Health & Safety Executive

BASEEFA

British Approvals Service for Electrical Equipment in Flammable Atmospheres

1. # CERTIFICATE OF CONFORMITY

2. BAS No Ex 85B2007

3. This certificate is issued for the electrical apparatus:

A BA404B 4-20 mA CURRENT CONTROLLER

4. manufactured and submitted for certification by:

BEKA ASSOCIATES
of Hitchin, Herts

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) confirms that the apparatus has been found to comply with harmonised European Standards

EN50 014 (1977) + A1 to 4
EN50 020 (1977) + A1

and has successfully met the examination and test requirements which are recorded in confidential Test Report

No 85(i)013 dated 21.2.85
held on File SFA 12/716/02

7. The apparatus marking shall include the code

EEx ia IIC T4 T_{amb} = 60°C

File No : SFA/16/263/02

HEALTH AND SAFETY EXECUTIVE

pp B HILL
DIRECTOR
22 February 1985

80/01

BASEEFA Harpur Hill Buxton Derbyshire SK17 9JN Tel 0298 6211 Telex 668113 RLSD G

8. The supplier, 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 Council Directive of 16 January 1984 (Doc 84/47/EEC). A facsimile of this mark is printed on sheet 1 of this certificate.

CERTIFICATE OF CONFORMITY SCHEDULE

NUMBER Ex 84B2007

DATED 22 February 1985

APPARATUS

A BA404B 4-20 mA CURRENT CONTROLLER is designed to enable the current in any 4-20 mA loop to be adjusted.

The controller comprises two printed circuit boards and a terminal strip which are housed in a painted aluminium enclosure which has a tapped hole in the bottom to accept a cable gland or screwed conduit. A potentiometer mounted on one of the printed circuit boards with its control knob external to the enclosure is used to adjust the loop current.

For Intrinsically Safe purposes the following parameters apply.

$U_{max:in}$ = 30 volts

$W_{max:in}$ = 1 watt

DRAWING Number	Issue	Date	Description
CI 404-001 Sheets 1 to 10	2	Jan 85	Certification Information for BA404B

Health & Safety Executive

BASEEFA

British Approvals Service for Electrical Equipment in Flammable Atmospheres

CERTIFICATE OF CONFORMITY VARIATION

THIS IS TO CERTIFY THAT CERTIFICATE OF CONFORMITY BAS NO Ex 85B2007

Issued to BEKA ASSOCIATES
of Hitchen, Herts

for the BA 404B 4-20 mA CURRENT CONTROLLER

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 the variations specified in the following Schedule.

VARIATION ONE To permit the two printed circuit boards to be replaced by a single printed circuit board and for the painted aluminium enclosure to be replaced by a moulded plastic enclosure designed for panel mounting.

These changes form a BA 405B 4-20 mA Current Controller.

DRAWING Number	Issue	Date	Description
CI 405-002 Sheets 1 to 8	Original	Mar 87	Certification Information for BA 405

Code: EEx ia IIC T4
(T_{amb} = 60°C)
As original

File: EECS 0121/02/001

Test Report 85(i)013
dated 21 February 1985
and Addendum No 1
dated 14 April 1987

HEALTH AND SAFETY EXECUTIVE

CERTIFICATE OF CONFORMITY BAS NO Ex 85B2007/1

199/34

B HILL
DIRECTOR
Dated 14 April 1987

British Approvals Service for Electrical
Equipment in Flammable Atmospheres

Certificate of Conformity Variation

THIS IS TO CERTIFY THAT CERTIFICATE BAS NO Ex 85B2007

Held by BEKA ASSOCIATES LIMITED
of Hitchin, Herts, SG5 2DA

for the BA404B 4-20mA CURRENT CONTROLLER

is hereby extended to apply to apparatus designed and constructed in accordance with the specification set out in the Schedule of the said Certificate but having the variations specified in the attached Schedule.

