SECURITON

Detonation Flame Arrester DFA-25-x

Technical Description

Impressum

Notice

This document, **TD 004 001**, is valid only for the product described in Chapter 1.

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Some words in this documentation are highlighted in blue. These are terms and designations which are the same in all languages and are not translated.

Users are encouraged to contact the editor/publisher if there are statements which are unintelligible, misleading, incorrect, or if there are errors.

Notice

Applicability for production version and software version

The following documentation is applicable only to the **Detonation Flame Arrester** with the following production version and software version:

Production version
ab 100112

Safety information

Provided the product is deployed by trained and qualified persons in accordance with documentation TD 004 001i and the hazard, safety and general information in this technical description is observed, there is no danger to persons or property under normal conditions and when used properly.
National and state-specific laws, regulations and guidelines must be observed and adhered to in all cases.

Below are the designations, descriptions and symbols of general, danger, and safety information as found in this document.

Danger

If the "Danger" notice is not properly observed, the product and any other system parts may present a hazard for persons and property, or the product and other system parts may be damaged to the extent that malfunctioning results in danger to persons and property.

- Description of which dangers can occur
- Measures and preventative actions
- How dangers can be averted
- Other safety-relevant information

Warning

The product may be damaged if the warning information is not heeded.

- Description of which damage can occur
- Measures and preventative actions
- How dangers can be averted
- Other safety-relevant information

Notice

The product may malfunction if this notice is not observed.

- Description of the notice and which malfunctions can be expected
- Measures and preventative actions
- Other safety-relevant information

Environmental protection / recycling

Neither the product nor product components present a hazard to the environment provided they are handled properly.

- Description of parts for which there are environmental issues
- Description of how devices and their parts have to be disposed of in an environmentally-friendly way
- Description of the recycling possibilities

Document history

First issue Date 08.02.1999

Index „h“ Date 10.01.2012

Most important changes compared with first issue:

Section	New (n) / changed (c) / deleted (d)		What / Reason
• 1.1	n	Explosion group	Supplement
• 5	n	Demensioned drawing	New Dimension drawing
• 8	n	Addition housing SecuriRAS® ASD 535	Supplement

Index „i“ Date 02.01.2014

Most important changes compared with first issue:

Section	New (n) / changed (c) / deleted (d)		What / Reason
• 6	n	Notices on suciton pipe in explosive areas	Image grounding clamp inserted
• 7.1	c	Monitoring of rooms	Correction
• 13	c	Declaration of conformity	Update
• 15	n	List of Figures	Supplement
• All	c	Adapted page format documentation	Adaptation

Table of contents

1 Field of application

In the case of ignition of gas or product vapour/air mixtures in closed spaces - containers, apparatus and pipes - so-called volume or pipe deflagrations or detonations can occur depending on the operating conditions present, i.e. the type and concentration of the ignitable mixture, starting pressure and temperature, and run-up distance for the flame front. These combustion processes are differentiated in particular by the magnitude of their flame propagation speed and the combustion pressure occurring and thus in their flame penetration capabilities.

The Detonation Flame Arrester PROTEGO DA-G is a design which absolutely guarantees flame arresting protection against pipe deflagrations and stable detonations of gas or product vapour/air mixtures of explosion group IIA, IIB1 and IIB3, and IIB and IIC in all ignitable concentration ranges up to +60°C and an operating pressure of up to 1.1 bar a ccording to the type examination certificates.

The Detonation Flame Arrester PROTEGO DA-G is laid out bidirectionally, i.e. flame penetration is prevented on either side in the case of a potential ignition source on both sides of the upstream and downstream systems.

This Detonation Flame Arrester is designed and tested in accordance with the new European Standard EN 12874 - Flame arresters - as a protection system in accordance with the European Explosion Protection Directive 94/9/EC (ATEX 100a).

The EC type examination certificates of the European designated bodies are available. The test certificates of other certification institutions (e.g. Factory Mutual, FTZU, etc.) are partly available or may be obtained additionally in the case of an order.

Depending on the design type – see exact type designation – the flame arresting capability is guaranteed against pipe deflagrations or stable detonations of product vapour/ or gas/air mixtures of the explosion groups IIA (standard gap width > 0.9mm), IIB1 to IIB3 (standard gap width ≥ 0.65 mm) and IIB and IIC (standard gap width ≥ 0.5 mm or < 0.5 mm).

The detonation flame arresters of the series PROTEGO DA-G are used under operating conditions where the occurrence of a stabilised burning of the mixture within the arrester, i.e. at the flame arrester, can be largely excluded. This is ensured by the fact that the pipe between the installation location of the arrester and possible a ignition source has been planned at a length which always leads to a startup of sufficiently accelerated deflagrations and detonations but not to a stabilised burning in the arrester. **Therefore, a minimum pipe length of *1.0 m*must be kept between the installation location of the Detonation Flame Arrester and a possible ignition source (aspirating smoke detector).**

The nominal widths of suction pipes where the Detonation Flame Arrester PROTEGO DA-G has been installed may not be larger than the nominal connection width of the devices. Integration in suction pipes with smaller nominal widths is nevertheless permitted.

When using the devices, sufficient corrosion resistance against the present product vapour or gas/air mixtures must be ensured. This applies to integrated flame filters in particular. If necessary, designs in suitable stainless steel quality must be used.

For the approval of a Detonation Flame Arrester in a fire detection and alarm system, the declarations of conformity are provided on the basis of EC type examination certificates and the ATEX 100a or other test certificates.

If there are usage possibilities for these flame arresters which lie beyond the requirements of ATEX 110a, (e.g. higher operating temperatures and pressures), this is particularly confirmed under paragraph 18 of the EC type examination certificate.

The special conditions mentioned in the respective test certificates – e.g. according to the annex to the EC type examination certificates – have been considered in these operating instructions.

1.1 Explosion groups

Explosion-protected equipment is divided into two groups:

Equipment group I: applies to equipment used in underground mining operations and their above-ground systems which may be at risk from methane and/or combustible dusts.

Equipment group II: applies to equipment used in normal areas which may be at risk from an explosive atmosphere. For the group II equipment, a further subdivision is necessary as the various gases possess different ignition energies (II A, II B, II C).

The materials in group II are further subdivided into the following according to the properties of the explosive atmosphere for which they are defined: IIA, IIB, IIC. An explosive atmosphere with the classification IIC is the easiest to ignite, one with IIA is the most difficult. Therefore, for example, equipment with an approval for IIC can also be used for IIB and IIA.

