1 # EU - TYPE EXAMINATION CERTIFICATE

2 **Safety Device, Controlling Device or Regulating Device intended for use outside a potentially explosive atmosphere but required for or contributing to the safe functioning of Equipment and Protective Systems with respect to the risks of explosion Directive 2014/34/EU**

3 EU - Type Examination Certificate Number: **BAS00ATEX7087 – Issue 8**

3.1 In accordance with Article 41 of Directive 2014/34/EU, EC-Type Examination Certificates referring to 94/9/EC that were in existence prior to the date of application of 2014/34/EU (20 April 2016) may be referenced as if they were issued in accordance with Directive 2014/34/EU. Supplementary Certificates to such EC-Type Examination Certificates, and new issues of such certificates, may continue to bear the original certificate number issued prior to 20 April 2016.

4 Product: **Dual Channel Smart Fire Detector Isolator Type KFD0-CS-Ex*.54/56**

5 Manufacturer: **Pepperl+Fuchs SE**

6 Address: **Lilienthalstrasse 200, 68307 Mannheim, Germany**

7 This re-issued certificate extends EC Type Examination Certificate No. BAS00ATEX7087 to apply to product designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

8 SGS Fimko Oy, Notified Body number 0598, in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.

8.1 The original certificate was issued by The Electrical Equipment Certification Service (UK Notified Body 0600). It, and any supplements previously issued by SGS Baseefa Ltd (UK Notified Body 1180) have been transferred to the supervision of SGS Fimko Oy (EU Notified Body 0598). The original certificate number is retained.

The examination and test results are recorded in confidential Report No. **See Certificate History**

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

EN IEC 60079-0:2018 **EN 60079-11:2012**

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.

11 This EU - TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

12 The marking of the product shall include the following:

See Schedule

SGS Fimko Oy Customer Reference No. **0808** Project File No. **21/0422**

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13 # Schedule

14 ## Certificate Number BAS00ATEX7087 – Issue 8

15 Description of Product

The Dual Channel Smart Fire Detector Isolator Type KFD0-CS-Ex*.54/56 is designed to provide a galvanically isolated interface to enable to the connection of equipment located in a hazardous area with equipment located in a non-hazardous area by providing galvanic isolation and limiting to intrinsically safe levels the voltage and current into the hazardous area

The equipment comprises a number of electronic components, including transformers, fuses, resistors and zener diodes, all mounted on a single printed circuit board and housed within a plastic enclosure fitted with terminals for external connections.

The segregation of the hazardous area circuits meets the requirements for 250V.

Coding is as follows:

⟨Ex⟩	**II (1) G**	**[Ex ia Ga] IIC**	**(-20°C ≤ Ta ≤ +60°C)**
⟨Ex⟩	**II (1) D**	**[Ex ia Da] IIIC**	**(-20°C ≤ Ta ≤ +60°C)**
⟨Ex⟩	**I (M1)**	**[Ex ia Ma] I**	**(-20°C ≤ Ta ≤ +60°C)**

Input / Output Parameters
KFD0-CS-Ex2.54 and KFD0-CS-Ex2.54-Y1, -Y3 or -Y207412 - Dual Channel
Non-hazardous Area Terminals
(Terminals 11 & 12 and terminals 8, 9 & 10)

U_m = 253V

The apparatus is designed to operate from a d.c. supply of up to 40V on the above terminals.

Hazardous Area Terminals
(Terminals 1 w.r.t. 2 and 4 w.r.t. 5)

U_o	=	28V	C_i	=	5.64nF
I_o	=	93mA	L_i	=	0
P_o	=	653mW			

The capacitance and either the inductance or inductance to resistance ratio (L/R) of the load connected to output terminals of the apparatus must not exceed the following values:

Hazardous Area Terminals
(Terminals 1 w.r.t. 2 and 4 w.r.t. 5)

GROUP	CAPACITANCE (µF)	INDUCTANCE (mH)	OR	L/R RATIO (µH/ohm)
IIC	0.077	4.3		55
IIB / IIIC	0.64	17		199
IIA	2.14	35		431
I	3.39	51		671

NOTE:
The above parameters apply when one of the two conditions below is given:
- the total L_i of the external circuit (excluding the cable) is < 1% of the L_o value or
- the total C_i of the external circuit (excluding the cable) is < 1% of the C_o value.

