

1 **EC - TYPE EXAMINATION CERTIFICATE**

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres
Directive 94/9/EC**

3 EC - Type Examination Certificate Number: **Baseefa13ATEX0080**

4 Equipment or Protective System: **Isolated Switch Amplifier Type KCD2-ST/SOT/SON-Ex***

5 Manufacturer: **Pepperl + Fuchs GmbH**

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

7 This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 Baseefa, Notified Body number 1180, in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment or protective system has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems 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. GB/BAS/ExTR13.0127/00

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

EN 60079-0:2012 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 equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.

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

12 The marking of the equipment or protective system shall include the following :

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

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

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

Baseefa Customer Reference No. **0808**

Project File No. **13/0183**

This document is issued by the Company subject to its General Conditions for Certification Services accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and the Supplementary Terms and Conditions accessible at <http://www.baseefa.com/terms-and-conditions.asp>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained herein reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. It does not necessarily indicate that the equipment may be used in particular industries or circumstances. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, schedule included, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS Baseefa Limited

Rockhead Business Park, Staden Lane,
Buxton, Derbyshire SK17 9RZ

Telephone +44 (0) 1298 766600 Fax +44 (0) 1298 766601

e-mail info@baseefa.com web site www.baseefa.com

Registered in England No. 4305578.

Registered address: Rossmore Business Park, Ellesmere Port, Cheshire, CH65 3EN


R S SINCLAIR

GENERAL MANAGER

On behalf of SGS Baseefa Limited

Re-issued 3 July to replace original

13

Schedule

14

Certificate Number Baseefa13ATEX0080

15 Description of Equipment or Protective System

The Isolated Switch Amplifier Type KCD2-ST/SOT/SON-Ex* is designed to transfer a digital signal 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 Isolated Switch Amplifier Type KCD2-ST/SOT/SON-Ex* comprises a number of electronic components including two isolating transformers, fuses, zener diodes and resistors all mounted on a single printed circuit board and housed in a plastic enclosure with removable terminals and PowerRail contacts. LEDs provide status indication.

Input / Output Parameters

Non-Hazardous Area Connector(s)

Power Supply: pin 9[+] wrt pin 10[-] or PR1[+] wrt PR2[-]

$$U_m = 253V \text{ r.m.s.}$$

The circuit connected to the power supply pins is designed to operate from a d.c. supply voltage of up to 30V.

Outputs: pin 5[+] wrt pin 6[-] (Output 1) and pin 7[+] wrt pin 8[-] (Output 2)

$$U_m = 253V \text{ r.m.s.}$$

The circuit connected to the output is designed to operate from a d.c. supply of up to 30V.

Fault Signal: PR4

$$U_m = 253V \text{ r.m.s.}$$

The circuit connected to the output is designed to operate from a d.c. supply of up to 30V.

Hazardous Area Connector(s)

Input: pin 1[+] wrt pin 2[-] and pin 3[+] wrt pin 4[-]

$$\begin{aligned} U_o &= 10.5V & C_i &= 0 \\ I_o &= 17.1mA & L_i &= 0 \\ P_o &= 45mW \end{aligned}$$

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

GROUP	CAPACITANCE (μF)	INDUCTANCE (mH)	OR	L/R RATIO ($\mu\text{H}/\text{ohm}$)
IIC	2.41	121.5		790
IIB	16.8	486.3		3165
IIA	75	972.7		6330
I	95	1000		10000

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 % of the L_o value and
- the total C_i of the external circuit (excluding the cable) \geq % 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 and 600nF for Group IIC.

16 Report Number

GB/BAS/ExTR13.0127/00

17 Specific Conditions of Use

None

18 Essential Health and Safety Requirements

All relevant Essential Health and Safety Requirements are covered by the standards listed at item 9.

19 Drawings and Documents

Number	Sheet	Issue	Date	Description
16-0957BS	1 of 1	-	2013-Jun-03	Summary
16-0957BS-00	1 – 8	-	2013-Jan-17	Description
16-0957BS-01	1 – 4	-	2013-Jan-17	Schematic
16-0957BS-02	1 of 1	-	2013-Jan-17	Relevant Components
16-0957BS-03	1 – 4	-	2013-Jan-17	Layouts
16-0957BS-04	1 & 2	-	2013-Jan-17	Mechanical Parts (Housing)
16-0957BS-05	1 – 8	-	2013-Jan-17	Layouts
16-0957BS-06	1 – 4	-	2013-Jan-17	Transformer
16-0957BS-09	1 & 2	-	2013-Jan-17	Instructions
16-0957BS-10	1 of 1	-	2013-Jun-03	Type Label

These drawings are common to, and held with, IECEx BAS 13.0046.

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 Number: **Baseefa13ATEX0080 – Issue 1**

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: **Isolated Switch Amplifier Type KCD2-ST/SOT/SON-Ex***

5 Manufacturer: **Pepperl + Fuchs GmbH**

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

7 This re-issued certificate extends EC Type Examination Certificate No. Baseefa13ATEX0080 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 Baseefa, Notified Body number 1180, 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.

