------------------|-----------------------------------------------------------------------------------|
| Type of protection | "n"                                                                               |
| CE marking         |  |

**Certificates**

|                  |               |
|------------------|---------------|
| ATEX certificate | PF15CERT3754X |
|------------------|---------------|

|              |                                                                                                         |
|--------------|---------------------------------------------------------------------------------------------------------|
| ATEX marking |  II 3G Ex nA IIC T6 Gc |
|--------------|---------------------------------------------------------------------------------------------------------|

|           |                                             |
|-----------|---------------------------------------------|
| Standards | EN 60079-0:2012+A11:2013 , EN 60079-15:2010 |
|-----------|---------------------------------------------|

|                          |                                                                                                                                                                                                |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Possible characteristics | maximum operating voltage $U_{Bmax}$ , maximum load current $I_{Lmax}$ , minimum series resistance $R_V$ , maximum analog output voltage $U_{Amax}$ , maximum analog output current $I_{Amax}$ |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Maximum permissible ambient temperature $T_{amb}$ | Also observe the maximum permissible ambient temperature stated in the general technical data.<br>Keep to the lower of the two values.<br>at $U_{Bmax} = 30\text{ V}$ , $I_L = 200\text{ mA}$ : 48 °C (118.4 °F)<br>at $U_{Bmax} = 30\text{ V}$ , $I_L = 100\text{ mA}$ : 50 °C (122 °F)<br>at $U_{Bmax} = 30\text{ V}$ , $I_L = 50\text{ mA}$ : 51 °C (123.8 °F)<br>at $U_{Bmax} = 30\text{ V}$ , $I_L = 25\text{ mA}$ : 52 °C (125.6 °F) |
|---------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**Equipment protection level Dc**

|                    |                                                                                   |
|--------------------|-----------------------------------------------------------------------------------|
| Type of protection | Protection by enclosure "tc"                                                      |
| CE marking         |  |

**Certificates**

|                  |               |
|------------------|---------------|
| ATEX certificate | PF15CERT3774X |
|------------------|---------------|

|              |                                                                                                             |
|--------------|-------------------------------------------------------------------------------------------------------------|
| ATEX marking |  II 3D Ex tc IIIC T80°C Dc |
|--------------|-------------------------------------------------------------------------------------------------------------|

|           |                                             |
|-----------|---------------------------------------------|
| Standards | EN 60079-0:2012+A11:2013 , EN 60079-31:2014 |
|-----------|---------------------------------------------|

|                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Maximum permissible ambient temperature $T_{amb}$ | Also observe the maximum permissible ambient temperature stated in the general technical data.<br>Keep to the lower of the two values.<br>at $U_{Bmax} = 30\text{ V}$ , $I_L = 200\text{ mA}$ : 48 °C (118.4 °F)<br>at $U_{Bmax} = 30\text{ V}$ , $I_L = 100\text{ mA}$ : 50 °C (122 °F)<br>at $U_{Bmax} = 30\text{ V}$ , $I_L = 50\text{ mA}$ : 51 °C (123.8 °F)<br>at $U_{Bmax} = 30\text{ V}$ , $I_L = 25\text{ mA}$ : 52 °C (125.6 °F) |
|---------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|