1 # UK-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 Product and Protective Systems with respect to the risks of explosion**
UKSI 2016:1107 (as amended) – Schedule 3A, Part 1

3 UK-Type Examination Certificate Number: **BAS21UKEX0426**

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 product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 SGS Baseefa, Approved Body number 1180, in accordance with Regulation 43 of the Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016, UKSI 2016:1107 (as amended), 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 Schedule 1 of the Regulations.

The examination and test results are recorded in confidential Report No. **21(C)0161**

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 UK-TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified product. Further requirements of the Regulations 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 :

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)

SGS Baseefa Customer Reference No. **0808** Project File No. **21/0161**

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UKAS PRODUCT CERTIFICATION
0191

R S SINCLAIR
TECHNICAL MANAGER
On behalf of SGS Baseefa Limited

13 **Schedule**

14 **Certificate Number BAS00UKEX0426**

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.

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	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 & IIB and 600nF for Group IIC.

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	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 & 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)

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	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 & IIB and 600nF for Group IIC.

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	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 & IIB and 600nF for Group IIC.

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	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 & IIB and 600nF for Group IIC.

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	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 & IIB and 600nF for Group IIC.

16 Report Number

21(C)0161

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, and conformity is demonstrated in the report:

Clause	Subject
1.2.7	LVD type requirements
1.2.8	Overloading of equipment (protection relays, etc.)
1.4.1	External effects
1.4.2	Aggressive substances, etc.

19 Drawings and Documents

Number	Sheet	Issue	Date	Description
16-1555CM-10	1 & 2	0	2021-Apr-12	Additional Marking Requirements for UKCA
For all other drawings see BAS00ATEX7087				