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 60079-0:2012+A11:2013 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 :

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

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

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

SGS Baseefa Customer Reference No. **0808**

Project File No. **16/0393**

This document is issued by the Company subject to its General Conditions for Certification Services accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx> and the Supplementary Terms and Conditions accessible at <http://www.sgs.com/SGSBaseefa/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained herein reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. It does not necessarily indicate that the equipment may be used in particular industries or circumstances. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, schedule included, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS Baseefa Limited

Rockhead Business Park, Staden Lane,
Buxton, Derbyshire SK17 9RZ

Telephone +44 (0) 1298 766600 Fax +44 (0) 1298 766601
e-mail baseefa@sgs.com web site www.sgs.co.uk/baseefa

Registered in England No. 4305578.

Registered address: Rossmore Business Park, Ellesmere Port, Cheshire, CH65 3EN



R S SINCLAIR
TECHNICAL MANAGER

On behalf of SGS Baseefa Limited

13

Schedule

14

Certificate Number Baseefa13ATEX0080

15 Description of Product

The Isolated Switch Amplifier Type KCD2-ST/SOT/SON-Ex* is designed to transfer a digital signal from a hazardous area to unspecified equipment 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 Isolated Switch Amplifier Type KCD2-ST/SOT/SON-Ex* comprises a number of electronic components including two isolating transformers, fuses, zener diodes and resistors all mounted on a single printed circuit board and housed in a plastic enclosure with removable terminals and PowerRail contacts. LEDs provide status indication.

Input / Output Parameters

Non-Hazardous Area Connector(s)

Power Supply: pin 9[+] wrt pin 10[-] or PR1[+] wrt PR2[-]

$$U_m = 253V \text{ r.m.s.}$$

The circuit connected to the power supply pins is designed to operate from a d.c. supply voltage of up to 30V.

Outputs: pin 5[+] wrt pin 6[-] (Output 1) and pin 7[+] wrt pin 8[-] (Output 2)

$$U_m = 253V \text{ r.m.s.}$$

The circuit connected to the output is designed to operate from a d.c. supply of up to 30V.

Fault Signal: PR4

$$U_m = 253V \text{ r.m.s.}$$

The circuit connected to the output is designed to operate from a d.c. supply of up to 30V.

Hazardous Area Connector(s)

Input: pin 1[+] wrt pin 2[-] and pin 3[+] wrt pin 4[-]

$$\begin{aligned} U_o &= 10.5V & C_i &= 0 \\ I_o &= 17.1mA & L_i &= 0 \\ P_o &= 45mW \end{aligned}$$

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

GROUP	CAPACITANCE (μF)	INDUCTANCE (mH)	OR	L/R RATIO ($\mu\text{H}/\text{ohm}$)
IIC	2.41	121.5		790
IIB	16.8	486.3		3165
IIA	75	972.7		6330
I	95	1000		10000

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 and 600nF for Group IIC.

16 Report Number

GB/BAS/ExTR17.0044/00

17 Specific Conditions of Use

None

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:

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
16-0957BSA	1 of 1	A	2016-May-02	Summary
16-0957BS-00A	1 of 1	A	2016-May-02	Description
16-0957BS-03A	1 – 4	A	2016-May-02	Layouts
16-0957BS-05A	1 – 8	A	2016-May-02	Layouts

Current drawings which remain unaffected by this issue:

Number	Sheet	Issue	Date	Description
16-0957BS	1 of 1	-	2013-Jun-03	Summary
16-0957BS-00	1 – 8	-	2013-Jan-17	Description
16-0957BS-01	1 – 4	-	2013-Jan-17	Schematic
16-0957BS-02	1 of 1	-	2013-Jan-17	Relevant Components
16-0957BS-03	1 – 4	-	2013-Jan-17	Layouts
16-0957BS-04	1 & 2	-	2013-Jan-17	Mechanical Parts (Housing)
16-0957BS-05	1 – 8	-	2013-Jan-17	Layouts
16-0957BS-06	1 – 4	-	2013-Jan-17	Transformer
16-0957BS-09	1 & 2	-	2013-Jan-17	Instructions
16-0957BS-10	1 of 1	-	2013-Jun-03	Type Label

All drawings are common to, and held with, IECEx BAS 13.0046.

20 Certificate History

Certificate No.	Date	Comments
Baseefa13ATEX0080	12 June 2013	The release of the prime certificate. The associated test and assessment against the requirements of EN 60079-0:2012 & EN 60079-11:2012 is documented in Test Report No. GB/BAS/ExTR13.0127/00. Project File No. 13/0183.
Baseefa13ATEX0080 Issue 1	14 February 2017	To permit the use of alternative PCB (the existing PCB layout is not obsoleted and may still be used) and to confirm that the safety device meets the requirements of EN 60079-0:2012+A11:2013; the safety device is already marked in accordance with the requirements of this standard. Test Report No. GB/BAS/ExTR17.0044/00. Project File No. 16/0393.

For drawings applicable to each issue, see original of that issue.