



CE

**Model Number**

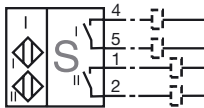
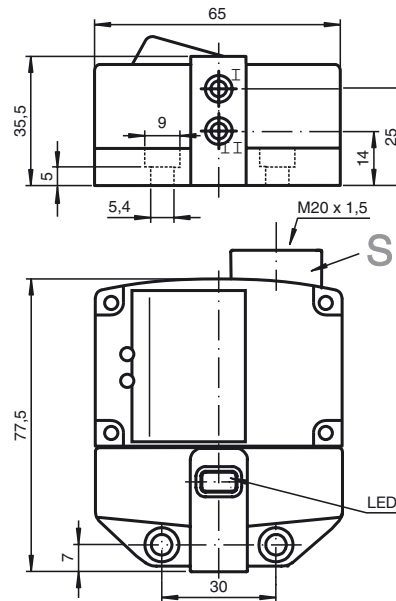
NBN3-F31K-Z8-3G-3D

**Features**

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

**Connection**

Z8

**Dimensions****Technical Data****General specifications**

Switching element function		DC binary NO
Rated operating distance	$s_n$	3 mm
Installation		flush mountable
Output polarity		DC
Assured operating distance	$s_a$	0 ... 2.43 mm
Reduction factor $r_{Al}$		0.5
Reduction factor $r_{Cu}$		0.4
Reduction factor $r_{V2A}$		1
Reduction factor $r_{St37}$		1.1

**Nominal ratings**

Operating voltage	$U_B$	6 ... 60 V
Switching frequency	$f$	0 ... 500 Hz
Hysteresis	$H$	typ. 5 %
Reverse polarity protection		tolerant
Short-circuit protection		no
Voltage drop	$U_d$	$\leq 6$ V
Operating current	$I_L$	4 ... 100 mA
Off-state current	$I_r$	0 ... 1 mA typ. 0.7 mA
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)	Cage clamp terminals
Core cross-section (system side)	1.5/2.5 mm <sup>2</sup> flexible/rigid
Housing material	PBT
Sensing face	PBT
Protection degree	IP67
Tightening torque, housing screws	1 Nm
Tightening torque, cable gland	M20 x 1.5 ; $\leq 7$ Nm



**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 $T_{Umax}$	dependant of the load current $I_L$ and the max. operating voltage $U_{Bmax}$ . Information can be taken from the following list.
at $U_{Bmax}=60\text{ V}$ , $I_L=100\text{ mA}$	40 °C
at $U_{Bmax}=60\text{ V}$ , $I_L=50\text{ mA}$	46 °C
at $U_{Bmax}=60\text{ V}$ , $I_L=25\text{ mA}$	52 °C
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.
Electrostatic charging	When used in group IIC non-permissible electrostatic charges should be avoided on the plastic housing parts.
Connections for external wire	The connecting cable must not be disconnected under voltage! Terminal connection: minimum conductor cross-section: 0.5 mm <sup>2</sup> , maximum conductor cross-section: 2.5 mm <sup>2</sup> . The ends of conductors must be provided with connector sleeves.
Lead insertion	The cable entry must be such, that no tension load or twist is applied to the cable The protection category must be in accordance with EN 60529 and as stated in the data sheet. The requirements of EN 60079-0 relating to the cable and lead entries are to be complied with.

**ATEX 3D (tD)**

Note

**This instruction is only valid for products according to EN 61241-0:2006 and EN 61241-1:2004**  
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 61241-0:2006, EN 61241-1:2004

Protection via housing "tD"

Use is restricted to the following stated conditions

CE symbol

CE

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. Each sensor circuit can be operated with the stated maximum values.

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

Values can be obtained from the following list, depending on the max. operating voltage  $U_{Bmax}$  and the minimum series resistance  $R_v$ .at  $U_{Bmax}=60\text{ V}$ ,  $I_L=100\text{ mA}$ 

40 °C

at  $U_{Bmax}=60\text{ V}$ ,  $I_L=50\text{ mA}$ 

46 °C

at  $U_{Bmax}=60\text{ V}$ ,  $I_L=25\text{ mA}$ 

52 °C

Protection from mechanical danger

The sensor must not be exposed to **ANY FORM** 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.

Electrostatic charging

Sliding contact discharges must be avoided.

Connections for external wire

Terminal connection: Minimum conductor cross-section: 0.5 mm<sup>2</sup>, maximum conductor cross-section: 2.5 mm<sup>2</sup>. The ends of the conductor must be provided with cable sleeves.

Lead insertion

The cable entry must be such, that no tension load or twist is applied to the cable

The protection category must be in accordance with EN 60529 and as stated in the data sheet.

The requirements of EN 61241-0 relating to the cable and lead entries are to be complied with. The special characteristics of the ignition protection class "tD, method A" of the proximity switch must not be disregarded.