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Applicant: BEKA associates Limited Address: Old Charlton Road, Hitchin, Hertfordshire, SG5 2DA Country: United Kingdom Contact: Mr. Chris Burkitt Phone: +44 (0) 1462 438301 FAX: +44 (0) 1462 453971 Email: chrisb@beka.co.uk	Manufacturer: BEKA associates Limited Address: Old Charlton Road, Hitchin, Hertfordshire, SG5 2DA, Country: United Kingdom Contact: Mr. Chris Burkitt Phone: +44 (0) 1462 438301 FAX: +44 (0) 1462 453971 Email: chrisb@beka.co.uk
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Party Authorized To Apply Mark: Same as Manufacturer
Report Issuing Office: Leatherhead, Unitek Kingdom

Control Number: 4008610

Authorized by: _____



Paul Klemets for
 Thomas J. Patterson, Certification Manager



This document supersedes all previous Authorizations to Mark for the noted Report Number.

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Intertek Testing Services NA Inc.
 545 East Algonquin Road, Arlington Heights, IL 60005
 Telephone 800-345-3851 or 847-439-5667 Fax 312-283-1672

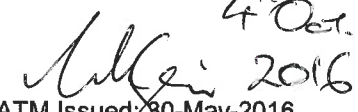
Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, Division 1, Hazardous (Classified) Locations [ANSI/UL 913; Seventh Edition; July 31, 2006; Rev: September 23, 2011]

Explosive Atmospheres – Part 0: Equipment – General requirements [ANSI/UL 60079-0; Fifth Edition; October 21, 2009; Rev: 2009/12/08]

Standard(s): Explosive Atmospheres – Part 11: Equipment Protection by Intrinsic Safety "I" [ANSI/UL 60079-11; Sixth Edition; February 15, 2013]

Electrical apparatus for explosive gas atmospheres - Part 0: General requirements [CAN/CSA-C22.2 No.60079.0; December 2011]

Electrical apparatus for explosive gas atmospheres - Part 11: Intrinsic safety "I" [CAN/CSA-C22.2 No.60079-11; December 2011]

4th Oct

 ATM Issued: 30-May-2016
 ED 16.3.15 (1-Jan-13) Mandatory

ILL

Product:	Panel Mounted Setpoint Stations Class I, Zone 0, AEx ia IIC T5 Ga Class I, Division 1, Groups A - D Class I, II, III Division 2, Groups A - G Class I, Zone 2, Group IIC Temperature Class: T5 Ambient Temperature: -40°C to +70°C
Models:	BA407E, BA408E, BA427E and BA428E

Iss.		Modification		Appd.	
Date	27.08 2013	New drawing		Ckd.	
Iss.	1			Modification	
Date				Date	
Iss.					

