



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: **Baseefa06ATEX0093X**

4 Equipment or Protective System: **Type HiC282* Switch Amplifier**

5 Manufacturer: **Pepperl + Fuchs GmbH**

6 Address: **Königsberger Allee 87, 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 (2001) Ltd., 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. **05(C)0856/2**

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

EN 60079-0: 2004 EN 50020: 2002 EN 60079-26: 2004 IEC 61241-0: 2004 EN 61241-11: 2005

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 :

$\text{\textcircled{Ex}}$ **II (1) GD** **[Ex ia] IIC** $-20^{\circ}\text{C} \leq T_a \leq +60^{\circ}\text{C}$
[Ex iaD]

$\text{\textcircled{Ex}}$ **I (M1)** **[Ex ia] I**

This certificate may only be reproduced in its entirety, without any change, schedule included.

Baseefa Customer Reference No. **0808**

Project File No. **05/0856**

This certificate is granted subject to the general terms and conditions of Baseefa (2001) Ltd. It does not necessarily indicate that the equipment may be used in particular industries or circumstances.

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DIRECTOR
On behalf of
Baseefa (2001) Ltd.

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Registered in England No. 4305578 at the above address



13

Schedule

14

Certificate Number Baseefa06ATEX0093X

15 Description of Equipment or Protective System

The Type HiC282* Switch Amplifiers are designed to transfer digital signals from the hazardous area to unspecified apparatus located in the non-hazardous area. The voltage and current passed to the hazardous area are limited to intrinsically safe levels and have linear characteristics. Up to two hazardous area channels are galvanically isolated from the non-hazardous area circuit using transformers.

The Type HiC282* Switch Amplifier comprise a number of electronic components, including isolating transformers, fuses, zener diodes and resistors mounted on a single printed circuit board and housed in a plastic enclosure with two polarised sockets in the base of the enclosure for hazardous and non-hazardous connections via a terminal backplane. The non-hazardous area connections are via relay contacts with configuration switches allowing the setting of the direction of operation and lead monitoring. LED indication is provided for power-on and channel status.

There are two models of the Type HiC282* Switch Amplifier, the Type HiC2822 Two Channel Switch Amplifier and the Type HiC2821 Single Channel Switch Amplifier. The Type HiC2821 is a depopulated version of the HiC2822 with only one hazardous area channel.

Input/Output Parameters

Non-Hazardous Area Connector SL1 pins 1a, 1b, 2a, 2b, 7a, 8a, 9a and 10a

$U_m = 253V$ r.m.s.

The circuit connected to non-hazardous area connector SL1 pins 1a, 1b, 2a & 2b is designed to operate from a d.c. supply voltage up to 30V.

Non-hazardous area connector SL1 pins 7a & 8a (Channel 1) and 9a & 10a (Channel 2) are connected to relay contacts which can switch up to 50V d.c. and 0.5A.

Non-Hazardous Area Connector SL1 pin 6b (Fault Bus)

$U_m = 40V$ d.c.

The circuit connected to non-hazardous area connector SL1 pin 6b is designed to operate from a d.c. supply voltage up to 30V.

Hazardous Area Connector SL2 pins 5a w.r.t. 5b (Channel 1)

Or

Hazardous Area Connector SL2 pins 1a w.r.t. 1b (Channel 2 – HiC2822 model only)

$U_o = 10.5V$ $U_i = 12V$
 $I_o = 17.1mA$
 $P_o = 45mW$
 $C_i = 0$
 $L_i = 0$

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



GROUP	CAPACITANCE (μ F)	INDUCTANCE (mH)	OR	L/R RATIO (μ H/ohm)
IIC	2.41	121.5		801
IIB	16.8	486.3		1,628
IIA	75.0	972.7		1,628
I	73.1	1,000		1,628

Note: The above load parameters apply where:

1. The external circuit contains no combined lumped inductance L_i and capacitance C_i greater than 1% of the above values
- Or 2. The inductance and capacitance are distributed as in a cable.
- Or 3. The external circuit contains either only lumped inductance or lumped capacitance in combination with a cable.

In all other situations e.g. the external circuit contains combined lumped inductance or lumped capacitance, up to 50% of each of the L and C values is allowed.

16 Report Number

05/0856/2

17 Special Conditions for Safe Use

1. The socket connections at the base of the enclosure must be afforded a degree of protection of at least IP20 when correctly installed.