➔ **Depending on the explosive atmosphere present, the appropriate Detonation Flame Arrester DFA-1, DFA-2 or DFA-3 must be used.**

The degree of hardness increases from equipment group IIA to IIC, i.e. equipment for group IIC also meets the requirements for groups IIA and IIB insofar as the requirements of the maximum surface temperature has been met for these equipment groups.

Warning

The Detonation Flame Arresters may only be used exclusively in areas where explosive gas mixtures may occur, e.g. field of application EX category 2G (Zone 1) and 3G (Zone 2) in accordance with the current ATEX provisions.

2 Construction

The Detonation Flame Arrester is composed of the upper and lower parts of the housing with suction pipe connection of DN 20 (d=25mm), integrated flame filters and housing sealing and screws.

3 Function

In normal mode, the mixtures may flow in both directions through the detonation flame arresters.

When rapidly accelerated pipe deflagrations or especially stable detonations enter the detonation flame arresters, the combustion pressures and flame propagation speed are reduced by the housing extension and the flames are extinguished by the flame arrester. Due to the relatively small nominal connection widths, a detonation shock absorber can be forgone for these detonation flame arresters; instead, the flame arrester has been reinforced so that it both absorbs the detonation's ram pressure and extinguishes the detonation flames. The flame arrester has also been adapted to the corresponding flash-back capability of the explosive mixtures by the number and gap width of flame filters.

Due to the symmetry of the detonation flame arresters (bidirectional mode of action), the flame arresting capability is guaranteed from both sides in the same manner.

4 Project planning notice

The Detonation Flame Arrester is used *exclusively* in connection with the aspirating smoke detector SecuriRAS® ASD 535 incl. the smoke sensor SSD 535-2. If an ASD pipeflow project plan underlies this, this information is obligatory. Furthermore, the following special project guidelines listed must be *strictly* observed and kept.

The following limit values in the design of the suction pipe must be strictly observed:

Pipe Ø	Shape	Length of suction pipe (furthest suction opening)	Number of suction openings (max.)
Ø 25 mm	I	50 m	10
Ø 25 mm	U / T	30 m	10

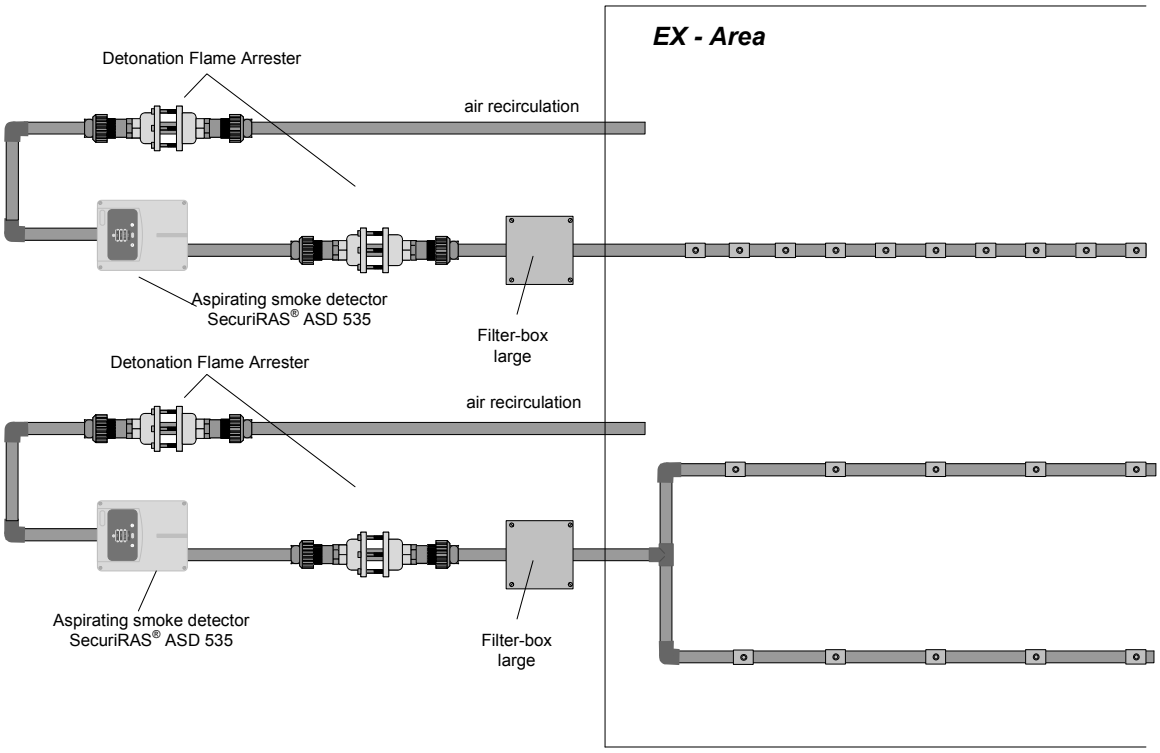

Abb. 1: Possible installation patterns of the suction pipes in the explosive area

Notice

For personal safety, the evaluation unit of the aspirating smoke detector must be ***stringently*** monitored in an additional housing as a detonation in the area of the aspirating smoke detector cannot be completely excluded. Due to the low suction volume (approx. 3m³/hour) it can however be assumed that only a low explosive concentration is present in the aspirating smoke detector.

The corresponding hole diameters can be taken from the following table depending on the number of suction openings per suction branch.

!! applies to all construction types !!												
Number of suction openings per suction branch	**Hole diameter in mm for the number of suction openings:**											
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
2	4,0	5,0										
3	4,0	4,0	5,0									
4	3,5	3,5	4,0	5,0	-	-	-	-	-	-	-	-
	4,0	4,0	4,0	5,0	-	-	-	-	-	-	-	-
5	3,5	3,5	3,5	4,0	5,0	-	-	-	-	-	-	-
	4,0	4,0	4,5	5,0	6,5	-	-	-	-	-	-	-
6	2,5	2,5	2,5	2,5	3,0	5,0	-	-	-	-	-	-
7	2,5	2,5	2,5	2,5	2,5	2,5	5,0	-	-	-	-	-
8	2,5	2,5	2,5	2,5	2,5	2,5	2,5	5,0	-	-	-	-
9	2,5	2,5	2,5	2,5	2,5	2,5	2,5	2,5	5,0	-	-	-
10	2,0	2,0	2,0	2,5	2,5	2,5	2,5	2,5	3,0	7,0	-	-

Notice

So that the correct functioning of the airflow monitoring is guaranteed (optimal working point of the ventilator), the aspirating smoke detector SecuriRAS® ASD 535 requires a certain minimum suction air quantity. Therefore, for aspirating smoke detectors with a low number of suction openings (2-3 per piece), a larger pipe diameter should be selected.

