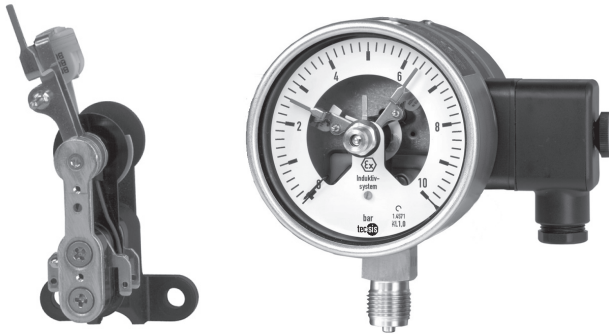


# Operating Instructions for Inductive Alarm Sensors Model 3. in pressure and temperature gauges



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## 1 Safety instructions

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The appropriate national safety regulations (i.e. VDE 0100) must be observed when installing, putting into operation and running these instruments.



- ⌞ Do not work on gauge while under voltage.
- ⌞ Serious injuries and/or damage can occur should the appropriate regulations not be observed.
- ⌞ Only appropriately qualified persons should work on these instruments.

## 2 Description, Application

The built-in electrical alarm contacts are inductive proximity non-contact sensors which operates by the presence or absence of a control vane moved by the actual value pointer on the sensor (slot-type initiators). The signal change is used for driving a control unit (intrinsic circuit).

Gauges with inductive alarm sensor contacts are permitted in areas which are under risk of explosion (zone 1). Provided that they have a certified intrinsically safe power supply.

For permissible electrical connection data and maximum permissible ambient temperatures for use in potentially explosive atmospheres see EC-type-examination certificates on the following pages.

For Model 3. -N see from page 6 PTB 99 ATEX 2219 X

For Model 3. -SN and 3. -S1N see from page 9 PTB 00 ATEX 2049 X

Suitable transformer isolated barriers are for Model 3. -N:

With Circuit Type1:Control unit 24V Ex1: EZE01X001003; Ex2: EZE01X002003

With Circuit Type2:Control unit 230V Ex1: EZE01X001002; Ex2: EZE01X002002

Suitable transformer isolated barriers are for Model 3. -SN and 3. -S1N.:

With Circuit Type2:Control unit 230V Ex1: EZE01X013002

### **3 Mechanical connection**

According to the general technical regulations for pressure gauges and temperature measuring instruments, respectively (i.e. EN 837-2 or EN 13 190). When screw-fitting the gauges the force required for this must not be applied through the case or terminal box but just through the spanner flats (with suitable tool) provided for this purpose.

Installation with  
open-end wrench



With safety pattern gauges S3 according to EN 837-1 (see dial symbol **S**) you need to pay attention to the fact that the free space behind the blow-out back will be at least 15 mm.

#### **3.1 Special requirements for the installation point**

It must be ensured that the instruments are mounted free of vibration to avoid amongst other things switch signal "chatter". If the measuring point is not adequately stable a measuring instrument holder should be used for fastening (and possibly via a flexible capillary line). If the pressure gauge is exposed to vibration or pulsating pressure or both, then a liquid filled pressure gauge may provide considerably better performance and readability. Instruments should be protected against coarse dirt and wide fluctuations in ambient temperature.

## 4 Wiring details

The electrical connections should be made by qualified electricians. The permissible electrical data, connection details and switch functions are given on the instrument type label.

Connection terminals are appropriately marked.

## 5 To set desired value indicator

The desired value indicators for the alarm contacts are adjustable over the adjustment lock in the window with the aid of adjustment key (included in delivery; to be found on standard gauges on the outside edge of the junction box).

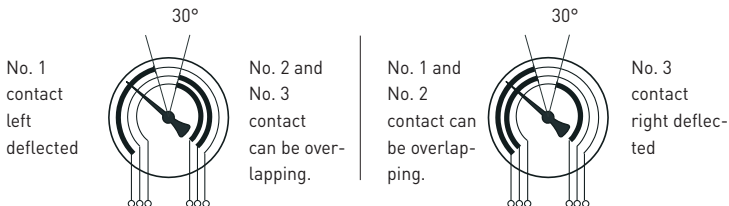


The desired value indicators for the alarm contacts are adjustable over the full range of the instrument.

