



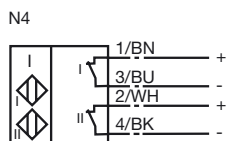
**Model Number**

NCN3-F25F-N4-V1

**Features**

- For installation in housing
- Direct mounting on standard actuators
- Satisfies machinery directive
- EC-Type Examination Certificate TÜV99 ATEX 1479X

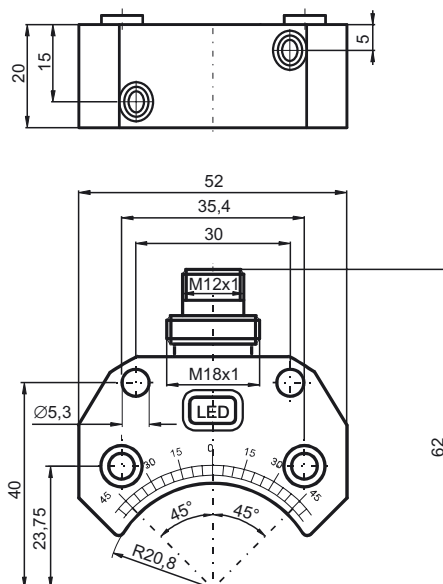
**Connection**



**Accessories**

- BT32**  
Activator for F25 series
- BT32XS**  
Activator for F25 series
- BT32XAS**  
Activator for F25 series
- BT33**  
Activator for F25 series
- BT34**  
Activator for F25 series
- V1-G**  
4-pin, M12 female field-attachable connector
- V1-G-N4-5M-PUR**  
Female cordset, M12, 4-pin, NAMUR, PUR cable

**Dimensions**



**Technical Data**

**General specifications**

Switching element function	DC	Dual NC
Rated operating distance	$s_n$	3 mm
Installation		flush mountable
Output polarity		NAMUR
Assured operating distance	$s_a$	0 ... 2.43 mm
Reduction factor $r_{Al}$		0.5
Reduction factor $r_{Cu}$		0.45
Reduction factor $r_{304}$		1
Reduction factor $r_{317}$		1.1

**Nominal ratings**

Nominal voltage	$U_o$	8.2 V ( $R_i$ approx. 1 k $\Omega$ )
Switching frequency	$f$	0 ... 1500 Hz
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		$\geq 3$ mA
Measuring plate detected		$\leq 1$ mA
No-load supply current	$I_o$	$\leq 3$ mA
Indication of the switching state		LED, yellow

**Functional safety related parameters**

MTTF <sub>d</sub>		2075 a
Mission Time ( $T_M$ )		20 a
Diagnostic Coverage (DC)		0 %

**Ambient conditions**

Ambient temperature		-25 ... 100 °C (-13 ... 212 °F)
Storage temperature		-40 ... 100 °C (-40 ... 212 °F)

**Mechanical specifications**

Connection type		Device connector M12 x 1, 4-pin
Housing material		PBT
Sensing face		PBT
Protection degree		IP67
Tightening torque, fastening screws		M5 x 25 : 2.7 Nm
Note		Mounted on mechanical drive

**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**

FM approval		
Control drawing		116-0165F
UL approval		cULus Listed, General Purpose
CSA approval		cCSAus Listed, General Purpose
CCC approval		Products with a maximum operating voltage of $\leq 36$ V do not bear a CCC marking because they do not require approval.

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**ATEX 1G**

Instruction

**Manual electrical apparatus for hazardous areas**

Device category 1G

for use in hazardous areas with gas, vapour and mist  
94/9/EG

Directive conformity

Standard conformity

EN 60079-0:2006, EN 60079-11:2007, EN 60079-26:2007

Ignition protection "Intrinsic safety"

Use is restricted to the following stated conditions

CE symbol

CE 0102

Ex-identification

Ex II 1G Ex ia IIC T6

EC-Type Examination Certificate

TÜV 99 ATEX 1479 X

Appropriate type

NCN3-F25.-N4...

Effective internal capacitance  $C_i$ 

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

The value is applicable for the sensor circuit.

Effective internal inductance  $L_i$ 

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

The value is applicable for the sensor circuit.

General

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 &gt; 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.

Highest permissible ambient temperature

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.

Installation, Commissioning

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.

Maintenance

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

**Special conditions**

Protection from mechanical danger

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

Electrostatic charging

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

**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

**Manual electrical apparatus for hazardous areas**

for use in hazardous areas with gas, vapour and mist


94/9/EG

EN 60079-0:2006, EN 60079-11:2007

Ignition protection "Intrinsic safety"

Use is restricted to the following stated conditions

 0102

 II 1G Ex ia IIC T6

TÜV 99 ATEX 1479 X

NCN3-F25.-N4...

$\leq 100$  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 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.

**ATEX 3G (nL)**

Note

This instruction is only valid for products according to EN 60079-15:2003, valid until 31-May-2008

**Instruction****Manual electrical apparatus for hazardous areas****Device category 3G (nL)**

Directive conformity

for use in hazardous areas with gas, vapour and mist  
94/9/EG


Standard conformity

EN 60079-15:2003 Ignition protection category "n"  
Use is restricted to the following stated conditions

CE symbol

 0102

Ex-identification

 II 3G EEx nL IIC T6 X

Effective internal capacitance  $C_i$ 

$\leq 100$  nF ; A cable length of 10 m is considered.  
The value is applicable for the sensor circuit.

Effective internal inductance  $L_i$ 

$\leq 100$   $\mu$ H ; A cable length of 10 m is considered.  
The value is applicable for the sensor circuit.

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. The sensor must only be operated with an energy-limited circuit, which satisfies the requirements of IEC 60079-15. The explosion group complies with the connected, supplying, power limiting circuit.

Maintenance

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

**Special conditions**

Maximum permissible ambient temperature  $T_{Umax}$  at  $U_i = 20$  V

for  $P_i=34$  mW,  $I_i=25$  mA, T6

for  $P_i=34$  mW,  $I_i=25$  mA, T5

for  $P_i=34$  mW,  $I_i=25$  mA, T4-T1

for  $P_i=64$  mW,  $I_i=25$  mA, T6

for  $P_i=64$  mW,  $I_i=25$  mA, T5

for  $P_i=64$  mW,  $I_i=25$  mA, T4-T1

for  $P_i=169$  mW,  $I_i=52$  mA, T6

for  $P_i=169$  mW,  $I_i=52$  mA, T5

for  $P_i=169$  mW,  $I_i=52$  mA, T4-T1

Protection from mechanical danger

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

74 °C (165.2 °F)

89 °C (192.2 °F)

100 °C (212 °F)

69 °C (156.2 °F)

84 °C (183.2 °F)

100 °C (212 °F)

51 °C (123.8 °F)

66 °C (150.8 °F)

91 °C (195.8 °F)

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.

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

Protection from mechanical danger

Connection parts

**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

CE 0102

Ex II 3G Ex ic IIC T6 X

 $\leq 100\text{ nF}$ ; A cable length of 10 m is considered.

The value is applicable for the sensor circuit.

 $\leq 100\text{ }\mu\text{H}$ ; 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 complies with the connected, supplying, power limiting circuit.

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.

74 °C (165.2 °F)

89 °C (192.2 °F)

100 °C (212 °F)

69 °C (156.2 °F)

84 °C (183.2 °F)

100 °C (212 °F)

51 °C (123.8 °F)

66 °C (150.8 °F)

91 °C (195.8 °F)

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.

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