4.1 Revision opening:

In applications with suction openings that are difficult to access, a revision opening can be installed in the suction pipe directly after the detector box if required. The revision opening should be drilled with a hole diameter of 3.5 mm. The distance in the evaluation unit must be at least 0.5 m.

If necessary, the revision opening can also be carried out using the specially designed "revision clip" (clip wthout a hole).

The following notices should be observed::

Notice

The following principles apply for the installation of a revision opening:

- The revision opening should only be installed if necessary, e.g. where the normal suction openings can only be accessed with difficulty.
- The revision opening is not included in the calculations.
- The revision openinng is exclusively for maintenance purposes, for testing alarm of the aspirating smoke detector.
- The revision opening should be locked in normal mode (no maintenance) with an adhesive band or with the "revision clip".
- All commissioning work at the airflow monitoring (original reset) should be carried out with the revision opening closed.

5 Dimensioned drawing

The aspirating smoke detector must be assembled outside of the defined EX area, i.e. the assembly location may not be within the explosive area. The aspirated air should be brought back to the EX area. It should be ensured that a Detonation Flame Arrester is also installed in the air return pipe.

Any guidelines for the wall entrances of the suction pipe should be settled and observed on site.

The Detonation Flame Arrester must be installed at a minimum distance of ***1m*** from the ignition source (aspirating smoke detector) **outside** the EX area.

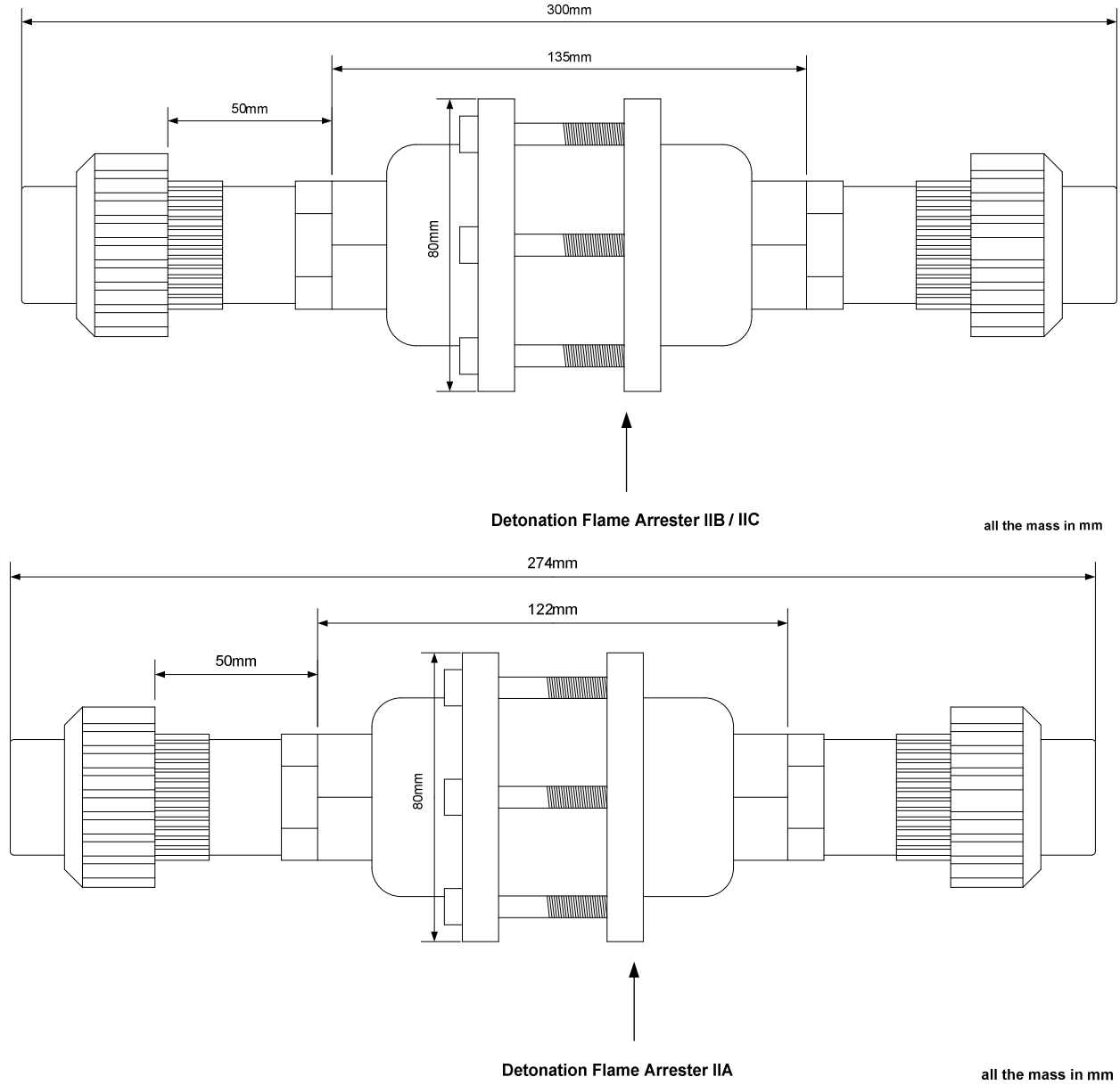

Abb. 2: Detonation Flame Arrester dimensions

6 Notices on suction pipe in explosive areas

In explosive spaces, the suction pipe **must** generally be made from conductive material to **prevent electrostatic charge**. The use of the following suction pipe material is recommended:

- stainless steel pipe d=22 mm (part number: 0.101134)

- copper pipe d=22 mm (part number: 0.101187)

When using PVC or ABS pipes d=25 mm, these must be painted with a solvent-free conductive paint (e.g. **ORMECON® L 5008 W**).

The suction pipe in explosive areas must be earthed in principle (grounding clamp)!

