# Installation and Maintenance Instruction Manual

## Differential pressure gauge, model F5509/F6509

for industrial application in the following configuration:

- ###F5509/F6509###ATEX differential pressure gauge without switching contact
- ###F5509/F6509###I###ATEX differential pressure gauge with inductive proximity switches

ASHCROFT

**Table of contents:**

# 1 General remarks

## 1.1 Purpose of this Manual

This Operating Manual contains fundamental and essential advice to be followed for the installation, operation and servicing of the device. It must be read before assembly and start-up of the device by the fitter, the operator and the specialist personnel responsible for the device. This Operating Manual must be available at the point of use at all times.

The following sections about general safety information (2) and also the following specific advice regarding the intended purposes (2.2) and through to disposal (11.3) contain important safety information which, if not followed, may result in risks for people and animals, or to property and buildings.

## 1.2 Symbols

**Warning!**
This indicates a possibly hazardous situation where failing to follow advice may result in risks to people, animals, the environment and buildings.

**Information!**
This emphasizes key information for efficient, fault-free operation.

## 1.3 Limits of liability

Refer to Ashcroft standard terms of sale for limits of liability.

## 1.4 Copyright

This Operating Manual may only be copied and passed on as a complete document without the special permission of the publisher.

## 1.5 Warranty

For the product described here, we offer a warranty pursuant to our General Terms and Conditions on Delivery and Payment, Section 6: Liability for Defects.

## 1.6 Manufacturer's address, customer services

**Ashcroft Instruments GmbH**
Max-Planck-Strasse 1
D-52499 Baesweiler. Germany

Tel.: +49 (0) 2401/808-888
Fax.: +49 (0) 2401/808-999
E-mail: customer.service@ashcroft.com
Web: www.ashcroft.eu

# 2 Safety

## 2.1 General sources of hazards

Pressure gauges are pressurized parts where failure can result in hazardous situations. The selection of pressure gauge should be made in accordance with the rules set out in EN 837-2 & DIN 16003.

## 2.2 Use in accordance with intended purpose

The devices are only to be used for the intended purpose as described by the manufacturer.

The devices are used for direct display of differential pressure.

The integrated switching elements are magnetic spring contacts or inductive proximity switches with a groove design, supplied by isolating switch amplifiers. If the set limit values are exceeded, the output circuits are opened or closed.

For each use scenario, the corresponding set-up regulations must be respected. The use in explosion risk areas is not permitted.

## 2.3 Operator's responsibility

Safety instructions for proper operation of the device must be respected. They are to be provided by the operator for use by the respective personnel for installation, servicing, inspection and operation. Risks from electrical energy and from the released energy of the medium, from escaping media and from improper connection of the device must be eliminated. The details for this are to be found in the corresponding applicable set of regulations, such as DIN EN, UVV (accident prevention regulations) and in sector-specific instances of use (DVWG, Ex-. GL, etc.) the VDE guidelines and the regulations supplied by local utilities companies.

The device must be taken out of service and secured against inadvertently being restarted, if the presumption is that risk-free operation is no longer possible (see Chapter 10: Faults).

Conversion works or other technical alterations to the device by the customer will violate the approval for hazardous area and are not permitted. This also applies to installation of spare parts. Possible conversations or alterations may only be carried out by the manufacturer.

The operational safety of the device is only guaranteed where it is used for its intended purpose. The specification of the device must be adapted to the medium used in the plant. The limit values indicated in the technical data must not be exceeded.

The safety information detailed in this Operating Manual, existing national regulations for accident prevention, and the operator's internal regulations regarding working, operations and safety must be respected.

The operator is responsible for all specified servicing, inspection and installation works being carried out by authorized and qualified specialists.

The operator is responsible that the device is used in the correct ATEX zone.

## 2.4 Staff qualifications (target group assessment)

The device may only be installed and started up by specialist staff who are qualified for installation, start-up and operation of the product.

Specialist staff is people who are able to assess the work assigned to them on the basis of their specialist training, their knowledge and experience and their knowledge of the relevant standards, and can identify possible risks.

For devices in explosion-protected configuration, these staff must have been trained or instructed in, or be authorized for, working on explosion-protected devices in potentially explosive plants.

## 2.5 Signs/Safety markings

The pressure gauge and its surrounding packaging carry markings. These markings show the article number, measurement range, maximum static pressure, maximum overload and manufacturer. The pressure gauge can be provided with additional signs and safety markings advising on special conditions:

- Advice on the filling liquid
- Advice on calibration
- Ex (for ATEX configuration)
- Oil-can deleted (if oxygen is used)

## 2.6 Safety equipment

This device is fitted with a (S3) solid front and rear wall (F6509) or (S1) blow plug (F5509) according DIN 16003, capable of being blown out. For the description, please refer to Chapter 6.3.4.

## 2.7 The window uses multi-layer safety glass.Environmental protection

This device may optionally contain a filling liquid (e.g. glycerin or silicone oil). The provisions set out in the REACH regulation on production and use of chemicals are to be respected, and the relevant safety data sheets from the manufacturers of the chemicals are available on our website for download.

Electric contacts are offered as a gauge option. The provisions set out in the WEEE regulation EU directive 2012/19/EC on electrical and electronically equipment are to be respected, and the products are registered at the EAR under the number DE 26646349.

# 3 Use in explosion risk areas pursuant to Directive 2014/34/EU (ATEX)

## 3.1 F5509 and F6509 without switching contact

**Area of use:**

Explosion risk areas Zone 1 and 2, and 21 and 22, risk from gases and dry dust

**Permitted temperatures:**

The maximum occurring surface temperature of 95 °C was determined with no covering of dust and with no safety factor.

For dust clouds and dust layers the ignition temperature must be specified pursuant to ISO / IEC 80079-20-2

- For dust clouds the maximum allowable medium temperature inside of the measuring instrument must not exceed 2/3 of the dust ignition temperature
- For dust layer the maximum allowable medium temperature inside of the measuring instrument must be 75K lower than the dust ignition temperature

Permitted ambient temperature -20°C to +60 °C.

Permitted medium temperature in the pressure gauge < 85 °C.

Permitted environment air with usual oxygen content (21%), ambient pressure 80 kPa (0,8 bar) to 110 kPa (1,1 bar)

**Warning! With gaseous media, the device temperature may increase due to compression heat. In such cases, the rate of the pressure change must be regulated or the permitted temperature of the measuring medium reduced.**

**Note:**

For a change in differential pressure between 10 % and 90 % of the measuring range and a pulse frequency of < 0.06 Hz, the temperature increase is <10 K.

To avoid additional temperature increase, the devices should not be exposed to direct exposure to sunlight when in operation!

