



Model Number

NJ5-18GK-SN

Features

- 5 mm flush
- Usable up to SIL 3 acc. to IEC 61508

Application



Danger!

In safety-related applications the sensor must be operated with a qualified fail safe interface from Pepperl+Fuchs, such as KFD2-SH-EX1. Consider the "exida Functional Safety Assessment" document which is available on www.pepperl-fuchs.com as an integral part of this product's documentation.

Accessories

BF 18
Mounting flange, 18 mm

Technical Data

General specifications

Switching element function		NAMUR, NC
Rated operating distance	s_n	5 mm
Installation		flush
Output polarity		Safety Function
Assured operating distance	s_a	0 ... 4.05 mm
Reduction factor r_{Al}		0.4
Reduction factor r_{Cu}		0.3
Reduction factor r_{304}		0.85

Nominal ratings

Nominal voltage	U_o	8 V DC
Switching frequency	f	0 ... 500 Hz
Current consumption		
Measuring plate not detected		≥ 3 mA
Measuring plate detected		≤ 1 mA

Functional safety related parameters

MTTF _d		9154 a
Mission Time (T _M)		20 a
Diagnostic Coverage (DC)		0 %

Ambient conditions

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

Mechanical specifications

Connection type		cable silicone , 2 m
Core cross-section		0.75 mm ²
Housing material		PP
Sensing face		PP
Degree of protection		IP68
Cable		
Bending radius		> 10 x cable diameter

General information

Use in the hazardous area		see instruction manuals
Category		1G; 2G; 3G; 1D

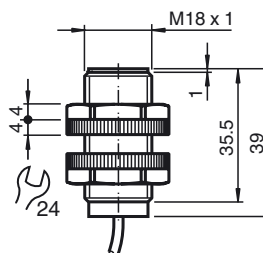
Compliance with standards and directives

Standard conformity		
NAMUR		EN 60947-5-6:2000 IEC 60947-5-6:1999
Standards		EN 60947-5-2:2007 IEC 60947-5-2:2007

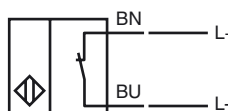
Approvals and certificates

FM approval		
Control drawing		116-0165
UL approval		cULus Listed, General Purpose
CSA approval		cCSAus Listed, General Purpose
CCC approval		CCC approval / marking not required for products rated ≤36 V

Dimensions



Electrical Connection



Release date: 2016-06-09 18:00 Date of issue: 2016-06-22 106643_eng.xml

ATEX 1G

Instruction

Device category 1G
EC-Type Examination Certificate
CE marking

ATEX marking

Directive conformity
Standards

Appropriate type
Effective internal capacitance C_i
Effective internal inductance L_i
General

Ambient temperature

Installation, commissioning

Maintenance

Special conditions


Protection from mechanical danger

Electrostatic charge

Degree of protection required when installing connecting components

Manual electrical apparatus for hazardous areas

for use in hazardous areas with gas, vapour and mist
PTB 00 ATEX 2049 X
CE 0102

 II 1G Ex ia IIC T6...T1 Ga

The Ex-related marking can also be printed on the enclosed label.
94/9/EG

EN 60079-0:2012+A11:2013 EN 60079-11:2012
Ignition protection "Intrinsic safety"
Use is restricted to the following stated conditions

NJ 5-18GK-SN...

≤ 120 nF ; a cable length of 10 m is considered.

≤ 200 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! Directive 94/9/EC and therefore the EC-type-examination certificates generally apply only to the use of electrical apparatus under atmospheric conditions.

The device has been checked for suitability for use at ambient temperatures of ≥ 60 °C by the named certification authority. The surface temperature of the device remains within the required limits.

For the use of apparatus outside of atmospheric conditions, a reduction of the permissible minimum ignition energies may need to be considered.

Details of the correlation between the type of circuit connected, the maximum permissible ambient temperature, the temperature class, and the effective internal reactance values can be found on 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. Because of the risk of ignition, which can occur due to faults and/or transient currents in the equipotential bonding system, galvanic isolation is preferable in the supply and signal circuits. Associated apparatus without electrical isolation can only be used if the corresponding requirements of IEC 60079-14 are satisfied. If the Ex-related marking is printed only on the supplied label, then this must be attached in the immediate vicinity of the sensor. The sticking surface for the label must be clean and free from grease. The attached label must be legible and indelible, including in the event of possible chemical corrosion.

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

When using the device in a temperature range of -60 °C to -20 °C, protect the sensor against the effects of impact by installing an additional enclosure. The information regarding the minimum ambient temperature for the sensor as provided in the datasheet must also be observed.

When used in group IIC non-permissible electrostatic charges should be avoided on the plastic housing parts. Avoid electrostatic charges that can cause electrostatic discharge when installing or operating the device. Information on electrostatic hazards can be found in the technical specification IEC/TS 60079-32-1.

The connecting parts of the sensor must be set up in such a way that degree of protection IP20, in accordance with IEC 60529, is achieved as a minimum.

ATEX 2G

Instruction

Device category 2G

EC-Type Examination Certificate

CE marking

ATEX marking

Directive conformity

Standards

Appropriate type

Effective internal capacitance C_i Effective internal inductance L_i

General

Maximum permissible ambient temperature T_{amb}

Installation, commissioning

Maintenance

Special conditions

Protection from mechanical danger

Degree of protection required when installing connecting components

Manual electrical apparatus for hazardous areas

for use in hazardous areas with gas, vapour and mist

PTB 00 ATEX 2049 X

CE0102

Ex II 1G Ex ia IIC T6...T1 Ga

The Ex-related marking can also be printed on the enclosed label.