Abb. 3: Earthing clamp for earthing of the suction, d=22mm

7 Application examples

7.1 Monitoring of rooms

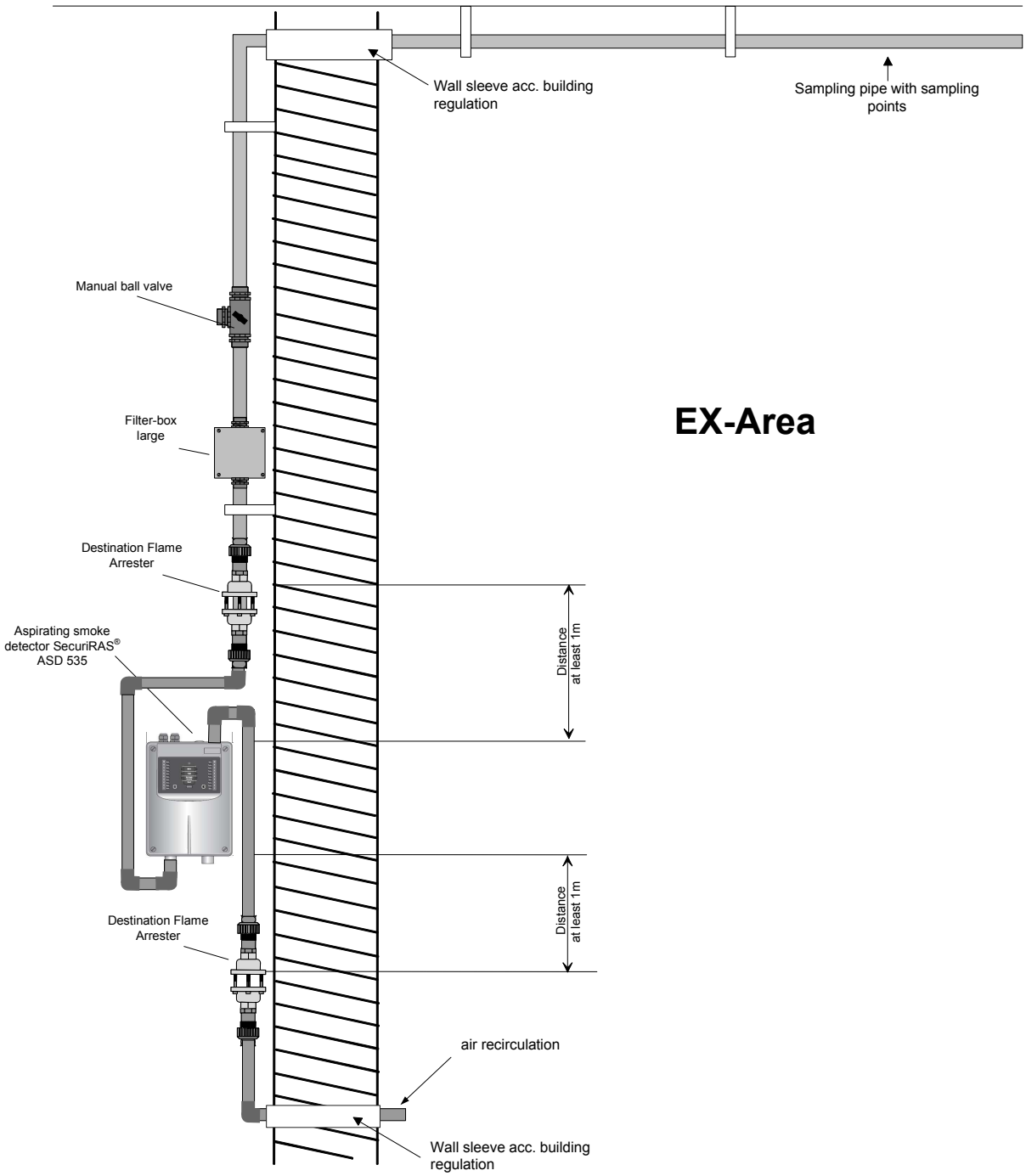

Abb. 4: Monitoring hazardous areas with aspirating smoke detector SecuriRAS® ASD 535

(The aspirating smoke detector SecuriRAS® ASD 535 should be installed in an additional housing!!!)

