# IECEx Certificate of Conformity

## INTERNATIONAL ELECTROTECHNICAL COMMISSION
### IEC Certification System for Explosive Atmospheres

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

| | | | |
|---|---|---|---|
| Certificate No.: | **IECEx FIDI 21.0009X** | Page 1 of 4 | Certificate history: |
| Status: | **Current** | Issue No: 2 | Issue 1 (2024-09-27)<br>Issue 0 (2022-06-14) |
| Date of Issue: | 2025-05-08 | | |
| Applicant: | **Pepperl+Fuchs SE**<br>Lilienthalstrasse 200<br>68307 Mannheim<br>**Germany** | | |
| Equipment: | **Isolated barrier type: KFD0-SD2-Ex* and KFD2-SLD-Ex*** | | |
| Optional accessory: | | | |
| Type of Protection: | **Intrinsic safety 'ia'; Increased safety 'ec'** | | |
| Marking: | Ex ec [ia Ga] IIC T4 Gc<br>[Ex ia Da] IIIC<br>[Ex ia Ma] I | | |

Approved for issue on behalf of the IECEx Certification Body: **Marino Kelava**

Position: **Certification Signatory**

Signature:
(for printed version)

Date:
(for printed version)

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Certificate issued by:

**Fiditas Ltd**
**Slavka Tomerlina 44**
**Zagreb-Sesvete HR-10361**
**Croatia**

Fiditas
explosion safety solutions

# IECEx Certificate of Conformity



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68307 Mannheim
**Germany**

Manufacturing locations: **Pepperl+Fuchs Asia Pte. Ltd.**
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**Pepperl+Fuchs Co. Ltd.**
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Ho Chi Minh City
**Viet Nam**

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 equipment 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 60079-0:2017 Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

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

IEC 60079-7:2017 Explosive atmospheres - Part 7: Equipment protection by increased safety "e"
Edition:5.1

This Certificate **does not** indicate compliance with 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:

HR/FIDI/ExTR21.0014/00

Quality Assessment Report:

HR/FIDI/QAR24.0001/00

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**EQUIPMENT:**
Equipment and systems covered by this Certificate are as follows:

Isolated barriers are used for intrinsic safety applications. They supply power to solenoids, LEDs and audible alarms located in a hazardous area. These devices are controlled with a loop powered signal or a bus powered logic signal.

The devices are designed as associated apparatuses and can be installed in the non-hazardous area or in areas requiring EPL Gc equipment. The devices are associated apparatuses for areas requiring EPL Ga, Da or Ma equipment.

The voltage and current at the output terminals are limited to intrinsically safe levels. The hazardous area circuits are galvanically isolated from all other circuits up to a peak value of 375 V.

**Type designation**

KFD0-SD2-Ex#.1045*

KFD0-SD2-Ex#.1245*

KFD0-SD2-Ex#.1545*

KFD2-SLD-Ex#.1045*

KFD2-SLD-Ex#.1245*

KFD2-SLD-Ex#.1545*

“#” = “1” or “2” depending on the number of channels

“*” = “–Y” followed by numeric signs (e.g. –Y1). This “*” is optional and is used to describe different versions of a module. These differences do not affect intrinsic safety.

For details see Annex of this certificate.

**SPECIFIC CONDITIONS OF USE: YES as shown below:**

- The device must be installed and operated only in a controlled environment that ensures a pollution degree 2 (or better) according to IEC 60664-1.
- The device must be installed and operated only in an environment of overvoltage category II (or better) according to IEC 60664-1.
- Additional requirements for installation in areas requiring Equipment Protection Level Gc:

  The device must be installed and operated only in the surrounding enclosure that

  - complies with the requirements for surrounding enclosures according to IEC 60079-0,
  - is rated with the degree of protection IP54 according to IEC 60529.

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**DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)**
Update of new QAR reference HR/FIDI/QAR24.0001/00.

**Annex:**

IECExFIDI21.0009X_02_P+F Barrier Annex1.pdf

**General product information –** continued from the body certificate

**Non-intrinsically safe circuits:**

Inputs (all types):
Connection: Terminals 7, 8 for Channel 1 and Terminals 8, 9 for Channel 2
Rated Voltage: 0…30 V DC
Maximum Voltage $U_m$: 253 V

Power Supply (only KFD2-SLD-Ex*):
Connection: Terminals 14 and 15 resp. Power Rail contacts
Rated Voltage: 18 …30 V DC
Maximum Voltage $U_m$: 253 V

Collective error messaging (only KFD2-SLD-Ex*):
Connection: Power Rail contact PR4
Maximum Voltage $U_m$: 253 V

**Intrinsically safe circuits:**

Output circuits:
Connection: Terminals 1, 2, 3 for Channel 1 and Terminals 4, 5, 6 for Channel 2