The above parameters are reduced to 50% when both of the two conditions below are given:
- the total L_i of the external circuit (excluding the cable) ≥1% of the L_o value and
- the total C_i of the external circuit (excluding the cable) ≥1% of the C_o value.

Note: the reduced capacitance of the external circuit (including cable) shall not be greater than 1µF for Groups I & IIA.

KFD0-CS-Ex1.54 and KFD0-CS-Ex1.54-Y1, -Y3 or -Y207411 - Single Channel

Non-hazardous Area Terminals
(Terminals 11 & 12)

U_m = 253V

The apparatus is designed to operate from a d.c. supply of up to 40V on the above terminals.

Hazardous Area Terminals
(Terminals 1 w.r.t. 2)

U_o	=	28V	C_i	=	5.64nF
I_o	=	93mA	L_i	=	0
P_o	=	653mW			

The capacitance and either the inductance or inductance to resistance ratio (L/R) of the load connected to output terminals of the apparatus must not exceed the following values:

Hazardous Area Terminals
(Terminal 1 w.r.t. 2)

GROUP	CAPACITANCE (µF)	INDUCTANCE (mH)	OR	L/R RATIO (µH/ohm)
IIC	0.077	4.3		55
IIB / IIIC	0.64	17		199
IIA	2.14	35		431
I	3.39	51		671

NOTE:
The above parameters apply when one of the two conditions below is given:
- the total L_i of the external circuit (excluding the cable) is < 1% of the L_o value or
- the total C_i of the external circuit (excluding the cable) is < 1% of the C_o value.

The above parameters are reduced to 50% when both of the two conditions below are given:
- the total L_i of the external circuit (excluding the cable) ≥1% of the L_o value and
- the total C_i of the external circuit (excluding the cable) ≥1% of the C_o value.

Note: the reduced capacitance of the external circuit (including cable) shall not be greater than 1µF for Groups I & IIA.

KFD0-CS-Ex2.54-Y2 or -Y72222 – Dual Channel

Non-hazardous Area Terminals
(Terminals 11 & 12 and terminals 8, 9 & 10)

U_m = 253V

The apparatus is designed to operate from a d.c. supply of up to 40V on the above terminals.

Hazardous Area Terminals
(Terminals 1 w.r.t. 2 and 4 w.r.t. 5)

U_o	=	25.2V	C_i	=	5.64nF
I_o	=	43mA	L_i	=	0
P_o	=	271mW			

The capacitance and either the inductance or inductance to resistance ratio (L/R) of the load connected to output terminals of the apparatus must not exceed the following values:

Hazardous Area Terminals
(Terminals 1 w.r.t. 2 and 4 w.r.t. 5)

GROUP	CAPACITANCE (µF)	INDUCTANCE (mH)	OR	L/R RATIO (µH/ohm)
IIC	0.101	19.6		138
IIB / IIIC	0.81	72		508
IIA	2.89	153		964
I	4.14	233		1452

NOTE:
The above parameters apply when one of the two conditions below is given:
- the total L_i of the external circuit (excluding the cable) is < 1% of the L_o value or
- the total C_i of the external circuit (excluding the cable) is < 1% of the C_o value.

The above parameters are reduced to 50% when both of the two conditions below are given:
- the total L_i of the external circuit (excluding the cable) ≥1% of the L_o value and
- the total C_i of the external circuit (excluding the cable) ≥1% of the C_o value.

Note: the reduced capacitance of the external circuit (including cable) shall not be greater than 1µF for Groups I & IIA.

KFD0-CS-Ex1.54-Y2 or -Y72221 – Single Channel
Non-hazardous Area Terminals
(terminals 11 & 12)

U_m = 253V

The apparatus is designed to operate from a d.c. supply of up to 40V on the above terminals.

Hazardous Area Terminals
(Terminal 1 w.r.t. 2)

U_o	=	25.2V	C_i	=	5.64nF
I_o	=	43mA	L_i	=	0
P_o	=	271mW			

The capacitance and either the inductance or inductance to resistance ratio (L/R) of the load connected to output terminals of the apparatus must not exceed the following values:

Hazardous Area Terminals
(Terminal 1 w.r.t. 2)

GROUP	CAPACITANCE (µF)	INDUCTANCE (mH)	OR	L/R RATIO (µH/ohm)
IIC	0.101	19.6		138
IIB / IIIC	0.81	72		508
IIA	2.89	153		964
I	4.14	233		1452

NOTE:
The above parameters apply when one of the two conditions below is given:
- the total L_i of the external circuit (excluding the cable) is < 1% of the L_o value or
- the total C_i of the external circuit (excluding the cable) is < 1% of the C_o value.