Switching points shall be set in the ranges between 10 % und 90 % of the scale, to ensure switching accuracy and long life of the mechanical measuring system.

With triple inductive contacts it is not feasible to set all three contacts overlapping at the same scale value. Either the left (= no. 1 contact) or the right contact (= no. 3 contact) is at an approximate distance of 30° to the left or the right of the other two contacts, which may be set to the same value:

Examples:



## **6 Ingress protection IP**

The type of enclosure to EN 60 529 for protection against external influences depends on the basic instrument and is found in the respective data sheet.

## **7 Admissible ambient temperatures**

The permissible ambient temperatures for alarm contacts is -25 to +100°C. Where this span exceeds the permissible temperature limits for the instrument to which the contacts are fitted, the limits for the instrument apply (see data sheet). For use in potentially explosive atmospheres please recognise reduced values (see respective EC-type-examination certificate). Types mentioned integrated slot-type initiators see gauge type label.

## **8 Maintenance and servicing / Cleaning**

The instruments require no maintenance or servicing. The indicator and switching function should be checked once or twice every 12 months. The instrument must be disconnected from the process to check indication with a pressure or temperature testing device.

The instruments should be cleaned with a damp cloth moistened with soap solution. For cleaning inside the instrument the mains power supply should be disconnected by means of the plug box or plug connection. It must be ensured that all the parts are dry before the power is switched on again.

## **9 Repairs**

Repairs are to be only carried out by the manufacturer or appropriately trained personnel. For further details see **tecsis** data sheet DE1231 or the data sheet for the respective basic gauge.

### **Enclosure 1: EC-type examination certificate for contact 3. -N**

See page 18 to 20,  
**tecsis**-Model 3. -N corresponds to slot-type initiators SJ2-N and SJ3,5-...-N

### **Enclosure 2: EC-type examination certificate for contacts 3. -SN and 3. -S1N**

See page 21 to 24,  
**tecsis**-Model 3. -SN corresponds to slot-type initiators SJ2-SN and SJ3,5-SN  
**tecsis**-Model 3.-S1N corresponds to slot-type initiators SJ2-S1N and SJ3,5-S1N.

**Physikalisch-Technische Bundesanstalt**

Braunschweig und Berlin



**EC-TYPE-EXAMINATION CERTIFICATE**

(Translation)

- (2) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres - **Directive 94/9/EC**
- (3) EC-type-examination Certificate Number:



**PTB 99 ATEX 2219 X**

- (4) Equipment: Slot-type initiators types SJ... and SC...
- (5) Manufacturer: Pepperl + Fuchs GmbH
- (6) Address: D-68307 Mannheim
- (7) This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.
- (8) The Physikalisch-Technische Bundesanstalt, notified body No. 0102 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment 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 the confidential report PTB Ex 99-29175.
- (9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:  
**EN 50014:1997** **EN 50020:1994**
- (10) If the sign "X" is placed after the certificate number, it indicates that the equipment 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 in accordance with Directive 94/9/EC. Further requirements of this Directive apply to the manufacture and supply of this equipment.
- (12) The marking of the equipment shall include the following:

**Ex II 2 G EEx ia IIC T6**

Zertifizierungsstelle Explosionsschutz  
By order:

Braunschweig, December 22, 1999

*U. Johannsmeyer*  
Dr.-Ing. U. Johannsmeyer  
Regierungsdirektor



sheet 1/3

EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.

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**SCHEDULE**

(13)

(14) **EC-TYPE-EXAMINATION CERTIFICATE PTB 99 ATEX 2219 X**

(15) Description of equipment

The slot-type initiators of types SJ... and SC... are used to convert displacements into electrical signals.