KFD0-SD2-Ex1.1045*, KFD0-SD2-Ex2.1045*,
KFD2-SLD-Ex1.1045*, KFD2-SLD-Ex2.1045*:

| | | |
|---|---|---|
| Maximum values per channel: | $U_0$ | = 25.2 V |
| | $I_0$ | = 93 mA |
| | $P_0$ | = 586 mW |
| | Characteristic: | linear |
| | $C_i$ | = negligible |
| | $L_i$ | = negligible |

| Type of protection | Ex ia resp. ib | | | |
|---|---|---|---|---|
| | I | IIA | IIB/IIIC | IIC |
| Maximum permissible external inductance $L_O$ | 53.95 mH | 32.88 mH | 16.44 mH | 4.11 mH |
| Maximum permissible external capacitance $C_O$ | 4.15 µF | 2.9 µF | 820 nF | 107 nF |
| Maximum L/R ratio | 796 µH/Ω | 485 µH/Ω | 242 µH/Ω | 60 µH/Ω |

Note:
The above parameters of capacitance and inductance apply when one of the two conditions below is met:
- The total Li of the external circuit (excluding the cable) is < 1 % of the Lo value or
- The total Ci of the external circuit (excluding the cable) is < 1 % of the Co value.

The above parameters for capacitance and inductance are reduced to 50 % when both of the two conditions below are met:
- the total Li of the external circuit (excluding the cable) is ≥ 1 % of the Lo value and
- the total Ci of the external circuit (excluding the cable) is ≥ 1 % of the Co value.

The reduced capacitance of the external circuit (including cable) shall not be greater than 1µF for I, IIA.

KFD0-SD2-Ex1.1245*, KFD0-SD2-Ex2.1245*,
KFD2-SLD-Ex1.1245*, KFD2-SLD-Ex2.1245*:

| | | |
|---|---|---|
| Maximum values per channel: | $U_0$ | = 25.2 V |
| | $I_0$ | = 110 mA |
| | $P_0$ | = 693 mW |
| | Characteristic: | linear |
| | $C_i$ | = negligible |
| | $L_i$ | = negligible |

| Type of protection | Ex ia resp. ib | | | |
|---|---|---|---|---|
| | I | IIA | IIB/IIIC | IIC |
| Maximum permissible external inductance $L_O$ | 38.56 mH | 23.5 mH | 11.75 mH | 2.93 mH |
| Maximum permissible external capacitance $C_O$ | 4.15 µF | 2.9 µF | 820 nF | 107 nF |
| Maximum L/R ratio | 673 µH/Ω | 410 µH/Ω | 205 µH/Ω | 51 µH/Ω |

Note:
The above parameters of capacitance and inductance apply when one of the two conditions below is met:
- The total Li of the external circuit (excluding the cable) is < 1 % of the Lo value or
- The total Ci of the external circuit (excluding the cable) is < 1 % of the Co value.

The above parameters for capacitance and inductance are reduced to 50 % when both of the two conditions below are met:
- the total Li of the external circuit (excluding the cable) is ≥ 1 % of the Lo value and
- the total Ci of the external circuit (excluding the cable) is ≥ 1 % of the Co value.

The reduced capacitance of the external circuit (including cable) shall not be greater than 1µF for I, IIA.

KFD0-SD2-Ex1.1545*, KFD0-SD2-Ex2.1545*,
KFD2-SLD-Ex1.1545*, KFD2-SLD-Ex2.1545*:

| | | | | | |
|---|---|---|---|---|---|
| Maximum values per channel: | $U_0$ | = 25.2 V | or alternatively: | $U_0$ | = 25.2 V |
| | $I_0$ | = 52 mA | | $I_0$ | = 153 mA |
| | $P_0$ | = 850 mW | | $P_0$ | = 960 mW |
| | Ri | = 167 Ω | | Characteristic: | linear |
| | Characteristic: | angular | | $C_i$ | = negligible |
| | $C_i$ | = negligible | | $L_i$ | = negligible |
| | $L_i$ | = negligible | | | |

| Type of protection (valid for angular and linear characteristic) | Ex ia resp. ib | | | |
|---|---|---|---|---|
| | I | IIA | IIB/IIIC | IIC |
| Maximum permissible external inductance $L_O$ | 19.4 mH | 11.8 mH | 5.9 mH | 1.2 mH |
| Maximum permissible external capacitance $C_O$ | 4.15 µF | 2.9 µF | 820 nF | 107 nF |
| Maximum L/R ratio | 486 µH/Ω | 296 µH/Ω | 148 µH/Ω | 37 µH/Ω |

Note:
The above parameters of capacitance and inductance apply when one of the two conditions below is met:
- The total Li of the external circuit (excluding the cable) is < 1 % of the Lo value or
- The total Ci of the external circuit (excluding the cable) is < 1 % of the Co value.

The above parameters for capacitance and inductance are reduced to 50 % when both of the two conditions below are met:
- the total Li of the external circuit (excluding the cable) is ≥ 1 % of the Lo value and
- the total Ci of the external circuit (excluding the cable) is ≥ 1 % of the Co value.

The reduced capacitance of the external circuit (including cable) shall not be greater than 1µF for I, IIA

**Rated data:**
Single channel versions: Tamb = -40°C to +70°C

Dual channel versions: Tamb = -40°C to +60°C / +70°C
(extended ambient temperature range up to 70 °C, refer to the manual for necessary mounting conditions)

KFD2-SLD-Ex2.1545 both switches set to bus powered: - 40°C to + 70°C

Ingress protection: IP20