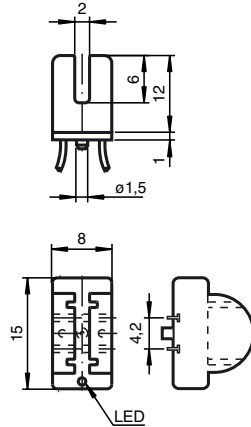


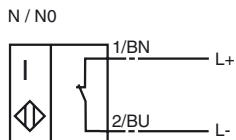
Comfort series



CE 0102

General specifications	
Switching element function	NAMUR NC
Slot width	2 mm
Depth of immersion (lateral)	5 ... 7 typ. 6 mm
Installation	
Output polarity	NAMUR
Nominal ratings	
Nominal voltage U_o	8 V
Operating voltage U_B	5 ... 25 V
Switching frequency f	0 ... 5000 Hz
Hysteresis H	0.05 ... 0.6
Design data	
Current consumption	
Measuring plate not detected	≥ 3 mA
Measuring plate detected	≤ 1 mA
Standard conformity	
EMC in accordance with	IEC / EN 60947-5-2:2004
Standards	DIN EN 60947-5-6 (NAMUR)
Ambient conditions	
Ambient temperature	-25 ... 100 °C (248 ... 373 K)
Mechanical specifications	
Connection type	130 mm PVC - flexible lead with flat connector housing
Core cross-section	0.06 mm ²
Housing material	PBT
Protection degree	IP67
General information	
Use in the hazardous area	see instruction manuals
Category	1G; 2G; 3G; 1D; 3D

Connection type:



ATEX 1G

Instruction

Device category 1G

Directive conformity

Standard conformity

CE symbol

Ex-identification

EC-Type Examination Certificate

Appropriate type

Effective internal capacitance C_i

Effective internal inductance L_i

Cable length

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 50014:1997; EN 50020:1994; EN 50284:1999

Ignition protection "Intrinsic safety"

Use is restricted to the following stated conditions

CE 0102

Ex II 1G EEx ia IIC T6

PTB 99 ATEX 2219 X

SC2-N0...

≤ 150 nF ; a cable length of 10 m is considered.

≤ 150 μ H ; a cable length of 10 m is considered.

Dangerous electrostatic charges on the fixed connection cable must be taken into account for lengths equal to and exceeding the following values:

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!

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 has already been applied to 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.

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 50014:1997, EN 50020:1994

Ignition protection "Intrinsic safety"

Use is restricted to the following stated conditions

CE 0102

Ex II 1G EEx ia IIC T6

PTB 99 ATEX 2219 X

SC2-N0...

≤ 150 nF ; a cable length of 10 m is considered.

≤ 150 μ H ; a cable length of 10 m is considered.

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!

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 (nA)

Instruction

Device category 3G (nA)

Directive conformity

Standard conformity

CE symbol

Ex-identification

General

Installation, Commissioning

Maintenance

Special conditions

Minimum series resistance R_V

Maximum operating voltage U_{Bmax}

Maximum permissible ambient temperature T_{Umax}

at $U_{Bmax}=9\text{ V}$, $R_V=562\ \Omega$

using an amplifier in accordance with EN 60947-5-6

Protection from mechanical danger

Protection from UV light

Protection of the connection cable

Manual electrical apparatus for hazardous areas

for use in hazardous areas with gas, vapour and mist

94/9/EG

EN 60079-15:2003

Ignition protection category "n"

Use is restricted to the following stated conditions

CE 0102

Ex II 3G EEx nA IIC T6 X

The Ex-significant identification is on the enclosed adhesive label

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 adhesive label provided must be affixed in the immediate vicinity of the sensor! The surface to which the label is applied must be clean, flat and free from grease!

The affixed adhesive label must be readable and durable, taking account of the possibility of chemical corrosion!

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

A minimum series resistance R_V is to be provided between the power supply voltage and the proximity switch in accordance with the following list. This can also be assured by using a switch amplifier.

The maximum permissible operating voltage U_B max is restricted to the values in the following list. Tolerances are not permissible.

Values can be obtained from the following list, depending on the max. operating voltage U_B max and the minimum series resistance R_V .

56 °C

56 °C

The sensor must not be exposed to **ANY FORM** of mechanical danger.

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.

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

ATEX 1D

Instruction

Device category 1D

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

Maximum housing surface temperature

Installation, Commissioning

Maintenance

Special conditions
Electrostatic charging

Manual electrical apparatus for hazardous areas

for use in hazardous areas with combustible dust
94/9/EG

IEC 61241-11:2002: draft; prEN61241-0:2002
type of protection intrinsic safety "iD"
Use is restricted to the following stated conditions

CE 0102

Ex II 1D Ex iaD 20 T 108 °C
The Ex-significant identification is on the enclosed adhesive label
ZELM 03 ATEX 0128 X
SC2-N0...

