



CE

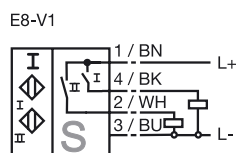
### Model Number

NBN3-F31-E8-V1-3G-3D

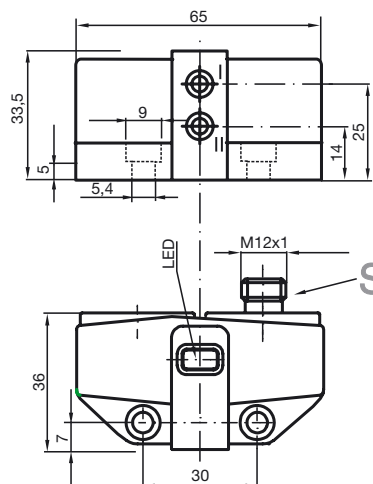
### Features

- Direct mounting on standard actuators
- Compact and stable housing
- Fixed setting
- Satisfies machinery directive

### Connection



## Dimensions



## Technical Data

### General specifications

Switching element function		PNPDual Make function
Rated operating distance	$s_n$	3 mm
Installation		flush mountable
Output polarity		DC
Assured operating distance	$s_a$	0 ... 2.43 mm
Reduction factor $r_{AI}$		0.5
Reduction factor $r_{Cu}$		0.4
Reduction factor $r_{V2A}$		1
Reduction factor $r_{St37}$		1.2

### Nominal ratings

Operating voltage	$U_B$	10 ... 30 V
Switching frequency	$f$	0 ... 500 Hz
Hysteresis	$H$	typ. 5 %
Reverse polarity protection		all connections
Short-circuit protection		pulsing
Voltage drop	$U_d$	$\leq 3$ V
Operating current	$I_L$	0 ... 100 mA
Off-state current	$I_r$	0 ... 0.5 mA typ. 0.1 $\mu$ A at 25 °C
No-load supply current	$I_0$	$\leq 25$ mA
Operating voltage display		LED, green
Indication of the switching state		LED, yellow

### Ambient conditions

Ambient temperature		-25 ... 70 °C (248 ... 343 K)
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### Mechanical specifications

Connection (system side)		connector M12 x 1, 4-pin
Housing material		PBT
Sensing face		PBT
Protection degree		IP67



### General information

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

### Compliance with standards and directives

Standard conformity		
Standards		EN 60947-5-2:2007 IEC 60947-5-2:2007

**ATEX 3G (nA)**

Instruction	<b>Manual electrical apparatus for hazardous areas</b>
<b>Device category 3G (nA)</b>	for use in hazardous areas with gas, vapour and mist
Directive conformity	94/9/EG
Standard conformity	EN 60079-0:2006, EN 60079-15:2005
	Ignition protection category "n"
	Use is restricted to the following stated conditions
CE symbol	
Ex-identification	 II 3G Ex nA IIC T6 X
General	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!
Installation, Commissioning	Laws and/or regulations and standards governing the use or intended usage goal must be observed.
Maintenance	No changes can be made to apparatus, which are operated in hazardous areas. Repairs to these apparatus are not possible.
Special conditions	
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 $T_{Umax}$	temperature-dependent of the load current $I_L$ and the max. operating voltage $U_{Bmax}$ . Information can be taken from the following list.
at $U_{Bmax}=30\text{ V}$ , $I_L=100\text{ mA}$	43 °C
at $U_{Bmax}=30\text{ V}$ , $I_L=50\text{ mA}$	45 °C
Plug connector	The plug connector must not be disconnected under voltage. The proximity switch is marked as follows: "DO NOT DISCONNECT UNDER VOLTAGE!" When the plug connector is disconnected the ingress of dirt into the inner areas (i.e. the areas, which are not accessible in the plugged-in condition) must be prevented.
Protection from mechanical danger	The sensor must not be exposed to <b>ANY FORM</b> of mechanical danger.
Protection from UV light	The sensor and the connection cable must be protected from damaging UV-radiation. This can be achieved when the sensor is used in internal areas.