7.2 Monitoring of ventilation ducts

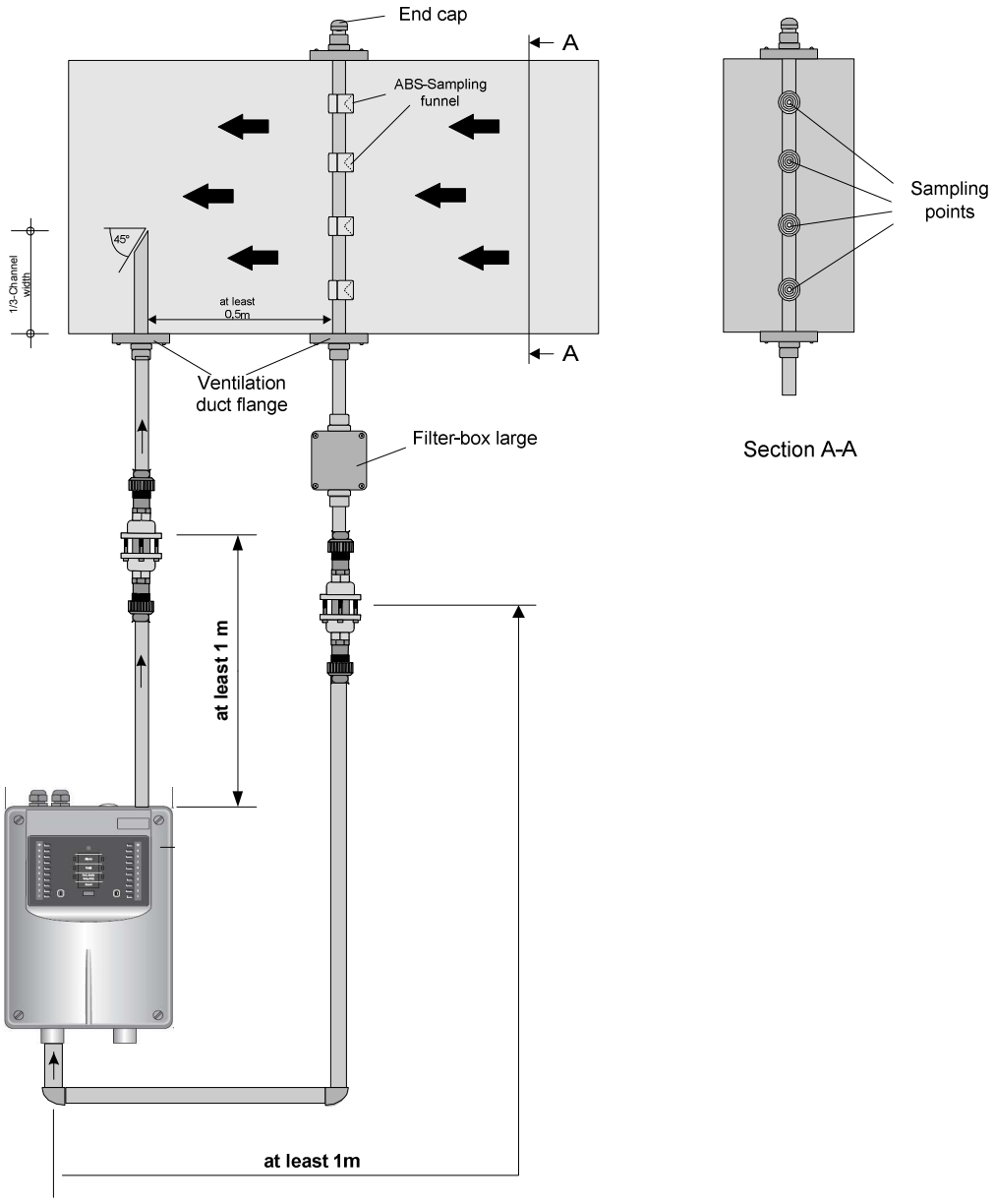

Abb. 5: Ventilation duct monitoring with aspirating smoke detector SecuriRAS® ASD 535

(The aspirating smoke detector SecuriRAS® ASD 535 should be installed in an additional housing!!!)

8 Additional housing SecuriRAS® ASD 535

Because the detonation of the aspirating smoke detector SecuriRAS®ASD 535 is not completely excluded, we recommend assembling the evaluation unit in an additional housing. Personal safety in the environment of the aspirating smoke detector is thereby ensured. The additional housing SecuriRAS®ASD 535 has already been prepared for the integration of the aspirating smoke detector.

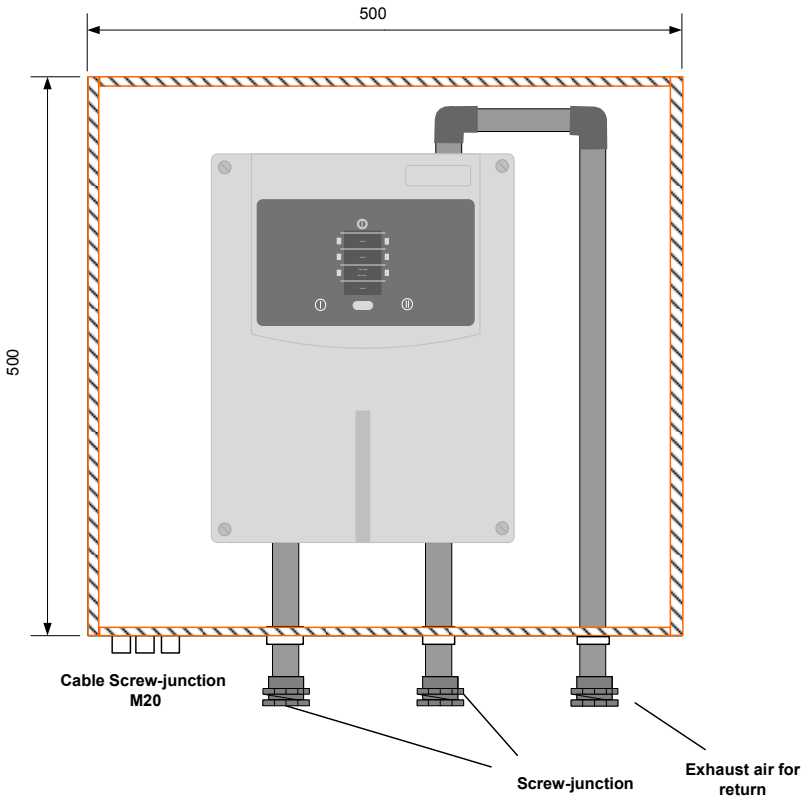

Abb. 6: Additional housing SecuriRAS® ASD 535

9 Assembly and commissioning

The detonation flame arresters PROTEGO DA-G are delivered ready to install and may be installed immediately – once any protective transport packaging (protection caps at the connection ends) have been removed – provided that no visible transport damage can be identified. They are installed in the existing suction pipe using screws attached to the detonation flame arrester.

Notice

- The commissioning instructions for the aspirating smoke detector
- SecuriRAS® ASD 535 must be observed.
- Switch setting 'C31 and C32' or ASD Pipeflow specification must be set.
- In applications with a polluted environment, the airflow monitoring should be adjusted depending on the level of pollution.
- In applications with high air turbulences, under certain circumstances an increase in the delay time of the air-flow monitoring is required (standard 300 sec.)

The type designation, nominal diameter, marks and registration number of the EC type examination certificate or other test certificates, explosion group, CE mark (or other approval markings), production number and any other required information according to the test certificates are engraved onto the housing (A) of the Detonation Flame Arrester or can be taken from the nameplate.

The installation position of the detonation pipe flame arrester is optional for the safety function.

Caution:

When installing the detonation flame arresters PROTEGO DA-G, the following tests are absolutely necessary:

1. **There must be a declaration of conformity**

2. **The connected suction pipe must feature the stated minimum distance of*1m* from the ignition source (aspirating smoke detector) to avoid stablised burning so that the Detonation Flame Arrester PROTEGO DA-G can be used – without a temperature sensor. Generally, conductive material must be used for the suction pipe (see point 6 of this documentation).**

3. **The nominal diameters of the connected pipelines may not be greater than those of the detonation flame arresters .**

4. **The explosion group of the products or mixtures that may be present in the operation must match the information on the nameplate or the declaration of conformity.**

5. **The max. permitted operating pressure of 1.1 bar absolute may not be exceeded on the side of the potential ignition source (aspirating smoke detector) unless the nameplate or conformity declarations reveal a higher operating pressure.**

6. **The operating temperature of the mixture may not exceed +60℃.**

7. **After the commissioning of the aspirating smoke detector SecuriRAS® ASD 535, the responding characteristics of the systems of every last suction opening per suction pipe branch should be tested using a smoke admission flow.**

   A special smoke tester suitable for use in explosive areas should be used for this review. Smoke is generated for this by means of a chemical reaction. The higher the air's humidity content, the clearer and more visible the sulfuric acid aerosol becomes.

   - **Smoke tester EX (part number: C.102716)**

     - Temperature: 0℃ to 40℃
     - Humidity: 3 to 50mg/L (corresponds to 100% RH at 40℃)

10 Maintenance and servicing

Maintenance work should in principle only be carried out when the aspirating smoke detector has been switched off. Likewise, the work may only be carried out when paying careful attention to the respective valid safety instructions and only by specially trained personell.