A copy of this Supplementary Certificate shall be attached to the original Certificate.

File No: EECS 0121/02/004

ELECTRICAL EQUIPMENT EECS CERTIFICATION SERVICE

CERTIFICATE BAS NO Ex 85B2007/2
Sheet 1/2
BJA

I M CLEARE
DIRECTOR EECS
18 September 1995

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 26211 Fax: 0298 79514 Telex: 668113 RLSD G

HSE Health & Safety Executive

Schedule

Certificate of Conformity BAS No Ex 85B2007/2

VARIATION TWO

To permit a number of minor changes to the Models BA404B and BA405B current controllers including:-

i) The removal of transistor TR1 and resistor R12.

ii) Transistor TR2 to be an alternative type.

iii) The Model BA404B also has an end stop fitted to its potentiometer.

DRAWINGS

Number	Issue	Date	Description
CI404-001 Sheets 2,3,4,7 and 9 of 11	3	July 1995	Model BA404B, circuit diagram, parts list and assemblies
CI405-002 Sheets 2,3,4 and 6 of 9	2	July 1995	Model BA405B, circuit diagram, parts list and assembly

Health & Safety Executive

BASEEFA

British Approvals Service for Electrical Equipment in Flammable Atmospheres

1. # CERTIFICATE OF CONFORMITY

2. BAS No Ex 852008

3. This certificate is issued for the intrinsically safe electrical system:

A BA404B 4-20 mA CURRENT CONTROLLER SYSTEM

4. submitted for certification by:

BEKA ASSOCIATES
of Hitchin, Herts

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

6. BASEEFA confirms that the system has been found to comply with European Standard BS 5501:Part9:1982 EN50 039

Relevant examination and test requirements are recorded in confidential Test Report No 85(i)013 dated 21 February 1985
(held on File SFA 12/716/02)

7. This system is coded EEx ia IIC T4

8. The supplier and/or user, of the intrinsically safe electrical system referred to in this certificate, has the responsibility to ensure that the system conforms to the specification laid down in the Schedule to this certificate and has satisfied routine verifications and tests specified therein.

File No. SFA/12/716/02

HEALTH AND SAFETY EXECUTIVE

B HILL
DIRECTOR

21 February 1985

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.

BASEEFA Harpur Hill Buxton Derbyshire SK17 9JN Tel 0298 6211 Telex 668113 RLSD G

CERTIFICATE OF CONFORMITY SCHEDULE

NUMBER Ex 852008

DATED 21 February 1985

SYSTEM

A BA404B 4-20 mA CURRENT CONTROLLER SYSTEM comprises:

1. Apparatus located in a non-hazardous area (Safe Area).

   1.1 A Shunt Zener Diode Safety Barrier or an arrangement of shunt Zener Diode Safety Barriers certified by an EEC Approved Certification Body to [EEx ia] IIC with a maximum open circuit voltage (U_z or $U_{max:out}$) not exceeding 30 volts and power into an optimum load not exceeding 1W. In any safety barrier/s used the output power must be limited by a resistor/s 'R' such that $\frac{(U_z \text{ or } U_{max:out})^2}{4R}$ is not greater than 1W.

   1.2 Apparatus which is unspecified except that it must not be supplied from nor contain in normal or abnormal conditions a source of potential with respect to earth in excess of 250 volts r.m.s. or 250 volts d.c.

2. Apparatus which may be located in a Hazardous Area.

   2.1 A BA404B 4-20 mA CURRENT CONTROLLER (Certificate No Ex 85B2007).

   2.2 An optional meter type BA303B 4-20 mA Digital Meter (Certificate No Ex 832399) or any meter certified by an EEC approved certification body to EEx ia IIC T4, T5 or T6 with Intrinsic Safety parameters not exceeding 1.2V, 100 mA, 25 mW or 20 µJ.