For the non-electrical part of the devices, the, EN ISO 80079-36, EN ISO 80079-37, EN 60079-0 and EN 60079-31, are applicable with regard to explosion protection. The relevant requirements of these standards are satisfied.

The documentation has been filed with TÜV-Nord-Cert NB 0044 (see declaration of conformity).

Labeling:

CE Ex II 2G Ex h IIC T4 Gb
II 2D Ex h IIIC T95°C Db
Ta = -20°C to +60°C

## 3.2 F5509 I#### and F6509 I#### with inductive proximity switches SJ2-N

**Area of use:**

Explosion risk areas Zone 1 and 2, and 21 and 22, risk from gases and dry dust.

**Permitted temperatures:**

The maximum occurring surface temperature of 95 °C was determined with no covering of dust and with no safety factor.

For dust clouds and dust layers the ignition temperature must be specified pursuant to ISO / IEC 80079-20-2

- For dust clouds the maximum allowable medium temperature inside of the measuring instrument must not exceed 2/3 of the dust ignition temperature
- For dust layer the maximum allowable medium temperature inside of the measuring instrument must be 75K lower than the dust ignition temperature

Permitted ambient temperature -20 °C to +60 °C.

Permitted medium temperature in the pressure gauge < 85 °C.

Permitted environment air with usual oxygen content (21%), ambient pressure 80 kPa (0,8 bar) to 110 kPa (1,1 bar)

**Warning! With gaseous media, the device temperature may increase due to compression heat. In such cases, the rate of the pressure change must be regulated or the permitted temperature of the measuring medium reduced.**

Note:

For a change in differential pressure between 10 % and 90 % of the measuring range and a pulse frequency of < 0.06 Hz, the temperature increase is <10 K.

To avoid additional temperature increase, the devices should not be exposed to direct exposure to sunlight when in operation!

**EU design type test certification for the installed inductive proximity switches:**

PTB 99 ATEX 2219X 4. supplement

The integrated proximity switch is indicated on the type label/wiring diagram.

The surrounding housing has protection class IP65 as per EN 60529.

For use in explosion risk areas, the devices must be connected to certified intrinsically safe power circuits:

| | | |
|---|---|---|
| Max. voltage | $U_{max}$ | = 16 V |
| Max. current | $I_{max}$ | = 25 mA |
| Max. power | $P_{max}$ | = 64 mW |

Device data (per contact):

| | | |
|---|---|---|
| max. internal capacitance | Ci max | = 30 nF |
| max. internal inductance | Li max | = 100 µH |

The permitted limit values for $U_i$, $I_i$ and $P_i$ for the intrinsically safe feed power circuits depend on the proximity switch type. They are to be found in the respective EU design type test certifications.

For the non-electrical part of the devices, the standards, EN ISO 80079-36, EN ISO 80079-37, EN 60079-0 and EN 60079-31 are applicable with regard to explosion protection. The relevant requirements of these standards are satisfied.

The documentation for the mechanical part has been filed with TÜV-Nord-NB 0044 (see declaration of conformity).

Labeling:

CE Ex II 2G Ex h IIC T4 Gb
II 2D Ex h IIIC T95°C Db
Ta = -20°C to +60°C

PTB 99 ATEX 2219 X
Supplement 4

II 2G Ex ia IIC T6...T1 Gb

II 1D Ex ia IIIC T135°C Da

Recommended isolating switch devices:

| | |
|---|---|
| MTL 5011B | 1-channel, for contacts/inductive proximity switch, operating voltage 20-35 VDC |
| MTL 5015 | 2-channel, for contacts/inductive proximity switch, operating voltage 20-35 VDC |
| KFA6-SR2-Ex1.W | 1-channel, for contacts/inductive proximity switch, operating voltage 230 VAC |
| KFA6-SR2-Ex2.W | 2-channel, for contacts/inductive proximity switch, operating voltage 230 VAC |

# 4 Technical data

The detailed technical information can be found in the documents in the Appendix, Chapter 12.

# 5 Labeling on the device

The label with the serial number and type designation is located on the outside of the housing. The materials identifier is encoded in the type designation.

## 5.1 Labeling on the device for explosion risk areas (ATEX)

The label with the marking for explosion risk areas is located on the outside of the housing.

<table>
<tr>
<td>Device without switching contacts:<br>###F5509####ATEX<br>II 2G Ex h IIC T4 Gb<br>II 2D Ex h IIIC T95°C Db<br>Ta = -20°C to +60°C</td>
<td>Article-no. .....<br>Measuring range .....<br>p stat. max. .....<br>Overrange limit +/- 10 x Measuring range max. bar<br>Prod.-no. .....<br>Made in Germany<br>Ashcroft Instruments GmbH D - 52499 Baesweiler<br><br>II 2G Ex h IIC T4 Gb<br>II 2D Ex h IIIC T95°C Db<br>Ta = -20°C to +60°C<br>T medium in the device max. 85°C<br>File-no.: 35264112<br>0044 TÜV NORD 2014/34/EU<br>Ashcroft Instruments GmbH D - 52499 Baesweiler</td>
</tr>
<tr>
<td>Device with integrated inductive proximity switch:<br>###F5509#### I####ATEX<br>II 2G Ex h IIC T4 Gb<br>II 2D Ex h IIIC T95°C Db<br>Ta = -20°C to +60°C<br><br>PTB 99 ATEX 2219 X<br>Supplement 4<br>II 2G Ex ia IIC T6...T1 Gb<br>II 1D Ex ia IIIC T135°C Da</td>
<td>Inductiv contact<br>Zero position<br>br bl<br>Article-no. .....<br>Contact function .....<br>Measuring range .....<br>p stat. max. .....<br>Overrange limit +/- 10 x Measuring range max. bar<br>Prod.-no. .....<br>Made in Germany<br>Ashcroft Instruments GmbH D - 52499 Baesweiler<br><br>Connect to certified intrinsically safe electric circuits only!<br>max. voltage: $U_{max}$ = 16 V<br>max. current: $I_{max}$ = 25 mA<br>max. output: $P_{max}$ = 64 mW<br>max. capacity: $Ci_{max}$ = 30 nF<br>max. inductance: $Li_{max}$ = 100 µH<br>II 2G Ex h IIC T4 Gb<br>II 2D Ex h IIIC T95°C Db<br>Ta = -20°C to +60°C<br>T medium in the device max. 85°C<br>File-no.: 35264112<br>0044 TÜV NORD 2014/34/EU<br>Ashcroft Instruments GmbH D - 52499 Baesweiler<br><br>Integrated inductive switches SJ 2-N<br>PTB 99 ATEX 2219 X<br>II 2G Ex ia IIC T6...T1 Gb<br>II 1D Ex ia IIIC T135°C Da<br>Ashcroft Instruments GmbH D - 52499 Baesweiler</td>
</tr>
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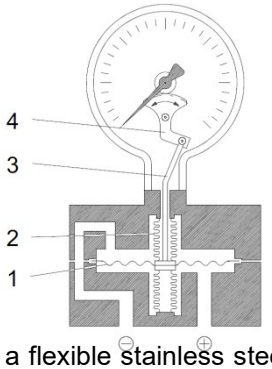
# 6 Construction and function

## 6.1 Overview

1. Sensing diaphragm
2. Sealing / spring bellows
3. Connecting rod
4. Pointer mechanism




## 6.2 Description of function

The pressures to be compared, differential pressure, act on a flexible stainless steel diaphragm, which separates the two pressure champers.

