



British Approvals Service for Electrical
Equipment in Flammable Atmospheres

1 **Certificate of Conformity**

2. **BAS No Ex 96D2066**

3. This certificate is issued for the electrical apparatus.:

BA304C 3½ DIGIT INDICATOR

4. manufactured and submitted for certification by:

BEKA ASSOCIATES
of Hitchin, Herts, SG5 2DA

5. This electrical apparatus and any acceptable variation thereto is specified in the Schedule to this Certificate and the documents therein referred to.

6. BASEEFA being an approved Certification Body in accordance with Article 14 of the Council Directive of the European Communities of 18 December 1975 (76/117/EEC) certifies that the apparatus has been found to comply with harmonised European Standards

EN 50 014 (1977) + Amendments A1 to A5
EN 50 020 (1977) + Amendments A1 to A5

and has successfully met the examination and test requirements as recorded in confidential Report No 95(C)0868 (ERA Report Ref 3627/780), dated May 1996.

7. The apparatus marking shall include the code

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

File No: **EECS 0121/02/012**

Sheet 1/5
VKV4/C2646



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I M CLEARE
DIRECTOR EECS
3 July 1996

This certificate is issued under NACCB accreditation No. 020



Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire, SK17 9JN, United Kingdom
Tel: 0298 262111 Fax: 0298 79514 Telex: 668113 RLSD G





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Certificate of Conformity BAS No Ex 96D2066

8. The manufacturer of the electrical apparatus referred to in this certificate, has the responsibility to ensure that the apparatus conforms to the specification laid down in the Schedule to this certificate and has satisfied routine verifications and tests specified therein.
9. This apparatus may be marked with the Distinctive Community Mark specified in Annex II to the Commission Directive of 16 January 1984 (Doc 84/47/EEC). A facsimile of this mark is printed on sheet 1 of this certificate.

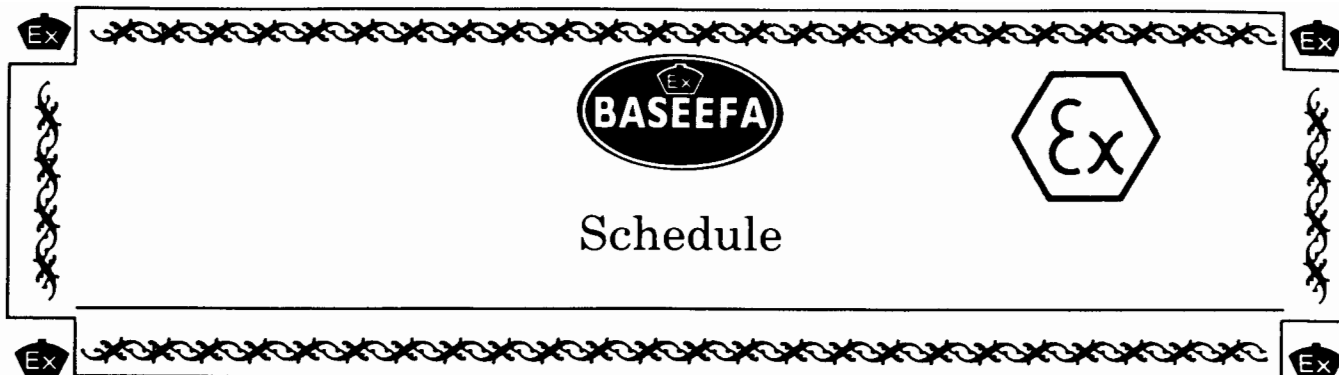
Sheet 2/5

This certificate is granted subject to conditions applicable to the Approval Service, it does not necessarily indicate that the apparatus may lawfully be used in particular industries or circumstances.



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Certificate of Conformity BAS No Ex 96D2066

APPARATUS

THE BA304C 3½ DIGIT INDICATOR is a two wire apparatus designed to be connected in a 4/20 mA process loop and provide a display in engineering units.

The BA304C may alternatively be identified as a DA4-Ex/70 3½ DIGIT INDICATOR.

The BA304C is a field mounting indicator comprising a terminal board, a main/display board and an optional root extractor or calibrator board, all housed within a metallic enclosure 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 and infallible segregation.

