

1 **EU - TYPE EXAMINATION CERTIFICATE**

2 **Safety Device, Controlling Device or Regulating Device intended for use outside a potentially explosive atmosphere but required for or contributing to the safe functioning of Equipment and Protective Systems with respect to the risks of explosion**
Directive 2014/34/EU

3 EU - Type Examination Certificate **Baseefa10ATEX0061X – Issue 3**
Number:

3.1 In accordance with Article 41 of Directive 2014/34/EU, EC-Type Examination Certificates referring to 94/9/EC that were in existence prior to the date of application of 2014/34/EU (20 April 2016) may be referenced as if they were issued in accordance with Directive 2014/34/EU. Supplementary Certificates to such EC-Type Examination Certificates, and new issues of such certificates, may continue to bear the original certificate number issued prior to 20 April 2016.

4 Product: **Resistance Repeater Type KCD2-RR(2)-Ex1(.SP)**

5 Manufacturer: **Pepperl + Fuchs GmbH**

6 Address: **Lilienthalstrasse 200, 68307 Mannheim, Germany**

7 This re-issued certificate extends EC Type Examination Certificate No. Baseefa10ATEX0061 to apply to product designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

8 SGS Fimko Oy, Notified Body number 0598, in accordance with Article 17 of 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.

8.1 The original certificate was issued by SGS Baseefa Ltd (UK Notified Body 1180). It, and any supplements previously issued by SGS Baseefa Ltd have been transferred to the supervision of SGS Fimko Oy (EU Notified Body 0598). The original certificate number is retained.

The examination and test results are recorded in confidential Report No. **See Certificate History**

9 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN IEC 60079-0:2018 EN 60079-11:2012

except in respect of those requirements listed at item 18 of the Schedule.

10 If the sign “X” is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.

11 This EU - TYPE EXAMINATION CERTIFICATE relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

12 The marking of the product shall include the following :

See Schedule

SGS Fimko Oy Customer Reference No. **0808**

Project File No. **19/0107**

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Authorised Signatory for SGS Fimko Oy

13

Schedule

14

Certificate Number Baseefa10ATEX0061 Issue 3

15 Description of Product

The Resistance Repeater Type KCD2-RR(2)-Ex1(.SP) is designed to transfer a resistance value from a hazardous area to unspecified apparatus located in a non-hazardous area. The hazardous area circuit is galvanically isolated from the non-hazardous area circuit using transformers and the voltage and current appearing at the hazardous area connectors are limited to intrinsically safe levels.

The Resistance Repeater Type KCD2-RR(2)-Ex1(.SP) comprises a number of electronic components including three isolating transformers, fuses, zener diodes and resistors all mounted on a single printed circuit board and housed in a plastic enclosure with removable terminals (units fitted with the spring terminal plugs in place of screw terminal plugs will have the addition of “.SP” to the type name i.e. KCD2-RR(2)-Ex1(.SP). An LED provides power status indication.

The KCD2-RR(2)-Ex1(.SP) may be marked as follows:

⊕ II (1) G [Ex ia Ga] IIC (-20°C / -40°C ≤ Ta ≤ +60°C / +70°C)

⊕ II (1) D [Ex ia Da] IIIC (-20°C / -40°C ≤ Ta ≤ +60°C / +70°C)

⊕ I (M1) [Ex ia Ma] I (-20°C / -40°C ≤ Ta ≤ +60°C / +70°C)

Input / Output Parameters

Non-Hazardous Area Terminals

KCD2-RR-Ex1(.SP) & KCD2-RR2-Ex1(.SP)

Power Supply

Terminal 9 wrt 10 or Power rail (terminal 1 wrt 2)

$$U_m = 250V$$

The apparatus is designed to operate from a d.c. supply of up to 30V on the above terminals.

Output

Terminals 5, 6, 7 & 8

$$U_m = 250V$$

Hazardous Area Terminals

KCD2-RR-Ex1(.SP)

Input

Terminals 1, 2, 3 & 4

$$\begin{aligned} U_o &= 12.4V & C_i &= 0 \\ I_o &= 17.4mA & L_i &= 0 \\ P_o &= 54mW \end{aligned}$$

The capacitance and either the inductance or inductance to resistance ratio (L/R) of the load connected to hazardous area terminals of the apparatus must not exceed the following values:

GROUP	CAPACITANCE (μF)	INDUCTANCE (mH)	OR	L/R RATIO ($\mu H/ohm$)
IIC	1.24	117		597
IIB / IIIC	7.9	469		2388

GROUP	CAPACITANCE	INDUCTANCE	OR	L/R RATIO
IIA	30	939		4776
I	31	1541		7838

NOTE:

The above parameters apply when one of the two 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 two conditions below are given:

- the total L_i of the external circuit (excluding the cable) $\geq 1\%$ of the L_o value and
- the total C_i of the external circuit (excluding the cable) $\geq 1\%$ of the C_o value.

Note: the reduced capacitance of the external circuit (including cable) shall not be greater than $1\mu\text{F}$ for Groups I, IIA & IIB/IIIC and 600nF for Group IIC.

