



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:** ITS11ATEX27253X Issue 2

4. **Equipment or Protective System:** 4 and 5 Digit Field Mounting Indicators and Rate Totaliser

5. **Manufacturer:** BEKA ASSOCIATES LIMITED

6. **Address:** Old Charlton Road, Hitchin, Herts, SG5 2DA, United Kingdom

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. Intertek Testing and Certification Limited, notified body number 0359 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 Intertek Report Ref G102060844 dated July 2015 and Intertek Report Ref 10048733A Issue 1 dated April 2011.

9. Compliance with the Essential Health and Safety Requirements has been assured by compliance with standards EN 60079-0:2012/A11:2013 and EN 60079-11:2012 except in respect of those requirements referred to at item 16 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.

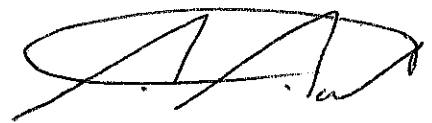
11. This EC Type examination certificate relates only to the design, examination and tests of the specified equipment or protective system in accordance to the directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

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



II 1 G, D Ex ia IIC T5 Ga,
Ex ia IIIC T80°C Da IP66,

-40°C ≤ Ta ≤ 70°C



A T Austin
Certification Officer
12 August 2015

Intertek Testing & Certification Limited
Intertek House, Cleeve Road, Leatherhead, Surrey, KT22 7SB
Tel: +44 (0)1372 370900 Fax: +44 (0)1372 370977
www.intertek.com

Registered No 3272281 Registered Office: Academy Place, 1-9 Brook Street, Brentwood, Essex, CM14 5NQ.

This certificate may only be reproduced in its entirety and without any change, schedule included and is subject to Intertek Testing and Certification's Conditions for Granting Certification.



SCHEDULE

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13. Description of Equipment or Protective System

The 4 and 5 Digit Field Mounting Indicators are field mounted loop powered equipment designed to display a measured variable in meaningful engineering units within the hazardous area. The zero and span of the display are independently adjustable allowing the indicator to be calibrated to display any linear variable represented by the 4/20 mA signal. A root extractor and an adjustable sixteen segment lineariser enable the indicator to display flow and non-linear variables such as tank level in engineering units.

The models are BA304E & BA304G 4 Digit Indicator, BA324E & BA324G 5 Digit Indicator and BA354E and BA354G Rate Totaliser.

The 4 and 5 Digit Field Mounting Indicators and Rate Totaliser may additionally be fitted with an optional Back Light Board.

The 4 and 5 Digit Field Mounting E-series indicators BA304E & , BA324E and Rate Totaliser BA354E comprise a Field Terminal Board , Main Display Board with optional Alarm circuits, Display LCD101 and optional Back Light Board all housed within an IP66 stainless steel or a glass reinforced polyester (GRP) enclosure.

The G-series models BA304G 4 Digit Indicator, BA324G 5 Digit Indicator and BA354G Rate Totaliser are similar to the E-series. They are housed within a pre-certified enclosure with IP rating of at least IP66.

The boards in both E-series and G-series contain fixed resistors, keypads, liquid crystal display (LCD), transformers, capacitors, inductors, semiconductor devices, connectors for printed circuit board (pcb) interconnections, terminal blocks for external connections and plastic spacers for pcb mounting.

The maximum intrinsically safe input and output parameters at the external connections are as follows:

TB1 Terminal 1 and 3 (Loop Input); TB2 Terminal 12 and TB1 Terminal 3 (TB2 - 13 and TB1 -1 connected in series)

$U_i = 30 \text{ V}$	$U_o = 1.1 \text{ V}$
$I_i = 200 \text{ mA}$	$I_o = 3 \text{ mA}$
$P_i = 0.84 \text{ W}$	$P_o = 4.5 \text{ mW}$
$C_i = 13 \text{ nF}$ (for E-series)	
$C_i = 5.4 \text{ nF}$ (for G - Series)	
$L_i = 0.016 \text{ mH}$ (0.02 mH)	
$C_o = 53 \text{ nF}$ (for E-series)	
$C_o = 60.6 \text{ nF}$ (for G - Series)	
$L_o = 0.78 \text{ mH}$	

TB2 Terminals 12, 13 and 14 (Backlight Input)