Furthermore, it must be checked before starting maintenance work whether the gas or product vapour/air mixture may be damaging to health, whereby special safety measures are required (e.g. use of breathing devices).

According to the valid regulations, the equipment should be maintained at regular intervals (quarterly), i.e. all elements influencing the function should be tested for flawless quality according to the following information, cleaned and/or replaced.

Caution – (observe in particular for repair and maintenance work):

- **If a flashback - deflagration, detonation or stabilised burning - has been registered, the entire equipment must be tested and the flame arrester must definitely be renewed.**
- **In principle, only use original spare parts.**
  For the correct quality, all the information from the nameplate – particularly the complete type designation – is necessary.
- **The gap width of any replacement flame filters to be used must match the data from the spare parts list.**
- **In the case of improper assembly, commissioning or maintenance, the manufacturer's warranty services become void.**

11 Technical data

Features		
Introduction	2x transfer to PVC pipe, d=25	mm
Housing material	Stainless steel	
Sealing	PTFE	
Flame filter	Stainless steel, material 1.4571	
Dimensions (H x W x D)	1000 x 730 x 80	mm
Weight	approx. 8	kg
Approval		
VdS	G 208154	
Building product approval	0768-CPD-20600	
Type examination certificate DFA 25-1	BAM 01ATEX 0005X	
Type examination certificate DFA 25-2	BAM 01ATEX 0006X	
Type examination certificate DFA 25-3	BAM 01ATEX 0007X	

12 Part numbers

Abbreviated designation		Type No. SECURITON
Aspirating smoke detector SecuriRAS® ASD 535-1		5000623-0101
Aspirating smoke detector SecuriRAS® ASD 535-2		5000623-0102
Aspirating smoke detector SecuriRAS® ASD 535-3		5000623-0103
Aspirating smoke detector SecuriRAS® ASD 535-4		5000623-0104
Smoke sensor SSD 535-1		5000613-0101
Smoke sensor SSD 535-2		5000613-0102
Smoke sensor SSD 535-3		5000613-0103
Filter-box large d=25	FBL 25 PC	0.100793
Spare filter mat block, fine stage		0.101132
Filter-box extra large	FBX 25	0.101196
Spare filter mat block fine stage		0.101132
Manual ball valvePVC	MV 25 PVC	21.544.20D25
Manual ball valve ABS	MV 25 ABS	0.100862
Additional housing SecuriRAS® ASD 535		50-1200001-01-01
Grounding clamp		C.103310
Detonation Flame Arrester IIA	DFA 25-1	50-0500085-01-01
Detonation Flame Arrester IIB	DFA 25-2	50-0500084-01-01
Detonation Flame Arrester IIC	DFA 25-3	0.101557

Subject to technical modification!

13 Declaration of conformity

ATEX KONFORMITÄTSERKLÄRUNG
ATEX DECLARATION OF CONFORMITY

CE

Gerät **Device**	DETONATIONSROHRSICHERUNG IN-LINE DETONATION FLAME ARRESTER
Typ **Type**	PROTEGO® DA-G-DN-IIA-P1,1 PROTEGO® DA-G-T-DN-IIA-P1,1 PROTEGO® DA-G-TB-DN-IIA-P1,1

Anschlussnennweite Flange connection	
DN [mm]	DN [inch]
15	½"
20	¾"
25	1"
32	1 ¼"
40	1 ½"
50	2"
80	3"

Hersteller
Manufacturer
Braunschweiger Flammenfilter GmbH
Industriestraße 11
38110 Braunschweig
Germany

Wir erklären in alleiniger Verantwortung, dass die o.g. Schutzsysteme den Wesentlichen Gesundheits- und Sicherheitsanforderungen im Anhang II und Anhang IV der Richtlinie 94/9/EG entsprechen, gemäß der EG-Baumusterprüfbescheinigungs-Nr. IBExU10ATEX2147X ausgestellt durch IBExU – Institut für Sicherheitstechnik GmbH, Freiberg – Benannte Stelle, Kenn-Nr. 0637, in Übereinstimmung mit Artikel 9 der Richtlinie.

We declare on our own responsibility that the above mentioned protective systems are confirmed to be in compliance with the "Essential Health and Safety" requirements given in Annex II and Annex IV of Directive 94/9/EC according to EC-Type Examination Certificate No. IIBExU10ATEX2147X issued by IBExU - Institut für Sicherheitstechnik GmbH, Freiberg / Germany – Notified Body, Reg.-No. 0637 in accordance with Article 9 of the Directive.

Kennzeichnung **Marking**	Ex G IIA	**Explosionsgruppe** **Explosion group**	IIA
Detonationssicherung Typ **Detonation flame arrester type**	4		
Max. Betriebstemperatur **Max. operating temperature**	60°C	**Max. Betriebsdruck max.** **Max. operating pressure**	1,1 bar (abs.)
Angewandte Normen **Applied standards**	EN 1127-1 EN ISO 16852	**Zugehörige Unterlagen** **Corresponding documents**	Betriebsanleitung Operating instructions
Datum / Date	03.09.2013		Konformität-000119-de-en.doc

Braunschweiger Flammenfilter GmbH

Leiter Technik / Manager Engineering (Dr. Davies)

Leiter QS / Manager Quality Assurance (Schlüter)

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Braunschweiger Flammenfilter

PROTEGO
für Sicherheit und Umweltschutz

Abb. 7: Declaration of conformity Explosion group IIA

ATEX KONFORMITÄTSERKLÄRUNG
ATEX DECLARATION OF CONFORMITY

CE

Gerät **Device**	DETONATIONSROHRSICHERUNG IN-LINE DETONATION FLAME ARRESTER
Typ **Type**	PROTEGO® DA-G-DN-IIB3-P(Po) PROTEGO® DA-G-T-DN-IIB3-P(Po) PROTEGO® DA-G-TB-DN-IIB3-P(Po)

Anschlussnennweite Flange connection DN [mm]	DN [inch]	Max. Betriebsdruck Max. operating pressure Po [bar (abs.)]
15	½"	1,1
20	¾"	1,1
25	1"	1,1
32	1 ¼"	1,1
40	1 ½"	1,4
50	2"	1,4
80	3"	1,4

Hersteller
Manufacturer

Braunschweiger Flammenfilter GmbH
Industriestraße 11
38110 Braunschweig
Germany

Wir erklären in alleiniger Verantwortung, dass die o.g. Schutzsysteme den Wesentlichen Gesundheits- und Sicherheitsanforderungen im Anhang II und Anhang IV der Richtlinie 94/9/EG entsprechen, gemäß der EG-Baumusterprüfbescheinigungs-Nr. IBExU10ATEX2148X ausgestellt durch IBExU – Institut für Sicherheitstechnik GmbH, Freiberg – Benannte Stelle, Kenn-Nr. 0637, in Übereinstimmung mit Artikel 9 der Richtlinie.