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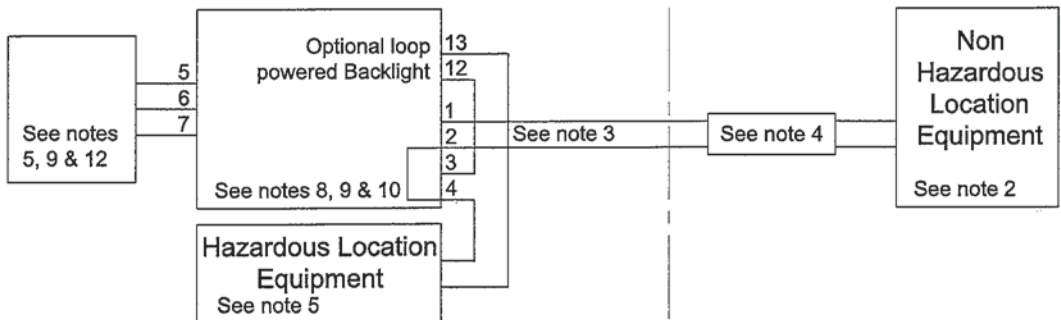
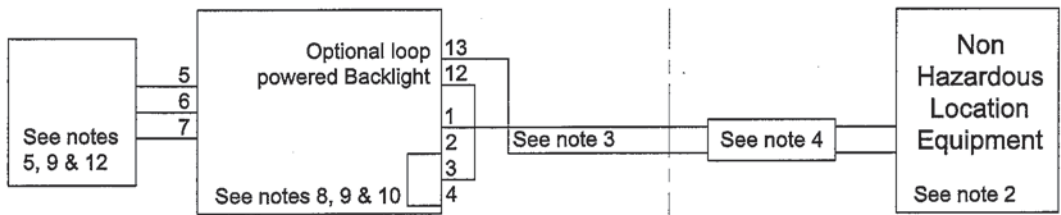
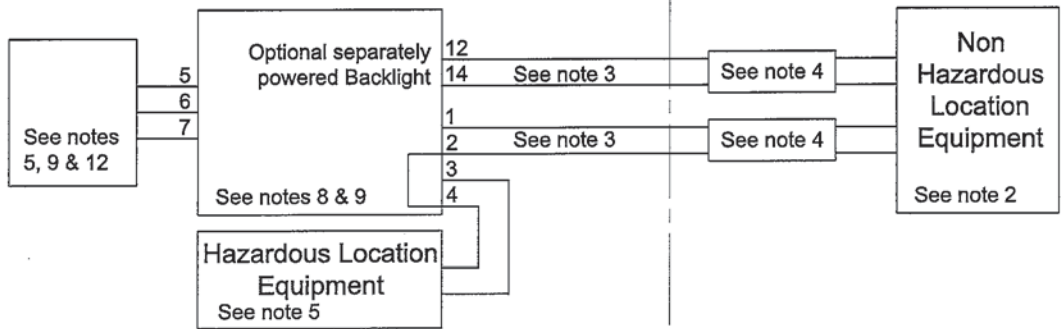
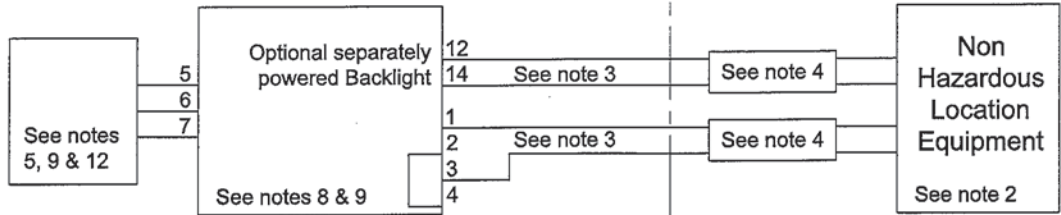
HAZARDOUS LOCATION

BA407E, BA408E, BA427E & BA428E
Class I Division 1 Groups A, B, C & D
Class I, Zone 0, Group IIC

Class I, Zone 0, AEx ia IIC T5 Ga
Class I, Division 1, Groups A - D
Class I, II, III Division 2, Groups A - G
Class I, Zone 2, Group IIC
Temperature Class: T5
Ambient Temperature: -40°C to +70°C


NON-HAZARDOUS LOCATION

See notes 1 & 3



Title
ETL Intrinsically Safe Control Drawing for
BA407E & BA408E 4 DIGIT SETPOINT STATIONS
BA427E & BA428E 5 DIGIT SETPOINT STATIONS