$U_i = 30 \text{ V}$
$I_i = 200 \text{ mA}$
$P_i = 0.84 \text{ W}$
$C_i = 13 \text{ nF}$ (for E-series)
$C_i = 3.3 \text{ nF}$ (for G - Series)
$L_i = 0.008 \text{ mH}$ (0.01 mH)
$C_o = 53 \text{ nF}$ (for E-series)
$C_o = 63 \text{ nF}$ (for G - Series)
$L_o = 0.79 \text{ mH}$

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TB3 Terminals RS1 and RS2

$U_i = 30\text{ V}$ $U_o = 6\text{ V}$
 $I_i = 200\text{ mA}$ $I_o = 2.5\text{ mA}$
 $P_i = 0.84\text{ W}$ $P_o = 3.75\text{ mW}$
 $C_i = 13\text{ nF}$ (for E-series)
 $C_i = 0$ (for G – Series)
 $L_i = 0.008\text{ mH}$ (0.01 mH)
 $C_o = 53\text{ nF}$ (for E-series)
 $C_o = 66\text{ nF}$ (for G – Series)
 $L_o = 0.79\text{ mH}$

TB4 Terminal 8 and 9; Terminals 10 and 11 (Alarm 1 and Alarm 2)

$U_i = 30\text{ V}$ $U_o = 1.47\text{ V}$
 $I_i = 200\text{ mA}$ $I_o = 1\text{ }\mu\text{A}$
 $P_i = 0.84\text{ W}$ $P_o = 2.2\text{ }\mu\text{W}$
 $C_i = 24\text{ nF}$ (for E-series)
 $C_i = 0$ (for G – Series)
 $L_i = 0.008\text{ mH}$ (0.01 mH)
 $C_o = 42\text{ nF}$ (for E-series)
 $C_o = 66\text{ nF}$ (for G – Series)
 $L_o = 0.79\text{ mH}$

For intrinsic safety considerations, under fault conditions, the voltage, current and power at the output terminals TB1 - 1 & 3, terminals TB2 - 12 & TB1 - 3 and terminals TB4 - 8 & 9 and 10 & 11 do not exceed those specified in clause 5.7 of EN60079-11. The equivalent capacitance and inductance are the result of r.f. suppression components directly connected across the apparatus input terminals.

14. Report Number

Intertek Report Ref G102060844 dated July 2015.
Intertek Report Ref 10048733A Issue 1 dated April 2011.

15. Conditions of Certification

(a). Special Conditions for safe use

- When installed in a Zone 0 potentially explosive atmosphere requiring EPL Ga apparatus, the instrument shall be installed such that even in the event of rare incidents, an ignition source due to impact or friction between the aluminium label and iron/steel is excluded.

(b). Conditions of Manufacture

- Routine tests for infallible transformers, 500 V between primary and secondary windings (both windings are supplied from intrinsically safe circuits).

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16. **Essential Health and Safety Requirements (EHSR's)**

The relevant EHSR's have been identified and assessed in Intertek Report Ref 10048733A Issue 1 dated April 2011.

17. **Drawings and Documents**

Title	Drawing No.:	Rev. Level:	Date:
ATEX & IECEx Certification Information for BA304E 4 Digit Indicator, BA324E 5 Digit Indicator and BA354E Rate Totalisers	CI300—61, Sheets 1-15, 18-20, 28, 29 & 32	3	Oct '10

18. **Revisions**

Variation One; Intertek Report Ref G102060844 dated July 2015, ITS11ATEX27253X Issue 2

1. Re-assessments of the 4 and 5 Digit Field Mounting Indicators to the requirements of the latest standards EN 60079-0: 2012 and EN 60079-11:2012.
2. The G-series models BA304G 4 Digit Indicator, BA324G 5 Digit Indicator and BA354G Rate totaliser added as part of this certification.
3. Changes to appropriate documents to reflect the above changes.

Title	Drawing No.:	Rev. Level:	Date:
ATEX & IECEx Certification Information for BA304E 4 Digit Indicator, BA324E 5 Digit Indicator and BA354E Rate Totalisers	CI300—61, Sheets 1-15, 18-20, 26 - 28, 29 & 32, 37 - 50	3	August '15

This Certificate is for the exclusive use of Intertek's client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this Certificate. Only the Client is authorized to permit copying or distribution of this Certificate and then only in its entirety. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek.

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