



Intertek Testing Services



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: ITS02ATEX2028

4. Equipment or Protective System: BA324C 4½ DIGIT INDICATOR

5. Manufacturer: BEKA ASSOCIATES LIMITED

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

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. The ITS 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 Report Number:  
ITS Report Ref 02006736, dated July 2002

9. Compliance with the Essential Health and Safety Requirements has been assured by compliance with:  
EN 50014: 1992, EN 50020: 1994, EN 50284: 1999  
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.

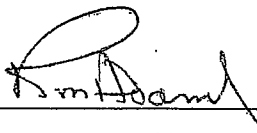
11. This EC-TYPE EXAMINATION CERTIFICATE relates only to the design of the specified equipment or protective system. Further requirements of this Directive apply to the manufacture and supply of this equipment or protection system.

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



II 1 G, EEx ia IIC T5 ( $T_{amb} = -40^{\circ}\text{C}$  to  $60^{\circ}\text{C}$ )

ITS Testing & Certification Limited  
ITS House, Cleeve Road, Leatherhead, Surrey, KT22 7SB  
Tel: + 44 (0) 1372 370900 Fax: +44 (0) 1372 370977  
<http://www.etlsemko.com/uk>  
Registered No 3272281 Registered Office: 25 Savile Row London W1X 1AA

  
R M Adams  
Deputy Certification Manager  
31 July 2002

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

## 13. Schedule

14. EC-TYPE EXAMINATION CERTIFICATE NUMBER ITS02ATEX2028

15. Description of Equipment or Protective System.

The BA324C 4½ Digit Indicator is a two wire apparatus designed to be connected in a 4/20 mA process loop and provide a display in engineering

The BA324C 4½ Digit Indicator may alternatively be identified as a DA4-Ex/50 or GSI 24 4½ Digit Indicator.

The BA324C 4½ Digit Indicator is a field mounting indicator comprising a terminal board, a main/display board and an optional alarm interface board and/or backlight boards, all housed within a metallic or conductive plastics enclosure, which may have a conductive coating on the inside surfaces. The enclosure provides a Degree of Protection of at least IP20

Intrinsic safety is assured by limitation of voltage, current and power, limitation of capacitance, suppression of inductance, use of intrinsically safe transformers (alarm interface board) and infallible segregation.

The equivalent resistance of the apparatus at terminals 1 and 3 is 14.85  $\Omega$  minimum in normal operation and 24.75  $\Omega$  minimum under fault conditions.

The maximum intrinsically safe input parameters are as follows:

### **Terminals 1 and 3**

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

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

$$P_i = 0.85 \text{ W}$$

The equivalent parameters of the apparatus at the supply terminals are:

$$C_i = 0.02 \text{ }\mu\text{F}$$

$$L_i = 0.01 \text{ mH}$$

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# ITS Intertek Testing Services

13. **Schedule**
14. EC-TYPE EXAMINATION CERTIFICATE NUMBER ITS02ATEX2028
15. Description of Equipment or Protective System.

**Terminals 8 and 9, 10 and 11**

$U_i = 28 \text{ V dc}$   
 $I_i = 200 \text{ mA}$   
 $P_i = 0.85 \text{ W}$

The equivalent parameters are:

$C_i = 0.04 \mu\text{F}$   
 $L_i = 0.02 \text{ mH}$

**Terminals 12 and 13**

$U_i = 28 \text{ V dc}$   
 $I_i = 110 \text{ mA}$   
 $P_i = 0.77 \text{ W}$

The equivalent parameters are:

$C_i = 0.045 \mu\text{F}$   
 $L_i = 0.02 \text{ mH}$

**Terminals 1 & 13 (3 & 12 connected in series)**

$C_i = 0.04 \mu\text{F}$   
 $L_i = 0.03 \text{ mH}$

For intrinsic safety considerations, under fault conditions, the voltage, current and power at terminals 1 and 3, 8 and 9, and 10 and 11 do not exceed those specified in Clause 5.4 of EN 50020: 1994. The equivalent capacitance and inductance are the result of r.f. suppression components directly connected to the apparatus terminals.