3. Permissible Interconnecting Cables.

   3.1 The Capacitance and Inductance OR Inductance to Resistance (L/R) ratio of the cables interconnecting the Shunt Zener Diode Safety Barrier/s and the equipment located in the hazardous area must not exceed the values quoted on the certificates for the barrier/s in use.

DRAWING

Number	Issue	Date	Description
CI 404-001 Sheet 11	2	Jan 85	BA404B System

Health & Safety Executive

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British Approvals Service for Electrical Equipment in Flammable Atmospheres

CERTIFICATE OF CONFORMITY VARIATION

THIS IS TO CERTIFY THAT CERTIFICATE OF CONFORMITY BAS NO Ex 852008

Issued to BEKA ASSOCIATES
of Hitchen, Herts

for the BA 404B 4-20 mA CURRENT CONTROLLER SYSTEM

is hereby extended to apply to the system conforming to the specification set out in the Schedule of the said Certificate but having the variations specified in the following Schedule.

VARIATION ONE To permit the BA 404B 4-20 mA Current Controller Item 2.1 of the First Schedule to be replaced by a BA 405B 4-20 mA Current Controller (Certificate No Ex 85B2007/1).

DRAWING Number	Issue	Date	Description
CI 405-002 Sheet 9	Original	Mar 87	BA 405B System

Code: EEx ia IIC T4
(As original)

