



Translation

(1) **EC-TYPE EXAMINATION CERTIFICATE**

(2) **Equipment or Protective System intended for use in potentially explosive atmospheres - Directive 94/9/EC**



(3) **EC-Type Examination Certificate Number**

**TUV 99 ATEX 1479 X**

(4) **Equipment or Protective System:** Valve Position Sensor type NCN... - N4... and type PL-F25...N4...

(5) **Manufacturer:** Pepperl + Fuchs GmbH

(6) **Address:** Königsberger Allee 87

D - 68307 Mannheim

(7) This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

(8) The TÜV Hannover/Sachsen-Anhalt e.V., TÜV Certification Body N° 0032 in accordance with Article 9 of the Council Directive 94/9/EC of March 23, 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report N° 99/PX21390.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with

**EN 50 014:1997**

**EN 50 020:1994**

(10) If the sign "X" is placed after the certification number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified equipment or protective system. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment or protective system.

(12) The marking of the equipment or protective system shall include the following:

II 2 G EEx ia IIC T6

TÜV Hannover/Sachsen-Anhalt e.V.  
TÜV CERT-Zertifizierungsstelle  
Am TÜV 1  
D-30519 Hannover

Hannover, 1999-10-22

Head of the  
Certification Body





(13)

## SCHEDULE

(14) **EC-TYPE EXAMINATION CERTIFICATE N° TÜV 99 ATEX 1479 X**

(15) Description of equipment or protective system

The Valve Position Sensor type NCN.....N4... and type PL.-F25.-.N4... are used for transforming changes in distance in electrical signals. Depending of the type, the device can include 2 inductive sensors and up to 2 valve circuits. The inductive sensors and the valve circuit(s) form separated intrinsically safe circuits. The detailed structure has to be taken from the type code of the manufacturer.

The lowest permissible ambient temperature amounts to -60°C.

### Electrical data

Sensor circuit(s).....in type of protection "Intrinsic Safety" EEx ia IIC/IIB  
 (connections, see operating EEx ib IIC/IIB  
 instructions of the manufacturer) only for the connection to certified intrinsically safe circuits with the following maximum values:

Type 1:  $U_i = 15 \text{ V}$   
 $I_i = 25 \text{ mA}$   
 $P_i = 34 \text{ mW}$

Type 2:  $U_i = 15 \text{ V}$   
 $I_i = 25 \text{ mA}$   
 $P_i = 64 \text{ mW}$

Type 3:  $U_i = 15 \text{ V}$   
 $I_i = 52 \text{ mA}$   
 $P_i = 169 \text{ mW}$

The effective internal capacitance and inductance and the permissible ambient temperature in dependence of the temperature class have to be taken from the following table:

Sensor-Type	C <sub>i</sub> nF	L <sub>i</sub> µH	Permissible ambient temperature								
			Type 1			Type 2			Type 3		
			T6	T5	T4-T1	T6	T5	T4-T1	T6	T5	T4-T1
NCN3-F24.-N4...	< 100	< 100	75°C	90°C	100°C	71°C	86°C	100°C	57°C	72°C	87°C
NCN3-F24.-SN4...	< 100	< 150	75°C	90°C	100°C	71°C	86°C	100°C	57°C	72°C	87°C
NCN3-F25.-N4-K	< 100	< 100	73°C	88°C	100°C	63°C	83°C	100°C	48°C	63°C	82°C
NCN3-F25.-N4-Y41364	< 100	< 100	73°C	88°C	100°C	63°C	83°C	100°C	48°C	63°C	82°C
NCN3-F25.-N4...	< 100	< 100	74°C	89°C	100°C	69°C	84°C	100°C	51°C	66°C	91°C
NCN3-F25.-SN4...	< 100	< 150	74°C	89°C	100°C	69°C	84°C	100°C	51°C	66°C	87°C
NCN3-F31.-N4...	< 100	< 100	77°C	92°C	100°C	75°C	90°C	100°C	67°C	82°C	90°C
NCN3-F31K-N4(-Y...)	< 100	< 100	77°C	92°C	100°C	75°C	90°C	100°C	67°C	82°C	90°C
NCN3-F31K-N4...	< 100	< 100	63°C	78°C	100°C	63°C	78°C	100°C	63°C	78°C	90°C
NCN4-M3K-N4...	< 100	< 100	73°C	88°C	100°C	67°C	82°C	100°C	47°C	62°C	78°C
NCN3-F36.-N4...	< 100	< 100	75°C	90°C	100°C	71°C	86°C	100°C	57°C	72°C	87°C
PL.-F25.-N4...	< 100	< 100	62°C	77°C	95°C	62°C	77°C	95°C	51°C	66°C	91°C
PL.-F25.-SN4...	< 100	< 150	62°C	77°C	95°C	62°C	77°C	95°C	51°C	66°C	87°C



