

EU-TYPE EXAMINATION CERTIFICATE



Equipment or Protective System intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU

- [3] EU-Type Examination Certificate Number: **UL 23 ATEX 3027X Rev. 0**
- [4] Product: **Isolated Barriers. Models KCD0-SD3-Ex#.1545* and KCD2-SLD-Ex#.1545***
- [5] Manufacturer: **Pepperl+Fuchs SE**
- [6] Address: **Lilienthalstrasse 200, 68307 Mannheim, Germany**
- [7] This product and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.
- [8] UL International Demko A/S, notified body number 0539 in accordance with Article 17 of the Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products 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. **DK/ULD/ExTR23.0018/00.**
- [9] Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
- EN IEC 60079-0:2018 EN 60079-11:2012**
- [10] If the sign "X" is placed after the certificate number, it indicates that the product is subject to the "Specific Conditions of Use" listed under item 17 of this certificate.
- [11] This EU-Type Examination Certificate relates only to the technical design of the specified product in accordance to the Directive 2014/34/EU. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by the certificate.
- [12] The marking of the product shall include the following (marking is provided in the Schedule as a part of item 15, if applicable):

II (1) G [Ex ia Ga] IIC
 II (1) D [Ex ia Da] IIIC
 I (M1) [Ex ia Ma] I

Certification Manager
Thomas Wilson

Date of issue: 2024-04-30

Notified Body

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Form-ULID-000217 (DCS:00-IC-F0056-1) – Issue 29.0

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Schedule

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[15] Description of Product

The 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 immune to the test pulses of various control systems. The devices simulate a minimum load at the input. The minimum load can be activated and de-activated. The line fault transparency function can display a line fault in the field by a change in impedance at the switching input of the solenoid driver. Line fault is indicated by a red LED and output via the fault indication.

The devices are designed as associated apparatus and can be installed in the non-hazardous area or in areas requiring EPL Gc equipment. The devices are associated apparatus 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 circuit is galvanically isolated from the non-hazardous area circuit.

Type designation:

KCD0-SD3-Ex#.1545*

KCD2-SLD-Ex#.1545*

Where:

"#" = "1" or "2" depending on the number of channels

"*" = ".SP" and/or "-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.

Temperature range

-40°C ≤ Ta ≤ +70°C (may be changed to any temperature range within these limits.)

Electrical data

Safe Area Connections:

KCD2-SLD-Ex*

Power Supply:

Connection	Terminals 9(+) and 10(-) resp. Power Rail contacts
Rated Voltage:	18 ...30 V DC
Maximum Voltage Um	250 V

Collective error messaging:

Connection:	Power Rail contact PR4
Maximum Voltage Um	250 V

Inputs:

Connection:	Terminals 5(+), 6(-) for Channel 1 and Terminals 7(+), 8(-) for Channel 2
Rated Voltage:	0...30 V DC
Maximum Voltage Um	250 V

KCD0-SD3-Ex*

Inputs:

Connection	Terminals 5(+), 6(-) for Channel 1 and Terminals 7(+), 8(-) for Channel 2
Rated Voltage:	0...30 V DC
Maximum Voltage Um	250 V



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Hazardous Area Connections:

KCD2-SLD-Ex*, KCD0-SD3-Ex*

Output Circuits:

Connection	Terminals 1(+),2(-) for Channel 1 and Terminals 3(+),4(-) for Channel 2 (Blue colour)
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Maximum values per channel:

U _o =	25.3 V	Or alternatively	U _o =	25.3 V
I _o =	52 mA (angular charact.)		I _o =	153 mA (linear charact.)
P _o =	850 mW (angular charact.)		P _o =	960 mW (linear charact.)
R _i =	167 Ω		Characteristic: linear	
Characteristic: angular				
C _i =	negligible		C _i =	negligible
L _i =	negligible		L _i =	negligible

The maximum permissible external capacitances, inductances and L/R:

Type of protection	Ex ia or 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	2.86 μF	820 nF	106 nF
Maximum L/R ratio	486 μH/Ω	296 μH/Ω	148 μH/Ω	37 μH/Ω

Note:

The above parameters apply when 1 of the 2 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 2 conditions below are given:

- the total L_i of the external circuit (excluding the cable) is ≥ 1 % of the L_o value and
- the total C_i of the external circuit (excluding the cable) is ≥ 1 % of the C_o value.

The reduced capacitance of the external circuit (including cable) shall not be greater than 1μF for I, IIA, IIB / IIIC and 600nF for IIC.

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

Routine tests

In accordance with clause 11.2 of the EN IEC 60079-11 standard, a dielectric strength test on each infallible transformer relied upon for Intrinsic Safety.

The protective transformers used in the associated apparatus are to be subjected to an alternating current potential as indicated in the following table for at least 60s. Alternatively, the test may be carried out at 1.2 times the test voltage, but with a reduced duration of at least 1s.

The applied voltage shall remain constant during the test. The current flowing during the test shall not increase above that which is expected from the design of the circuit and shall not exceed 5mA r.m.s. at any time.

During these tests, there shall be no breakdown of insulation between windings

Where applied	RMS test voltage
Between input and output windings (T001, T002 = Pins 9, 11 to Pins 7, 8)	1500V

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Descriptive Documents

The scheduled drawings are listed in the report no. provided under item no. [8] on page 1 of this EU-Type Examination Certificate.



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Specific conditions of use:

- The device must be installed and operated only in an environment of overvoltage category II (or better) according to IEC/EN 60664-1.
- The device must be installed and operated only in a controlled environment that ensures a pollution degree 2 (or better) according to IEC/EN 60664-1.

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Essential Health and Safety Requirements

The Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9.

Additional information

The manufacturer shall inform the notified body concerning all modifications to the technical documentation as described in Annex III to Directive 2014/34/EU of the European Parliament and the Council of 26 February 2014.