

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: **Baseefa06ATEX0252 – Issue 2**

4 Equipment or Protective System: **Type KFD0-SD2-Ex Series Transformer Isolated Solenoid Drivers**

5 Manufacturer: **Pepperl + Fuchs GmbH**

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

7 This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 Baseefa, Notified Body number 1180, in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres given in Annex II to the Directive.

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 / IIB (-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. **15/0068**

This document is issued by the Company subject to its General Conditions for Certification Services accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and the Supplementary Terms and Conditions accessible at <http://www.baseefa.com/terms-and-conditions.asp>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained herein reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. It does not necessarily indicate that the equipment may be used in particular industries or circumstances. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, schedule included, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS Baseefa Limited

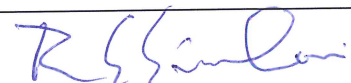
Rockhead Business Park, Staden Lane,
Buxton, Derbyshire SK17 9RZ

Telephone +44 (0) 1298 766600 Fax +44 (0) 1298 766601

e-mail info@baseefa.com web site www.baseefa.com

Registered in England No. 4305578.

Registered address: Rossmore Business Park, Ellesmere Port, Cheshire, CH65 3EN



R S SINCLAIR
GENERAL MANAGER

On behalf of SGS Baseefa Limited

13 **Schedule**

14 **Certificate Number Baseefa06ATEX0252 – Issue 2**

15 **Description of Equipment or Protective System**

The Type KFD0-SD2-Ex Series Transformer Isolated Solenoid Drivers are designed to transfer current from unspecified apparatus located in the non-hazardous area to the hazardous area. The voltage and current passed to the hazardous area are limited to intrinsically safe levels and have linear characteristics. The hazardous area circuit is galvanically isolated from the non-hazardous area circuit using transformers.

The Type KFD0-SD2-Ex Series Transformer Isolated Solenoid Drivers comprise a number of electronic components, including isolating transformers, fuses, zener diodes and resistors all mounted on printed circuit boards and housed in a plastic enclosure with polarised plug-in terminals for hazardous and non-hazardous area connections. LED indication is provided for channel status.

There are single and dual channel models of the apparatus. The dual channel versions have two printed circuit boards fitted and are denoted by '2' after 'Ex' in the model number. The digits at the end of the model number denote the voltage and current limit of the apparatus. The following models are in the range: -

KFD0-SD2-Ex1.1045
KFD0-SD2-Ex2.1045
KFD0-SD2-Ex1.1245
KFD0-SD2-Ex2.1245
KFD0-SD2-Ex1.1065
KFD0-SD2-Ex2.1065
KFD0-SD2-Ex1.10100
KFD0-SD2-Ex1.1180 ([Ex ia Ga] IIB only)

Input/Output Parameters

Non-Hazardous Area Terminals 7 to 9

$$U_m = 253V \text{ r.m.s.}$$

The equipment is designed to operate from a d.c. supply of up to 35V.

Hazardous Area Terminals 1 w.r.t. 2 & 3 (Channel 1)

Or

Hazardous Area Terminals 4 w.r.t. 5 & 6 (Channel 2)

Model No.	U_o (V)	I_o (mA)	P_o (W)	C_i (μ F)	L_i (mH)
KFD0-SD2-Ex*.1045	25.2	93	0.586	0	0
KFD0-SD2-Ex*.1245	25.2	110	0.693	0	0
KFD0-SD2-Ex*.1065	17.22	220	0.947	0	0
KFD0-SD2-Ex1.1180	25.2	184	1.159	0	0
KFD0-SD2-Ex1.10100	17	271	1.152	0	0

NOTE: * in model number denotes the number of channels. '1' denotes a single channel version and '2' a dual channel version. Hazardous Area Terminals 4 to 6 are only fitted on dual channel models.

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

GROUP	CAPACITANCE in μF	INDUCTANCE in mH	OR	L/R RATIO in $\mu\text{H}/\Omega$
Type KFD0-SD2-Ex*.1045				
IIC	0.107	4.11		60
IIB	0.82	16.44		242
IIA	2.90	32.88		485
I	4.15	53.95		796
Type KFD0-SD2-Ex*.1245				
IIC	0.107	2.93		51
IIB	0.82	11.75		205
IIA	2.90	23.50		410
I	4.15	38.56		673
Type KFD0-SD2-Ex*.1065				
IIC	0.353	0.73		37
IIB	2.06	2.93		150
IIA	8.50	5.87		300
I	10.60	9.64		492
Type KFD0-SD2-Ex1.10100				
IIC	0.375	0.48		30
IIB	2.20	1.93		123
IIA	9.00	3.87		246
I	11.00	6.35		405
Type KFD0-SD2-Ex1.1180 ([Ex ia Ga] IIB only)				
IIB	0.82	4.20		122
IIA	2.90	8.40		245
I	4.15	13.78		402

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 600nF for Group IIC.

16 Report Number

GB/BAS/ExTR15.0022/00

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
266-018BS-B	1 of 1	B	2014-Oct-22	Summary (ATEX)
266-018BS-03A	1 – 3	A	2008-Nov-18	Component Overlay
266-018BS-05A	1 – 14	A	2008-Nov-19	Printed Circuit Boards
16-0706IE-04C	1 – 14	C	2014-Mar-27	Mechanical Parts

Current drawings also associated with this certificate.

Number	Sheet	Issue	Date	Description
266-018BS-00	1 to 14	Original	2006-Jan-06	Description
266-018BS-01	1 – 7	Original	2005-Nov-23	Schematic
266-018BS-02	1 to 5	Original	2005-Dec-16	Safety Related Components
266-018BS-06A	1 – 12	A	2012-Feb-22	Transformer Details
266-018BS-10A	1 & 2	A	2012-Feb-22	Type Label

20 Certificate History

Certificate No.	Date	Comments
Baseefa06ATEX0252	2 October 2006	The release of the prime certificate. The associated test and assessment is documented in Test Report No. 06(C)0106/3.
Baseefa06ATEX0252/1	6 August 2012	To permit: <ul style="list-style-type: none"> - Minor drawing and PCB layout changes - 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 60079-0:2004 and EN 50020:2002 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"> ⊕ II (1)G [Ex ia Ga] IIC / IIB* ⊕ II (1)D [Ex ia Da] IIIC ⊕ I (M1) [Ex ia Ma] I <p>* [Ex ia Ga] IIB for KFD0-SD2-Ex1.1180.</p> <p>Report No. GB/BAS/ExTR12.0195/00. Project File No. 12/0186.</p>
Baseefa06ATEX0252 Issue 2	28 April 2015	This issue incorporates previously issued primary and supplementary certificates into one certificate, permits changes to the transformer, minor electrical changes and confirms that the equipment covered by this certificate has been reviewed against the requirements of EN 60079-0:2012 in respect of the differences from EN 60079-0:2006 and that none of these differences affect this equipment.
Report No. GB/BAS/ExTR15.0022/00. Project File No. 15/0068.		
For drawings applicable to each issue, see original of that issue.		