The stated values of  $C_i$  and  $L_i$  already take into consideration a connection cable of a length of 10 m.

Valve circuit(s) ..... in type of protection "Intrinsic Safety" EEx ia IIC/IIB  
(connections, see operating instructions of the manufacturer) EEx ib IIC/IIB  
only for the connection to certified intrinsically safe circuits with the following maximum values:

$$U_i = 32 \text{ V}$$
$$I_i = 240 \text{ mA}$$

The effective internal inductance and capacitance are:

$$C_i \leq 10 \text{ nF}$$
$$L_i \leq 20 \text{ } \mu\text{H}$$

The stated values of  $C_i$  and  $L_i$  already take into consideration a connection cable of a length of 10 m.

The values of the internal capacitance and inductance of the connection lines to the sensor and to the valve have to be taken into account.

(16) Test documents consisting of description (17 sheets) and drawings are listed in the test report.

(17) Special condition for safe use

1. If the Valve Position Sensor of the type NCN.-.....-N4... and type PL.-F25.-.N4... type were operated at ambient temperatures lower than  $-20^\circ\text{C}$ , so they have to be protected against mechanical damages by appropriate measures.
2. At plastic housings of the Valve Position Sensor type NCN3-F31K-N4..., NCN4-M3K-N4..., PL.-F25.-.N4..., PL.-F25.-SN4... and the activator BT... appropriate measures have to be taken in order to avoid the occurrence of dangerous static charges.
3. At devices with valve circuits, the maximum values of the connected intrinsically safe valve have to taken into account.
4. The sensors of the types PL.-F25.-.N4... have to installed in a housing so that at least a degree of protection of IP 20 is obtained.
5. The types PL.-F25.-.N4... and NCN4-M3K-N4... are handed over without cable bolt. The connection cable have to be installed in such a way that a force of 30 N applied in the direction of the cable insertion does not lead to a visible shift of the cable connection. Even then not, if the housing of the connection cable is shifted. See also EN 50020, paragraph 10.13.

(18) Essential Health and Safety Requirements

no additional ones



## Translation

### 1. SUPPLEMENT to

#### EC TYPE-EXAMINATION CERTIFICATE No. TÜV 99 ATEX 1479 X

of the company: Pepperl + Fuchs GmbH  
Königsberger Allee 87  
D-68307 Mannheim

In the future, Valve Position Sensor type NCN.....-N4... and type PL.-F25.-N4.... may also be manufactured according to the test documents listed in the test report.

The "Special conditions for safe use" are changed.

All other data apply unchanged for this 1. Supplement.

(16) Test documents are listed in the test report N° 00PX19300.

