



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: **Baseefa10ATEX0263X**

4 Equipment or Protective System: **Transformer Isolated Resistance Repeater Type HiC2077**

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/ExTR10.0292/00**

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

**EN 60079-0:2006 EN 60079-11:2007 EN 61241-11:2006**

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 :

**See schedule**

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

Baseefa Customer Reference No. **0808**

Project File No. **10/0261**

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

A handwritten signature in black ink, appearing to read "R S Sinclair".

**Baseefa**

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**R S SINCLAIR**

**DIRECTOR  
On behalf of  
Baseefa**

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## Schedule

14

Certificate Number Baseefa10ATEX0263X

### 15 Description of Equipment or Protective System

The Transformer Isolated Resistance Repeater Type HiC2077 is designed to transfer a voltage 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 connection pins is limited to intrinsically safe levels.

The Transformer Isolated Resistance Repeater Type HiC2077 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 two polarised sockets in the base of the enclosure for hazardous and non-hazardous area connections via a terminal backplane. LED indication is provided for power-on status.

The equipment may be marked:

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

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

### Input / Output Parameters

#### Non-Hazardous Area Connector(s)

Power Supply: SL1, pins 1a[-] / 1b[-] w.r.t. pins 2a[+] / 2b[+]

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

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

Output: SL1, pins 7a[-] / 9a[-] w.r.t. 8a[+] / 10a[+]

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

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

#### Hazardous Area Connector(s)

Input: SL2 pins 1a[+] / 5a[+] w.r.t. 1b[-] / 5b[-]

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



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 ( $\mu\text{F}$ )	INDUCTANCE (mH)	OR	L/R RATIO ( $\mu\text{H}/\text{ohm}$ )
IIC	1.24	117		597
IIB	7.9	469		2388
IIA	30	939		4776
I	31	1541		7838

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 Group IIB and  $600\text{nF}$  for Group IIC.

## 16 Report Number

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## 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 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
16-0773BS	1 of 1	-	2010-Mar-10	Summary
16-0773BS-00	1 – 8	-	2010-Mar-04	Description
16-0773BS-01	1 & 2	-	2010-Mar-03	Schematic
16-0773BS-02	1 of 1	-	2010-Mar-05	I.S. Relevant Components
16-0773BS-03	1 of 1	-	2010-Mar-04	Component Layout
16-0534-04A	1 & 2	A	2009-Feb-04	Housing
16-0773BS-05	1 – 4	-	2010-Mar-04	PCB Layout
16-0665BS-06	1 – 7	-	2010-Jan-27	Transformers
16-0773BS-07	1 of 1	-	2010-Mar-04	PCB Lacquering Details
16-0773BS-10	1 – 3	-	2010-Mar-09	Type Label

These drawings are common to, and held with, IECEx BAS 10.0122X.