

CERTIFICATE OF CONFORMITY




- HAZARDOUS (CLASSIFIED) LOCATION ELECTRICAL EQUIPMENT PER US REQUIREMENTS**
- Certificate No:** FM19US0067X
- Equipment:
(Type Reference and Name)** KCD2-RR-Ex1, KCD2-RR2-Ex1 Transformer Isolated Resistance Repeater
- Name of Listing Company:** Pepperl+Fuchs GmbH
- Address of Listing Company:** Lilienthalstrasse 200
Mannheim D-68307
Germany
- The examination and test results are recorded in confidential report number:

3036730 dated 28th October 2010
- FM Approvals LLC, certifies that the equipment described has been found to comply with the following Approval standards and other documents:

FM Class 3600:2018, FM Class 3610:2018, FM Class 3611:2018, FM Class 3810:2018,
ANSI/ISA 61010-1:2012, ANSI/ISA-12.12.01:2015,
ANSI/ISA 60079-0:2013, ANSI/UL 60079-11:2014, ANSI/ISA 60079-7:2013
- If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.
- This certificate relates to the design, examination and testing of the products specified herein. The FM Approvals surveillance audit program has further determined that the manufacturing processes and quality control procedures in place are satisfactory to manufacture the product as examined, tested and Approved.
- Equipment Ratings:**

Intrinsically safe outputs for connection to Class I, II and III, Division 1, Groups A, B, C, D, E, F and G; AEx ia outputs for connection to Zone 0, Group IIC; AEx ec for Zone II, Group IIC; Nonincendive for Class I, Division 2, Groups A, B, C and D; in accordance with drawing number 116-0457; hazardous (classified) locations; T4 for -40°C ≤ Ta ≤ +70°C.

Certificate issued by:



J.E. Marquedant
VP, Manager - Electrical Systems

12 September 2019

Date

To verify the availability of the Approved product, please refer to www.approvalguide.com

THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE

FM Approvals LLC, 1151 Boston-Providence Turnpike, Norwood, MA 02062 USA
T: +1 (1) 781 762 4300 F: +1 (1) 781 762 9375 E-mail: information@fmapprovals.com www.fmapprovals.com

SCHEDULE



US Certificate Of Conformity No: FM19US0067X

11. The marking of the equipment shall include:

IS circuits for CL I, II, III, DIV 1, GP A-G;
CL 1, DIV 2, GP A-D T4;
IS circuits for CL 1, ZN 0 [AEx ia] IIC;
CL I, ZN 2, AEx ec IIC T4 Gc;
Installed per 116-0457;
 $-40^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$.

12. **Description of Equipment:**

General – The KCD2-RR-Ex1 and KCD2-RR2-Ex1 Transformer Isolated Resistance Repeaters transfer RTD resistance values from hazardous areas to safe areas. A 2-wire, 3-wire, or 4-wire mode is available depending on the required accuracy. All resistive sensors may be connected and function correctly within the limits “measurement current x resistance of sensor (R_m) $\leq 4.2V$ ”.

Construction – Both models are housed in a polycarbonate enclosure offering a degree of protection of IP20.

Ratings – 30V, 28 mA, $U_m = 250V$.

KCD2-RR-Ex1. Transformer Isolated Resistance Repeater.

Entity Parameters:

Terminals 1, 2, 3 and 4:

U_o (V)	I_{sc}, I_o (mA)	P_o (mW)	Group	C_a, C_o (μF)	L_a, L_o (mH) or L_o/R_o ($\mu H/\Omega$)	
12.4	17.4	54	A, B, IIC	1.24	117	597
			C, E, F, G, IIB	7.9	469	2388
			D, IIA	30	939	4776

THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE

FM Approvals LLC. 1151 Boston-Providence Turnpike, Norwood, MA 02062 USA

T: +1 (1) 781 762 4300 F: +1 (1) 781 762 9375 E-mail: information@fmapprovals.com www.fmapprovals.com

SCHEDULE



US Certificate Of Conformity No: FM19US0067X

KCD2-RR2-Ex1. Transformer Isolated Resistance Repeater.

Entity Parameters:

Terminals 1, 2, 3 and 4:

U _o (V)	I _{sc} , I _o (mA)	P _o (mW)	Group	C _a , C _o (μF)	L _a , L _o (mH)	or	L _o /R _o (μH/Ω)
9.5	39.22	93	A, B, IIC	3.7	23		351
			C, E, F, G, IIB	27	92		1405
			D, IIA	255	184		2811

13. **Specific Conditions of Use:**

1. In Class I, Division 2 installations, the subject equipment shall be mounted within a tool-secured enclosure which is capable of accepting one or more of the Class I, Division 2 wiring methods specified in the National Electric Code (ANSI/NFPA 70).
2. In Class I, Zone 2 installations, the subject equipment shall be mounted within a tool-secured enclosure which is capable of accepting one or more of the Class I, Zone 2 wiring methods specified in the National Electric Code (ANSI/NFPA 70). The equipment shall be installed in an AEx ec certified IP54 enclosure unless the apparatus is intended to be afforded an equivalent degree of protection by location.
3. The equipment shall only be used in an area of pollution degree of not greater than 2.

14. **Test and Assessment Procedure and Conditions:**

This Certificate has been issued in accordance with FM Approvals US Certification Requirements.

15. **Schedule Drawings**

A copy of the technical documentation has been kept by FM Approvals.

16. **Certificate History**

Details of the supplements to this certificate are described below:

Date	Description
28 th October 2010	Original Issue.
2 nd July 2019	<u>Supplement 1:</u> PR453408 dated 2 nd July 2019. Description of the Change: Addition of the KCD2-RR2-Ex1 variant. The ambient temperature range was expanded to -40°C to +70°C. The original certificate #3036730coc is reissued in the new format.

THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE

FM Approvals LLC. 1151 Boston-Providence Turnpike, Norwood, MA 02062 USA

T: +1 (1) 781 762 4300 F: +1 (1) 781 762 9375 E-mail: information@fmaprovals.com www.fmaprovals.com

SCHEDULE



US Certificate Of Conformity No: FM19US0067X

12 th September 2019	<u>Supplement 2:</u> Revision Report RR220138 dated 12 th September 2019. Description of the Change: For model KCD2-RR2-Ex1, the Uo value is changed. Compliance is not affected.
---------------------------------	---

FM Approvals

FM Approvals

FM Approvals

THIS CERTIFICATE MAY ONLY BE REPRODUCED IN ITS ENTIRETY AND WITHOUT CHANGE

FM Approvals LLC. 1151 Boston-Providence Turnpike, Norwood, MA 02062 USA
T: +1 (1) 781 762 4300 F: +1 (1) 781 762 9375 E-mail: information@fmapprovals.com www.fmapprovals.com