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

The maximum intrinsically safe input parameters are as follows:

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

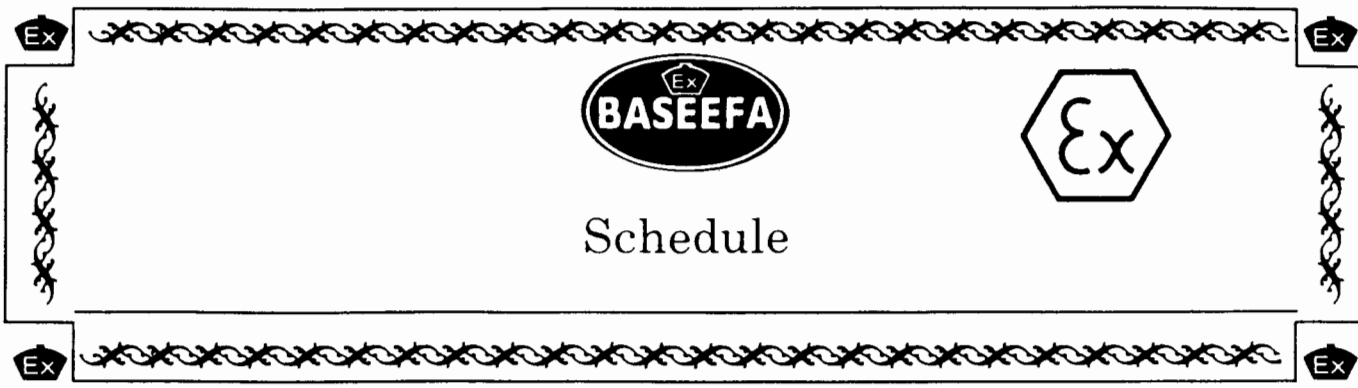
$$I_i = 200 \text{ mA dc}$$

$$P_i = 0.8 \text{ W}$$

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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For intrinsic safety considerations, under fault conditions the voltage, current, power and energy at terminals 1 and 3 do not exceed those specified in Clause 1.3 of EN50 014. The equivalent capacitance and inductance are the result of r.f suppression components directly connected to the apparatus terminals.

DRAWINGS

Number	Issue	Date	Description
CI300-01 Sheets 1 to 23	1	Sept 95	BA300C Certification Information

VARIATION ONE

To permit the following changes to form a BA307C 3½ 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.
- b) Optional backlight board fitted to the BA307C only.

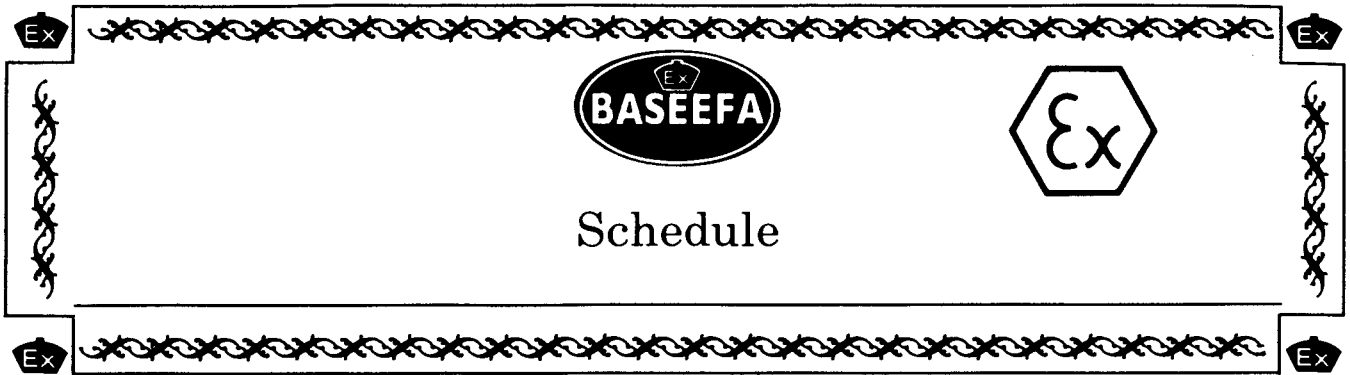
The intrinsically safe input parameters at terminals 12 and 13 are:

$$U_i = 28 \text{ V dc}$$
$$I_i = 159 \text{ mA dc}$$
$$P_i = 0.8 \text{ W}$$

The equivalent parameters are:

$$C_i = 0.03 \text{ } \mu\text{F}$$
$$L_i = 0.01 \text{ mH}$$

The segregation between circuits connected between terminals 12 - 13 and 1 - 3 satisfies the requirements for a peak voltage of 60 V.



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The BA307C may alternatively be identified as a DA4-Ex/60 3½ DIGIT INDICATOR.

VARIATION TWO

To permit the use of a larger display board than the BA307C to form a BA308C 3½ DIGIT INDICATOR.

The equivalent parameters are unchanged ie.

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

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

The BA308C may alternatively be identified as a DA4-Ex/65 3½ DIGIT INDICATOR.

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Certificate of Conformity - Variation

SUPPLEMENTARY CERTIFICATE BAS No. Ex 96D2066/1

This is to certify that Apparatus Certificate number:

Ex 96D2066

held by:

BEKA ASSOCIATES

of:

Hitchin, Herts, SG5 2DA

for the:

BA304C 3½ DIGIT INDICATOR

is hereby extended to apply to the apparatus 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.

This Supplementary Certificate shall be held with the original Certificate.

File No: EECS 0121/02/012

Report No. 97(C)0322 (ERA Report Ref. 3627/838), July 1997

Sheet 1 of 3

This certificate is granted subject to the general conditions of the Electrical Equipment Certification Service. It does not necessarily indicate that the apparatus may be used in particular industries or circumstances. Representation of equipment as "Certified" is valid only when the number of the prime certificate to which this certificate is a supplement is given on the relevant EECS Manufacturing Licence or Verification Certificate.



**I M CLEARE
DIRECTOR**

13 August 1997



Electrical Equipment Certification Service
Health and Safety Executive
Harpur Hill, Buxton, Derbyshire. SK17 9JN. United Kingdom
Tel: 01298 28000 Fax: 01298 28244



Registration Number
020
The use of the Accreditation
Mark indicates accreditation in
respect of those activities
covered by the accreditation
certificate number 020



Supplementary Certificate BAS No. Ex 96D2066/1

VARIATION THREE

To permit the following changes:

- i) The BA304C, BA307C and BA308C 3½ Digit Indicators may alternatively be identified as GS104, GS107 and GS108 3½ Digit Indicators respectively.
- ii) Optional backlight board may be fitted to the BA304C and BA308C.
- iii) Alternative terminal board, PC78, may be fitted.
- iv) Alternative terminals may be fitted for external connections.
- v) Minor changes to the circuit diagram and minor changes to the printed circuit boards.

The intrinsic safety and segregation requirements are not affected.

- vi) Minor changes to the certification labels.
- vii) Maximum input power changed from $P_i = 0.8W$ to $P_i = 0.85W$.

Due to the above changes, the maximum intrinsically safe input parameters are as follows:-

Terminals 1 and 3

$$U_i = 30V \text{ d.c.}$$

$$I_i = 200 \text{ mA d.c.}$$

$$P_i = 0.85W$$

The equivalent parameters are unchanged, i.e.

$$C_i = 0.02 \mu F$$

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

Terminals 12 and 13

$$U_i = 28V \text{ d.c.}$$

$$I_i = 159 \text{ mA d.c.}$$

$$P_i = 0.8W$$

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Schedule

Supplementary Certificate BAS No. Ex 96D2066/1

The equivalent parameters for the BA307C are unchanged, i.e.

$$C_i = 0.03 \mu\text{F}$$

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

The equivalent parameters for the BA304C and BA308C are:

$$C_i = 0.04 \mu\text{F}$$

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

DRAWINGS

<u>Number</u>	<u>Issue</u>	<u>Date</u>	<u>Description</u>
CI300-01, sheets 1 to 25	2	Mar 97	BA300C Certification Information