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
16-534BS	1	Original	2006-May-15	Summary – HiC282*
16-534BS-00	1 to 9	Original	2006-Apr-25	Description – HiC282*
16-534BS-01	1 & 2	Original	2005-Sep-30	Schematic – HiC2822 HiC Slimline
16-534BS-01	3 & 4	Original	2005-Sep-30	Schematic – HiC2821 HiC Slimline
16-533BS-02	1	Original	2005-Dec-05	Relevant Components – KCD2-SR-Ex*.* / HiC282*
16-534BS-03	1 of 5	Original	2005-Sep-30	Assembly drawing SMD top side – HiC2822
16-534BS-03	2 of 5	Original	2005-Sep-30	Assembly drawing SMD bottom side – HiC2822
16-534BS-03	3 of 5	Original	2005-Sep-30	Assembly drawing SMD top side – HiC2821
16-534BS-03	4 of 5	Original	2005-Sep-30	Assembly drawing SMD bottom side – HiC2821
16-534BS-03	5 of 5	Original	2005-Sep-30	Assembly drawing wired top side – HiC2821 / HiC2822
16-534-04	1 & 2	Original	2005-Dec-05	Housing – HiC
16-534BS-05	1 to 4	Original	2005-Sep-30	PCB Layout – HiC2821 / HiC2822
16-533BS-06	1 to 4	Original	2005-Dec-05	Transformer – KCD2-SR-Ex*.* / HiC282*
16-534BS-09	1 of 2	Original	2005-Dec-05	Instructions – HiC282*
16-534BS-09	2 of 2	Original	2006-Apr-25	Instructions – HiC282*
16-534BS-10	1 & 2	Original	2006-May-15	Type Label – HiC282*

The above drawings are associated and held with IECEx Certificate No. IECEx BAS 06.0026X



1 **SUPPLEMENTARY EC - TYPE EXAMINATION CERTIFICATE**

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

3 Supplementary EC - Type Examination Certificate Number: **Baseefa06ATEX0093X/1**

4 Equipment or Protective System: **Type HiC282* Switch Amplifier**

5 Manufacturer: **Pepperl + Fuchs GmbH**

6 Address: **Königsberger Allee 87, 68307 Mannheim, Germany**

7 This supplementary certificate extends EC – Type Examination Certificate No. Baseefa06ATEX0093X to apply to equipment or protective systems 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.

This supplementary certificate shall be held with the original certificate.

This certificate may only be reproduced in its entirety, without any change, schedule included.

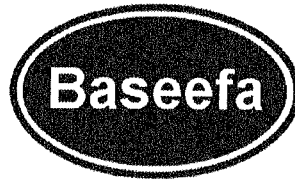
Baseefa Customer Reference No. **0808**

Project File No. **06/0971**

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R S SINCLAIR
DIRECTOR
On behalf of
Baseefa (2001) Ltd.



13

Schedule

14

Certificate Number Baseefa06ATEX0093X/1

15 **Description of the variation to the Equipment or Protective System**

Variation 1.1

To permit a minor change to the transformer design not affecting the original assessment.

16 **Report Number**

None.

17 **Special Conditions for Safe Use**

None

18 **Essential Health and Safety Requirements**

Compliance with the Essential Health and Safety Requirements is not affected by this variation.

19 **Drawings and Documents**

Number	Sheet	Issue	Date	Description
16-534BS A	1	A	2006-Nov-15	Summary – HiC282*
16-534BS-00A	1 to 9	A	2006-Nov-15	Description – HiC282*
16-533BS-06A	1 to 4	A	2006-Nov-15	Transformer – KCD2-SR-Ex*.* / HiC282*

The above drawings are associated and held with IECEx Certificate No. IECEx BAS 06.0026X/1



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Schedule

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Certificate Number Baseefa06ATEX0093X/2

15 Description of the variation to the Equipment or Protective System

Variation 2.1

To permit minor drawing changes that do not affect the original assessment.

Variation 2.2

To confirm that the equipment covered by this certificate has been reviewed against the requirements of EN 60079-0:2009 and EN 60079-11:2012 in respect of the differences from EN 60079-0:2004 and EN 50020:2002 and that none of these differences, with the exception of marking, affect this equipment. The equipment is now marked:

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

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

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

16 Report Number

GB/BAS/ExTR12.0200/00

17 Specific Conditions of Use

None additional to those listed previously

18 Essential Health and Safety Requirements

Compliance with the Essential Health and Safety Requirements is not affected by this variation.

19 Drawings and Documents

Number	Sheet	Issue	Date	Description
16-533BS-06B	1 – 4	B	2012-Mar-01	Transformer
16-534BS-B	1 of 1	B	2012-Mar-01	Summary
16-534BS-10B	1 & 2	B	2012-Mar-01	Type Label

These drawings are common to, and held with, IECEx BAS 06.0026X Issue 2.