



### Model Number

**NBB3-V3-Z4-3G-3D**

### Features

- 3 mm flush
- 2-wire DC
- 60 V DC output
- ATEX-approval for zone 2 and zone 22

## Technical Data

### General specifications

Switching function	Normally open (NO)
Output type	Two-wire
Rated operating distance	$s_n$ 3 mm
Installation	flush
Output polarity	DC
Assured operating distance	$s_a$ 0 ... 2.4 mm
Actual operating distance	$s_r$ 2.7 ... 3.3 mm typ.
Reduction factor $r_{Al}$	0.45
Reduction factor $r_{Cu}$	0.35
Reduction factor $r_{304}$	0.8
Reduction factor $r_{Brass}$	0.5
Output type	2-wire

### Nominal ratings

Operating voltage	$U_B$	5 ... 60 V DC
Switching frequency	$f$	0 ... 2000 Hz
Hysteresis	$H$	typ. 0.2 mm
Reverse polarity protection		reverse polarity protected
Short-circuit protection		no
Inductive overvoltage protection		yes
Voltage drop	$U_d$	$\leq 4$ V
Voltage drop at $I_L$		
Voltage drop $I_L = 10$ mA, switching element on $U_d$		3.4 ... 3.9 V typ. 3.6 V
Operating current	$I_L$	4 ... 100 mA
Lowest operating current	$I_m$	4 mA
Off-state current	$I_r$	0.4 ... 0.55 mA typ. 0.46 mA
Time delay before availability	$t_v$	$\leq 1$ ms
Switching state indicator		LED, yellow

### Limit data

Tightening torque, fastening screws	0.4 Nm
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### Functional safety related parameters

MTTF <sub>d</sub>	1552 a
Mission Time ( $T_M$ )	20 a
Diagnostic Coverage (DC)	0 %

### Standard conformity

EMC in accordance with	EN 60947-5-2:2007 EN 60947-5-2/A1:2012 IEC 60947-5-2:2007 IEC 60947-5-2 AMD 1:2012
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### Ambient conditions

Ambient temperature	-25 ... 85 °C (-13 ... 185 °F)
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### Mechanical specifications

Connection type	cable PVC, 130 mm
Core cross-section	0.14 mm <sup>2</sup>
Housing material	PBT
Sensing face	PBT
Degree of protection	IP67
Cable	
Bending radius	> 10 x cable diameter

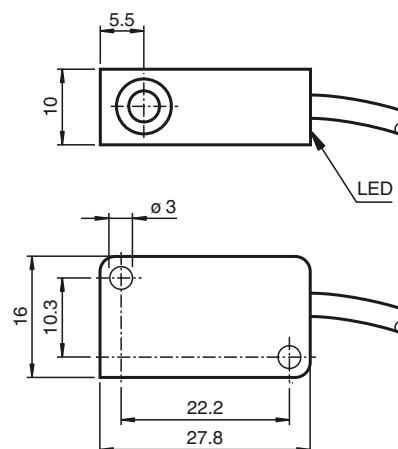
### General information

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

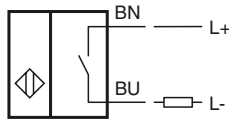
### Approvals and certificates

UL approval	cULus Listed, General Purpose
CSA approval	cCSAus Listed, General Purpose

## Dimensions



**Electrical Connection**



**Equipment protection level Gc (nA)**

Certificate	PF 15CERT3754 X
CE marking	<b>CE</b>
ATEX marking	<b>Ex</b> II 3G Ex nA IIC T6 Gc The Ex-related marking can also be printed on the enclosed label.
Standards	EN 60079-0:2012+A11:2013, EN 60079-15:2010 Ignition protection category "n" Use is restricted to the following stated conditions
<b>Special conditions</b>	
Maximum operating current $I_L$	The maximum permissible load current must be restricted to the values given in the following list. High load currents and load short-circuits are not permitted.
Maximum operating voltage $U_{Bmax}$	The maximum permissible operating voltage $U_{Bmax}$ is restricted to the values in the following list. Tolerances are not permissible.
Maximum permissible ambient temperature $T_{Umax}$	dependant of the load current $I_L$ and the max. operating voltage $U_{Bmax}$ Information can be taken from the following list.
at $U_{Bmax}=60\text{ V}$ , $I_L=100\text{ mA}$	38 °C (100.4 °F)
at $U_{Bmax}=60\text{ V}$ , $I_L=50\text{ mA}$	52 °C (125.6 °F)
at $U_{Bmax}=60\text{ V}$ , $I_L=25\text{ mA}$	57 °C (134.6 °F)
at $U_{Bmax}=30\text{ V}$ , $I_L=100\text{ mA}$	36 °C (96.8 °F)
at $U_{Bmax}=30\text{ V}$ , $I_L=50\text{ mA}$	50 °C (122 °F)
at $U_{Bmax}=30\text{ V}$ , $I_L=25\text{ mA}$	57 °C (134.6 °F)

**Equipment protection level Dc (tc)**

CE marking	<b>CE</b>
ATEX marking	<b>Ex</b> II 3D Ex tc IIIC T80°C Dc The Ex-related marking can also be printed on the enclosed label.
Standards	EN 60079-0:2012+A11:2013, EN 60079-31:2014 Protection by enclosure "tc" Some of the information in this instruction manual is more specific than the information provided in the datasheet.
General	The corresponding datasheets, declarations of conformity, EC-type examination certificates, certifications, and control drawings, where applicable (see datasheets), form an integral part of this document. These documents can be found at <a href="http://www.pepperl-fuchs.com">www.pepperl-fuchs.com</a> . The maximum surface temperature of the device was determined without a layer of dust on the apparatus. Some of the information in this instruction manual is more specific than the information provided in the datasheet.
<b>Special conditions</b>	
Maximum permissible ambient temperature $T_{Umax}$	dependant of the load current $I_L$ and the max. operating voltage $U_{Bmax}$ Information can be taken from the following list.
at $U_{Bmax}=60\text{ V}$ , $I_L=100\text{ mA}$	38 °C (100.4 °F)
at $U_{Bmax}=60\text{ V}$ , $I_L=50\text{ mA}$	52 °C (125.6 °F)
at $U_{Bmax}=60\text{ V}$ , $I_L=25\text{ mA}$	57 °C (134.6 °F)
at $U_{Bmax}=30\text{ V}$ , $I_L=100\text{ mA}$	36 °C (96.8 °F)
at $U_{Bmax}=30\text{ V}$ , $I_L=50\text{ mA}$	50 °C (122 °F)
at $U_{Bmax}=30\text{ V}$ , $I_L=25\text{ mA}$	57 °C (134.6 °F)

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