The diaphragm is mechanically linked by a rigid connecting rod. When pressures are equal on both sides, the diaphragm is on zero position. When there is a difference in pressures the diaphragm is deflected from the high pressure side, towards the lower pressure side, causing a displacement of the connecting rod.
A precision mechanism translates the linear displacement of the diaphragm connecting rod to angular movement of the gauge's dial pointer. The pointer's displacement range of 270° corresponds to the full scale differential pressure.

## 6.3 Description of components

### 6.3.1 Scale with pointer

The differential pressure gauge is equipped with a dial face and pointer pursuant to DIN 16003, nominal size 100 mm or 160 mm.

### 6.3.2 Instrument connection

The instrument connection is located on the underside of the differential pressure gauge and can be male or female threaded process connection. Distance between ports is 37 mm, please consider this when selecting a 5-way manifold.

### 6.3.3 Vent valve

The vent valve for the housing is located on the top side. If the nipple is pulled out, the housing is vented and the pressure which has built up in the housing due to the influence of temperature is discharged. With the valve closed, protection class IP 66 is achieved.

### 6.3.4 Rear wall/plug with blow-out capability

The pressure gauge has a plug capable of blowing out on the rear wall of the housing (Model F5509) or a rear wall capable of blowing out (Model F6509). These act as a safety feature pursuant to DIN 16003 and simultaneously allow for temperature compensation for the housing, via a rubber membrane.

## 6.4 Accessories

Please contact the manufacturer regarding available accessories.

# 7 Transport

## 7.1 Safety

The differential pressure gauge should be protected against the effects of knocks and impacts. The device should only be transported in the packaging provided, to protect against glass breakage. The device should only be transported in a clean condition (free of residues of measuring media).

## 7.2 Transport inspection

The delivery must be checked for damage during transport. In the event of damage during transport, the delivery must not be accepted, or only accepted subject to reservation of the scope of the damage being recorded and, if necessary, a complaint initiated.

## 7.3 Storage

The differential pressure gauge must be stored in dry, clean conditions, within a temperature range of -20 to +70 °C, protected against direct exposure to sunlight and protected against impact damage.

# 8 Assembly/Installation

## 8.1 Safety

To ensure safe working during installation and servicing, suitable shut-off valves must be installed in the plant (see 6.4 Accessories), enabling the device:

- To be depressurized or taken out of operation;
- To be disconnected from the pressure source for repair or check within the relevant plant;
- Or to enable function tests of the device to be performed “on site”.

During the works to mount/install the gauge, the plant must be protected against being switched back on.

## 8.2 Preparations (requirements for the installation location)

- A check on suitability of the device for the medium to be measured, the scope of the measurement range and static pressure and of the protection against special conditions such as vibration, pulsation and pressure spikes.
- A bracket must be installed to support the pressure gauge if the mounting process pipe is not able to provide adequate support.
- The installation location should be chosen such that the work-spaces for operating personnel are not located to the rear of the pressure gauge.

## 8.3 Mounting/Installation

### 8.3.1 Process connection

The instrument is intended and factory adjusted for vertical mounting, pressure ports downward. When mounted in other orientation (max. ± 10°) the pointers’ zero position needs to be adjusted (see 8.4.1 Zero point adjustment).

- Connection to be made by authorized and qualified personnel only.
- Use only with the mechanical process connection provided – regarding the configuration, see order code on the device type label, with a matching threaded seal.
- When connecting the device, the process piping must be depressurized.
- The process pipe must be installed on an incline so that:

  - for fluid measurement, no air pockets are created
  - for gas measurement, no water pockets are created

  If the necessary incline is not achieved, then at suitable points water separators or air separators must be installed.
- The pressure process pipe must be kept as short as possible and installed without sharp bends, to avoid a delayed response time.
- The instruments pressure ports are marked by "+" and "-" symbols:

  "+" port must be connected to the higher pressure

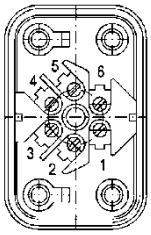
  "-" port must be connected to the lower pressure.
- With liquid measurement media, the pressurized connection pipe must be degassed, since any gas bubble inclusions result in measurement error.
- If water is used as the measurement medium, the device must be frost-protected.

Safety notice: Only mount using the correct open-jawed wrench, and do not twist the device itself.

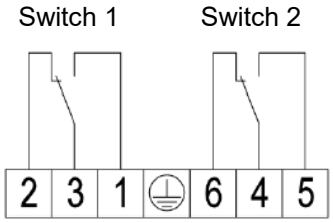
### 8.3.2 Electrical connection

Take note of the electrical data in the EU design type test certification and the locally-applicable regulations and guidelines for installing and operating electrical plant in explosion risk areas (e.g. EN 60079-14, EN 60079-17 etc.).

- Connection to be undertaken by authorized and qualified specialist staff only.
- The electrical connection of the device is to be undertaken in accordance with the relevant regulations of the VDE and the regulations supplied by the local utilities company.
- Disconnect the plant from the mains supply before wiring electrical connections.
- Install appropriate fuses upstream.




Please refer to type label for configuration of connections.




## 8.4 Starting up

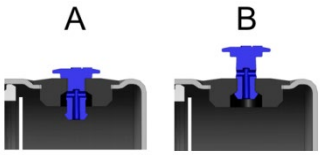
The precondition for start-up is proper installation of all electrical feed lines and metering pipes. All connecting lines must be installed so that no mechanical forces can act on the device.

Before start-up, the seal on the pressurized connection line must be checked.

### 8.4.1 Zero point adjustment

The pressure gauges are supplied calibrated at the factory, so that as a rule there is no need for calibration at the installation point. For devices with Micrometer pointer (see order code), zero pointer adjustment on site is possible. For this, proceed as follows:

- Equalize pressure in both chambers.
- Check if internal pressure was built up in the case due to ambient temperature effect. Open valve (position B), wait for pressure relief and close valve again (position A)
- Lift up on vent plug.
- Use zero pointer adjustment screw to set the pointer to zero.
- Mount vent plug




Filled Models need to be vented before commissioning by opening the air valve on the upper side of instrument!

