

Certificate Number  
**BAS00ATEX7087**  
 Issue 7



Issued 28 April 2015  
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1 **EC - TYPE EXAMINATION CERTIFICATE**

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres**  
**Directive 94/9/EC**

3 EC - Type Examination Certificate Number: **BAS00ATEX7087 – Issue 7**

4 Equipment or Protective System: **Dual Channel Smart Fire Detector Isolator Type KFD0-CS-Ex\*.54/56**

5 Manufacturer: **Pepperl + Fuchs GmbH**

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

7 This re-issued certificate extends EC – Type Examination Certificate No. BAS00ATEX7087 to apply to equipment or protective systems 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 The original certificate was issued by The Electrical Equipment Certification Service, Notified Body Number 0600, which retains responsibility for its original documentation. Baseefa, Notified Body Number 1180, is responsible only for the additional work relating to this re-issued certificate and any other supplementary certificate it has issued.

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

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

**EN 60079-0:2012+A11:2013 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 equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

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

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

⊕ II (1) G [Ex ia Ga] IIC (-20°C ≤Ta ≤+60°C)

⊕ II (1) D [Ex ia Da] IIIC (-20°C ≤Ta ≤+60°C)

⊕ I (M1) [Ex ia Ma] I (-20°C ≤Ta ≤+60°C)

Baseefa Customer Reference No. **0808**

Project File No. **15/0066**

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**R S SINCLAIR**  
**GENERAL MANAGER**

On behalf of SGS Baseefa Limited

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## Schedule

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### 15 Description of Equipment or Protective System

The Dual Channel Smart Fire Detector Isolator Type KFD0-CS-Ex\*.54/56 is designed to provide a galvanically isolated interface to enable 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.

#### 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)

$$\begin{aligned} U_o &= 28V & C_i &= 5.64nF \\ I_o &= 93mA & L_i &= 0 \\ P_o &= 653mW \end{aligned}$$

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 ( $\mu F$ )	INDUCTANCE (mH)	OR	L/R RATIO ( $\mu H/ohm$ )
IIC	0.077	4.3		55
IIB	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)  $\geq$  1% of the  $L_o$  value and
- the total  $C_i$  of the external circuit (excluding the cable)  $\geq$  1% of the  $C_o$  value.

Note: the reduced capacitance of the external circuit (including cable) shall not be greater than 1 $\mu F$  for Groups I, IIA & IIB and 600nF for Group IIC.

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**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)

$$\begin{array}{ll} U_o & = 28V & C_i & = 5.64nF \\ I_o & = 93mA & L_i & = 0 \\ P_o & = 653mW \end{array}$$

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 ( $\mu F$ )	INDUCTANCE (mH)	OR	L/R RATIO ( $\mu H/ohm$ )
IIC	0.077	4.3		55
IIB	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)  $\geq$  1% of the  $L_o$  value and
- the total  $C_i$  of the external circuit (excluding the cable)  $\geq$  1% of the  $C_o$  value.

Note: the reduced capacitance of the external circuit (including cable) shall not be greater than 1 $\mu F$  for Groups I, IIA & IIB and 600nF for Group IIC.

**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)

$$\begin{array}{ll} U_o & = 25.2V & C_i & = 5.64nF \\ I_o & = 43mA & L_i & = 0 \\ P_o & = 271mW \end{array}$$

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:

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Hazardous Area Terminals

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

GROUP	CAPACITANCE ( $\mu\text{F}$ )	INDUCTANCE (mH)	OR	L/R RATIO ( $\mu\text{H}/\text{ohm}$ )
IIC	0.101	19.6		138
IIB	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)  $\geq 1\%$  of the  $L_o$  value and
- the total  $C_i$  of the external circuit (excluding the cable)  $\geq 1\%$  of the  $C_o$  value.

Note: the reduced capacitance of the external circuit (including cable) shall not be greater than  $1\mu\text{F}$  for Groups I, IIA & IIB and  $600\text{nF}$  for Group IIC.

