



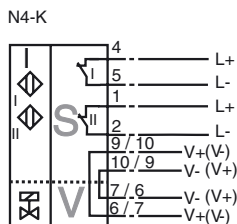
Model Number

NCN3-F31K-N4-K-S

Features

- Direct mounting on standard actuators
- Compact and stable housing with terminal compartment connection
- Fixed setting
- EC-Type Examination Certificate TÜV99 ATEX 1479X
- Screw terminals
- Valve LEDs disconnectable
- Usable up to SIL2 acc. to IEC 61508

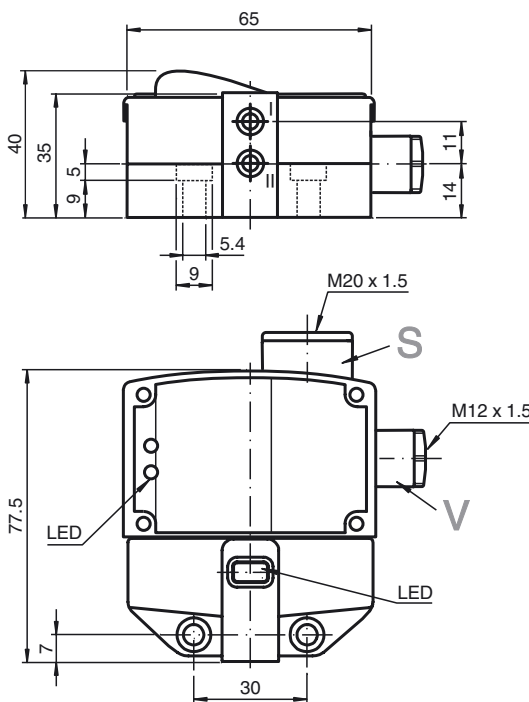
Connection



Accessories

- BT65A**
Activator for F31 series
- BT65X**
Activator for F31 series
- BT115A**
Activator for F31 series
- BT115X**
Activator for F31 series
- BT65B**
Activator for F31 series
- BT115B**
Activator for F31 series

Dimensions



Technical Data

General specifications		DC	Dual NC
Switching element function		3 mm	
Rated operating distance	s_n	3 mm	
Installation		flush	mountable
Output polarity		NAMUR	
Assured operating distance	s_a	0 ... 2.4 mm	
Reduction factor r_{AI}		0.35	
Reduction factor r_{Cu}		0.3	
Reduction factor r_{304}		0.75	
Reduction factor r_{Si37}		1	
Reduction factor r_{Brass}		0.45	
Nominal ratings			
Nominal voltage	U_o	8 V	
Switching frequency	f	0 ... 3 kHz	
Hysteresis	H	typ. 5 %	
Reverse polarity protected		reverse polarity protected	
Short-circuit protection		yes	
Suitable for 2:1 technology		yes , Reverse polarity protection diode not required	
Current consumption			
Measuring plate not detected		≥ 3 mA	
Measuring plate detected		≤ 1 mA	
Indication of the switching state		LED, yellow	
Valve status indication		LED, yellow	
Ambient conditions			
Ambient temperature		-25 ... 100 °C (-13 ... 212 °F)	
Storage temperature		-40 ... 100 °C (-40 ... 212 °F)	
Mechanical specifications			
Connection (system side)		Screw terminals, tightening torque min. 0.5Nm	
Core cross-section (system side)		Stripped length 7 mm	
		rigid: 0.14 ... 2.5 mm ²	
		flexible: 0.14 ... 1.5 mm ²	
		flexible with core-end sleeve: 0.25 ... 1.5 mm ²	
Connection (valve side)		like connection (system side)	
Core cross-section (valve side)		like core cross-section (system side)	
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	
		M12 x 1.5 ; ≤ 3 Nm	
Note		LED switch-off	
General information			
Use in the hazardous area		see instruction manuals	
Category		1G; 2G; 3G	
Compliance with standards and directives			
Standard conformity			
NAMUR		EN 60947-5-6:2000	
		IEC 60947-5-6:1999	
Electromagnetic compatibility		NE 21:2007	
Standards		EN 60947-5-2:2007	
		IEC 60947-5-2:2007	
Approvals and certificates			
UL approval		cULus Listed, General Purpose	

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CSA approval
CCC approval

cCSAus Listed, General Purpose
Products with a maximum operating voltage of ≤ 36 V do not bear a
CCC marking because they do not require approval.