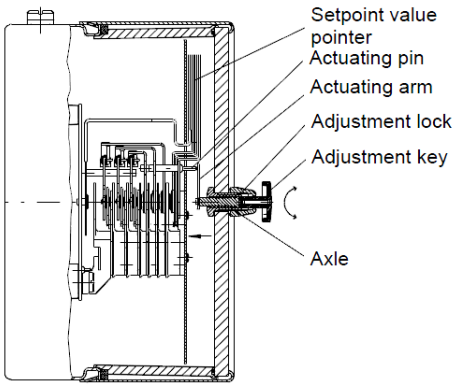
### 8.4.2 Setting the electric contacts

An adjustable lock is fitted in the front panel of the pressure gauge. Using the removable adjustment key, the contacts mounted on the target value indicators can be set to any point on the range covered by the scale.

For reasons relating to accuracy of switching and the lifetime of mechanical measurement systems, the switch points should be positioned between 10% and 90% of the range.

- Place the adjustment key on the axle of the adjustable lock.
- Press the axle inwards, until the carrier arm grips behind the adjuster pin on the target value indicator.
- By turning the key, adjust the target value indicator to the desired switch point.

Release the pressure on the axle, and remove the adjustment key.



### 8.4.3 Contact function

Function 1: Close contacts with the indication rising in a clockwise direction.

Function 2: Open contacts with the indication rising in a clockwise direction.

Contact assignment:

1st contact left target value indicator,

2nd contact middle target value indicator,

3rd contact right target value indicator

## 8.5 Subsequent relocation of the gauge (by the customer)

***Recommendation:*** Do not remove the differential pressure gauge from one pressure monitoring location to another place, as there is a risk of the process media being mixed, with unforeseeable chemical reactions.

# 9 Servicing

The device is maintenance-free. However, to ensure reliable operation and a long lifetime for the device, we recommend that it is checked regularly.

## 9.1 Safety

When servicing the pressure gauge, the process pressure line must be depressurized, the electrical connections isolated from the mains supply, and special attention should be taken to ensure process pressure is not applied.

## 9.2 Gauge performance and calibration

Gauge performance and recalibration is carried out at regular intervals, depending on the application. The precise testing cycles should be adjusted in line with the operating conditions and ambient conditions. In the event of various device components interacting, the operating instructions for all other devices should also be taken into account.

- Check on display.
- Check on function, in conjunction with downstream components.
- Check of pressurized connection pipes for seal condition.
- Check of electrical connections.

## 9.3 Cleaning and maintenance

Cleaning is carried out using a non-aggressive cleaning agent, with the ventilation valve closed and respecting the protection category of the device.

# 10 Faults

## 10.1 Safety

Defective or faulty pressure gauges put the operational safety and process safety of the plant at risk, and can lead to a risk or injury to persons, the environment or the plant.

## 10.2 Conduct in the event of faults

All defective of faulty devices must be taken out of service. If a repair is required, contact service department.

## 10.3 When action is required to repair/replace the gauge:

Possible situations when action should be taken:

- Jerky or random movement of the pointer
- Pointer does not set to zero for pressure less display

- Bent or loose pointer
- Cracked window
- Leaks when the device is filled
- Damage to housing
- Indications that the measurement system seal (diaphragm) has been breached (discoloration to dial display or of filling liquid)

In these instances, repair or replacement of the pressure gauge is always required.

### 10.4 Gauge repair/replacement

See Chapter 8.3 Mounting/Installation

# 11 Removal, disposal

## 11.1 Safety

Residues of measuring media in and on removed gauges can constitute a risk to people, the environment and equipment. Adequate precautionary measures must be adopted. If necessary, the devices must be cleaned thoroughly (see advice in safety data sheets).

## 11.2 Removal

- When servicing the gauge, the process pressure line must be depressurized, the electrical connections isolated from the mains supply, and special attention should be taken to ensure process pressure is not applied.
- Remove the gauge using a suitable tool.

## 11.3 Disposal

Please help to protect the environment and dispose of or recycle the devices and components used in accordance with the applicable regulations.

# 12 Appendix

## 12.1 Data sheet for differential pressure gauge F5509/F6509

Detailed data sheet is available from supplier's website (see 1.6 Manufacturer's address, customer services)
This Table refers to specific documents:

| Model | Description | Document |
|---|---|---|
| F5509/F6509 | Stainless steel differential pressure gauge model F5509/F6509 | G1.F5509 |
| K5500 | Electrical contact devices for pressure and temperature gauges | G1.K5500 |

## 12.2 Declaration of conformity model F5509 / F6509 without contacts

ASHCROFT
Trust the shield.

**EU-Konformitätserklärung**
***EU-Declaration of Conformity***
*DIN EN ISO IEC 17050-1:2010*

**Ashcroft Instruments GmbH**
Max-Planck-Straße 1
52499 Baesweiler

erklärt in alleiniger Verantwortung, dass das mit CE gekennzeichnete Produkt
*declares in sole responsibility that the product marked with CE*

Gerät: Differenzdruckmanometer vom Typ F5509
*Equipment: Differential Pressure Gauge Type F5509*

Kennzeichnung:
*Marking:*

CE Ex II 2G Ex h IIC T4 Gb
II 2D Ex h IIIC T95°C Db
Ta = -20°C to +60°C

Herstellungsdatum: ab 04.11.2019
*Date of manufacture: from 04.11.2019*

die grundlegenden Sicherheits- und Schutzanforderungen erfüllen, in Übereinstimmung mit den unten genannten Richtlinien und Normen. Die Konformitätsaussage bezieht sich auf die Konzeption und Fertigung des oben genannten Produktes.
*the fundamental safety and protection requirements passed in accordance with the guidelines and standards listed below. This declaration of conformity refers to the design and manufacture of the above product.*