Drawn RC	Checked 	Scale -
Drawing No. Sheet 1 of 4		CI400-12

Iss.	Date	Modification	Ckd.	Appd.	<p>Notes</p> <ol style="list-style-type: none"> The associated protective barriers and galvanic isolators shall be NRTL approved and the manufacturers instructions shall be followed when installing this equipment. For installations in Canada the associated protective barriers and galvanic isolators shall be NRTL or CSA approved and the manufacturers installation drawings shall be followed when installing this equipment. The unclassified location equipment shall not use or generate more than 250V rms or 250V dc. Installations shall be in accordance with ANSI/ISA RP 12.06.01 'Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations' and the National Electrical Code ANSI/NFPA 70. Installations in Canada shall be in accordance with the Canadian Electrical Code C22.2. One single channel or one two channel associated protective barrier or galvanic isolator with entity parameters complying with the following requirements: <ul style="list-style-type: none"> Uo equal or less than The lowest Ui of the NRTL or CSA approved apparatus installed in the loop. Io equal or less than The lowest Ii of the NRTL or CSA approved apparatus installed in the loop. Po equal or less than The lowest Pi of the NRTL or CSA approved apparatus installed in the loop. Lo equal or greater than The sum of the cable inductances and the internal inductances Li of each NRTL or CSA approved apparatus in the loop. Co equal or greater than The sum of the cable capacitance and the internal capacitance Ci of each NRTL or CSA approved apparatus in the loop. 			
Iss.	Date	Modification	Ckd.	Appd.				
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<p>BEKA associates Hitchin England company confidential, copyright reserved.</p>								
Iss.	Date	Modification	Ckd.	Appd.	<p>Title</p> <p>ETL Intrinsically Safe Control Drawing for BA407E & BA408E 4 DIGIT SETPOINT STATIONS BA427E & BA428E 5 DIGIT SETPOINT STATIONS</p>	Drawn RC	Checked 	Scale -
Iss.	Date	Modification	Ckd.	Appd.		<p>Drawing No. Sheet 2</p> <p>CI400-12</p>		

Iss.	Date	Modification	Ckd.	Appd.
1	27.08 2013	New drawing		

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5. Simple Apparatus as defined in the National Electrical Code ANSI/NFPA 70, or for installations in Canada by the Canadian Electrical Code C22.2 OR:

- Ui equal or greater than The highest Uo of the NTRL or CSA approved apparatus powering the loop.
- li equal or greater than The highest lo of the NTRL or CSA approved apparatus powering the loop.
- Pi equal or greater than The highest Po of the NTRL or CSA approved apparatus powering the loop.
- Lo of the NTRL or CSA approved apparatus powering the loop equal or greater than The sum of the cable inductances and the internal inductances Li of each NTRL or CSA approved apparatus in the loop.
- Co of the NTRL or CSA approved apparatus powering the loop equal or greater than The sum of the cable capacitances and the internal capacitances Ci of each NTRL or CSA approved apparatus in the loop.

6. The BA407E, BA408E, BA427E and the BA428E Setpoint Stations shall be mounted where they are shielded from direct sunlight.

7. When mounting the BA407E, BA408E, BA427E and the BA428E panel mounting Setpoint Stations in an enclosure to maintain Type 4 front panel rating:

Minimum panel thickness should be 2mm (0.08inches) Steel
3mm (0.12inches) Aluminium

Outside panel finish should be smooth, free from particles, inclusions, runs or build-ups around cut-out.

Panel cut-out for BA407E and BA427E shall be:
90.0 x 43.5mm -0.0 +0.5mm
(3.54 x 1.71 inches -0.00 +0.02)

Two panel mounting clips are required and each shall be tightened to between:
20 & 22cNm (1.77 to 1.95inLb)

Panel cut-out for BA408E & BA428E shall be:
136.0 x 66.2mm-0.0 +0.5mm
(5.35 x 2.60 inches -0.00 +0.02)

Four panel mounting clips are required and each shall be tightened to between:
20 & 22cNm (1.77 to 1.95inLb)

Iss.	Date	Title	Drawn	Checked	Scale
			RC		-
		ETL Intrinsically Safe Control Drawing for BA407E & BA408E 4 DIGIT SETPOINT STATIONS BA427E & BA428E 5 DIGIT SETPOINT STATIONS	Drawing No.	CI400-12	
			Sheet 3		

Iss.	Date	Modification	Iss.	Date	Modification	Ckd.	Appd.
1	27.08 2013	New drawing					

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8. BA407E, BA408E, BA427E & BA428E Setpoint Stations.

9. Safety parameters

4/20mA output terminals 1, 2, 3 & 4

$U_i = 30V$
 $I_i = 200mA$
 $P_i = 0.84W$

 $C_i = 2.2nF$
 $L_i = 0.01mH$

Terminals 1, 2, 3, 4, (loop output) connected in series with the Terminals 12 & 13 (loop powered backlight).