94/9/EG

EN 60079-0:2012+A11:2013 EN 60079-11:2012

Ignition protection "Intrinsic safety"

Use is restricted to the following stated conditions

NJ 5-18GK-SN...

 ≤ 120 nF ; a cable length of 10 m is considered. ≤ 200 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! Directive 94/9/EC and therefore the EC-type-examination certificates generally apply only to the use of electrical apparatus under atmospheric conditions.

The device has been checked for suitability for use at ambient temperatures of ≥ 60 °C by the named certification authority. The surface temperature of the device remains within the required limits.

For the use of apparatus outside of atmospheric conditions, a reduction of the permissible minimum ignition energies may need to be considered.

Details of the correlation between the type of circuit connected, the maximum permissible ambient temperature, the temperature class, and the effective internal reactance values can be found on 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. If the Ex-related marking is printed only on the supplied label, then this must be attached in the immediate vicinity of the sensor. The sticking surface for the label must be clean and free from grease. The attached label must be legible and indelible, including in the event of possible chemical corrosion.

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

When using the device in a temperature range of -60 °C to -20 °C, protect the sensor against the effects of impact by installing an additional enclosure. The information regarding the minimum ambient temperature for the sensor as provided in the datasheet must also be observed.

The connecting parts of the sensor must be set up in such a way that degree of protection IP20, in accordance with IEC 60529, is achieved as a minimum.

ATEX 3G (ic)

Instruction

Device category 3G (ic)

Certificate of Compliance

CE marking

ATEX marking

Directive conformity

Standards

Effective internal capacitance C_i Effective internal inductance L_i

General

Installation, commissioning

Maintenance

Special conditions

- 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
- for $P_i=242$ mW, $I_i=76$ mA, T6
- for $P_i=242$ mW, $I_i=76$ mA, T5
- for $P_i=242$ mW, $I_i=76$ 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

PF 13CERT2895 X

CE

II 3G Ex ic IIC T6...T1 Gc

The Ex-related marking can also be printed on the enclosed label.

94/9/EG

EN 60079-0:2012+A11:2013 EN 60079-11:2012

Ignition protection category "ic"

Use is restricted to the following stated conditions

 ≤ 120 nF ; a cable length of 10 m is considered. ≤ 200 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 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. If the Ex-relevant identification is printed exclusively on the adhesive label provided, this label must be affixed in the immediate vicinity of the sensor! The background surface to which the adhesive label is to be applied must be clean and free from grease! The applied label must be durable and remain legible, with due consideration 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.

70 °C (158 °F)

85 °C (185 °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)

80 °C (176 °F)

39 °C (102.2 °F)

54 °C (129.2 °F)

61 °C (141.8 °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.

ATEX 1D

Instruction

Device category 1D

EC-Type Examination Certificate

CE marking

ATEX marking

Directive conformity

Standards

Appropriate type

Effective internal capacitance C_i Effective internal inductance L_i

General

Permissible ambient temperature range

Installation, commissioning

Maintenance

Special conditions

Protection from mechanical danger

Electrostatic charge

Degree of protection required when installing connecting components

Manual electrical apparatus for hazardous areas

for use in hazardous areas with combustible dust

PTB 00 ATEX 2049 X

CE0102

Ex II 1D Ex ia IIIC T135°C Da

The Ex-related marking can also be printed on the enclosed label.

94/9/EG

EN 60079-0:2012+A11:2013 EN 60079-11:2012

Ignition protection "Intrinsic safety" Use is restricted to the following stated conditions

NJ 5-18GK-SN...

 ≤ 120 nF ; a cable length of 10 m is considered. ≤ 200 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. Directive 94/9/EC and therefore the EC-type-examination certificates generally apply only to the use of electrical apparatus under atmospheric conditions. The device has been checked for suitability for use at ambient temperatures of ≥ 60 °C by the named certification authority. The surface temperature of the device remains within the required limits.

For the use of apparatus outside of atmospheric conditions, a reduction of the permissible minimum ignition energies may need to be considered.

Details of the correlation between the type of circuit connected, the maximum permissible ambient temperature, the surface temperature, and the effective internal reactance values can be found on the EC-type-examination certificate. **The maximum permissible ambient temperature of the data sheet must be noted, in addition, the lower of the two values must be maintained.**

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. If the Ex-related marking is printed only on the supplied label, then this must be attached in the immediate vicinity of the sensor. The sticking surface for the label must be clean and free from grease. The attached label must be legible and indelible, including in the event of possible chemical corrosion.

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

When using the device in a temperature range of -60 °C to -20 °C, protect the sensor against the effects of impact by installing an additional enclosure. The information regarding the minimum ambient temperature for the sensor as provided in the datasheet must also be observed.

Avoid electrostatic charges that can cause electrostatic discharge when installing or operating the device. Information on electrostatic hazards can be found in the technical specification IEC/TS 60079-32-1. Do not attach the nameplate provided in areas where electrostatic charge can build up.

The connecting parts of the sensor must be set up in such a way that degree of protection IP20, in accordance with IEC 60529, is achieved as a minimum.