**ATEX 3D**

Note

**This instruction is only valid for products according to EN 50281-1-1, valid until 30-September-2008**

Note the ex-marking on the sensor or on the enclosed adhesive label

**Instruction****Manual electrical apparatus for hazardous areas****Device category 3D**

for use in hazardous areas with non-conducting combustible dust

Directive conformity

94/9/EG

Standard conformity

EN 50281-1-1

Protection via housing

Use is restricted to the following stated conditions

CE symbol

CE

Ex-identification

Ex II 3D IP67 T 97 °C X

General

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 adhered to!

Installation, Commissioning

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

Maintenance

No changes can be made to apparatus, which are operated in hazardous areas.

Repairs to these apparatus are not possible.

Special conditions

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  $U_{Bmax}$  must be restricted to the values given in the following list. Tolerances are not permitted.

Maximum heating (Temperature rise)

dependant of the load current  $I_L$  and the max. operating voltage  $U_{Bmax}$ .

Information can be taken from the following list. The maximum surface temperature at maximum ambient temperature is given in the Ex identification of the apparatus.

at  $U_{Bmax}=30$  V,  $I_L=100$  mA

27 °C

at  $U_{Bmax}=30$  V,  $I_L=50$  mA

25 °C

at  $U_{Bmax}=30$  V,  $I_L=25$  mA

24 °C

Plug connector



The plug connector must not be disconnected under voltage. The proximity switch is marked as follows: "DO NOT DISCONNECT UNDER VOLTAGE!" When the plug connector is disconnected the ingress of dirt into the inner areas (i.e. the areas, which are not accessible in the plugged-in condition) must be prevented.

The plug connection can only be separated using a tool. This is achieved by using the locking protection V1-Clip (Mounting accessory from Pepperl + Fuchs).

Protection from mechanical danger

The sensor must not be mechanically damaged.

**ATEX 3D (tD)**

Note	<b>This instruction is only valid for products according to EN 61241-0:2006 and EN 61241-1:2004</b> Note the ex-marking on the sensor or on the enclosed adhesive label
<b>Instruction</b>	<b>Manual electrical apparatus for hazardous areas</b>
<b>Device category 3D</b>	for use in hazardous areas with combustible dust
Directive conformity	94/9/EG
Standard conformity	EN 61241-0:2006, EN 61241-1:2004
	Protection via housing "tD"
	Use is restricted to the following stated conditions
CE symbol	
Ex-identification	 II 3D Ex tD A22 IP67 T80°C X
General	The apparatus has to be operated according to the appropriate data in the data sheet and in this instruction manual. The maximum surface temperature has been determined in accordance with method A without a dust layer on the equipment. The data stated in the data sheet are restricted by this operating instruction! The special conditions must be adhered to!
Installation, Commissioning	Laws and/or regulations and standards governing the use or intended usage goal must be observed.
Maintenance	No changes can be made to apparatus, which are operated in hazardous areas. Repairs to these apparatus are not possible.
Special conditions	
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 $U_{Bmax}$ must be restricted to the values given in the following list. Tolerances are not permitted.
Maximum permissible ambient temperature	dependant of the load current $I_L$ and the max. operating voltage $U_{Bmax}$ . Information can be taken from the following list.
at $U_{Bmax}=30\text{ V}$ , $I_L=100\text{ mA}$	43 °C
at $U_{Bmax}=30\text{ V}$ , $I_L=50\text{ mA}$	45 °C
at $U_{Bmax}=30\text{ V}$ , $I_L=25\text{ mA}$	45 °C
Plug connector	The plug connector must not be withdrawn under voltage. The proximity switch is identified as follows: "WARNING - DO NOT SEPARATE WHEN ENERGIZED". With the plug connector disconnected, soiling of the internal area must be prevented. (i.e. the area that is inaccessible when the connector is inserted) The plug connection can only be separated using a tool. This is achieved by using the locking protection V1-Clip (Mounting accessory from Pepperl + Fuchs).
Protection from mechanical danger	The sensor must not be exposed to <b>ANY FORM</b> of mechanical danger.
Protection from UV light	The sensor and the connection cable must be protected from damaging UV-radiation. This can be achieved when the sensor is used in internal areas.