KCD2-RR2-Ex1(.SP)

Input

Terminals 1, 2, 3 & 4

$$\begin{array}{ll}
 U_o = 9.5\text{V} & C_i = 0 \\
 I_o = 39.22\text{mA} & L_i = 0 \\
 P_o = 93\text{mW} &
 \end{array}$$

The capacitance and either the inductance or inductance to resistance ratio (L/R) of the load connected to hazardous area terminals of the apparatus must not exceed the following values:

GROUP	CAPACITANCE (μF)	INDUCTANCE (mH)	OR	L/R RATIO ($\mu\text{H}/\text{ohm}$)
IIC	3.7	23		351
IIB / IIIC	27	92		1405
IIA	255	184		2811
I	1000	303		4612

NOTE:

The above parameters apply when one of the two 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 two conditions below are given:

- the total L_i of the external circuit (excluding the cable) $\geq 1\%$ of the L_o value and
- the total C_i of the external circuit (excluding the cable) $\geq 1\%$ of the C_o value.

Note: the reduced capacitance of the external circuit (including cable) shall not be greater than $1\mu\text{F}$ for Groups I, IIA & IIB/IIIC and 600nF for Group IIC.

16 Report Number

See Certificate History

17 Specific Conditions of Use

1. The KCD2-RR(2)-Ex1(.SP) must be installed in a controlled environment with suitably reduced pollution.

18 Essential Health and Safety Requirements

In addition to the Essential Health and Safety Requirements (EHSRs) covered by the standards listed at item 9, the following are considered relevant to this product, and conformity is demonstrated in the report:

Clause	Subject	Compliance
1.2.7	LVD type requirements	Manufacturer responsibility
1.2.8	Overloading of equipment (protection relays, etc.)	User/Installer responsibility
1.4.1	External effects	User/Installer responsibility
1.4.2	Aggressive substances, etc.	User/Installer responsibility

19 Drawings and Documents

New drawings submitted for this issue of certificate:

Number	Sheet	Issue	Date	Description
16-0665BS-D	1 of 1	D	2019-Aug-23	Summary
16-0665BS-00C	1 – 10	C	2019-Aug-22	Description
16-0665BS-01A	1 & 2	A	2019-Apr-29	Schematic
16-0665BS-02A	1 – 3	A	2019-Jul-08	I.S. Relevant Components
16-0665BS-03A	1 of 1	A	2019-Apr-29	Component Layout
16-0665BS-05A	1 – 4	A	2019-Apr-29	PCB Layout
16-0665BS-06A	1 – 7	A	2019-Apr-29	Transformers
16-0665BS-10C	1 – 4	C	2019-Aug-23	Type Label

Current drawings which remain unaffected by this issue:

Number	Sheet	Issue	Date	Description
16-533-04	1 & 2	-	05-12-05	Housing KCD2

These drawings are common to, and held with, IECEx BAS 10.0024X

20 Certificate History

Certificate No.	Date	Comments
Baseefa10ATEX0061	12 March 2010	The release of the prime certificate. The associated test and assessment against the requirements of EN 60079-0:2006, EN 60079-11:2007 & EN 61241-11:2006 is documented in Test Report No. GB/BAS/ExTR10.0049/00. Project File No. 08/0143.
Baseefa10ATEX0061/1	1 March 2012	To permit the use of Phoenix spring terminal plugs as an alternative to the screw terminal plug. Units fitted with the spring terminal plugs will have the addition of “.SP” to the type name i.e. KCD2-RR-Ex1.SP. Additionally, the current design meets the requirements of EN 60079-0: 2009 with the marking now as follows: ⓧ II (1)G [Ex ia Ga] IIC ⓧ II (1)D [Ex ia Da] IIC ⓧ I (M1) [Ex ia Ma] I Test Report No. GB/BAS/ExTR12.0043/00. Project File No. 11/0857.

Certificate No.	Date	Comments
Baseefa10ATEX0061 Issue 2	20 June 2018	<p>This issue incorporates previously issued primary and supplementary certificates into one certificate, permits minor documentation changes and confirms that the equipment covered by this certificate has been reviewed against the requirements of EN 60079-0:2012+A11:2013 & EN 60079-11:2012 in respect of the differences from EN 60079-0:2009, EN 60079-11:2007 & EN 61241-11:2006 and that none of these differences affect this equipment. The equipment is already appropriately marked.</p> <p>Report No. GB/BAS/ExTR18.0156/00. Project File No. 18/0359.</p>
Baseefa10ATEX0061X Issue 3	8 October 2019	<p>This issue permits minor electrical and mechanical changes, removal of conformal coating (a specific condition of use referring to a controlled environment now applies), a change to the ambient range from $-20^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$ to $-20^{\circ}\text{C} / -40^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C} / +70^{\circ}\text{C}$ and additionally confirms that the current design meets the requirements of EN IEC 60079-0:2018. Test Report No. GB/BAS/ExTR19.0174/00. Project File No. 19/0107.</p>
For drawings applicable to each issue, see original of that issue.		