| | |
|---|---|
| Richtlinie<br>*Directive* | 2014/34/EU „Geräte und Schutzsysteme zur bestimmungs-gemäßen Verwendung in explosionsgefährdeten Bereichen"<br>*"equipment and protective systems intended for use in potentially explosive atmospheres"* |
| Angewendete harmonisierte Normen<br>*Used harmonized Standards* | EN 60079-0:2014, EN 60079-31:2014, EN ISO 80079-36:2016, EN ISO 80079-37:2016 |
| Benannte Stelle<br>*Notification Body* | Code number of notified Body: 0044<br>TÜV NORD CERT<br>Langemarkstrasse 20, 45141 Essen, Germany |
| Hinterlegungsnummer:<br>*Dossier File No.:* | 35264112 |
| Richtlinie<br>*Directive* | (1)2014/68/EU „Druckgeräterichtlinie"<br>*„Pressure Equipment Directive"* |
| Angewendete Prüfnormen:<br>*Used test standards:* | EN 837-1,2,3:1996, DIN 16003:2018 |
| (1) PS >200 bar und V <0,1l, Artikel 4 Drucktragende Ausrüstungsteile, Modul A<br>*PS >200 bar and V <0,1l, Article 4 Pressure Accessories, Module A* | |
| Richtlinie<br>*Directive* | 1907/2006 „Verordnungen zur Registrierung, Bewertung, Zulassung und Beschränkung chemischer Stoffe (REACH)<br>*"Regulations on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)"* |
| Besonders besorgniserregende Stoffe<br>Substances of Very High Concern | SVHC-Liste der Europäischen Chemikalienagentur ECHA<br>*SVHC List of the European Chemicals Agency ECHA*<br>http://echa.europa.eu/candidate-list-table |
| Keines unserer Produkte wird mit Chemikalien hergestellt, die als besonders besorgniserregend identifiziert wurden.<br>*None of our products are produced with chemicals identified as Substance of very high concern identification.* | |
| Richtlinie | 2011/65/EU „Richtlinie zur Beschränkung der Verwendung |

Ashcroft Instruments GmbH Fon: +49 (0)2401-808-888 eMail: customer.service@ashcroft.com www.ashcroft.eu

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# EU-Konformitätserklärung
## *EU-Declaration of Conformity*
*DIN EN ISO IEC 17050-1:2010*

| | |
|---|---|
| *Directive* | bestimmter gefährlicher Stoffe in Elektro- und Elektronikgeräten"<br>*"Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment"*<br>2015/863/EU „Änderung von Anhang II der Richtlinie 2011/65/EU"<br>*"Amending Annex II to Directive 2011/65/EU"* |
| Einstufung<br>*Classification* | Einstufung des Produktes nach Anhang II Punkt 9 der Richtlinie „Überwachungs- und Kontrollinstrumente einschließlich Überwachungs- und Kontrollinstrumente in der Industrie"<br>*Classificationof the product according to Annex II, point 9 of the Directive "Monitoring and control instruments, including industrial monitoring and control instruments".* |
| Stoffbeschränkungen<br>*Substance restrictions* | Beschränkungen und Höchstkonzentrationen in homogenen Werkstoffen in Gewichtsprozent:<br>*Limitations and maximum concentrations in homogeneous materials in percent by weight:*<br><br>Blei (0,1 %)<br>*Lead (0,1 %)*<br>Quecksilber (0,1 %)<br>*Mercury (0,1 %)*<br>Cadmium (0,01 %)<br>*Cadmium (0,01 %)*<br>Sechswertiges Chrom (0,1 %)<br>*Hexavalent chromium (0,1 %)*<br>Polybromierte Biphenyle (PBB) (0,1 %)<br>*Polybrominated biphenyls (PBB) (0,1 %)*<br>Polybromierte Diphenylether (PBDE) (0,1 %)<br>*Polybrominated diphenyl ethers (PBDE) (0,1 %)*<br>Di(2-ethylhexyl)phthalat (DEHP) (0,1 %)<br>*Bis(2-ethylhexyl) phthalate (DEHP) (0,1 %)*<br>Butylbenzylphthalat (BBP) (0,1 %)<br>*Butyl benzyl phthalate (BBP) (0,1 %)*<br>Dibutylphthalat (DBP) (0,1 %)<br>*Dibutyl phthalate (DBP) (0,1 %)*<br>Diisobutylphthalat (DIBP) (0,1 %)<br>*Diisobutyl phthalate (DIBP) (0,1 %)* |

Das oben benannte Produkt erfüllt die derzeit gültigen Vorschriften der Richtlinie 2011/65/EU des Europäischen Parlaments und des Rates vom 8. Juni 2011 sowie der Delegierten Richtlinie 2015/863/EU der Kommission vom 31.03.2015.
*The above-mentioned product comply with the currently valid provisions of Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 and the Commission Delegate Directive 2015/863/EU of 31 March 2015.*

Baesweiler, den 19.03.2020
Ort und Datum
*Place and date*

ASHCROFT
Instruments GmbH
Max-Planck-Str. 1
D-52499 Baesweiler
Postfach 1120
D-52490 Baesweiler
Tel. 02401/8089 · Fax 02401/7027

Werksleiter
*Operations Manager*

## 12.3 Declaration of conformity model F5509 and F6509 inductive proximity switches

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Trust the shield.

**EU-Konformitätserklärung**
***EU-Declaration of Conformity***
*DIN EN ISO IEC 17050-1:2010*

**Ashcroft Instruments GmbH**
Max-Planck-Straße 1
52499 Baesweiler

erklärt in alleiniger Verantwortung, dass das mit CE gekennzeichnete Produkt
*declares in sole responsibility that the product marked with CE*

| | |
|---|---|
| Gerät: | Differenzdruckmanometer vom Typ F5509 mit induktivem Näherungsschalter |
| *Equipment:* | *Differential Pressure Gauge Type F5509 with inductive proximity switch* |

Kennzeichnung:
*Marking:*

CE Ex II 2G Ex h IIC T4 Gb
II 2D Ex h IIIC T95°C Db
Ta = -20°C to +60°C

| | |
|---|---|
| Herstellungsdatum:<br>*Date of manufacture:* | ab 04.11.2019<br>*from 04.11.2019* |

die grundlegenden Sicherheits- und Schutzanforderungen erfüllen, in Übereinstimmung mit den unten genannten Richtlinien und Normen. Die Konformitätsaussage bezieht sich auf die Konzeption und Fertigung des oben genannten Produktes.
*the fundamental safety and protection requirements passed in accordance with the guidelines and standards listed below. This declaration of conformity refers to the design and manufacture of the above product.*

| | | |
|---|---|---|
| Richtlinie<br>*Directive* | 2014/34/EU „Geräte und Schutzsysteme zur bestimmungs-gemäßen Verwendung in explosionsgefährdeten Bereichen"<br>*"equipment and protective systems intended for use in potentially explosive atmospheres"* | |
| Angewendete harmonisierte Normen<br>*Used harmonized Standards* | EN 60079-0:2014, EN 60079-31:2014, EN ISO 80079-36:2016, EN ISO 80079-37:2016 | |
| Benannte Stelle<br>*Notification Body* | Code number of notified Body: 0044<br>TÜV NORD CERT<br>Langemarkstrasse 20, 45141 Essen, Germany | |
| Hinterlegungsnummer:<br>*Dossier File No.:* | 35264112 | |
| EG- Baumusterprüfbescheinigung<br>*EC-Type-Certified* | Induktive Näherungsschalter<br>*inductive proximity switch* | PTB 99 ATEX 2219X |
| Richtlinie<br>*Directive* | (1)2014/68/EU „Druckgeräterichtlinie"<br>*„Pressure Equipment Directive"* | |
| Angewendete Prüfnormen:<br>*Used test standards:* | EN 837-1,2,3:1996, DIN 16003:2018 | |
| (1) PS >200 bar und V <0,1l, Artikel 4 Drucktragende Ausrüstungsteile, Modul A<br>*PS >200 bar and V <0,1l, Article 4 Pressure Accessories, Module A* | | |

**Ashcroft Instruments GmbH** Fon: +49 (0)2401-808-888 eMail: customer.service@ashcroft.com www.ashcroft.eu

ASHCROFT HEISE

ASHCROFT
Trust the shield.