$U_i = 30V$
 $I_i = 200mA$
 $P_i = 0.84W$

 $C_i = 2nF$
 $L_i = 0.01mH$

Separately powered backlight terminals 12 & 14.

$U_i = 30V$
 $I_i = 200mA$
 $P_i = 0.84W$

 $C_i = 11nF$
 $L_i = 0.01mH$

Optional remote encoder terminals 5, 6 & 7.

$U_i = 30V$
 $I_i = 200mA$
 $P_i = 0.84W$

 $C_i = 0$
 $L_i = 0$

$U_o = 5V$
 $I_o = 1mA$

10. Series connection of Setpoint Station 4/20mA output, loop powered Backlight and Hazardous Location Equipment may be in alternative sequence.

11. **CAUTION** The BA407E, BA408E, BA427E and the BA428E Setpoint Station enclosures may carry the following potential electrostatic warning:

WARNING

Potential electrostatic charging hazard clean only with a damp cloth

AVERTISSEMENT

Risque potentiel de charge électrostatique Nettoyer uniquement avec un chiffon humide

Alternatively, the enclosures may be manufactured from a conducting plastic per Article 250 of the National Electrical Code.

12. Optional remote encoder.

Iss.	Date	Modification	Title	Drawn	Checked	Scale
				RC		-
			ETL Intrinsically Safe Control Drawing for BA407E & BA408E 4 DIGIT SETPOINT STATIONS BA427E & BA428E 5 DIGIT SETPOINT STATIONS	Drawing No.	CI400-12	
				Sheet 4		

Appd.	
Ckd.	
Modification	
Date	
Iss.	
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Modification	New drawing
Date	28.03 2013
Iss.	1