The slot-type initiators may be operated with intrinsically safe circuits certified for categories and explosion groups [EEx ia] IIC or IIB resp. [EEx ib] IIC or IIB. The category as well as the explosion group of the intrinsically safe slot-type initiators depends on the connected supplying intrinsically safe circuit.

Electrical data

Evaluation and supply circuit..... type of protection Intrinsic Safety EEx ia IIC/IIB  
 ..... resp. EEx ib IIC/IIB  
 ..... only for connection to certified intrinsically safe circuits  
 Maximum values:

type 1	type 2	type 3	type 4
$U_i = 16 \text{ V}$	$U_i = 16 \text{ V}$	$U_i = 16 \text{ V}$	$U_i = 16 \text{ V}$
$I_i = 25 \text{ mA}$	$I_i = 25 \text{ mA}$	$I_i = 52 \text{ mA}$	$I_i = 76 \text{ mA}$
$P_i = 34 \text{ mW}$	$P_i = 64 \text{ mW}$	$P_i = 169 \text{ mW}$	$P_i = 242 \text{ mW}$

The assignment of the type of the connected circuit to the maximum permissible ambient temperature and the temperature class as well as the effective internal reactances for the individual types of slot-type initiators are shown in the table:

## Physikalisch-Technische Bundesanstalt



Braunschweig und Berlin

## SCHEDULE TO EC-TYPE-EXAMINATION CERTIFICATE PTB 99 ATEX 2219 X

types	C <sub>i</sub> [nF]	L <sub>i</sub> [µH]	type 1		type 2			type 3			type 4			
			maximum permissible ambient temperature in °C for application in temperature class											
			T6	T5	T4-T1	T6	T5	T4-T1	T6	T5	T4-T1	T6	T5	T4-T1
SC2-N0...	150	150	72	87	100	65	80	100	40	55	75	23	38	54
SC3,5-N0-Y...	150	150	72	87	100	65	80	100	40	55	75	23	38	54
SC3,5...-N0...	150	150	73	88	100	66	81	100	45	60	89	30	45	74
SJ1,8-N-Y...	30	100	73	88	100	67	82	100	45	60	78	30	45	57
SJ2,2-N...	30	100	73	88	100	67	82	100	45	60	78	30	45	57
SJ2-N...	30	100	73	88	100	67	82	100	45	60	78	30	45	57
SJ3,5...-N...	50	250	73	88	100	66	81	100	45	60	89	30	45	74
SJ3,5-H...	50	250	73	88	100	66	81	100	45	60	89	30	45	74
SJ5...-N...	50	250	73	88	100	66	81	100	45	60	89	30	45	74
SJ5-K...	50	550	72	87	100	66	81	100	42	57	82	26	41	63
SJ10-N...	50	1000	72	87	100	66	81	100	42	57	82	26	41	63
SJ15-N...	150	1200	72	87	100	66	81	100	42	57	82	26	41	63
SJ30-N...	150	1250	72	87	100	66	81	100	42	57	82	26	41	63

(16) Test report PTB Ex 99-29175(17) Special conditions for safe use

- For the application within a temperature range of -60°C to -20 °C the slot-type initiators of types SJ... and SC... must be protected against damage due to impact by mounting into an additional housing.
- The connection facilities of the slot-type initiators of types SJ... and SC... shall be installed as such that at least a degree of protection of IP20 according to IEC-publication 60529:1989 is met.
- The assignment of the type of the connected circuit to the maximum permissible ambient temperature and the temperature class as well as the effective internal reactances for the individual types of slot-type initiators is shown in the table given under item (15) of this EC-type-examination certificate..
- Inadmissible electrostatic charge of the plastic housing of the slot-type initiators of type SJ30-N... has to be avoided (warning label on the device ).

(18) Essential health and safety requirements

Met by the standards mentioned above

Zertifizierungsstelle Explosionsschutz  
By order:Dr.-Ing. U. Johannsmeyer  
Regierungsdirektor

Braunschweig, August 10, 1999

sheet 3/3

EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.

