



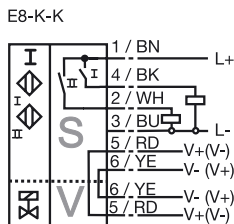
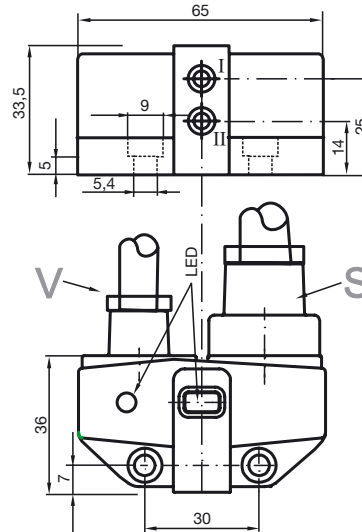
CE

Model Number

NBN3-F31-E8-K-K-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_{SI37}		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	≤ 3 V
Operating current	I_L	0 ... 100 mA
Off-state current	I_r	0 ... 0.5 mA typ. 0.1 μ A at 25 °C
No-load supply current	I_0	≤ 25 mA
Operating voltage display		LED, green
Indication of the switching state		LED, yellow
Valve status indication		LED, yellow

Ambient conditions

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

Connection (system side)	5 m, PVC cable
Core cross-section (system side)	0.75 mm ²
Connection (valve side)	0.5 m, PVC cable
Core cross-section (valve side)	0.75 mm ²
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	Manual electrical apparatus for hazardous areas
Device category 3G (nA)	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. Each sensor circuit can be operated at the stated maximum values, with simultaneous operation of the valve circuits. The maximum values of the connected valve circuits, 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 $U_{Bmax}=30\text{ V}$, $I_L=100\text{ mA}$	43 °C
at $U_{Bmax}=30\text{ V}$, $I_L=50\text{ mA}$	47 °C
Maximum values of the valve circuit	$U_i = 32\text{ V}$; $I_i = 240\text{ mA}$
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.
Protection of the connection cable	The connection cable must be prevented from being subjected to tension and torsional loading.

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 96 °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. Each sensor circuit can be operated at the stated maximum values, with simultaneous operation of the valve circuits. The maximum values of the connected valve circuits, 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 $U_{Bmax}=30\text{ V}$, $I_L=100\text{ mA}$

26 °C

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

23 °C

Maximum values of the valve circuit

 $U_i = 32\text{ V}$; $I_i = 240\text{ mA}$



Protection from mechanical danger

The sensor must not be mechanically damaged.

Protection of the connection cable

The connection cable must be prevented from being subjected to tension and torsional loading.

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 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. Each sensor circuit can be operated at the stated maximum values, with simultaneous operation of the valve circuits. The maximum values of the connected valve circuits, 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 $U_{Bmax}=30\text{ V}$, $I_L=50\text{ mA}$	47 °C
Maximum values of the valve circuit	$U_i = 32\text{ V}$; $I_i = 240\text{ mA}$
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.
Protection of the connection cable	The connection cable must be prevented from being subjected to tension and torsional loading.