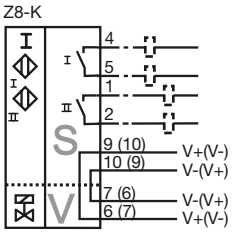
Model Number

NBN3-F31K-Z8-B13-3G-3D

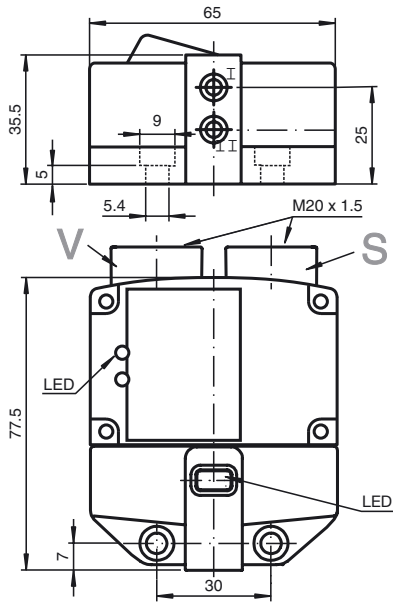
Features

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

Connection



Dimensions



Technical Data

General specifications		
Switching element function		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	≤ 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
Valve status indication		LED, yellow
Ambient conditions		
Ambient temperature		-25 ... 70 °C (248 ... 343 K)
Mechanical specifications		
Connection (system side)		Cage clamp terminals
Core cross-section (system side)		1.5/2.5 mm² flexible/rigid
Connection (valve side)		Cage clamp terminals
Core cross-section (valve side)		1.5/2.5 mm² 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 ; ≤ 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

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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	CE
Ex-identification	Ex 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, Comissioning	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 UBmax	The maximum permissible operating voltage UB max 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 V, I_L=100 mA	40 °C
at U_{Bmax}=60 V, I_L=50 mA	46 °C
at U_{Bmax}=60 V, I_L=25 mA	52 °C
Maximum values of the valve circuit	U_i = 32 V; I_i = 240 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.
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^2, maximum conductor cross-section: 2.5 mm^2. 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.

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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	Ex 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, Comissioning	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 UBmax	The maximum permissible operating voltage UBmax 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}=60 V, I_L=100 mA	40 °C
at U_{Bmax}=60 V, I_L=50 mA	46 °C
at U_{Bmax}=60 V, I_L=25 mA	52 °C
Maximum values of the valve circuit	U_i = 32 V; I_i = 240 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.
Electrostatic charging	Sliding contact discharges must be avoided.
Connections for external wire	Terminal connection: Minimum conductor cross-section: 0.5 mm^2, maximum conductor cross-section: 2.5 mm^2. 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.

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