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Kennzeichnung **Marking**	Ex G IIB3	**Explosionsgruppe** **Explosion group**	IIB3
Max. Betriebstemperatur **Max. operating temperature**	60°C	**Detonationssicherung Typ** **Detonation flame arrester type**	4
Angewandte Normen **Applied standards**	EN 1127-1 EN ISO 16852	**Zugehörige Unterlagen** **Corresponding documents**	Betriebsanleitung Operating instructions
Datum / Date	03.09.2013		Konformität-000120-de-en.doc

Braunschweiger Flammenfilter GmbH

Leiter Technik / Manager Engineering (Dr. Davies)

Leiter QS / Manager Quality Assurance (Schlüter)

Braunschweiger Flammenfilter

PROTEGO
für Sicherheit und Umweltschutz

Abb. 8: Declaration of conformity Explosion group IIB

ATEX KONFORMITÄTSERKLÄRUNG
ATEX DECLARATION OF CONFORMITY

CE

Gerät **Device**	DETONATIONSROHRSICHERUNG IN-LINE DETONATION FLAME ARRESTER
Typ **Type**	PROTEGO® DA-G-DN-IIC-P(Po) PROTEGO® DA-G-T-DN-IIC-P(Po) PROTEGO® DA-G-TB-DN-IIC-P(Po)

Anschlussnennweite Flange connection DN [mm]	DN [inch]	Max. Betriebsdruck Max. operating pressure Po [bar (abs.)]
15	½"	1,1
20	¾"	1,1
25	1"	1,1
32	1 ¼"	1,1
40	1 ½"	1,6
50	2"	1,6
80	3"	1,6

Hersteller
Manufacturer

Braunschweiger Flammenfilter GmbH
Industriestraße 11
38110 Braunschweig
Germany

Wir erklären in alleiniger Verantwortung, dass die o.g. Schutzsysteme den Wesentlichen Gesundheits- und Sicherheitsanforderungen im Anhang II und Anhang IV der Richtlinie 94/9/EG entsprechen, gemäß der EG-Baumusterprüfbescheinigungs-Nr. IBExU10ATEX2149X ausgestellt durch IBExU – Institut für Sicherheitstechnik GmbH, Freiberg – Benannte Stelle, Kenn-Nr. 0637, in Übereinstimmung mit Artikel 9 der Richtlinie.

We declare on our own responsibility that the above mentioned protective systems are confirmed to be in compliance with the "Essential Health and Safety" requirements given in Annex II and Annex IV of Directive 94/9/EC according to EC-Type Examination Certificate No. IBExU10ATEX2149X issued by IBExU - Institut für Sicherheitstechnik GmbH, Freiberg / Germany – Notified Body, Reg.-No. 0637 in accordance with Article 9 of the Directive.

Kennzeichnung **Marking**	Ex G IIC	**Explosionsgruppe** **Explosion group**	IIIC
Max. Betriebstemperatur **Max. operating temperature**	60°C	**Detonationssicherung Typ** **Detonation flame arrester type**	4
Angewandte Normen **Applied standards**	EN 1127-1 EN ISO 16852	**Zugehörige Unterlagen** **Corresponding documents**	Betriebsanleitung Operating instructions
Datum / Date	03.09.2013		Konformität-000122-de-en.doc

Braunschweiger Flammenfilter GmbH

Leiter Technik / Manager Engineering (Dr. Davies)

Leiter QS / Manager Quality Assurance (Schlüter)

Braunschweiger Flammenfilter

PROTEGO
für Sicherheit und Umweltschutz

Abb. 9: Declaration of conformity Explosion group IIC

14 TÜV test report

Product Service

Competence.
Certainty.
Quality.

Technischer Bericht Nr. 70093121

Rev. 0
vom 14.102005

Auftraggeber:	Securiton GmbH Von-Drais-Str. 33 D-77855 Achern
Hersteller:	SECURITON AG Alpenstr. 20 CH-3052 Zollikofen
Gegenstand der Begutachtung:	Ansaugrauchmelder SecuriRAS ASD 516-1
Prüf-spezifikation:	EN 1127-1:1997, BGR 104:2000
Aufgabe der Begut-achtung:	Risikoeinschätzung, Zündgefahrenanalyse
Prüfergebnis:	Siehe nachfolgende Seiten dieses Berichtes

Datename:
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Berichtsnummer: 70093121
Revision: 0
Seite 1 von 3

Ersteller:
Dipl.-Ing. Klaus Gohlke
Erstelldatum: 14.10.2005

Telefon: +49 (0)71 1 70 05 - 59 7
Telefax: +49 (0)71 1 70 05 - 58 7

E-Mail: Klaus.Gohlke@tuev-sued.de

TÜV Product Service GmbH
TÜV SÜD Gruppe

Niederlassung Stuttgart
Gottlieb-Daimler-Straße 7
70794 Filderstadt
Deutschland

Seite 1/5

Product Service

Competence.
Certainty.
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1 Vorbemerkungen

Der betreffende Ansaugrauchmelder besteht aus einem Ventilator, welcher über ein Ansaug-Rohrsystem aus dem zu überwachenden Raum Luft ansaugt und durch eine Messkammer mit einem Streulichtrauchmelder leitet. Nach der Messkammer wird die Luft abgeleitet.

Der Ansaugrauchmelder soll auch zur Überwachung von explosionsgefährdeten Bereichen eingesetzt werden. Das Gerät als solches wird außerhalb der explosionsgefährdeten Bereiche installiert, steht aber mit diesen Bereichen über das Ansaug-Rohrsystem in Verbindung.

