



# 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](http://www.iecex.com)

Certificate No.: IECEx TUN 04.0007

Issue No: 3

Certificate history:

[Issue No. 3 \(2014-10-01\)](#)

[Issue No. 2 \(2010-02-02\)](#)

[Issue No. 1 \(2004-02-06\)](#)

Status: **Current**

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Date of Issue: **2014-10-01**

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

Equipment: **Impulse evaluating device**

Optional accessory: *KF\*\*-UF\*-Ex\*\**

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:

Andreas Meyer

Position:

Head of IECExCB

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:

**TÜV NORD CERT GmbH**  
Hanover Office  
Am TÜV 1  
30519 Hannover  
Germany





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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  
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:

<b>IEC 60079-0 : 2011</b> Edition:6.0	Explosive atmospheres - Part 0: General requirements
<b>IEC 60079-11 : 2011</b> Edition:6.0	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
<b>IEC 60079-26 : 2006</b> Edition:2	Explosive atmospheres - Part 26: Equipment with equipment protection level (EPL) Ga

*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*

IECEX ATR:  
DE/TUN/ExTR06.0053/02  
DE/PTB/QAR06.0007/03  
DE/PTB/QAR06.0008/05

File Reference:  
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## Schedule

### EQUIPMENT:

*Equipment and systems covered by this certificate are as follows:*

See attachment.

**SPECIFIC CONDITIONS OF USE: NO**



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

The changes concern some components, changes of the internal assembly and the standards used for assessment.

**Annex:**

[Attachment to CoC IECEX TUN 04.0007 issue 3.pdf](#)

The following modules had been assessed:

KFD2-UFT-Ex2.D\*  
 KFU8-UFT-Ex2.D\*  
 KFD2-UFC-Ex1.D\*  
 KFU8-UFC-Ex1.D\*

Remark: the character „\*“ represents alpha numeric signs. These signs are used to describe different future versions of the modules. These differences must not affect intrinsic safety.

Permissible ambient temperature range: -20 °C to + 60 °C.

Electrical data

Supply circuit (terminals 23, 24)	U = 20 .. 30 V d.c. , U <sub>m</sub> = 40 V (KFD2)	
	U = 20 .. 90 V d.c. , U <sub>m</sub> = 253 V (KFU8)	
	or 48 .. 253 V a.c.	
or via Power Rail (terminals PR: 1, 2)	U = 20 .. 30 V d.c. , U <sub>m</sub> = 40 V (only KFD2)	
Current output (terminals 7, 8)	I = 0/4 .. 20 mA , U <sub>m</sub> = 40 V	
	R <sub>max</sub> = 650 Ω	
Contact circuits (terminals 10, 11, 12 And 16, 17, 18)	alternating voltage U = 253 V AC I = 2 A P = 500 W U <sub>m</sub> = 253 V cos φ ≥ 0.7	direct voltage U = 40 V I = 2 A P = 80 W U <sub>m</sub> = 253 V resistive load
Transistor outputs (terminals 19, 20 and 20, 21)		U <sub>m</sub> = 40 V
Control inputs (terminals 13, 14 and 14, 15)		U <sub>m</sub> = 40 V
Interface RS232 (3.5 mm plug)		U <sub>m</sub> = 40 V
Interface RS485 (terminals PR: 3, 5)		U <sub>m</sub> = 40 V

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Sum error  
 (terminal PR: 4)

$U_m = 40V$

Input circuits  
 (terminals 1, 3 resp. 4, 6)

in type of protection „Intrinsic Safety“ Ex ia IIC, Ex ia IIIC or Ex ia I

Maximum values:

per input	2 inputs parallel
$U_o = 10.1 V$	$U_o = 10.1 V$
$I_o = 13.5 mA$	$I_o = 27 mA$
$P_o = 34 mW$	$P_o = 68 mW$
$R_i = 758 \Omega$	$R_i = 379 \Omega$

Characteristic line: linear

Effective inner inductance:  $L_i =$  negligibly small  
 Effective inner capacitance:  $C_i =$  negligibly small

per input				
	Ex ia IIC	Ex ia IIB resp. IIIC	Ex ia IIA	Ex ia I
$L_o$	195 mH	730 mH	1000 mH	1000 mH
$C_o$	2.87 $\mu F$	19.4 $\mu F$	93 $\mu F$	79 $\mu F$
2 inputs parallel				
	Ex ia IIC	Ex ia IIB resp. IIIC	Ex ia IIA	Ex ia I
$L_o$	46 mH	170 mH	380 mH	600 mH
$C_o$	2.87 $\mu F$	19.4 $\mu F$	93 $\mu F$	79 $\mu F$

The above mentioned values of the outer reactance apply only on condition that simultaneous appearance of the outer inductance and capacitance does not need to be considered.

In case of simultaneous appearance of capacitance and inductance in concentrated form the permissible maximum values per input or for 2 inputs parallel have to be taken from the following table:

	Ex ia IIC	Ex ia IIB resp. IIIC	Ex ia IIA	Ex ia I
$L_o$	5 mH	10 mH	20 mH	20 mH
$C_o$	0.4 $\mu F$	1.5 $\mu F$	3.0 $\mu F$	3.0 $\mu F$

The intrinsically safe input circuits are safely galvanically separated from other circuits up to a peak crest value of the voltage of 375 V.  
 The intrinsically safe input circuits are galvanically connected with each other.