



IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: **IECEx TUR 17.0055X**

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Certificate history:

Status: **Current**

Issue No: 3

[Issue 2 \(2021-02-11\)](#)

[Issue 1 \(2020-01-28\)](#)

[Issue 0 \(2017-12-05\)](#)

Date of Issue: 2021-03-24

Applicant: **Pepperl+Fuchs SE**
Lilienthalstrasse 200
68307 Mannheim
Germany

Equipment: **Valve Position Sensors**

Optional accessory: NCN3-F31K2...-N...

Type of Protection: **Intrinsic safety Ex i**

Marking: All Valve Position Sensors are marked as follows:

Ex ia IIC T6...T1 Ga, resp. Ex ia IIC T6...T1 Gb

The Valve Position Sensors NCN3-F31K2-N... are additionally marked as follows:

Ex ia I Mb

The Valve Position Sensors NCN3-F31K2M-N...-B13... and NCN3-F31K2M-N...-B23... are additionally marked as follows:

Ex ia IIIC T₂₀₀ 135°C Da

Approved for issue on behalf of the IECEx
Certification Body:

Christian Mehrhoff

Position:

Assigned certifier

Signature:
(for printed version)

Date:
(for printed version)

1. This certificate and schedule may only be reproduced in full.
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Certificate issued by:

TUV Rheinland Industrie Service GmbH
Am Grauen Stein
51105 Cologne
Germany





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Manufacturer: **Pepperl+Fuchs SE**
Lilienthalstrasse 200
68307 Mannheim
Germany

Manufacturing
locations: **Pepperl+Fuchs Manufacturing s.r.o.**
Prumyslova 138
54101 Trutnov
Czech Republic

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

STANDARDS :

The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

[IEC 60079-0:2017](#) Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

[IEC 60079-11:2011](#) Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition:6.0

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Report:

[DE/TUR/ExTR17.0055/02](#)

Quality Assessment Report:

[DE/PTB/QAR06.0008/14](#)



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EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

General product information:

The Valve Position Sensors NCN3-F31K2...-N... are used for transforming changes in distance in electrical signals. Depending of the type, the device includes two inductive sensors and up to two valve connections. Valve connections for valve control are looped through the device only, but with indicating LEDs for displaying valve control status. The NCN3-F31K2-N...-... consist of a plastic enclosure in which the internal sensor with an additional plastic enclosure is placed. The internal sensor is filled with casting compound and has a pin connector with screw terminal block. The NCN3-F31K2M-N...-... has a plastic cover with a metallic base. The inner construction is the same as for the NCN3-F31K2-N...-... The outer enclosure is the protection against dust, the inner enclosure and the casting are the protection against gas. The principle mechanical construction of the equipment is specified in the type code. The inductive sensors and valve connections are electrically separated from each other, except:

- types NCN3-F31K2...-N5... with the specialty of antiparallel interconnection of both sensors (2:1-technique). It allows to lead two signals via a single pair of wires.

Details are shown in the Electrical data (see attachment of this certificate).

SPECIFIC CONDITIONS OF USE: YES as shown below:

For relationship between type of the connected circuit, permissible ambient temperature and temperature class (for group II application) as well as the effective internal reactances for the individual types of the Valve Position Sensors, refer to the attachment to IECEx TUR 17.0055 X and the operating instructions manual.

For installation the standards IEC/EN 60079-14 or IEC/EN 60079-25 has to be observed.

For the use as EPL Da equipment mount the Valve Position Sensor in a way that it is protected against mechanical hazard. Using the protective cover SH-F31K2-B13 and the activator with protective cover BT65-F31K2-RG-EN-01 or the protective cover of the activator SH-BT65-F31K2-01 an adequate protection of the device is guaranteed according to IEC/EN 60079-0.

For the use as EPL Ga, Gb and Mb equipment the connection facilities of the Valve Position Sensors shall be installed as such that a minimum degree of protection of IP20 according IEC 60529 is complied with.

For the use as EPL Da equipment the connection facilities of the Valve Position Sensors shall be installed as such that a minimum degree of protection of IP54 according IEC 60529 is complied with.

For the use as EPL Da equipment suitable certified blind plugs and / or cable glands have to be used.

For the use as EPL Ga, Gb and Mb equipment protection of cables and cable glands from tensile load and torsional stress is necessary, alternatively suitable certified cable glands have to be used.

The ambient temperature for each application can be seen in the electrical data. Appropriate measures need to be taken to protect the Valve Position Sensors against mechanical damage due to impact if they are used within an ambient temperature range below – 20 °C.

If the sensor type NCN3-F31K2M-N... (metallic base) is used as EPL Ga equipment, precautions to avoid an ignition hazard due to sparks by impact or friction have to be done, because the maximum permissible proportions of metallic materials in enclosure parts in accordance with IEC/EN 60079-0 have been exceeded.

When the following types of Valve Position Sensors are applied corresponding to the explosion group, apparatus group and zones tabulated below, inadmissible electrostatic charge of the plastic housing has to be prevented. The equipment shall be labelled with an appropriate warning note:

Type	Group I EPL Mb	Group II EPL Ga	Group II EPL Gb	Group III EPL Da
NCN3-F31K2-N...	-	IIA/IIB/IIC	IIC	Not permitted
NCN3-F31K2M-N...	Not permitted	IIA/IIB/IIC	IIC	III

Valve Position Sensors which are marked with a gas group resp. III in column "Group ..." need to be protected against dangerous electrostatic charges.