The above parameters are reduced to 50% when both of the two conditions below are given:

- the total L_i of the external circuit (excluding the cable) ≥1% of the L_o value and
- the total C_i of the external circuit (excluding the cable) ≥1% of the C_o value.

Note: the reduced capacitance of the external circuit (including cable) shall not be greater than 1µF for Groups I & IIA.

KFD0-CS-Ex2.56 - Dual Channel

Hazardous Area Terminals
(Terminals 1 w.r.t. 2 and 4 w.r.t. 5)

U_o	=	21V	C_i	=	5.64nF
I_o	=	252mA	L_i	=	0
P_o	=	1.323W			

The capacitance and either the inductance or inductance to resistance ratio (L/R) of the load connected to output terminals of the apparatus must not exceed the following values:

Hazardous Area Terminals
(Terminals 1 w.r.t. 2 and 4 w.r.t. 5)

GROUP	CAPACITANCE (µF)	INDUCTANCE (mH)	OR	L/R RATIO (µH/ohm)
IIC	0.182	0.56		26.9
IIB / IIIC	1.264	2.24		107.6
IIA	4.774	4.48		215.3
I	6.294	7.35		353.2

NOTE:
The above parameters apply when one of the two conditions below is given:
- the total L_i of the external circuit (excluding the cable) is < 1% of the L_o value or
- the total C_i of the external circuit (excluding the cable) is < 1% of the C_o value.

The above parameters are reduced to 50% when both of the two conditions below are given:
- the total L_i of the external circuit (excluding the cable) ≥1% of the L_o value and
- the total C_i of the external circuit (excluding the cable) ≥1% of the C_o value.

Note: the reduced capacitance of the external circuit (including cable) shall not be greater than 1µF for Groups I & IIA.

KFD0-CS-Ex1.56 - Single Channel

Hazardous Area Terminals
(Terminals 1 w.r.t. 2)

U_o	=	21V	C_i	=	5.64nF
I_o	=	252mA	L_i	=	0
P_o	=	1.323W			

The capacitance and either the inductance or inductance to resistance ratio (L/R) of the load connected to output terminals of the apparatus must not exceed the following values:

Hazardous Area Terminals
(Terminals 1 w.r.t. 2)

GROUP	CAPACITANCE (µF)	INDUCTANCE (mH)	OR	L/R RATIO (µH/ohm)
IIC	0.182	0.56		26.9
IIB / IIIC	1.264	2.24		107.6
IIA	4.774	4.48		215.3
I	6.294	7.35		353.2

NOTE:
The above parameters apply when one of the two conditions below is given:
- the total L_i of the external circuit (excluding the cable) is < 1% of the L_o value or

- the total C_i of the external circuit (excluding the cable) is < 1% of the C_o value.

The above parameters are reduced to 50% when both of the two conditions below are given:
- the total L_i of the external circuit (excluding the cable) ≥1% of the L_o value and
- the total C_i of the external circuit (excluding the cable) ≥1% of the C_o value.

Note: the reduced capacitance of the external circuit (including cable) shall not be greater than 1µF for Groups I & IIA.

16 Report Number

See Certificate History.

17 Specific Conditions of Use

None

18 Essential Health and Safety Requirements

In addition to the Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9, the following are considered relevant to this product:

Clause	Subject	Compliance
1.2.7	LVD type requirements	Manufacturer responsibility
1.2.8	Overloading of equipment (protection relays, etc.)	User/Installer responsibility
1.4.1	External effects	User/Installer responsibility
1.4.2	Aggressive substances, etc.	User/Installer responsibility

19 Drawings and Documents

New drawings submitted for this issue of certificate.

Number	Sheet	Issue	Date	Description
16-0691BS-H	1 of 1	H	2021-Oct-27	Summary (Ex*.56)
16-0692BS-H	1 of 1	H	2021-Oct-27	Summary (Ex*.54)
16-0691BS-10G	1 – 3	G	2021-Oct-27	Type Label (Ex*.56)
16-0692BS-10G	1 – 3	G	2021-Oct-27	Type Label (Ex*.54)

The drawings above are common to Baseefa10ATEX0021X, IECEx BAS 08.0079 & IECEx BAS 10.0007X and are held with IECEx BAS 08.0079.