# EU-Konformitätserklärung
## *EU-Declaration of Conformity*
*DIN EN ISO IEC 17050-1:2010*

| | |
|---|---|
| Richtlinie<br>*Directive* | 1907/2006 „Verordnungen zur Registrierung, Bewertung, Zulassung und Beschränkung chemischer Stoffe (REACH)<br>*"Regulations on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)"* |
| Besonders besorgniserregende Stoffe<br>Substances of Very High Concern | SVHC-Liste der Europäischen Chemikalienagentur ECHA<br>*SVHC List of the European Chemicals Agency ECHA*<br>http://echa.europa.eu/candidate-list-table |
| Keines unserer Produkte wird mit Chemikalien hergestellt, die als besonders besorgniserregend identifiziert wurden.<br>*None of our products are produced with chemicals identified as Substance of very high concern identification.* | |
| Richtlinie<br>*Directive* | 2011/65/EU „Richtlinie zur Beschränkung der Verwendung bestimmter gefährlicher Stoffe in Elektro- und Elektronikgeräten"<br>*"Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment"*<br>2015/863/EU „Änderung von Anhang II der Richtlinie 2011/65/EU"<br>*"Amending Annex II to Directive 2011/65/EU"* |
| Einstufung<br>*Classification* | Einstufung der Produkte nach Anhang II Punkt 9 der Richtlinie „Überwachungs- und Kontrollinstrumente einschließlich Überwachungs- und Kontrollinstrumente in der Industrie"<br>*Classification of the products according to Annex II, point 9 of the Directive "Monitoring and control instruments, including industrial monitoring and control instruments".* |
| Stoffbeschränkungen<br>*Substance restrictions* | Beschränkungen und Höchstkonzentrationen in homogenen Werkstoffen in Gewichtsprozent:<br>*Limitations and maximum concentrations in homogeneous materials in percent by weight:*<br><br>Blei (0,1 %)<br>*Lead (0,1 %)*<br>Quecksilber (0,1 %)<br>*Mercury (0,1 %)*<br>Cadmium (0,01 %)<br>*Cadmium (0,01 %)*<br>Sechswertiges Chrom (0,1 %)<br>*Hexavalent chromium (0,1 %)*<br>Polybromierte Biphenyle (PBB) (0,1 %)<br>*Polybrominated biphenyls (PBB) (0,1 %)*<br>Polybromierte Diphenylether (PBDE) (0,1 %)<br>*Polybrominated diphenyl ethers (PBDE) (0,1 %)*<br>Di(2-ethylhexyl)phthalat (DEHP) (0,1 %)<br>*Bis(2-ethylhexyl) phthalate (DEHP) (0,1 %)*<br>Butylbenzylphthalat (BBP) (0,1 %)<br>*Butyl benzyl phthalate (BBP) (0,1 %)*<br>Dibutylphthalat (DBP) (0,1 %)<br>*Dibutyl phthalate (DBP) (0,1 %)*<br>Diisobutylphthalat (DIBP) (0,1 %)<br>*Diisobutyl phthalate (DIBP) (0,1 %)* |
| Das oben benannte Produkt erfüllt die derzeit gültigen Vorschriften der Richtlinie 2011/65/EU des Europäischen Parlaments und des Rates vom 8. Juni 2011 sowie der Delegierten Richtlinie 2015/863/EU der Kommission vom 31.03.2015.<br>*The above-mentioned products comply with the currently valid provisions of Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 and the Commission Delegate Directive 2015/863/EU of 31 March 2015.* | |

Baesweiler, den 19.03.2020
Ort und Datum
*Place and date*

ASHCROFT
Instruments GmbH
Max-Planck-Str. 1
D-52499 Baesweiler
Postfach 1154 · Box 1120
D-52490 Baesweiler
Tel. 02401/8030 · Fax 02401/70227

Werksleiter
*Operations Manager*

## 12.4 EU design type test certification for inductive proximity switches of types SJ2-N

# 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 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:

**II 2 G EEx ia IIC T6**

Zertifizierungsstelle Explosionsschutz
By order:

Braunschweig, December 22, 1999

Dr.-Ing. U. Johannsmeyer
Regierungsdirektor

PHYSIKALISCH-TECHNISCHE BUNDESANSTALT 24

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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.

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

**Physikalisch-Technische Bundesanstalt**

**Braunschweig und Berlin**

(13) # SCHEDULE

(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 V | $U_i$ = 16 V | $U_i$ = 16 V | $U_i$ = 16 V |
| $I_i$ = 25 mA | $I_i$ = 25 mA | $I_i$ = 52 mA | $I_i$ = 76 mA |
| $P_i$ = 34 mW | $P_i$ = 64 mW | $P_i$ = 169 mW | $P_i$ = 242 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 intiators are shown in the table:

# Physikalisch-Technische Bundesanstalt

**Braunschweig und Berlin**

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

| types | $C_i$ | $L_i$ | type 1 | | | type 2 | | | type 3 | | | type 4 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | maximum permissible ambient temperature in °C for application in temperature class | | | | | | | | | | | |
| | [nF] | [µH] | 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

1. 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.
2. 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.
3. 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..
4. 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

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# Physikalisch-Technische Bundesanstalt

**Braunschweig und Berlin**

## 1. SUPPLEMENT

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

## to EC-TYPE-EXAMINATION CERTIFICATE PTB 99 ATEX 2219 X

## (Translation)

Equipment: Slot-type initiators, types SJ... and SC...