Physikalisch-Technische Bundesanstalt • Bundesallee 100 • D-38116 Braunschweig



## 1. SUPPLEMENT

according to Directive 94/9/EC Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2049 X

(Translation)

Equipment: SN-sensors, types NJ... and SJ...

Marking:  II 2 G EEx ia IIC T6

Manufacturer: Pepperl + Fuchs GmbH

Address: Königsberger Allee 87, 68307 Mannheim, Germany

### Description of supplements and modifications

The SN-sensors of type series NJ... and SJ... listed below may in future also be used in hazardous areas where equipment of category-1 is required.

The modifications exclusively concern the „Electrical data“ (change of maximum permissible ambient temperatures for application as category-1 equipment, reduction of the intrinsically safe evaluation and supply circuit to category ia) as well as the marking of the SN-sensors listed below.

NJ 2-11-SN...	NJ 5-30GK-S1N...	NJ 15-30GK-SN...
NJ 2-11-SN-G...	NJ 6-22-SN...	NJ 15S-U,-N...
NJ 2-12GK-SN...	NJ 6-22-SN-G...	NJ 20S-U,-N...
NJ 3-18GK-S1N...	NJ 6S1+U,+N...	SJ 2-SN...
NJ 4-12GK-SN...	NJ 8-18GK-SN...	SJ 2-S1N...
NJ 5-18GK-SN...	NJ 10-30GK-SN...	SJ 3,5-S1N...
		SJ 3,5-SN...

For application as category-1 equipment the marking of the slot-type initiators listed above will be in the future:

 II 1 G EEx ia IIC T6

The „Special conditions“ are also valid for application as category-1 equipment without changes.

Sheet 1/3

EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.

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## 1. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2049 X

### Electrical data

Evaluation and supply circuit

type of protection Intrinsic Safety EEx ia IIC/IIB  
only for connection to certified intrinsically safe circuits  
Maximum values:

type 1	type 2	type 3	type 4
$U_i = 16 \text{ V}$	$U_i = 16 \text{ V}$	$U_i = 16 \text{ V}$	$U_i = 16 \text{ V}$
$I_i = 25 \text{ mA}$	$I_i = 25 \text{ mA}$	$I_i = 52 \text{ mA}$	$I_i = 76 \text{ mA}$
$P_i = 34 \text{ mW}$	$P_i = 64 \text{ mW}$	$P_i = 169 \text{ mW}$	$P_i = 242 \text{ mW}$

The assignment of the type of the connected circuit to the maximum permissible ambient temperature and the temperature class as well as the effective internal reactances for the individual types of slot-type initiators are shown in the following table:

types	$C_i$ [nF]	$L_i$ [μH]	type 1		type 2		type 3			type 4				
			maximum permissible ambient temperature in °C for application in temperature class											
			T6	T5	T4-T1	T6	T5	T4-T1	T6	T5	T4-T1	T6	T5	T4-T1
NJ 2-11-SN...	50	150	56	68	96	49	61	89	28	40	68	13	25	53
NJ 2-11-SN-G...	50	150	59	71	99	56	68	96	45	57	81	37	49	63
NJ 2-12GK-SN...	50	150	57	69	97	52	64	92	34	46	74	22	34	61
NJ 3-18GK-S1N...	70	200	57	69	97	52	64	92	34	46	74	22	34	61
NJ 4-12GK-SN...	70	150	57	69	97	52	64	92	34	46	74	22	34	61
NJ 5-18GK-SN...	120	200	57	69	97	52	64	92	34	46	74	22	34	61
NJ 5-30GK-S1N...	100	200	57	69	97	52	64	92	34	46	74	22	34	61
NJ 6-22-SN...	110	150	57	69	97	52	64	92	34	46	74	22	34	61
NJ 6-22-SN-G...	110	150	59	71	99	56	68	96	45	57	81	37	49	63
NJ 6S1+U.+N...	180	150	57	69	97	52	64	92	34	46	74	22	34	61
NJ 8-18GK-SN...	120	200	57	69	97	52	64	92	34	46	74	22	34	61
NJ 10-30GK-SN...	120	150	57	69	97	52	64	92	34	46	74	22	34	61
NJ 15-30GK-SN...	120	180	57	69	97	52	64	92	34	46	74	22	34	61
NJ 15S-U.-N...	180	150	56	68	96	49	61	89	28	40	68	13	25	53
NJ 20S-U.-N...	200	150	56	68	96	49	61	89	28	40	68	13	25	53
SJ 2-SN...	30	100	56	68	96	49	61	89	28	40	68	13	25	53
SJ 2-S1N...	30	100	56	68	96	49	61	89	28	40	68	13	25	53
SJ 3,5-S1N...	30	100	56	68	96	49	61	89	28	40	68	13	25	53
SJ 3,5-SN...	30	100	56	68	96	49	61	89	28	40	68	13	25	53