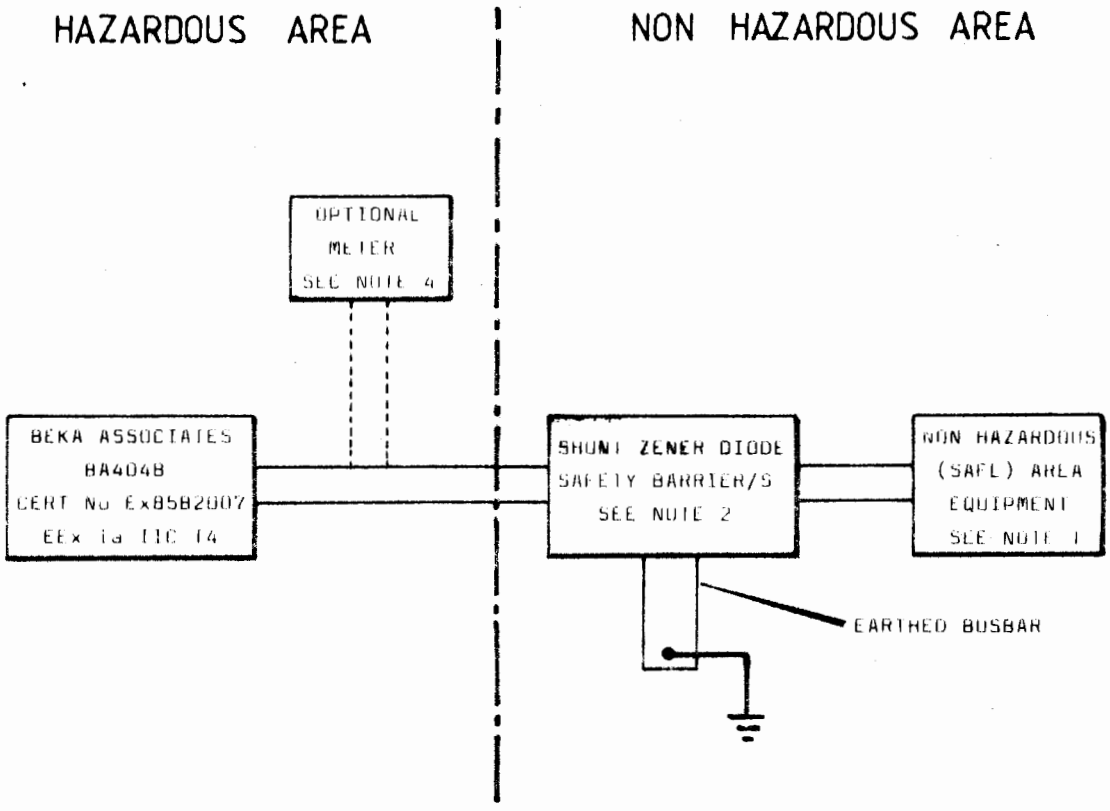
File: EECS 0121/02/001

HEALTH AND SAFETY EXECUTIVE

CERTIFICATE OF CONFORMITY BAS NO Ex 852008/1

199/36

B HILL
DIRECTOR
Dated 14 April 1987



NOTES

1. THIS APPARATUS IS UNSPECIFIED EXCEPT THAT IT MUST NOT BE SUPPLIED FROM NOR CONTAIN UNDER NORMAL OR ABNORMAL CONDITIONS A SOURCE OF POTENTIAL WITH RESPECT TO EARTH IN EXCESS OF 250V rms OR 250V dc.

2. ANY SHUNT ZENER DIODE SAFETY BARRIER OR COMBINATIONS OF BARRIERS CERTIFIED BY ANY EEC APPROVED BODY TO [EEx ia] IIC WHERE THE MAXIMUM OPEN CIRCUIT OUTPUT VOLTAGE (Uz or UmaxOUT) DOES NOT EXCEED 30 VOLTS AND MAXIMUM POWER INTO AN OPTIMUM LOAD DOES NOT EXCEED 1 WATT. IN ANY SAFETY BARRIER/S USED THE OUTPUT POWER MUST BE LIMITED BY A RESISTOR/S 'R' SUCH THAT:

$$\frac{(Uz \text{ or } UmaxOUT)^2}{4R}$$ IS NOT GREATER THAN 1.

3. THE CAPACITANCE AND INDUCTANCE OR INDUCTANCE TO RESISTANCE RATIO OF THE CABLE INTERCONNECTING THE SHUNT ZENER DIODE SAFETY BARRIER/S AND THE EQUIPMENT IN THE HAZARDOUS AREA MUST NOT EXCEED THE VALUES QUOTED ON THE CERTIFICATE FOR THE BARRIER/S IN USE.
THE CABLE MAY BE A SEPARATE PAIR, OR A PAIR CONTAINED IN A TYPE A, OR TYPE B MULTICORE CABLE (AS DEFINED IN CLAUSE 5.3 OF EN50 039) PROVIDED THAT THE PEAK VOLTAGE OF ANY CIRCUIT CONTAINED WITHIN THE MULTICORE DOES NOT EXCEED 60 VOLTS.

4. METER TYPE BA303B 4/20mA DIGITAL METER CERTIFICATION NO. Ex 832399 OR ANY METER CERTIFIED BY AN EEC APPROVED BODY TO EEx ia IIC T4, T5 or T6 WITH INTRINSIC SAFETY PARAMETERS NOT EXCEEDING 1.2V, 100mA, 25mW or 20uJ.

5. THE ELECTRICAL CIRCUIT IN THE HAZARDOUS AREA MUST BE CAPABLE OF WITHSTANDING AN AC TEST VOLTAGE OF 500 VOLTS rms TO EARTH OR FRAME OF THE APPARATUS FOR ONE MINUTE.

6. THE INSTALLATION MUST COMPLY WITH NATIONAL REQUIREMENTS EG. IN THE UK GENERALLY BS5345:PART 4:1977.

HEALTH AND SAFETY EXECUTIVE
BASEEFA APPROVED DRAWING
CERT. No. Ex852008

DRG. No.

ISSUE | DESCRIPTION | APPD | DATE

See sheet 2

BEKA associates

TITLE
CERTIFICATION INFORMATION FOR BA404B

DRAWING No. CI404-001

DRAWN JAD | TRACED | CHECKED | APPROVED | DATE JAN 85

PART OF

DO NOT SCALE

SHEET 11 OF 11

BS 358-717