**KFD0-CS-Ex1.54-Y2 or -Y72221 – Single Channel**

Non-hazardous Area Terminals

(terminals 11 & 12)

$$U_m = 253\text{V}$$

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)

$$\begin{aligned} U_o &= 25.2\text{V} & C_i &= 5.64\text{nF} \\ I_o &= 43\text{mA} & L_i &= 0 \\ P_o &= 271\text{mW} \end{aligned}$$

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 ( $\mu\text{F}$ )	INDUCTANCE (mH)	OR	L/R RATIO ( $\mu\text{H}/\text{ohm}$ )
IIC	0.101	19.6		138
IIB	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)  $\geq 1\%$  of the  $L_o$  value and
- the total  $C_i$  of the external circuit (excluding the cable)  $\geq 1\%$  of the  $C_o$  value.

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Note: the reduced capacitance of the external circuit (including cable) shall not be greater than  $1\mu\text{F}$  for Groups I, IIA & IIB and  $600\text{nF}$  for Group IIC.

#### **KFD0-CS-Ex2.56 - Dual Channel**

##### Hazardous Area Terminals

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

$$\begin{aligned} U_o &= 21\text{V} & C_i &= 5.64\text{nF} \\ I_o &= 252\text{mA} & L_i &= 0 \\ P_o &= 1.323\text{W} \end{aligned}$$

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 ( $\mu\text{F}$ )	INDUCTANCE (mH)	OR	L/R RATIO ( $\mu\text{H}/\text{ohm}$ )
IIC	0.182	0.56		26.9
IIB	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)  $\geq 1\%$  of the  $L_o$  value and
- the total  $C_i$  of the external circuit (excluding the cable)  $\geq 1\%$  of the  $C_o$  value.

Note: the reduced capacitance of the external circuit (including cable) shall not be greater than  $1\mu\text{F}$  for Groups I, IIA & IIB and  $600\text{nF}$  for Group IIC.

#### **KFD0-CS-Ex1.56 - Single Channel**

##### Hazardous Area Terminals

(Terminals 1 w.r.t. 2)

$$\begin{aligned} U_o &= 21\text{V} & C_i &= 5.64\text{nF} \\ I_o &= 252\text{mA} & L_i &= 0 \\ P_o &= 1.323\text{W} \end{aligned}$$

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 ( $\mu\text{F}$ )	INDUCTANCE (mH)	OR	L/R RATIO ( $\mu\text{H}/\text{ohm}$ )
IIC	0.182	0.56		26.9
IIB	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.

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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)  $\geq$  % of the  $L_o$  value and
- the total  $C_i$  of the external circuit (excluding the cable)  $\geq$  % of the  $C_o$  value.

Note: the reduced capacitance of the external circuit (including cable) shall not be greater than 1  $\mu$ F for Groups J, IIA & IIB and 600nF for Group IIC.

## 16 Report Number

GB/BAS/ExTR15.0020/00

## 17 Specific Conditions of Use

None.

## 18 Essential Health and Safety Requirements

All relevant Essential Health and Safety Requirements are covered by the standards listed at item 9.

## 19 Drawings and Documents

New drawings submitted for this issue of certificate.

Number	Sheet	Issue	Date	Description
16-0691BS-G	1 of 1	G	2014-Oct-13	Summary (Ex*.56)
16-0692BS-G	1 of 1	G	2014-Oct-13	Summary (Ex*.54)
16-0706IE-04C	1 – 14	C	2014-Mar-27	Mechanical Parts

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
16-0691BS-10F	1 – 3	F	2011-Dec-05	Type Label (Ex*.56)
16-0692BS-00F	1 – 8	F	2011-Nov-30	Description (Ex*.54)
16-0692BS-02F	1 of 1	F	2011-Nov-30	I.S. Relevant Components (Ex*.54)
16-0692BS-10F	1 – 3	F	2011-Nov-30	Type Label (Ex*.54)

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.

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<b>Certificate No.</b>	<b>Date</b>	<b>Comments</b>
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 to 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: <ul style="list-style-type: none"> <li>- Minor drawing changes</li> <li>- 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</li> <li>- 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: <ul style="list-style-type: none"> <li>⊕ II (1)G [Ex ia Ga] IIC</li> <li>⊕ II (1)D [Ex ia Da] IIIC</li> <li>⊕ I (M1) [Ex ia Ma] I</li> </ul> </li> </ul> 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.
For drawings applicable to each issue, see original of that issue.		



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