16. Report No. ITS Report Ref 02006736
17. SPECIAL CONDITIONS FOR SAFE USE  
None

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## 13. Schedule

14. EC-TYPE EXAMINATION CERTIFICATE NUMBER I ITS02ATEX2028
18. Essential Health and Safety Requirements

Essential Health and Safety Requirements not covered by Standards listed at (9)		
Clause	Subject	Compliance
1.01	Principal of integrated explosion protection	The equipment is designed to comply with the requirements of EN 50014 and EN 50020
1.02	Analysis of possible operating faults	The equipment is designed to comply with failure modes specified in EN 50020
1.0.3	Special checking and maintenance conditions	No special requirements
1.0.6	Instructions	Instruction Manual provides all the information
1.2.1	Design with regard to technical knowledge	The state of the art as specified in EN 50014 and EN 50020 satisfies this requirement
1.2.4	Dust deposits	Certification for gas atmospheres only
1.2.5	Additional means of protection	No special requirements
1.2.7	Protection against other hazards	The equipment is designed to comply with the requirements of EN 50014
2.1.1	Explosive atmospheres caused by gases, vapours or hazes.	Equipment is designed to comply with the requirements of EN 50020

## 19. DRAWINGS

Number	Issue	Date	Description
CI320-41, sheets 1 to 31	1	Dec 01	BA324C, BA327C & BA328C Certification Information

ITS Testing & Certification Limited  
ITS House, Cleeve Road, Leatherhead, Surrey, KT22 7SB  
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## 13. Schedule

14. EC-TYPE EXAMINATION CERTIFICATE NUMBER I ITS02ATEX2028

20 VARIATION ONE

To permit the following changes to form a BA327C 4½ DIGIT INDICATOR

- a) Re-arrangement of electronic components onto a main board and a display board which are mounted in a metallic enclosure for panel mounting.

The BA327C 3½ Digit Indicator may alternatively be identified as a DA4-Ex/40 or GSI 27 4½ Digit Indicator.

21 VARIATION TWO

To permit the use of a larger display board than the BA327C to form a BA328C 4½ DIGIT INDICATOR

The equivalent parameters are unchanged i.e.

$$C_i = 0.045 \mu\text{F}$$

$$L_i = 0.02 \text{ mH}$$

The BA328C 4½ Digit Indicator may alternatively be identified as a DA4-Ex/45 or GSI 28 4½ Digit Indicator

ITS Testing & Certification Limited

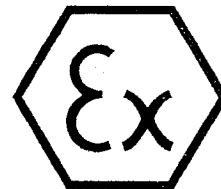
ITS House, Cleeve Road, Leatherhead, Surrey, KT22 7SB

Tel: + 44 (0) 1372 370900 Fax: +44 (0) 1372 370977

<http://www.etlsemko.com/uk>

Registered No 3272281 Registered Office: 25 Savile Row London W1X 1AA

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1. **SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE**

2. **Equipment or Protective System Intended for use in  
Potentially Explosive Atmospheres Directive 94/9/EC**

3. **Supplementary EC-Type Examination Certificate Number: ITS02ATEX2028/1**

4. **Equipment or Protective System: BA324C 4½ DIGIT INDICATOR**

5. **Manufacturer: BEKA ASSOCIATES LIMITED**

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

7. This supplementary certificate extends EC-Type Examination Certificate Number ITS02ATEX2028 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 variations specified in the Schedule attached to this certificate and the documents therein referred to.

ITS Report Ref 02009360.

