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 PTB 11.0034

Issue No: 1

Certificate history:
Issue No. 1 (2014-07-31)
Issue No. 0 (2011-05-10)

Status: **Current**

Date of Issue: **2014-07-31**

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

Equipment: **Isolation switching amplifier, type K*D*-SR*-Ex*.W.***
Optional accessory:

Type of Protection: **Intrinsic Safety**

Marking: [Ex ia Ga] IIC
[Ex ia Da] IIIC
[Ex ia Ma] I

Approved for issue on behalf of the IECEx Certification Body: Dr.-Ing. U. Johannsmeyer

Position: Head of Department "Explosion Protection in Sensor Technology and Instrumentation"

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.

Certificate issued by:

Physikalisch-Technische Bundesanstalt (PTB)
Bundesallee 100
38116 Braunschweig
Germany

Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin

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

Additional Manufacturing location(s):

Pepperl + Fuchs (Manufacturing) PTE LTD
18 Ayer Rajah Crescent
Singapore 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:

DE/PTB/ExTR11.0049/01

Quality Assessment Report:

DE/PTB/QAR06.0007/03 DE/PTB/QAR06.0008/05

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Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

The isolation switching amplifier type K*D*-SR*-Ex*.W.* is used for the transmission of control commands from the hazardous area into the non-hazardous area as well as for the safe electrical isolation of intrinsically safe and nonintrinsically safe circuits.

Covered types of isolation switching amplifier K*D*-SR*-Ex*.W.* :

KFD2-SR2-Ex1.W*

KFD2-SR2-Ex1.W.LB*

KFD2-SR2-Ex2.W*

KFD2-SR2-Ex2.W.SM*

Remark: the „*“ represents alpha numeric signs (e.g.-Y1). These signs are used to describe different versions of a module. These differences do not affect intrinsic safety.

The maximum permissible ambient temperature is 60°C.

SPECIFIC CONDITIONS OF USE: NO

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EQUIPMENT (continued):

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

- update of Standards and marking
- addition of a lacquered Version of the pcb
- slight modification of one of the used relay type
- add electrical data for Explosion Group IIIC
- slight modification of the schematic

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Additional information:

Annex:

IECExPTB1100341.pdf

Applicant: Pepperl + Fuchs GmbH
Lilienthalstrasse 200, 68307 Mannheim, Germany

Electrical Apparatus: Isolation switching amplifier, type K*D*-SR*-Ex*.W.*

Electrical data

Supply circuit ..... (terminals 14 and 15 resp. powerrail contacts PR1 and PR2)	direct voltage 20...30 V DC Safety voltage, max:				U_m = 253 V AC U_m = 125 V DC			
Fault signal output ..... (power rail contact PR4)	Safety voltage, max:				U_m= 40 V DC			
Output circuits ..... (terminals 7, 8, 9 and 10, 11, 12)	AC				DC			
	U ≤ 253 V		U ≤126.5 V		U ≤ 40 V		U ≤ 130 V	
	I ≤ 2 A		I ≤ 4 A		I ≤ 2 A		I ≤ 20 mA	
	S ≤ 500 VA				P ≤ 80 W			
	cosφ ≥ 0.7							
	Safety voltage, max.:				U_m= 253 V AC			

Input circuits ..... (terminals 1, 2, 3 resp. 4, 5, 6)
type of protection Intrinsic Safety Ex ia I/IIA/IIB/IIC/IIIC resp. Ex ib I/IIA/IIB/IIC/IIIC
maximum values per circuit:
U_o = 10.5 V
I_o = 13 mA
P_o = 34 mW
R_i = 807.7 Ω
linear characteristic
$C_i \approx 0$
$L_i \approx 0$

type of protection	Ex ia resp. ib			
	I	IIA	IIB/IIIC	IIC
maximum permissible external inductance L_O	1 H	1 H	840 mH	210 mH
maximum permissible external capacitance C_O	95 µF	75 µF	16.8 µF	2.41 µF

In the presence of concentrated capacitances and/or inductances in the intrinsically safe input circuit, the maximum permissible external capacitances and inductances are to be taken from the following table.

type of protection	Ex ia resp. ib			
	I	IIA	IIB/IIIC	IIC
maximum permissible external inductance L_O	20 mH	10 mH	7 mH	3 mH
maximum permissible external capacitance C_O	5.3 µF	4.6 µF	2.1 µF	620 nF

When both intrinsically safe input circuits are interconnected, the following maximum values result:
U_o = 10.5 V
I_o = 26 mA
P_o = 68 mW
R_i = 403.9 Ω
linear characteristic
$C_i \approx$ 0
$L_i \approx$ 0

type of protection	Ex ia resp. ib			
	I	IIA	IIB/IIIC	IIC
maximum permissible external inductance L_O	500 mH	420 mH	210 mH	52 mH
maximum permissible external capacitance C_O	95 µF	75 µF	16.8 µF	2.41 µF

In the presence of concentrated capacitances and/or inductances in the interconnnected intrinsically safe input circuits, the maximum permissible external capacitances and inductances are to be taken from the following table.

type of protection	Ex ia resp. ib			
	I	IIA	IIB/IIIC	IIC
maximum permissible external inductance L_O	20 mH	10 mH	7 mH	3 mH
maximum permissible external capacitance C_O	5.1 µF	4.4 µF	2.1 µF	590 nF

The intrinsically safe input circuits are safely electrically isolated from all other circuits up to a peak value of the nominal voltage of 375 V.

Special conditions for safe use

none

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