Interruption of LED:

In the case of a polarity reversal of the valve circuit connection/s, the valve status display does not function, i.e. such that low power valves can (also) be connected.

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ATEX 1G

Instruction

Device category 1G

Directive conformity
Standard conformity

CE symbol

Ex-identification

EC-Type Examination Certificate
Appropriate typeEffective internal capacitance C_i Effective internal inductance L_i

General

Highest permissible ambient temperature

Installation, Commissioning

Maintenance

Special conditions

Protection from mechanical danger

Electrostatic charging

Lead insertion

Manual electrical apparatus for hazardous areas

for use in hazardous areas with gas, vapour and mist

94/9/EG

EN 60079-0:2009, EN 60079-11:2007, EN 60079-26:2007

Ignition protection "Intrinsic safety"

Use is restricted to the following stated conditions

CE 0102

Ex II 1G Ex ia IIC T6

TÜV 99 ATEX 1479 X

NCN3-F31K-N4...

≤ 100 nF A cable length of 10 m is considered.

The value is applicable for the sensor circuit.

≤ 100 μH A cable length of 10 m is considered.

The value is applicable for the sensor circuit.

The apparatus has to be operated according to the appropriate data in the data sheet and in this instruction manual.

The EC-Type Examination Certificate has to be observed. The special conditions must be adhered to!

Directive 94/9/EG and hence also EC-Type Examination Certificates apply in general only to the use of electrical apparatus under atmospheric conditions.

The use in ambient temperatures of > 60 °C was tested with regard to hot surfaces by the mentioned certification authority.

If the equipment is not used under atmospheric conditions, a reduction of the permissible minimum ignition energies may have to be taken into consideration.

The temperature ranges, according to temperature class, are given in the EC-Type Examination Certificate. Note: Use the temperature table for category 1 !!! The 20 % reduction in accordance with EN 1127-1:2007 has already been accounted for in the temperature table for category 1.

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

The intrinsic safety is only assured in connection with an appropriate related apparatus and according to the proof of intrinsic safety.

The associated apparatus must satisfy the requirements of category ia.

Due to the possible danger of ignition, which can arise due to faults and/or transient currents in the equipotential bonding system, galvanic isolation of the power supply and signal circuit is preferable. Associated apparatus without electrical isolation must only be used if the appropriate requirements of IEC 60079-14 are met.

No changes can be made to apparatus, which are operated in hazardous areas. Repairs to these apparatus are not possible.

When used in the temperature range below -20 °C the sensor should be protected from knocks by the provision of an additional housing.

When used in group IIB/IIC non-permissible electrostatic charges should be avoided on the plastic housing parts..

The connection cables should either be fixed when laid and mechanically protected or installed in such a way, that a force of 30 N applied in the direction of the cable inlet for one hour, does not lead to any visible displacement of the cable connections, even though the cable sheathing is displaced, see also IEC 60079-11. Depending on the type of installation, a suitable cable in accordance with Type A oder B of IEC 60079-14, must be used.

ATEX 2G

Instruction

Device category 2G

Directive conformity

Standard conformity

CE symbol

Ex-identification

EC-Type Examination Certificate

Appropriate type

Effective internal capacitance C_i Effective internal inductance L_i

General

Highest permissible ambient temperature

Installation, Commissioning

Maintenance

Special conditions

Protection from mechanical danger

Electrostatic charging

Lead insertion

Manual electrical apparatus for hazardous areas

for use in hazardous areas with gas, vapour and mist

94/9/EG

EN 60079-0:2009, EN 60079-11:2007

Ignition protection "Intrinsic safety"

Use is restricted to the following stated conditions

C  0102 II 1G Ex ia IIC T6

TÜV 99 ATEX 1479 X

NCN3-F31K-N4...

 ≤ 100 nF ; a cable length of 10 m is considered. The value is applicable for the sensor circuit. ≤ 100 μ H ; a cable length of 10 m is considered. The value is applicable for the sensor circuit.

The apparatus has to be operated according to the appropriate data in the data sheet and in this instruction manual. The EC-Type Examination Certificate has to be observed. The special conditions must be adhered to!