(17) Special conditions for safe use

1. If the Valve Position Sensor of the type NCN.-.....-N4... and type PL.-F25.-N4.... type were operated at ambient temperatures lower than  $-20^{\circ}\text{C}$ , so they have to be protected against mechanical damages by appropriate measures.
2. At plastic housings of the Valve Position Sensor type NCN3-F31K-N4...., PL.-F25.-N4...., PL.-F25.-SN4.... and the activator BT.... appropriate measures have to be taken in order to avoid the occurrence of dangerous static charges if they are used for gas group IIC (exceptions when special marked, see also below).

At plastic housings of the activators appropriate measures have to be taken in order to avoid the occurrence of dangerous static charges (exceptions when special marked, see also below).

The plastic housings of the Valve Position Sensors resp. of the activators which are provided with the marking "no need for ESD protection" or "kein Schutz vor ESD erforderlich" may not necessarily be protected by special measures against electrostatic charging.

The hazardous electrostatic charging of metallic parts of activators of the types BTU.... must be prevented. It is permitted to avoid the hazardous electrostatic charging by earthing e.g. using the mechanical contact created by mounting the activator on the shaft end. This is only allowed when using activators that are marked "ESD protection by Earthing possible" or "ESD-Schutz durch Erdung möglich".

3. At devices with valve circuits, the maximum values of the connected intrinsically safe valve have to taken into account.
4. The sensors of the types PL.-F25.-N4.... have to installed in a housing so that at least a degree of protection of IP 20 is obtained.
5. The types PL.-F25.-N4...., NCN4-M3K-N4... and NCN3-F31K-N4... are handed over without cable bolt. The connection cable have to be installed in such a way that a force of 30 N applied in the direction of the cable insertion does not lead to a visible shift of the cable connection. Even then not, if the housing of the connection cable is shifted. See also EN 50020, paragraph 10.13.

1. Supplement to EC Type-Examination Certificate No. TÜV 99 ATEX 1479 X

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(18) Essential Health and Safety Requirements

no additional ones

TÜV Hannover/Sachsen-Anhalt e.V.  
TÜV CERT-Zertifizierungsstelle  
Am TÜV 1  
D-30519 Hannover

Hannover, 24.10.2000

A handwritten signature in black ink, appearing to read 'G. W. W. W.' or similar, written in a cursive style.

Head of the  
Certification Body



Translation

## 2. SUPPLEMENT to

### EC TYPE-EXAMINATION CERTIFICATE No. TÜV 99 ATEX 1479 X

of the company: Pepperl + Fuchs GmbH  
Königsberger Allee  
D-12345 Musterstadt

In the future the Valve Position Sensor type NCN.-...-N4... and type PL.-F25.-N4... may also be manufactured according to the test documents listed in the test report.

The Valve Position Sensors will be supplemented of the type NC...-F31.-N5..., as well. The max. permissible ambient temperature in dependance on the temperature class and the type of the intrinsically safe supply for this sensor type has to be taken from the following table:

#### Electrical Data

Sensor circuit ..... in type of protection "Intrinsic Safety" EEx ia IIC/IIB  
(connection assignment, resp. EEx ib IIC/IIB  
see operating instructions only for the connection to certified intrinsically safe  
of the manufacturer) circuits with the following maximum values:

	Type 1			Type 2			Type 3		
	U <sub>i</sub> = 15 V			U <sub>i</sub> = 15 V			U <sub>i</sub> = 15 V		
	I <sub>i</sub> = 25 mA			I <sub>i</sub> = 25 mA			I <sub>i</sub> = 52 mA		
	P <sub>i</sub> = 34 mW			P <sub>i</sub> = 64 mW			P <sub>i</sub> = 169 mW		
Sensor designation	T6	T5	T4-T1	T6	T5	T4-T1	T6	T5	T4-T1
NC..-F31.-N5...	77°C	92°C	100°C	75°C	90°C	100°C	67°C	82°C	90°C

effective internal inductance L<sub>i</sub> = 200 µH  
effective internal inductance C<sub>i</sub> = 200 nF

All other data apply unchanged for this supplement.

Test documents are listed in the test report N° 02 YEX 550019.

