



IECEX Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.:	IECEX BAS 06.0058	Issue No: 3	<u>Certificate history:</u> Issue No. 3 (2015-04-28) Issue No. 2 (2012-08-06) Issue No. 1 (2009-03-25) Issue No. 0 (2006-10-03)
Status:	Current	Page 1 of 4	
Date of Issue:	2015-04-28		
Applicant:	Pepperl + Fuchs GmbH Lilienthalstrasse 200 68307 Mannheim Germany		
Electrical Apparatus: <i>Optional accessory:</i>	Type KFD0-SD2-Ex Series Transformer Isolated Solenoid Drivers		
Type of Protection:	Intrinsic Safety		
Marking:	[Ex ia Ga] IIC / IIB [Ex ia Da] IIIC [Ex ia Ma] I (-20°C ≤ Ta ≤ +60°C)		

Approved for issue on behalf of the IECEx
Certification Body:

R S Sinclair

Position:

General Manager

Signature:
(for printed version)

Date:

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the [Official IECEx Website](http://www.iecex.com).

Certificate issued by:

SGS Baseefa Limited
Rockhead Business Park
Staden Lane
Buxton
Derbyshire
SK17 9RZ
United Kingdom





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Manufacturer: **Pepperl + Fuchs GmbH**
Lilienthalstrasse 200
68307 Mannheim
Germany

Additional Manufacturing
location(s):

Pepperl + Fuchs PTE Ltd
P + F Building
18 Ayer Rajah Crescent
139942
Singapore

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

STANDARDS:

The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0 : 2011 Explosive atmospheres - Part 0: General requirements
Edition:6.0
IEC 60079-11 : 2011 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition:6.0

*This Certificate **does not** indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.*

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in

Test Report:

GB/BAS/ExTR06.0100/00 GB/BAS/ExTR09.0057/00 GB/BAS/ExTR12.0196/00
GB/BAS/ExTR15.0022/00

Quality Assessment Report:

DE/PTB/QAR06.0007/03 DE/PTB/QAR06.0008/06



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Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

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)

See Annex for electrical parameters.

CONDITIONS OF CERTIFICATION: NO



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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above):

Variation 3.1

To permit minor mechanical changes to the transformer.

Variation 3.2

To permit minor changes to the circuitry and PCB.

Variation 3.3

To confirm that the equipment covered by this certificate has been reviewed against the requirements of IEC 60079-0:2011 in respect of the differences from IEC 60079-0:2007 and that none of these differences affect this equipment.

ExTR: **GB/BAS/ExTR15.0022/00**

File Reference: **15/0068**

Annex:

[IECEx BAS 06.0058 Annex.pdf](#)

Type KFD0-SD2-Ex Series Transformer Isolated Solenoid DriversNon-Hazardous Area Terminals 7 to 9

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

The circuit connected to non-hazardous area terminals 7 to 9 are designed to operate from a d.c. supply 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 (μF)	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 μH/Ω
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

Baseefa (2001) Ltd.

Rockhead Business Park
Staden lane, Buxton
Derbyshire
SK17 9RZ
United Kingdom



ANNEX to IECEx BAS 06.0058

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GROUP	CAPACITANCE in μF	INDUCTANCE in mH	OR	L/R RATIO in $\mu\text{H}/\Omega$
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] IIB only)				
IIB	0.82	4.20		122
IIA	2.90	8.40		245
I	4.15	13.78		402

Note: The above load parameters apply where:

1. The external circuit contains no combined lumped inductance L_i and capacitance greater than 1% of the above values.

Or 2. The inductance and capacitance are distributed as in a cable.

Or 3. The external circuit contains either only lumped inductance or lumped capacitance in combination with a cable.

In all other situations e.g. the external circuit contains combined lumped inductance and capacitance, up to 50% of each of the L and C values is allowed.