Marking: Ⓔx **II 2 G EEx ia IIC T6**

Manufacturer: Pepperl + Fuchs GmbH

Address: Königsberger Allee 87, 68307 Mannheim, Germany

Description of supplements and modifications

The slot-type initiators of type series SJ... and SC... listed below may in future also be used in hazardous areas where equipment of catagory-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 slot-type initiators listed below.

| | |
|---|---|
| SC2-N0... | SJ5-...-N... |
| SC3,5-N0-Y... | SJ5-K... |
| SC3,5...-N0... | SJ10-N... |
| SJ2-N... | SJ15-N... |
| SJ3,5-...-N... | SJ30-N... |

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

Ⓔx **II 1 G EEx ia IIC T6**

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

# Physikalisch-Technische Bundesanstalt

**Braunschweig und Berlin**

## 1. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 99 ATEX 2219 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 V | $U_i$ = 16 V | $U_i$ = 16 V | $U_i$ = 16 V |
| $I_i$ = 25 mA | $I_i$ = 25 mA | $I_i$ = 52 mA | $I_i$ = 76 mA |
| $P_i$ = 34 mW | $P_i$ = 64 mW | $P_i$ = 169 mW | $P_i$ = 242 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 intiators 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 |
| SC2-N0... | 150 | 150 | 55 | 67 | 95 | 48 | 60 | 88 | 23 | 35 | 63 | 6 | 18 | 46 |
| SC3,5-N0-Y... | 150 | 150 | 55 | 67 | 95 | 48 | 60 | 88 | 23 | 35 | 63 | 6 | 18 | 46 |
| SC3,5...-N0... | 150 | 150 | 56 | 68 | 96 | 49 | 61 | 89 | 28 | 40 | 68 | 13 | 25 | 53 |
| SJ2-N... | 30 | 100 | 56 | 68 | 96 | 49 | 61 | 89 | 28 | 40 | 68 | 13 | 25 | 53 |
| SJ3,5-...-N... | 50 | 250 | 56 | 68 | 96 | 49 | 61 | 89 | 28 | 40 | 68 | 13 | 25 | 53 |
| SJ5-...-N... | 50 | 250 | 56 | 68 | 96 | 49 | 61 | 89 | 28 | 40 | 68 | 13 | 25 | 53 |
| SJ5-K... | 50 | 550 | 55 | 67 | 95 | 48 | 60 | 88 | 25 | 37 | 65 | 9 | 21 | 49 |
| SJ10-N... | 50 | 1000 | 55 | 67 | 95 | 48 | 60 | 88 | 25 | 37 | 65 | 9 | 21 | 49 |
| SJ15-N... | 150 | 1200 | 55 | 67 | 95 | 48 | 60 | 88 | 25 | 37 | 65 | 9 | 21 | 49 |
| SJ30-N... | 150 | 1250 | 55 | 67 | 95 | 48 | 60 | 88 | 25 | 37 | 65 | 9 | 21 | 49 |

Test report: PTB Ex 03-23133

Zertifizierungsstelle Explosionsschutz
By order:

Dr.-Ing. U. Johannsmeyer
Regierungsdirektor

Braunschweig, October 29, 2003

Sheet 2/2

# Physikalisch-Technische Bundesanstalt

**Braunschweig und Berlin**

## 2. SUPPLEMENT

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

## to EC-TYPE-EXAMINATION CERTIFICATE PTB 99 ATEX 2219 X

## (Translation)

Equipment: Slot-type initiators, types SJ... and SC...

Marking: Ⓔx **II 1 G EEx ia IIC T6**

Manufacturer: Pepperl + Fuchs GmbH

Address: Lilienthalstraße 200, 68307 Mannheim, Germany

Description of supplements and modifications

In the future the slot-type initiators, types SJ... and SC... may also be manufactured and operated according to the test documents listed in the assessment and test report.

The modifications concern the application of alternative casting compounds and materials for the type label as well as a different enclosure material and additional types of LEDs. The manufacturer´s address changes as given above. Furthermore, the test specification is adapted to the current state of the standards which causes an alteration of the marking.

The marking will read in future:

Ⓔx **II 1 G Ex ia IIC T6** or Ⓔx **II 2 G Ex ia IIC T6**

The "Special Conditions" and all further specifications of the EC-type examination certificate including the 1st supplement apply without changes also to this 2nd supplement.

Applied standards

| | | |
|---|---|---|
| **EN 60079-0:2006** | **EN 60079-11:2007** | **EN 60079-26:2007** |

Assessment and test report: PTB Ex 11-20276

ZSEx1010e.dot

Zertifizierungssektor Explosionsschutz
On behalf of PTB:

Braunschweig, November 25, 2011

Dr.-Ing. U. Johannsmeyer
Direktor und Professor

Sheet 1/1

Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin
Nationales Metrologieinstitut

# 3. SUPPLEMENT

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

## to EC-TYPE-EXAMINATION CERTIFICATE PTB 99 ATEX 2219 X

## (Translation)

Equipment: Slot-type inductive initiators, types SJ... and SC...

Marking: **II 1 G Ex ia IIC T6 or II 2 G Ex ia IIC T6**

Manufacturer: Pepperl+Fuchs GmbH

Address: Lilienthalstraße 200, 68307 Mannheim, Germany

Description of supplements and modifications

The modifications concern the consideration of the current state of the applied standards and – resulting from this – the marking of the slot-type inductive initiators of types SJ... and SC... as well as the internal construction (inclusion of further alternative casting resin materials).

The "electrical data", the "special conditions" as well as all other specifications apply without changes.

In the future the marking will read:

**II 1 G Ex ia IIC T6...T1 Ga or II 2 G Ex ia IIC T6...T1 Gb**

Applied standards

**EN 60079-0:2012, EN 60079-11:2012, EN 60079-26:2007**

Test report: PTB Ex 15-24247

ZSEx10101e b

Konformitätsbewertungsstelle, Sektor Explosionsschutz
On behalf of PTB:

Braunschweig, April 15, 2015

Dr.-Ing. U. Johannsmeyer
Direktor und Professor

Sheet 1/1

Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin
Nationales Metrologieinstitut

# 4. SUPPLEMENT

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

## to EC-TYPE-EXAMINATION CERTIFICATE PTB 99 ATEX 2219 X

## (Translation)

Equipment: Slot-type initiators, types SL... and SC...

Marking: **II 1 G Ex ia IIC T6... T1 Ga or II 2 G Ex ia IIC T6...T1 Gb**

Manufacturer: Pepperl+Fuchs GmbH

Address: Lilienthalstraße 200, 68307 Mannheim, Germany

Description of supplements and modifications

The modifications concern the application of the new state of the standard EN 60079-0, the internal design as well as the extension of the EC-type examination certificate by type of protection Ex ia IIIC for the slot-type initiators of types SL... and SC... .

Resulting from this – the marking, the "Electrical Data" as well as the "Special Conditions" for the slot-type initiators of types SL... and SC... change.