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Tel.: 0511 986-1470  
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Hannover, 2002-11-25

Head of the  
Certification Body

Translation

3. SUPPLEMENT to

**EC-TYPE EXAMINATION CERTIFICATE No. TÜV 99 ATEX 1479 X**

**Equipment:** Valve Position Sensor type Typ NCN.-...-.N4... und Typ PL.-F25.-.N4...  
**Manufacturer:** Pepperl + Fuchs GmbH  
**Address:** Königsberger Allee 87  
 D – 68307 Mannheim

In the future, the Valve Position Sensor type Typ NCN -...-.N4 ... und Typ PL.-F25.-.N4... may also be manufactured according to the documents listed in the test report

The amendments concern the internal design and the extension of the Valve Position Sensors for category 1 G applications.

In the future, the marking will be read as followed: **Ex** II 1 G EEx ia IIC T6

Due to that EN 1127-1 requires reduced maximum surface temperature for category 1, the following table applies for the sensor circuits in case of category 1 applications.

Moreover the special conditions for safe use were adapted.

**Electrical data:**

Sensor circuit ..... in type of protection Intrinsic Safety EEx ia IIC/IIB

In case of applications that require apparatus of category 1 G, the permissible maximum ambient temperature in dependence on the temperature class, the type of intrinsically supply, the effective internal capacitance and inductance per sensor type, as well, has to be taken from the following table:

**Sensor circuits:**

Sensor-Type	C <sub>i</sub> /nF	L <sub>i</sub> /µH	U <sub>i</sub> = 15V			U <sub>i</sub> = 15V			U <sub>i</sub> = 15V		
			Type 1			Type 2			Type 3		
			I <sub>i</sub> = 25mA	I <sub>i</sub> = 25mA	I <sub>i</sub> = 52mA	P <sub>i</sub> = 34mW	P <sub>i</sub> = 64mW	P <sub>i</sub> = 169mW	T6	T5	T4-T1
NCN3-F24.-N4...	< 100	< 100	58°C	70°C	98°C	54°C	66°C	94°C	40°C	52°C	80°C
NCN3-F24.-SN4...	< 100	< 150	58°C	70°C	98°C	54°C	66°C	94°C	40°C	52°C	80°C
NCN3-F25.-N4-K	< 100	< 100	56°C	68°C	96°C	51°C	63°C	91°C	31°C	43°C	71°C
NCN3-F25.-N4-Y41364	< 100	< 100	56°C	68°C	96°C	51°C	63°C	91°C	31°C	43°C	71°C
NCN3-F25.-N4...	< 100	< 100	57°C	69°C	97°C	52°C	64°C	92°C	34°C	46°C	74°C
NCN3-F25.-SN4...	< 100	< 150	57°C	69°C	97°C	52°C	64°C	92°C	34°C	46°C	74°C
NCN3-F31.-N4...	< 100	< 100	60°C	72°C	100°C	58°C	70°C	98°C	50°C	62°C	90°C
NCN3-F31K-N4(-Y...)	< 100	< 100	60°C	72°C	100°C	58°C	70°C	98°C	50°C	62°C	90°C
NCN3-F31K-N4-...	< 100	< 100	46°C	58°C	86°C	46°C	58°C	86°C	46°C	58°C	86°C
NCN4-M3K-N4...	< 100	< 100	56°C	68°C	96°C	50°C	62°C	90°C	30°C	42°C	70°C
NCN3-F36.-N4...	< 100	< 100	58°C	70°C	98°C	54°C	66°C	94°C	40°C	52°C	80°C
PL.-F25.-.N4...	< 100	< 100	45°C	57°C	85°C	45°C	57°C	85°C	34°C	46°C	74°C
PL.-F25.-SN4...	< 100	< 150	45°C	57°C	85°C	45°C	57°C	85°C	34°C	46°C	74°C
NC...F31.-N5-V18-V1	< 200	< 200	60°C	72°C	100°C	58°C	70°C	98°C	50°C	62°C	90°C

### 3 Supplement to EC-Type Examination Certificate No. TÜV 99 ATEX 1479 X

The stated values of  $C_i$  and  $L_i$  already take into consideration a connection cable of a length of 10 m.