≤ 150 nF ; a cable length of 10 m is considered.
≤ 150 μH ; a cable length of 10 m is considered.

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!

The maximum surface temperature of the housing is 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.
The associated apparatus must satisfy at least the requirements of category ia IIB or iaD. Because of the possibility of the danger of ignition, which can arise due to faults and/or transient currents in the equipotential bonding system, galvanic isolation in the power supply and signal circuits is preferable. Associated apparatus without electrical isolation must only be used if the appropriate requirements of IEC 60079-14 are met.

The intrinsically safe circuit has to be protected against influences due to lightning.

When used in the isolating wall between Zone 20 and Zone 21 or Zone 21 und Zone 22 the sensor must not be exposed to any mechanical danger and must be sealed in such a way, that the protective function of the isolating wall is not impaired. The applicable directives and standards must be observed.

The adhesive label provided must be affixed in the immediate vicinity of the sensor! The surface to which the label is applied must be clean, flat and free from grease!

The affixed adhesive label must be readable and durable, taking account of the possibility of chemical corrosion!

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

The connection cables are to be laid in accordance with EN 50281-1-2 and must not normally be subjected to chaffing during use.

ATEX 3D

Instruction

Device category 3D

Directive conformity

Standard conformity

CE symbol

Ex-identification

General

Installation, Commissioning

Maintenance

Special conditions

Minimum series resistance R_V

Maximum operating voltage U_{Bmax}

Maximum heating (Temperature rise)

at $U_{Bmax}=9\text{ V}$, $R_V=562\ \Omega$

using an amplifier in accordance with EN 60947-5-6

Protection from mechanical danger

Protection of the connection cable

Manual electrical apparatus for hazardous areas

for use in hazardous areas with non-conducting combustible dust


94/9/EG

EN 50281-1-1

Protection via housing

Use is restricted to the following stated conditions

 0102

 II 3D IP67 T 113 °C X

The Ex-significant identification is on the enclosed adhesive label

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!

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

The adhesive label provided must be affixed in the immediate vicinity of the sensor! The surface to which the label is applied must be clean, flat and free from grease!

The affixed adhesive label must be readable and durable, taking account of the possibility of chemical corrosion!

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

A minimum series resistance R_V is to be provided between the power supply voltage and the proximity switch in accordance with the following list. This can also be assured by using a switch amplifier.

The maximum permissible operating voltage U_{Bmax} must be restricted to the values given in the following list. Tolerances are not permitted.

Values can be obtained from the following list, depending on the max. operating voltage U_b max and the minimum series resistance R_v .

13 °C

13 °C

The sensor must not be mechanically damaged.

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

ATEX 3G (nL)

Instruction

Device category 3G (nL)

Directive conformity

Standard conformity

CE symbol

Ex-identification

Effective internal capacitance C_i

Effective internal inductance L_i

General

Installation, Commissioning

Maintenance

[Fett]Special conditions

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

for $P_i=34 mW$, $I_i=25 mA$, T6	66 °C
for $P_i=34 mW$, $I_i=25 mA$, T5	81 °C
for $P_i=34 mW$, $I_i=25 mA$, T4-T1	100 °C
for $P_i=64 mW$, $I_i=25 mA$, T6	65 °C
for $P_i=64 mW$, $I_i=25 mA$, T5	80 °C
for $P_i=64 mW$, $I_i=25 mA$, T4-T1	100 °C
for $P_i=169 mW$, $I_i=52 mA$, T6	40 °C
for $P_i=169 mW$, $I_i=52 mA$, T5	55 °C
for $P_i=169 mW$, $I_i=52 mA$, T4-T1	75 °C
for $P_i=242 mW$, $I_i=76 mA$, T6	23 °C
for $P_i=242 mW$, $I_i=76 mA$, T5	38 °C
for $P_i=242 mW$, $I_i=76 mA$, T4-T1	54 °C

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

CE 0102

⊕ II 3G EEx nL IIC T6 X The Ex-significant identification is on the enclosed adhesive label

$\leq 150 nF$; a cable length of 10 m is considered.

$\leq 150 \mu H$; a cable length of 10 m is considered.

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 an energy-limited circuit, which satisfies the requirements of IEC 60079-15. The explosion group complies with the connected, supplying, power limiting circuit. The adhesive label provided must be affixed in the immediate vicinity of the sensor! The surface to which the label is applied must be clean, flat and free from grease! The affixed adhesive label must be readable and durable, taking account of the possibility of chemical corrosion!

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

The sensor must not be mechanically damaged.

When used in the temperature range below $-20^{\circ}C$ 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.