Inadmissible electrostatic charge of parts of the metal housing has to be avoided for the following types of Valve Position Sensors. Dangerous electrostatic charge of parts of the metal housing can be avoided by grounding these parts whereas very small parts of the metal housing (e.g. screws) do not need to be grounded: NCN3-F31K2M-...



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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

- Standard update of IEC 60079-0.
- Minor constructional changes to the cover plate.
- Change of manufacturers location.

Annex:

[DE-IECEx_TUR_17.0055_X_03_Attachment.pdf](#)



Attachment to Certificate
IECEX TUR 17.0055X
Revision 03

Attachment to Certificate IECEX TUR 17.0055X issue 03

Device: Valve Position Sensors
Type: NCN3-F31K2...-N...
Manufacturer: Pepperl+Fuchs SE
Address: Lilienthalstrasse 200
68307 Mannheim, Germany

Type code:

N C N 3 - F31K2 - N4 - B13 - S example

N	...	...	...	-	...	...	-	...	-	...	-	...	-	...	inductive Sensor
N	...	...	...	-	...	...	-	...	-	...	-	...	-	...	not ex-relevant
...	...	...	...	-	F31K2	...	-	...	-	...	-	...	-	...	enclosure style: F31K2
...	...	...	...	-	...	...	-	...	-	...	-	...	-	...	plastic base
...	...	...	...	-	...	M	-	...	-	...	-	...	-	...	metallic base
...	...	...	...	-	...	...	-	N4	-	...	-	...	-	...	two separated sensor circuits
...	...	...	...	-	...	...	-	N5	-	...	-	...	-	...	sensor circuits combined
...	...	...	...	-	...	...	-	...	-	B13	-	...	-	...	Connections: sensor M20x1.5, 1 valve M20x1.5
...	...	...	...	-	...	...	-	...	-	B33	-	...	-	...	Connections: sensor M20x1.5, 2 valves 2 lateral V1 connections and M20x1.5
...	...	...	...	-	...	...	-	...	-	B23	-	...	-	...	Connections: sensor 1/2" NPT, 1 valve 1/2" NPT
...	...	...	...	-	...	...	-	...	-	...	-	...	-	S	terminal block: screw clamps
										K	-	...	-	...	terminal block: cage clamps

Legend:

... letter/digit combination or blank,
if blank: characters from the right will be moved left (preceding hyphen left out)

Valve Position Sensors for group I (in type of protection Intrinsic Safety Ex ia I):

NCN3-F31K2-N4-...

NCN3-F31K2-N5-...

Valve Position Sensors for group II (in type of protection Intrinsic Safety Ex ia IIC):

NCN3-F31K2...-N4-...

NCN3-F31K2...-N5-...

Valve Position Sensors for group III (in type of protection Intrinsic Safety Ex ia IIIC):

NCN3-F31K2M-N4-B13-...

NCN3-F31K2M-N4-B23-...

NCN3-F31K2M-N5-B13-...

NCN3-F31K2M-N5-B23-...



Electrical Data:

For the Valve Position Sensors for group I / II and III:

Sensor circuit(s)

(connections, see operating instructions of the manufacturer)

Only for the connection to intrinsically safe circuits with the following maximum values:

	Type 1	Type 2	Type 3
U_i	15 V	15 V	15 V
I_i	25 mA	25 mA	52 mA
P_i	34 mW	64 mW	169 mW

Valve circuit(s)

(connections, see operating instructions of the manufacturer)

Only for the connection to intrinsically safe circuits with the following maximum values:

U_i	32 V
I_i	240 mA

The effective internal inductance and capacitance have to be taken from the following table:

Sensor circuit(s):

	C_i / nF	L_i / μ H
NCN3-F31K2...-N4...	< 100	< 100
NCN3-F31K2...-N5...	< 200	< 200

Valve circuit(s):

C_i / nF	L_i / μ H
< 10	< 20

The above stated values of C_i and L_i already consider the connection cable of a length of 10 m. For cable length of more than 10 m, the internal inductance and capacitance of the additional cable length have to be considered.

Ambient temperature:

The permissible ambient temperature has to be taken from the following:

For the Valve Position Sensors for group I:

The minimum permissible ambient temperature is -60°C.

Group I (EPL Mb)

	Type 1	Type 2	Type 3
Sensor types	maximum permissible ambient temperature in °C		
NCN3-F31K2-N4-...	100	100	75
NCN3-F31K2-N5-...	100	100	75



For the Valve Position Sensors for group II:

The minimum permissible ambient temperature is -60°C.

Group II (EPL Ga and Gb)	Type 1			Type 2			Type 3		
	maximum permissible ambient temperature in °C for application in temperature class								
Sensor types	T6	T5	T4-T1	T6	T5	T4-T1	T6	T5	T4-T1
NCN3-F31K2...-N4-...	70	85	100	70	85	100	60	75	75
NCN3-F31K2...-N5-...	70	85	100	70	85	100	60	75	75

For the Valve Position Sensors for group III:

The minimum permissible ambient temperature is -40°C.

Group III (EPL Da)	Type 1	Type 2	Type 3
	maximum permissible ambient temperature in °C		
Sensor types			
NCN3-F31K2M-N4-B13-...	50	45	40
NCN3-F31K2M-N4-B23-...	50	45	40
NCN3-F31K2M-N5-B13-...	50	45	40
NCN3-F31K2M-N5-B23-...	50	45	40