The electrical data of the valve circuits apply unchanged.

In case of category 2 applications the tables of the EC Type Examination Certificate and of the 2<sup>nd</sup> Supplement.

#### Applied test principles

EN 50014:1997 + A1 + A2    EN 50020:2002    EN 50284:1999    EN 1127-1:1997

(16) The test documents are listed in the test report N° 06 YEX 552608.

(17) Special conditions for safe use

1. If the Valve Position Sensors are operated at ambient temperatures lower than  $-20^{\circ}\text{C}$ , they have to be protected against mechanical damages by appropriate measures.
2. Appropriate measures have to be taken to prevent the occurrence of dangerous electrostatic charges at the plastic housing of the following types (warning label):

Type	Use as category 1 G apparatus	Use as category 2 G apparatus
NCN3-F24.-N4...	IIC	-
NCN3-F24.-SN4...	IIC	-
NCN3-F25.-N4-K	IIC	-
NCN3-F25.-N4-Y41364	IIC	-
NCN3-F25.-N4...	IIC	-
NCN3-F25.-SN4...	IIC	-
NCN3-F31.-N4...	IIC	-
NCN3-F31K-N4(-Y...)	IIB/IIC	IIC
NCN3-F31K-N4-...	IIB/IIC	IIC
NCN4-M3K-N4...	IIC	-
NCN3-F36.-N4...	IIC	-
PL.-F25.-N4...	IIB/IIC	IIC
PL.-F25.-SN4...	IIB/IIC	IIC
NC.-F31.-N5-V18-V1	IIC	-

3. The sensors of the types PL -F25.-N4... have to be installed in a housing so that at a proper IP degree of protection according to IEC 60629 is achieved at the installation site.

3 Supplement to EC-Type Examination Certificate No. TÜV 99 ATEX 1479 X

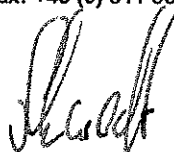
4. The types PL -F25 - N4... and NCN4-M3K-N4... are being delivered without cable entry. Their connection cable must either be installed fixed and mechanically protected or a cable pull test must be carried out. The realization of the pull test is described in the operation instructions. Depending on the installation way a suitable cable according to type B or A as specified in EN 60079-14 must be used.
5. At devices with valve circuits, the maximum values of the connected intrinsically safe valve have to be taken into account.
6. In case of category 1 G applications also the critical charging of the connection cable must be prevented. For this purpose the corresponding statements of the operation instruction must be observed.

(18) Essential Health and Safety Requirements

no additional ones

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Hannover, 2006-01-23



Head of the  
Certification Body

## EC - Declaration of Conformity

In accordance with Directive 94/9/EC

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This is to declare that the

Equipment: Valve Solenoid

Model Series: 3039

is in conformity with the provisions of the Directive 94/9/EC for use in potentially explosive atmospheres

Referenced normative documents:

EN 50 014:1997 General requirements

EN 50 020:1994 Intrinsic safety „i“

Equipment group, Category, Types of protection



II 2 G EEx ia IIC T4/T6

EC-Type Examination Certificate:

PTB 03 ATEX 2134


issued by Physikalisch-Technische Bundesanstalt,  
D-38116 Braunschweig (Notified Body No. 0102)

EC Certificate for quality system:

EX3 03 07 11122 009

issued by TÜV Product Service GmbH,  
D-80339 München (Notified Body No. 0123)

Fellbach, November 2003

  
ppa  
(Theo Paulus)  
Technical Director Germany

  
i.V.  
(Dieter Maisch)  
Authorized Representative