

1 **EU - TYPE EXAMINATION CERTIFICATE**

2 **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres
Directive 2014/34/EU**

3 EU - Type Examination Certificate **Baseefa13ATEX0075X – Issue 1**
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: **Transmitter Power Supply Type HiC2027***

5 Manufacturer: **Pepperl + Fuchs GmbH**

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

7 This re-issued certificate extends EU Type Examination Certificate No. Baseefa13ATEX0075X 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. 15/0848

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R S SINCLAIR
TECHNICAL MANAGER

On behalf of SGS Baseefa Limited

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Schedule

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Certificate Number Baseefa13ATEX0075X – Issue 1

15 Description of Product

The Transmitter Power Supply Type HiC2027* is designed to transfer monitoring signals from equipment in a hazardous area to unspecified apparatus located in a non-hazardous area and to transfer communication signals in both directions. 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 Transmitter Power Supply HiC2027* comprises a number of electronic components including four 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 following variants are covered by this certificate:

HiC2027
HiC2027ES
HiC2027DE
HiC2027(**)-Y1..n
HiC2017
HiC2017ES
HiC2017(**)-Y1..n

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 19-30V.

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

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

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, pin 5a[+] w.r.t. 5b[-]

$$\begin{array}{ll} U_o = 25.2V & C_i = 12nF \\ I_o = 93mA & L_i = 0 \\ P_o = 656mW & \end{array}$$

The output characteristic is trapezoidal, $U_Q = 28.2V$ (see Annex C, EN 60079-25:2010).

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 ($\mu H/ohm$)
IIC	0.095	3.400		54.53
IIB	0.808	16.44		218.12
IIA	2.888	32.88		436.25
I	4.788	53.95		715.73

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.

Input: SL2, pin 1a[+] w.r.t. 1b[-] / 7a[-]

$$\begin{array}{ll} U_i = 30\text{V} & C_i = 12\text{nF} \\ I_i = 115\text{mA} & L_i = 0 \\ P_i = 700\text{mW} & \end{array}$$

Input: SL2, pin 1a[+] w.r.t. 1b[-] / 7a[-]

$$\begin{array}{ll} U_o = 5\text{V} & C_i = 12\text{nF} \\ I_o = 0\text{mA} & L_i = 0 \\ P_o = 0\text{mW} & \end{array}$$

Input: SL2, pin 1b[+] / 7a[+] w.r.t. 1a[-]

$$\begin{array}{ll} U_o = 0.9\text{V} & C_i = 12\text{nF} \\ I_o = 6.8\text{mA} & L_i = 0 \\ P_o = 1.6\text{mW} & \end{array}$$

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	100	768		23466
IIB	1000	3075		93866
IIA	1000	6151		187773
I	1000	10092		308000

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/ExTR16.0150/00

17 Specific Conditions of Use

1. The HiC2027* must be installed in a controlled environment with suitably reduced pollution.
2. 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

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
16-0806BS-B	1 of 1	B	2016-May-03	Summary
16-0806BS-00B	1 – 11	B	2015-Nov-16	Description
16-0806BS-01A	1 – 4	A	2015-Nov-16	Schematic
16-0806BS-02A	1 & 2	A	2016-Jan-06	I.S. Relevant Components
16-0806BS-03A	1 & 2	A	2015-Nov-16	Layouts
16-0806BS-05A	1 – 4	A	2015-Nov-16	Layouts
16-0806BS-06A	1 – 7	A	2016-May-03	Transformer
16-0806BS-10A	1 – 3	A	2015-Nov-16	Type Label

Current drawings also associated with this certificate.

Number	Sheet	Issue	Date	Description
16-0533-04	1 & 2	-	2005-Dec-05	Mechanical Parts (Housing)

All drawings are common to Baseefa13ATEX0076X and IECEx BAS 13.0042X and held with IECEx BAS 13.0042X.

20 Certificate History

Certificate No.	Date	Comments
Baseefa13ATEX0075X	12 December 2013 Reissued 9 April 2014	The release of the prime certificate. The associated test and assessment is documented in Test Report No. GB/BAS/ExTR13.0136/01. Project File No. 13/0208.
Baseefa13ATEX0075X Issue 1	7 June 2016	To permit the use of alternative components requiring a minor PCB change, other minor drawing changes and to confirm that the current design meets the requirements of EN 60079-0: 2012+A11:2013 in respect of the differences from EN 60079-0:2012. Test Report No. GB/BAS/ExTR16.0150/00. Project File No. 15/0848.

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