

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: **BAS98ATEX7152 – Issue 8**

4 Equipment or Protective System: **Type KFD2-GU-Ex1 Universal Trip Amplifier**

5 Manufacturer: **Pepperl + Fuchs GmbH**

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

7 This re-issued certificate extends EC – Type Examination Certificate No. BAS98ATEX7152 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

8 The original certificate was issued by The Electrical Equipment Certification Service, Notified Body Number 0600, which retains responsibility for its original documentation. Baseefa, Notified Body Number 1180, is responsible only for the additional work relating to this re-issued certificate and any other supplementary certificate it has issued.

The examination and test results are recorded in confidential Report No's. 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 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)

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

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

Baseefa Customer Reference No. **0808**

Project File No. **15/0067**

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R S SINCLAIR
GENERAL MANAGER

On behalf of SGS Baseefa Limited

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Schedule

14

Certificate Number BAS98ATEX7152 – Issue 8

15 Description of Equipment or Protective System

The Type KFD2-GU-Ex1 Universal Trip Amplifier is a programmable device designed to interface various temperature sensors located in the hazardous area with unspecified apparatus located in the non-hazardous area by limiting the voltage and current to the hazardous area, to intrinsically safe levels. The non-hazardous area circuits are galvanically isolated from the hazardous area circuits.

The equipment comprises a number of electronic components, including an isolating transformer, two opto-isolators, two relays, fuses, resistors and zener diodes all mounted on a single printed circuit board and housed in a plastic enclosure with plug in terminals. A jack socket is provided in the non-hazardous area circuit to enable the connection of the transmitters to an external programming device.

The segregation of the hazardous area circuits meets the requirements for 250V.

Input / Output Parameters

Non-Hazardous Area Terminals 7 to 15 or SKT1 (or Power Rail)

$$U_m = 253V_{\text{rms}}$$

The equipment is designed to operate from a d.c. supply of up to 40V.

Non-hazardous area terminals 7, 8 & 9 and 10, 11 & 12 are connected to relay change-over contacts which can switch up to $253V_{\text{rms}}$, $2A_{\text{rms}}$ and 500VA.

Hazardous Area Terminals 1 to 6

$$\begin{array}{ll} U_o = 10.5V & C_i = 0 \\ I_o = 27mA & L_i = 0 \\ P_o = 0.07W & \end{array}$$

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	48.8		501
IIB	16.8	195.1		2006
IIA	75.0	390.2		4013
I	95.0	640.1		6584

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.

Hazardous Area Terminal 5 or 6 w.r.t 2

$U_i = 28V$
 $I_i = 112mA$

16 Report Number

GB/BAS/ExTR15.0021/00

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

New drawings submitted for this issue of certificate:

Number	Sheet	Issue	Date	Description
266-008BS-D	1 of 1	D	2014-Oct-15	Summary
266-005BS-02B	1 – 6	B	2011-Mar-08	Relevant Components
266-005BS-04J	1 – 17	J	2014-Mar-27	Mechanical Parts
266-005BS-10D	1 – 3	D	2014-Oct-15	Type labels

Current drawings which remain unaffected by this issue:

Number	Sheet	Issue	Date	Description
266-005BS-01A	1 – 3	A	2006-Jun-22	Schematic
266-005BS-03A	1 of 1	A	2006-Jun-23	Component Overlay
266-005BS-05C	1 – 12	C	2006-Nov-24	Printed Circuit Board Details
266-005BS-06A	1 – 3	A	2006-Jun-28	Transformer Details

20 Certificate History

Certificate No.	Date	Comments
BAS98ATEX7152	20 May 1998	The release of the prime certificate. The associated test and assessment is documented in Test Report 98(C)0422.
BAS98ATEX7152/1	20 June 2000	To permit dust to be included in the marking, i.e. Ex II (1) GD and other minor changes to the label.
BAS98ATEX7152/2	4 October 2000	To permit an alternative PCB and the addition of terminal parameters for terminals 5 or 6 w.r.t 2.
BAS98ATEX7152/3	8 May 2002	To confirm that terminals 7, 8 & 9 and 10, 11 & 12 are connected to relay change-over contacts which can switch up to $250V_{\text{rms}}$, $2A_{\text{rms}}$ and 100VA.
BAS98ATEX7152/4	13 July 2005	To permit changes to the relay contact parameters to: terminals 7, 8 & 9 and 10, 11 & 12 are connected to relay change-over contacts which can switch up to $253V_{\text{rms}}$, $2A_{\text{rms}}$ and 500VA and to permit the introduction of alternative drawings. Project File No. 05/0009.
BAS98ATEX7152/5	24 April 2006	To permit minor drawing changes. Project File No. 05/0010.

Certificate No.	Date	Comments
BAS98ATEX7152/6	11 October 2006	To permit minor changes to the schematic, PCB and transformer construction, re-definition of component references and use of an alternative P+F Type TOC2 opto-isolator. Report No. 06(C)0592. Project File No. 06/0592.
BAS98ATEX7152/7	17 September 2008	To permit minor changes to the lacquering details, to confirm that the current design meets the requirements of EN 60079-0:2006 & EN 60079-11:2007 and to confirm that the current design meets the requirements of EN 61241-11:2006 and is additionally marked [Ex iaD]. Report No. GB/BAS/ExTR08.0167/00. Project File No. 08/0604.
BAS98ATEX7152 Issue 8	7 July 2015	This issue incorporates previously issued primary and supplementary certificates into one certificate, permits changes to the transformer and confirms that the equipment covered by this certificate has been reviewed against the requirements of EN 60079-0:2012+A11:2013 and EN 60079-11:2012 in respect of the differences from EN 60079-0:2006 and EN 60079-11:2007 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 ⚠ II (1)D [Ex ia Da] IIC ⚠ I (M1) [Ex ia Ma] I Test Report No. GB/BAS/ExTR15.0021/00 Project File No. 15/0067.
For drawings applicable to each issue, see original of that issue.		