Current drawings also associated with this certificate.

Number	Sheet	Issue	Date	Description
16-0691BS-00E	1 – 8	E	2009-Oct-09	Description (Ex*.56)
16-0691BS-01E	1 of 1	E	2009-Apr-21	Schematic
16-0691BS-02E	1 of 1	E	2009-Oct-09	I.S. Relevant Components (Ex*.56)
16-0691BS-03E	1 of 1	E	2009-Apr-21	Component Layout
16-0691BS-05E	1 & 2	E	2009-Apr-17	PCB Layout
16-0691BS-06F	1 & 2	F	2011-Nov-30	Transformers
16-0691BS-07E	1 – 3	E	2009-Dec-10	Lacquering Details
16-0692BS-00F	1 – 8	F	2011-Nov-30	Description SMART Fire Detector Power Supply KFD0-CS-Ex*.54
16-0692BS-02F	1 of 1	F	2011-Nov-30	I.S. Relevant Components (Ex*.54)
16-0706IE-04C	1 – 14	C	2014-Mar-27	Mechanical Parts

These drawings are common to, and held with, IECEx BAS 08.0079.

20 Certificate History

Certificate No.	Date	Comments
BAS00ATEX7087	17 July 2000	The release of the prime certificate. The associated test and assessment is documented in Test Report 00(C)0160.
BAS00ATEX7087/1	22 March 2001	To permit an alternative PCB coating pattern for the K*D0-CS-Ex1.54 and K*D0-CS-Ex1.54-Y72221.
BAS00ATEX7087/2	29 November 2001	To permit minor changes to component values in non-critical circuitry.
BAS00ATEX7087/3	3 November 2004	To permit minor parts list changes. Project File No. 04/0729.
BAS00ATEX7087/4	10 September 2008	To permit minor drawing changes, PCB layout changes, addition of the certification code [Ex iaD], addition of the KFD0-CS-Ex1.54-Y207411 & KFD0-CS-Ex2.54-Y207412 models and t o confirm that the current designs meet the requirements of EN 60079-0:2006, EN 60079-11:2007, EN 60079-26:2004 & EN 61241-11:2005. Test Report No. GB/BAS/ExTR08.0169/00. Project File No. 08/0307.
BAS00ATEX7087/5	20 January 2010	To permit the use of alternative PCB and electrical changes to introduce the KFD0-CS-Ex*.56 model. Test Report No. GB/BAS/ExTR10.0010/00. Project File No. 09/0397.
BAS00ATEX7087/6	24 May 2012 Re-issued 10 September 2012	To permit: - Minor drawing changes - Minor electrical changes to form the following models KFD0-CS-Ex1.54-Y1, KFD0-CS-Ex2.54-Y1 KFD0-CS-Ex1.54-Y2, KFD0-CS-Ex2.54-Y2 KFD0-CS-Ex1.54-Y3, KFD0-CS-Ex2.54-Y3 - To confirm that the equipment covered by this certificate has been reviewed against the requirements of EN 60079-0:2009 and EN 60079-11:2012 in respect of the differences from EN 60079-0:2006 and EN 60079-11:2007 and that none of these differences, with the exception of marking, affect this equipment. The equipment is now marked: ⟨Ex⟩ II (1)G [Ex ia Ga] IIC ⟨Ex⟩ II (1)D [Ex ia Da] IIIC ⟨Ex⟩ I (M1) [Ex ia Ma] I Test Report No. GB/BAS/ExTR12.0138/00. Project File No. 11/0986.
BAS00ATEX7087 Issue 7	28 April 2015	This issue incorporates previously issued primary and supplementary certificates into one certificate, permits changes to the transformer and confirms that the equipment covered by this certificate has been reviewed against the requirements of EN 60079-0:2012+A11:2013 in respect of the differences from EN 60079-0:2009 and that none of these differences affect this equipment. Test Report No. GB/BAS/ExTR15.0020/00 Project File No. 15/0066.

Certificate No.	Date	Comments
BAS00ATEX7087 Issue 8	23 November 2021	This issue confirms that the equipment covered by this certificate has been reviewed against the requirements of EN IEC 60079-0:2018 in respect of the differences from EN 60079-0:2012+A11:2013 and that none of these differences affect this equipment. Test Report No. GB/BAS/ExTR21.0189/00 Project File No. 21/0422
For drawings applicable to each issue, see original of that issue.		