This Supplementary Certificate shall be held with the original Certificate

**R M Adams**  
**Deputy Certification Manager**  
**17<sup>th</sup> February 2003**

**ITS Testing & Certification Limited**  
**ITS House, Cleeve Road, Leatherhead, Surrey, KT22 7SB**  
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**Registered No 3272281 Registered Office: 25 Savile Row London W1X 1AA**

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# Intertek Testing Services

## Schedule

**SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE NUMBER ITS02ATEX2028/1**

### **VARIATION ONE**

**Description of the Variation to the Equipment or Protective System.**

To permit the following changes:

1. Alternative window coating material, polyester with Dupont Zelec ECP or/and SC Technologies ABF or TMF static dissipative film coating for BA327C and BA328C Indicators.
2. Omission of earthing point on rear of panel when membrane with inner conductive layer is not fitted.
3. Correction of drawings.
4. Change of maximum input parameters at Terminals 1 and 13 (3 & 12 connected in series) to

$U_i = 30 \text{ V dc}$

$I_i = 200 \text{ mA}$

$P_i = 0.85 \text{ W}$

The above changes do not impair Intrinsic Safety and the Temperature Class of the apparatus is unaltered.

### **Report No.**

ITS Report Ref 02009360

### **SPECIAL CONDITIONS FOR SAFE USE**

None

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ITS House, Cleeve Road, Leatherhead, Surrey, KT22 7SB  
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## Schedule

SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE NUMBER ITS02ATEX2028/1

### Essential Health and Safety Requirements

See original certificate

### DRAWINGS

Number	Issue	Date	Description
CI320-41, sheets 2, 16, 17, 22 & 23	2	Nov 02	BA324C, BA327C & BA328C Certification Information

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ITS House, Cleeve Road, Leatherhead, Surrey, KT22 7SB  
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1. **SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE**
2. **Equipment or Protective System Intended for use in Potentially Explosive Atmospheres Directive 94/9/EC**
3. Supplementary EC-Type Examination Certificate Number: **ITS02ATEX2028/2**
4. Equipment or Protective System: **BA324C 4½ DIGIT INDICATOR**
5. Manufacturer: **BEKA ASSOCIATES LIMITED**
6. Address: **OLD CHARLTON ROAD, HITCHIN, HERTS, SG5 2DA**
7. This supplementary certificate extends EC-Type Examination Certificate Number ITS02ATEX2028 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 variations specified in the Schedule attached to this certificate and the documents therein referred to.

Intertek Report Ref 07023732 dated January 2007

This Supplementary Certificate shall be held with the original Certificate

**A M Smart**  
**Principal Engineer**  
**25 January 2007**

**Intertek Testing & Certification Limited**  
**Intertek House, Cleeve Road, Leatherhead, Surrey, KT22 7SB**  
**Tel: + 44 (0) 1372 370900 Fax: +44 (0) 1372 370977**  
<http://www.etlsemko.com/uk>  
**Registered No 3272281 Registered Office: 25 Savile Row London W1X 1AA**

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# Intertek Industrial

## Schedule

SUPPLEMENTARY EC-TYPE EXAMINATION CERTIFICATE NUMBER ITS02ATEX2028/2

### VARIATION TWO

#### Description of the Variation to the Equipment or Protective System.

To permit the following changes:

- a) Addition of a diode, a transistor and a resistor in the display circuit.
- b) Deletion of X201 and R216 in the display circuit.
- c) Replacement of some of the obsolete semiconductors.
- d) Replacement of some of the resistors with new quad pack resistors.
- e) Changes to the printed circuit boards PC61, PC66 and PC150 (replaces PC63) due to the above changes.

The above changes do not impair intrinsic safety. The entity parameters are unchanged.

#### Report No.

Intertek Report Ref 07023732

#### SPECIAL CONDITIONS FOR SAFE USE

None

#### Essential Health and Safety Requirements

See original certificate

#### DRAWINGS

Number	Sheets	Issue	Date	Description
CI320-41	1 to 8, 13, 16, 17, 23	3	Nov 2006	BA324C, BA327C & BA328C Certification Information

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