2 Analyse der Risiken

Gefahr	Lösungsmöglichkeit	Ist Zustand Gerät
Durch Ansaugen von Atmosphäre aus Ex-Bereichen kann Ex-Atmosphäre ins Messgerät gelangen. Die Zone im Geräte-Luftsystem ist zunächst dieselbe wie die des Raumes aus dem angesaugt wird.	Ausführen aller Betriebsmittel im Gerät nach RL 94/9/EG entsprechend der Zone aus der angesaugt wird. Festlegen aus welcher Zone Prüfluft angesaugt werden darf. Nicht Zone 0 nicht Zone 1, nicht Zone 2 Ansaugen aus nicht-Ex-Bereichen (Eingrenzung der Zonen in der Höhe) Hierzu nach EN 60079-10 vorgehen.	Die mit der Prüfluft kontaminierten Geräteteile sind nicht speziell explosionsgeschützt ausgeführt. Mögliche Zündquellen: IR-Melder, Ventilatormotor. Räume die überwacht werden sind üblicherweise in Zone 1 bzw. Zone 2 eingeteilt. Nicht Zone 0
Gefahr	Lösungsmöglichkeit	Ist Zustand Gerät
Explosion im Geräteinnern erzeugt Explosionsdruck, welcher das Gerät durch inneren Überdruck zerstören kann und in den Ex-Bereich durchschlägt.	Flammen dürfen nicht in den Ex-Bereich schlagen. Verwendung von Flammdurchschlagsicherungen Hiermit wird aber in Kauf genommen, dass durch eine nicht auszuschließende Explosion im Messgerät	Gerät ist mit EG-Baumustergeprüften Flammdurchschlagsicherungen versehen.

Telefon: +49 (0)71 1 70 05 - 59 7
Telefax: +49 (0)71 1 70 05 - 58 7

E-Mail: Klaus.Gohlke@tuev-sued.de

TÜV Product Service GmbH
TÜV SÜD Gruppe

Niederlassung Stuttgart
Gottlieb-Daimler-Straße 7
70794 Filderstadt
Deutschland

Seite 2/5

Product Service

Competence.
Certainty.
Quality.

	dieses zerstört wird	
Umher fliegende Splitter	Gerät so gestalten, dass bei einer unterstellten inneren Explosion keine Teile umherfliegen können.	Das Gehäuse muss zusätzlich in einem Schutzgehäuse montiert werden.

6 Zusammenfassung

Durch obige Analyse wurde festgestellt, dass bei der derzeitigen Ausführung eine im Messgerät nicht auszuschließende Explosion durch die Flammsperren im Rohrsystem nicht in den Ex-Bereich durchschlagen kann.

Es wird hiermit aber in Kauf genommen, dass eine nicht auszuschließende Explosion im Innern des Messgerätes (Zündquellenvermeidung ist durch die Hersteller von Sensor und Ventilator nicht nachgewiesen) das Gerät durch den auftretenden Explosionsdruck zerstört. Begünstigend jedoch ist, dass in den betreffenden Räumen an den Stellen angesaugt wird, an denen aufgrund von örtliche Gegebenheiten keine Ex-Atmosphäre vorliegt, da üblicherweise immer der gesamte Raum einer Zone zugeordnet wird und dass im Gerät keine Betriebsmässig funkenden Bauteile vorhanden sind.

TÜV PRODUCT SERVICE GMBH

Prüfer

Dipl.-Ing. Klaus Gohlke
TEC Produktion und Vertrieb Stuttgart

TÜV Product Service GmbH
TÜV SÜD Gruppe

Niederlassung Stuttgart
Gottlieb-Daimler-Straße 7
70794 Filderstadt
Deutschland

Telefon: +49 (0)71 1 70 05 - 59 7
Telefax: +49 (0)71 1 70 05 - 58 7

E-Mail: Klaus.Gohlke@tuev-sued.de

Industrie Service

Mehr Sicherheit.
Mehr Wert.

Technischer Bericht Nr. 1491161

Rev. 0

vom 30.04.2010

Auftraggeber:	Securiton GmbH Von-Drais-Str. 33 77855 Achern
Hersteller:	Securiton AG Alpenstr. 20 CH-3052 Zollikofen
Gegenstand der Begutachtung:	Ansaugrauchmelder SecuriRAS® 535-x
Prüf-spezifikation:	EN 1127-1:2008, BGR 104:2006
Aufgabe der Begutachtung:	Ergänzung zum „Technischen Bericht Nr. 70093121 vom 14.10.2005 Ansaugrauchmelder – Risikoeinschätzung, Zündgefahrenanalyse
Prüfergebnis:	Siehe nachfolgende Seiten dieses Berichtes

Ersteller:
Dipl.-Ing. Klaus Gohlke
Erstelldatum: 30.04.2010

Telefon: + 49 711 7005-597
Telefax: + 49 711 7005-587

E-Mail: klaus.gohlke@tuev-sued.de

TÜV SÜD Industrie Service GmbH
Niederlassung Stuttgart
Abteilung Elektro- und Gebäudetechnik
Gottlieb-Daimler-Str. 7
70794 Filderstadt
Deutschland

Seite 4/5

Industrie Service

1 Vorbemerkungen

Der mit Bericht Nr. 70093121 vom 14.10.2005 bewertete Ansaugrauchmelder Typ SecuriRAS ASD 516-1 wurde durch den Hersteller geändert.

Die Funktionalität des neuen Ansaugrauchmelders SecuriRAS® 535-x hat sich gegenüber dem ursprünglich beurteilten Typ nicht geändert.

Wesentliche Änderungen:

- Einsatz neuer Rauchsensoren
- Lüfter mit höherer Luftleistung
- Überwachung der Lufströmung

Dieser Bericht ergänzt den oben bezeichneten Bericht.

2 Durchführung der Beurteilung

Die Beurteilung wurde im April 2010 aufgrund der Dokumentenlage in Filderstadt vorgenommen.

3 Dokumente

3.1 Datenblatt ASD 535 Ansaugrauchmelder, 10 Seiten, T 131 193 b de
3.2 Beschreibungen des Herstellers

4 Ergebnis

Die Beurteilung ergab, dass beim geänderten Ansaugrauchmelder bei bestimmungsgemäßer Verwendung keine höheren Risiken vorliegen als beim Vorgängermodell. Im Ansaugrauchmelder stattfindende Explosionen können durch die integrierten, baumustergeprüften Flammsperren nicht in den Ansaugbereich durchschlagen.

Explosionen im Gerät selbst würden dies jedoch ggf. zerstören. (siehe auch Risikobeurteilung Bericht 70093121

TÜV SÜD Industrie Service GmbH

i.A. Dipl.-Ing. Klaus Gohlke
IS-EG1-STG

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Revision: 0
Seite 2 von 2

Ersteller:
Dipl.-Ing. Klaus Gohlke
Erstelldatum: 30.04.2010

Telefon: + 49 711 7005-597
Telefax: + 49 711 7005-587

E-Mail: klaus.gohlke@tuev-sued.de

TÜV SÜD Industrie Service GmbH
Niederlassung Stuttgart
Abteilung Elektro- und Gebäudetechnik
Gottlieb-Daimler-Str. 7
70794 Filderstadt
Deutschland

Seite 5/5

15 List of Figures