

UK-TYPE EXAMINATION CERTIFICATE

Product or Protective Systems Intended for Use in Potentially Explosive Atmospheres

UKSI 2016:1107 (as amended) – Schedule 3A, Part 1

- UK-Type Examination Certificate Number:** ITS21UKEX0087X **Issue 00**
- Product:** 4 and 5 Digit Field Mounting Indicators and Rate Totaliser
- Manufacturer:** BEKA Associates Ltd
- Address:** Old Charlton Road, Hitchin, Herts, SG5 2DA, United Kingdom
- This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.
- Intertek Testing and Certification Limited, Approved Body number 0359, in accordance with Regulation 42 of the Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016, UKSI 2016:1107 (as amended), 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 Schedule 1 of the Regulations.

The examination and test results are recorded in the confidential report G102060844 dated July 2015 and 10048733A Issue 1 dated April 2011.
- Compliance with the Essential Health and Safety Requirements has been assured by compliance with EN 60079-0:2012+A11:2013 and EN 60079-11:2012 except in respect of those requirements referred to within item 14 of the Schedule.
- If the sign “X” is placed after the certificate number, it indicates that the product is subject to the special conditions of use specified in the Schedule to this certificate.
- This UK-Type Examination Certificate relates only to the design and construction of the specified product. Further requirements of the Regulations apply to the manufacturing process and supply of this product. These are not covered by this certificate.
- The marking of the product shall include the following:

II 1 G Ex ia IIC T5 Ga



II 1 D Ex ia IIIC T80°C Da IP66

-40°C ≤ Ta ≤ +70°C

Certification Officer:  M Newman **Date:** 5th July 2021

SCHEDULE:

UK-Type Examination Certificate Number: ITS21UKEX0087X Issue 00

11. Description of Product 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)	
$L_o = 0.78 \text{ mH}$	

SCHEDULE:

UK-Type Examination Certificate Number: ITS21UKEX0087X Issue 00

TB2 Terminals 12, 13 and 14 (Backlight Input)

$$U_i = 30 \text{ V}$$

$$I_i = 200 \text{ mA}$$

$$P_i = 0.84 \text{ W}$$

$$C_i = 13 \text{ nF (for E-series)}$$

$$C_i = 3.3 \text{ nF (for G – Series)}$$

$$L_i = 0.008 \text{ mH (0.01 mH)}$$

$$C_o = 53 \text{ nF (for E-series)}$$

$$C_o = 63 \text{ nF (for G – Series)}$$

$$L_o = 0.79 \text{ mH}$$

TB3 Terminals RS1 and RS2

$$U_i = 30 \text{ V}$$

$$I_i = 200 \text{ mA}$$

$$P_i = 0.84 \text{ W}$$

$$C_i = 13 \text{ nF (for E-series)}$$

$$C_i = 0 \text{ (for G – Series)}$$

$$L_i = 0.008 \text{ mH (0.01 mH)}$$

$$C_o = 53 \text{ nF (for E-series)}$$

$$C_o = 66 \text{ nF (for G – Series)}$$

$$L_o = 0.79 \text{ mH}$$

$$U_o = 6 \text{ V}$$

$$I_o = 2.5 \text{ mA}$$

$$P_o = 3.75 \text{ mW}$$

TB4 Terminal 8 and 9; Terminals 10 and 11 (Alarm 1 and Alarm2)

$$U_i = 30 \text{ V}$$

$$I_i = 200 \text{ mA}$$

$$P_i = 0.84 \text{ W}$$

$$C_i = 24 \text{ nF (for E-series)}$$

$$C_i = 0 \text{ (for G – Series)}$$

$$L_i = 0.008 \text{ mH (0.01 mH)}$$

$$C_o = 42 \text{ nF (for E-series)}$$

$$C_o = 66 \text{ nF (for G – Series)}$$

$$L_o = 0.79 \text{ mH}$$

$$U_o = 1.47 \text{ V}$$

$$I_o = 1 \text{ } \mu\text{A}$$

$$P_o = 2.2 \text{ } \mu\text{W}$$

SCHEDULE:

UK-Type Examination Certificate Number: ITS21UKEX0087X Issue 00

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.

12. Report Number

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

13. Special Conditions of Certification

- (a). Special Conditions of Use
- When installed in potentially explosive atmosphere requiring apparatus of Category 1G, the equipment shall be installed such that even in the event of rare incidents, an ignition source due to impact or friction between aluminium label and other iron/steel parts is excluded.
- (b). Conditions of Manufacture
- Routine tests for infallible transformers, 500V between primary and secondary windings (both windings are supplied from intrinsically safe circuits).

14. Essential Health and Safety Requirements (EHSRs)

The relevant Essential Health and Safety Requirements (EHSRs) have been identified and assessed in Intertek Report: 104629389CHE-011 dated 25th May 2021.

15. 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 Totaliser (Sheets 1-15, 18-20, 26-28, 29, 32, 37-50)	CI300-61	3	August '15
UKCA Certification Information for BA304E, BA307E & 308E 4 Digit Indicators BA324E, 327E & BA328E 5 Digit Indicators BA354E & BA358E Rate Totalisers (2 Sheets)	CI300-61-UKCA	1	May 2021