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: **BAS00ATEX7240 – Issue 11**

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: **Type KFD2-(S)CD2-Ex*.LK Transformer Isolated Driver**

5 Manufacturer: **Pepperl + Fuchs GmbH**

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

7 This re-issued certificate extends EC Type Examination Certificate No. BAS00ATEX7240 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 The original certificate was issued by The Electrical Equipment Certification Service, Notified Body Number 0600, which retains responsibility for its original documentation. SGS Baseefa, Notified Body Number 1180, in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, 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. 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 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 :

⟨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. **16/0060**

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R S SINCLAIR
TECHNICAL MANAGER
On behalf of SGS Baseefa Limited

13 **Schedule**

14 **Certificate Number BAS00ATEX7240 – Issue 11**

15 **Description of Product**

The Type KFD2-(S)CD2-Ex*.LK Transformer Isolated Driver is a two channel device 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 the voltage and current into the hazardous area to intrinsically safe levels.

The equipment comprises a number of electronics 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.

In the type designation, the .P indicates the inclusion of Power Rail terminals.

The following variants are covered by this certificate:

KFD2-SCD2-Ex1.LK(-Y*)
KFD2-SCD2-Ex2.LK(-Y*)
KFD2-CD2-Ex1(-Y*)
KFD2-CD2-Ex2(-Y*)

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

Input / Output Parameters

Terminal 7 to 12, 14 & 15 and Power Rail terminals 1, 2 & 4:
KFD2-SCD2-Ex1.LK only: Terminal 7 to 9, 14 & 15 and Power Rail terminals 1, 2 & 4:
KFD2-CD2-Ex1 only: Terminal 7, 8, 14 & 15 and Power Rail terminals 1 & 2:
KFD2-CD2-Ex2 only: Terminal 7, 8, 10, 11, 14, 15 and Power Rail terminals 1 & 2:

U_m = 250V

The equipment is designed to operate from a d.c. supply of up to 40V.

All variants and KFD2-CD2-Ex2: Terminal 1 & 2 (Ch 1) and 4 & 5 (Ch 2):
KFD2-SCD2-Ex1.LK & KFD2-CD2-Ex1 only: Terminals 1 & 2:

U_o = 25.2V I_o = 93mA P_o = 585mW C_i = 0 L_i = 0

The capacitance and either the inductance or the inductance to resistance ratio (L/R) of the hazardous area load must not exceed the following values:

GROUP	CAPACITANCE (µF)	INDUCTANCE (mH)	OR	L/R RATIO (µH/ohm)
IIC	0.107	4.30		62
IIB	0.820	17.7		234
IIA	2.900	36.0		493
I	4.800	51.9		797

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

GB/BAS/ExTR16.0291/00

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
266-036BS-L	1 of 1	L	2015-Dec-16	Summary
266-036BS-02L	1 – 5	L	2015-Dec-16	Critical Components

Current drawings which remain unaffected by this issue:

Number	Sheet	Issue	Date	Description
266-036BS-01J	1 – 7	J	2010-Sep-22	Schematic
266-036BS-03J	1 & 2	J	2011-Feb-25	Component Overlays
266-010BS-04E	1 – 15	E	2014-Mar-27	Mechanical Parts
266-036BS-05J	1 – 6	J	2011-Jul-19	Layouts
266-036BS-06J	1 - 12	J	2011-Feb-25	Transformer Details
266-036BS-07J	1 & 2	J	2011-Feb-25	PCB Lacquering Details
266-036BS-10K	1 – 3	K	2014-May-12	Type Label

All drawings are common to, and held with, IECEx BAS 04.0014.

20 Certificate History

Certificate No.	Date	Comments
BAS00ATEX7240	11 April 2001	The release of the prime certificate. The associated test and assessment is documented in Test Report 99(C)0589.
BAS00ATEX7240/1	15 January 2002	To permit alternative PCB planar transformers and minor components changes. Test Report No. 01(CI)0721.

Certificate No.	Date	Comments
BAS00ATEX7240/2	15 March 2002	To permit an alternative PCB layout with minor component changes, alternative PCB planar transformer arrangements and fuse F4 increased to 315mA from 250mA.
BAS00ATEX7240/3	30 October 2002	To permit: - minor circuit changes, an alternative PCB layout, minor changes to the planar transformer PCB and minor labelling changes. - removal of certain components to form the single channel KFD2-SCD2-Ex1.LK. - removal of certain components to form the single channel non-SMART KFD2-CD2-Ex1 - removal of certain components to form the dual channel non-SMART KFD2-CD2-Ex2 Project File No. 02/0311.
BAS00ATEX7240/4	4 February 2003	To permit minor changes to the moulded plastic mounting plate that supports the planar transformers. Project File No. 03/0085.
BAS00ATEX7240/5	5 February 2004	To permit minor changes to the PCB. Project File No. 03/1003
BAS00ATEX7240/6	14 December 2004	To permit the removal of fuse type option from the parts list. Project File No. 04/0791.
BAS00ATEX7240/7	25 September 2007	To permit minor changes to the specification of the planar transformer PCBs. Project File No. 07/0190.
BAS00ATEX7240/8	12 November 2009	To permit an alternative version which has short circuit detection disabled, forming types with the –Y1 suffix. To confirm that the equipment covered by this certificate has been reviewed against the requirements of EN 60079-0:2006, and EN 60079-11:2007 in respect of the differences from EN 50014:1997 + Amds 1 & 2 and EN 50020:1994 and that none of these differences affect this equipment. The equipment is also considered suitable for Group I applications and has additionally been assessed against the relevant requirements of EN 61241-11:2006 and the following additional marking may be applied: **Ⓔx I (M1) [Ex ia] I** **Ⓔx II (1)D [Ex iaD]** Report No. GB/BAS/ExTR09.0170/00. Project File No. 09/0567.
BAS00ATEX7240/9	11 October 2011	To permit the use of an alternative PCB design and other minor drawing changes. The Input/Output Parameter table has been updated to included Terminals 3 & 6. Report No. GB/BAS/ExTR11.0226/00. Project File No. 10/0600

Certificate No.	Date	Comments
BAS00ATEX7240 Issue 10	31 October 2014	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 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/ExTR14.0292/00 Project File No. 14/0400.
BAS00ATEX7240 Issue 11	15 November 2016	To permit the use of alternative components, other minor drawing changes and to confirm that the current design meets the requirements of EN 60079-0: 2012+A11:2013 in respect of the differences from EN 60079-0:2012. Test Report No. GB/BAS/ExTR16.0291/00. Project File No. 16/0060.
For drawings applicable to each issue, see original of that issue.		