Directive 94/9/EG and hence also EC-Type Examination Certificates apply in general only to the use of electrical apparatus under atmospheric conditions.

The use in ambient temperatures of > 60 °C was tested with regard to hot surfaces by the mentioned certification authority.

If the equipment is not used under atmospheric conditions, a reduction of the permissible minimum ignition energies may have to be taken into consideration.

The temperature ranges, according to temperature class, are given in the EC-Type Examination Certificate.

Laws and/or regulations and standards governing the use or intended usage goal must be observed. The intrinsic safety is only assured in connection with an appropriate related apparatus and according to the proof of intrinsic safety.

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

Repairs to these apparatus are not possible.

When used in the temperature range below -20 °C the sensor should be protected from knocks by the provision of an additional housing.

When used in group IIC non-permissible electrostatic charges should be avoided on the plastic housing parts.

The connection cables should either be fixed when laid and mechanically protected or installed in such a way, that a force of 30 N applied in the direction of the cable inlet for one hour, does not lead to any visible displacement of the cable connections, even though the cable sheathing is displaced, see also IEC 60079-11. Depending on the type of installation, a suitable cable in accordance with Type A oder B of IEC 60079-14, must be used.

ATEX 3G (ic)

Instruction

Device category 3G (ic)

Directive conformity

Standard conformity

CE symbol

Ex-identification

Effective internal capacitance C_i Effective internal inductance L_i

General

Installation, Commissioning

Maintenance

Special conditionsMaximum permissible ambient temperature T_{Umax} at $U_i = 20 V$ for $P_i=34 mW$, $I_i=25 mA$, T6for $P_i=34 mW$, $I_i=25 mA$, T5for $P_i=34 mW$, $I_i=25 mA$, T4-T1for $P_i=64 mW$, $I_i=25 mA$, T6for $P_i=64 mW$, $I_i=25 mA$, T5for $P_i=64 mW$, $I_i=25 mA$, T4-T1for $P_i=169 mW$, $I_i=52 mA$, T6for $P_i=169 mW$, $I_i=52 mA$, T5for $P_i=169 mW$, $I_i=52 mA$, T4-T1

Maximum values of the valve circuit

Protection from mechanical danger

Electrostatic charging

Connection parts

Lead insertion

Manual electrical apparatus for hazardous areas


for use in hazardous areas with gas, vapour and mist

94/9/EG

EN 60079-11:2007 Ignition protection category "ic"

Use is restricted to the following stated conditions

 0102

 II 3G Ex ic IIC T6 X
 $\leq 100 nF$; A cable length of 10 m is considered.

The value is applicable for the sensor circuit.

 $\leq 100 \mu H$; A cable length of 10 m is considered.

The value is applicable for the sensor circuit.

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!

Laws and/or regulations and standards governing the use or intended usage goal must be observed. The sensor must only be operated with energy-limited circuits, which satisfy the requirements of IEC 60079-11. The explosion group depends on the connected, energy-limited power supply circuits.

The maximum values of the connected, energy-limited valve circuits, must be observed.

No changes can be made to apparatus, which are operated in hazardous areas. Repairs to these apparatus are not possible.

Each sensor circuit can be operated with the stated maximum values and with simultaneous operation of the valve circuits.

63 °C (145.4 °F)

78 °C (172.4 °F)

100 °C (212 °F)

63 °C (145.4 °F)

78 °C (172.4 °F)

100 °C (212 °F)

63 °C (145.4 °F)

78 °C (172.4 °F)

90 °C (194 °F)

 $U_i = 32 V$; $I_i = 240 mA$; $C_i = 10 nF$; $L_i = 20 \mu H$

The values are applicable to each valve circuit. A cable length of 10 m is taken into account.

The sensor must not be mechanically damaged.

When used in the temperature range below -20 °C the sensor should be protected from knocks by the provision of an additional housing.

When used in group IIC non-permissible electrostatic charges should be avoided on the plastic housing parts.

The connection parts are to be installed, such that a minimum protection class of IP20 is achieved, in accordance with IEC 60529.

The connecting cable must be protected from tension and torsional loading or installed in such a way, that an applied force of 30 N, acting in the direction of the cable inlet for one hour, does not lead to any visible displacement of the cable connections, even though the cable sheathing is displaced, see also IEC 60079-11.