Test report: PTB Ex 03-23134

Zertifizierungsstelle Explosionsschutz  
By order:

Braunschweig, October 29, 2003

  
Dr.-Ing. U. Johannsmeyer  
Regierungsdirektor



**Physikalisch-Technische Bundesanstalt**

Braunschweig und Berlin



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

(2) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres - **Directive 94/9/EC**



(3) EC-type-examination Certificate Number:

**PTB 00 ATEX 2049 X**

(4) Equipment: SN-sensors, types NJ... and SJ...

(5) Manufacturer: Pepperl + Fuchs GmbH

(6) Address: D-68307 Mannheim

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

(8) The Physikalisch-Technische Bundesanstalt, notified body No. 0102 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment 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 the confidential report PTB Ex 00-29268.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:  
**EN 50014:1997** **EN 50020:1994**

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment 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 in accordance with Directive 94/9/EC. Further requirements of this Directive apply to the manufacture and supply of this equipment.

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

**II 2 G EEx ia IIC T6**

Zertifizierungsstelle Explosionsschutz  
By order:

Braunschweig, October 05, 2000

Dr.-Ing. U. Johannsmeyer  
Regierungsdirektor



sheet 1/4

EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.

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**SCHEDULE**

(13)

(14) **EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2049 X**

(15) Description of equipment

The SN-sensors, types NJ... and SJ... are used to convert displacements into electrical signals.

The SN-sensors, types NJ... and SJ... may be operated with intrinsically safe circuits certified for categories and explosion groups [EEx ia] IIC or IIB resp. [EEx ib] IIC or IIB. The category as well as the explosion group of the SN-sensors depends on the connected supplying intrinsically safe circuit.

Electrical data

Evaluation and supply circuit.....type of protection Intrinsic Safety EEx ia IIC/IIB  
 resp. EEx ib IIC/IIB  
 only for connection to certified intrinsically safe circuits  
 maximum values:

type 1	type 2	type 3	type 4
$U_i = 16 \text{ V}$	$U_i = 16 \text{ V}$	$U_i = 16 \text{ V}$	$U_i = 16 \text{ V}$
$I_i = 25 \text{ mA}$	$I_i = 25 \text{ mA}$	$I_i = 52 \text{ mA}$	$I_i = 76 \text{ mA}$
$P_i = 34 \text{ mW}$	$P_i = 64 \text{ mW}$	$P_i = 169 \text{ mW}$	$P_i = 242 \text{ mW}$

The assignment of the type of the connected circuit to the maximum permissible ambient temperature and the temperature class as well as the effective internal reactances for the individual types of SN-sensors is shown in the following table:

# Physikalisch-Technische Bundesanstalt



Braunschweig und Berlin

SCHEDULE TO EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2049 X

types	C <sub>i</sub> [nF]	L <sub>i</sub> [µH]	type 1			type 2			type 3			type 4		
			maximum permissible ambient temperature in °C for application in temperature class											
			T6	T5	T4-T1	T6	T5	T4-T1	T6	T5	T4-T1	T6	T5	T4-T1
NJ 2-11-SN...	50	150	73	88	100	66	81	100	45	60	89	30	45	74
NJ 2-11-SN-G...	50	150	76	91	100	73	88	100	62	77	81	54	63	63
NJ 2-12GK-SN...	50	150	73	88	100	69	84	100	51	66	80	39	54	61
NJ 3-18GK-S1N...	70	200	73	88	100	69	84	100	51	66	80	39	54	61
NJ 4-12GK-SN...	70	150	73	88	100	69	84	100	51	66	80	39	54	61
NJ 5-18GK-SN...	120	200	73	88	100	69	84	100	51	66	80	39	54	61
NJ 5-30GK-S1N...	100	200	73	88	100	69	84	100	51	66	80	39	54	61
NJ 6-22-SN...	110	150	73	88	100	69	84	100	51	66	80	39	54	61
NJ 6-22-SN-G...	110	150	76	91	100	73	88	100	62	77	81	54	63	63
NJ 6S1+U.+N...	180	150	73	88	100	69	84	100	51	66	80	39	54	61
NJ 8-18GK-SN...	120	200	73	88	100	69	84	100	51	66	80	39	54	61
NJ 10-30GK-SN...	120	150	73	88	100	69	84	100	51	66	80	39	54	61
NJ 15-30GK-SN...	120	180	73	88	100	69	84	100	51	66	80	39	54	61
NJ 15S-U.-N...	180	150	73	88	100	66	81	100	45	60	89	30	45	74
NJ 20S-U.-N...	200	150	73	88	100	66	81	100	45	60	89	30	45	74
NJ 40-FP-SN...	370	300	73	88	100	66	81	100	45	60	89	30	45	74
SJ 2-SN...	30	100	73	88	100	66	81	100	45	60	78	30	45	57
SJ 2-S1N...	30	100	73	88	100	66	81	100	45	60	78	30	45	57
SJ 3,5-S1N...	30	100	73	88	100	66	81	100	45	60	89	30	45	74
SJ 3,5-SN...	30	100	73	88	100	66	81	100	45	60	89	30	45	74

(16) Test report PTB Ex 00-29268(17) Special conditions for safe use

- For the application within a temperature range of -60 °C to -20 °C the SN-sensors, types NJ... and SJ... must be protected against damage due to impact by mounting into an additional housing.
- The connection facilities of the SN-sensors, types NJ... and SJ... shall be installed as such that at least a degree of protection of IP20 according to IEC-publication 60529:1989 is met.
- The assignment of the type of the connected circuit to the maximum permissible ambient temperature and the temperature class as well as the effective internal reactances for the individual types of SN-sensors is shown in the table given under item (15) of this EC-type-examination certificate.

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EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.

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# Physikalisch-Technische Bundesanstalt



Braunschweig und Berlin

## SCHEDULE TO EC-TYPE-EXAMINATION CERTIFICATE PTB 00 ATEX 2049 X

4. With the application in group IIC inadmissible electrostatic charge of the plastic housing has to be avoided for following types of SN-sensors (warning label on the device):

NJ 40-FP-SN...

5. Inadmissible electrostatic charge of parts of the metal housing has to be avoided for the following types of SN-sensors. Dangerous electrostatic charges of parts of the metal housing can be avoided by grounding of these parts whereas very small parts of the metal housing (e.g. screws) don't need to be grounded:

NJ 2-11-SN-G...

NJ 6-22-SN-G...

NJ 6S1+U3+N...

NJ 6S1+U4+N...

NJ 15S+U3+N...

NJ 15S+U4+N...

NJ 20S+U3+N...

NJ 20S+U4+N...

NJ 40-FP-SN-P3...

NJ 40-FP-SN-P4...

(18) Essential health and safety requirements

Met by the standards mentioned above

Zertifizierungsstelle Explosionsschutz  
By order:

  
Dr.-Ing. U. Johannsmeyer  
Regierungsdirektor



Braunschweig, October 05, 2000

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EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.

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