In the future the marking will read:

**II 1 G Ex ia IIC T6... T1 Ga or II 2 G Ex ia IIC T6...T1 Gb**

**resp.**

**II 1 D Ex ia IIIC T135°C Da**

ZSEx10101e b

Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin
Nationales Metrologieinstitut

## 4. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 99 ATEX 2219 X

Electrical data

Evaluation and supply circuit ..... only for connection to certified intrinsically safe circuits

Ex ia IIC/IIB for EPL Ga

or Ex ia IIIC for EPL Da

or Ex ia IIC/IIB or Ex ib IIC/IIB for EPL Gb

or Ex ia IIIC or Ex ib IIIC for EPL Db

Maximum values:

| type 1 | type 2 | type 3 | type 4 |
|---|---|---|---|
| $U_i$ = 16 V | $U_i$ = 16 V | $U_i$ = 16 V | $U_i$ = 16 V |
| $I_i$ = 25 mA | $I_i$ = 25 mA | $I_i$ = 52 mA | $I_i$ = 76 mA |
| $P_i$ = 34 mW | $P_i$ = 64 mW | $P_i$ = 169 mW | $P_i$ = 242 mW |

Table 1

For relationship between type of connected circuit, maximum ambient temperature for the application as EPL-Ga equipment and temperature class as well as the effective internal reactances for the individual types of slot-type initiators, reference is made to the following Table 2:

| 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 |
| SC2-N0... | 150 | 150 | 55 | 67 | 95 | 48 | 60 | 88 | 23 | 35 | 63 | 6 | 18 | 46 |
| SC3,5-N0-Y... | 150 | 150 | 55 | 67 | 95 | 48 | 60 | 88 | 23 | 35 | 63 | 6 | 18 | 46 |
| SC3,5...-N0... | 150 | 150 | 56 | 68 | 96 | 49 | 61 | 89 | 28 | 40 | 68 | 13 | 25 | 53 |
| SJ2-N... | 30 | 100 | 56 | 68 | 96 | 49 | 61 | 89 | 28 | 40 | 68 | 13 | 25 | 53 |
| SJ3,5-...-N... | 50 | 250 | 56 | 68 | 96 | 49 | 61 | 89 | 28 | 40 | 68 | 13 | 25 | 53 |
| SJ5-...-N... | 50 | 250 | 56 | 68 | 96 | 49 | 61 | 89 | 28 | 40 | 68 | 13 | 25 | 53 |
| SJ5-K... | 50 | 550 | 55 | 67 | 95 | 48 | 60 | 88 | 25 | 37 | 65 | 9 | 21 | 49 |
| SJ10-N... | 50 | 1000 | 55 | 67 | 95 | 48 | 60 | 88 | 25 | 37 | 65 | 9 | 21 | 49 |
| SJ15-N... | 150 | 1200 | 55 | 67 | 95 | 48 | 60 | 88 | 25 | 37 | 65 | 9 | 21 | 49 |
| SJ30-N... | 150 | 1250 | 55 | 67 | 95 | 48 | 60 | 88 | 25 | 37 | 65 | 9 | 21 | 49 |

Table 2

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## 4. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 99 ATEX 2219 X

For relationship between type of connected circuit, maximum ambient temperature for the application as EPL-Gb equipment and temperature class as well as the effective internal reactances for the individual types of slot-type initiators, reference is made to the following Table 3:

| 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 |
| 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 |

Table 3

For relationship between type of connected circuit, maximum ambient temperature for the application as EPL-Da or Db equipment as well as the effective internal reactances for the individual types of slot-type initiators, reference is made to the following Table 4:

| Types | $C_i$ [nF] | $L_i$ [µH] | Type 1 | Type 2 | Type 3 | Type 4 |
|---|---|---|---|---|---|---|
| | | | Maximum permissible ambient temperature in °C | | | |
| SC2-N0... | 150 | 150 | 100 | 100 | 75 | 54 |
| SC3,5-N0-Y... | 150 | 150 | 100 | 100 | 75 | 54 |
| SC3,5...-N0... | 150 | 150 | 100 | 100 | 89 | 74 |
| SJ1,8-N-Y... | 30 | 100 | 100 | 100 | 78 | 57 |
| SJ2,2-N... | 30 | 100 | 100 | 100 | 78 | 57 |
| SJ2-N... | 30 | 100 | 100 | 100 | 78 | 57 |
| SJ3,5-...-N... | 50 | 250 | 100 | 100 | 89 | 74 |
| SJ3,5-H... | 50 | 250 | 100 | 100 | 89 | 74 |
| SJ5-...-N... | 50 | 250 | 100 | 100 | 89 | 74 |
| SJ5-K... | 50 | 550 | 100 | 100 | 82 | 63 |
| SJ10-N... | 50 | 1000 | 100 | 100 | 82 | 63 |
| SJ15-N... | 150 | 1200 | 100 | 100 | 82 | 63 |
| SJ30-N... | 150 | 1250 | 100 | 100 | 82 | 63 |

Table 4

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## 4. SUPPLEMENT TO EC-TYPE-EXAMINATION CERTIFICATE PTB 99 ATEX 2219 X

Special conditions for safe use

1. For the application within a temperature range of -60 °C to -20 °C the slot-type initiators, types SL... and SC... shall be protected against damage due to impact by mounting into an additional housing.
2. The connection facilities of the slot-type initiators, types SL... and SC...shall be installed as such that a minimum degree of protection of IP2X in accordance with EN 60529 is met.
3. For relationship between type of the connected circuit, maximum permissible ambient temperature and temperature class as well as the effective internal reactances for the individual types of slot-type initiators, reference is made to tables 1, 2 and 3 given in this 4. supplement to EC-type-examination certifcate PTB 99 ATEX 2219 X.
4. Inadmissible electrostatic charge of the plastic enclosures shall be avoided for the application of the following types of slot-type initiators according to the explosion groups and equipment categories specified in the following Table 5. When the respective types of slot-type initiators are applied in potentially explosive gas atmospheres a corresponding warning note shall be affixed on the slot-type initiators or near the slot-type initiators respectively. When these are applied in potentially explosive dust atmospheres the corresponding notes given in the operating instructions manual shall be considered.

| Type | Group II (1 G) | Group II (2 G) | Group III (1D or 2D) |
|---|---|---|---|
| SJ5-K... | IIC | - | III |
| SJ10-N... | IIC | - | III |
| SJ15-N... | IIC | - | III |
| SJ30-N... | IIA/IIB/IIC | IIC | III |
| SC3,5...-N0... | - | - | III |
| SC3,5-N0-Y... | - | - | III |
| SJ1,8-N-Y... | - | - | III |
| SJ3,5-...-N... | - | - | III |
| SJ5-...-N... | - | - | III |

Table 5

Applied standards

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

Test report: PTB Ex 16-25161

Konformitätsbewertungsstelle, Sektor Explosionsschutz
On behalf of PTB:

Braunschweig, February 3, 2016

Dr.-Ing. U. Johannsmeier
Direktor und Professor

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