HAZARDOUS LOCATION

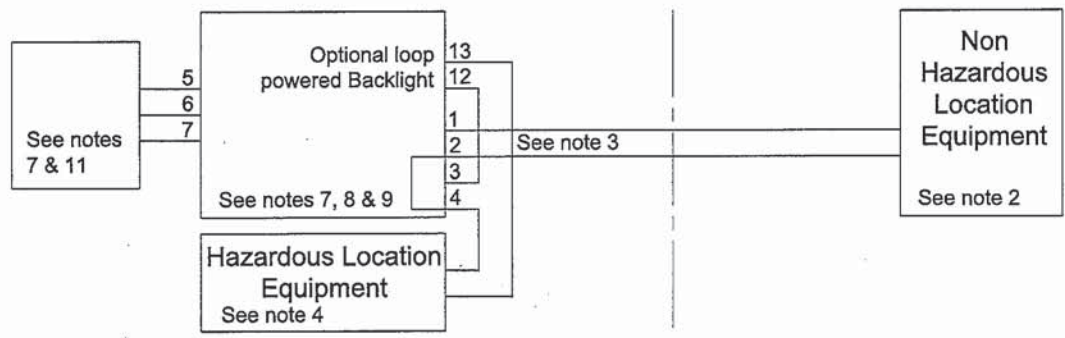
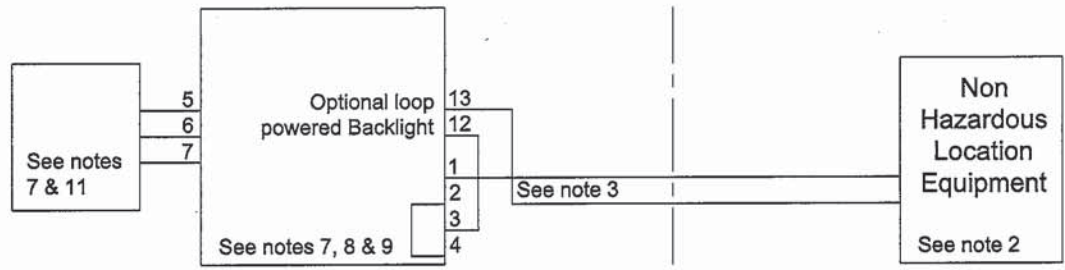
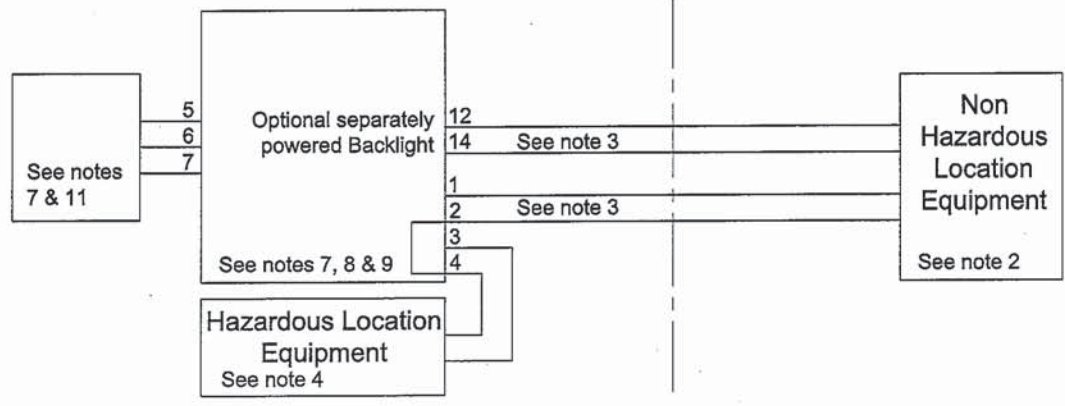
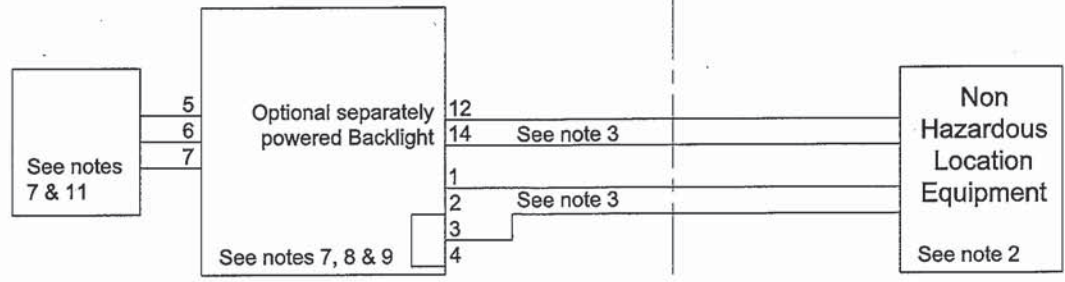
See note 3

NON-HAZARDOUS LOCATION

Locations

BA407E, BA408E, BA427E and BA428E
 Class I, Division 2, Groups A, B, C & D
 Class II, Division 2, Groups E, F & G
 Class III
 or Class I, Zone 2, Groups IIC

See note 1



Title
 ETL Nonincendive Control Drawing for
 BA407E & BA408E 4 DIGIT SETPOINT STATIONS
 BA427E & BA428E 5 DIGIT SETPOINT STATIONS

Drawn RC	Checked 	Scale -
Drawing No.		CI400-13
Sheet 1 of 3		

Iss.	Date	Modification	Ckd.	Appd.
1	28.03 2013	New drawing		
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Iss.	Date	Modification	Ckd.	Appd.

Notes

1. The unclassified location equipment shall not use or generate more than 250V rms or 250V dc.
2. Nonincendive field wiring installations shall be in accordance with the National Electrical Code ANSI/NFPA 70. The Nonincendive Field Wiring concept allows interconnection of Nonincendive Field Wiring Apparatus with Associated Nonincendive Field Wiring Apparatus using any of the wiring methods permitted for unclassified locations. Installations in Canada shall be in accordance with the Canadian Electrical Code C22.2.
3. Classified location equipment shall be NRTL Approved Nonincendive Field Wiring Apparatus or simple apparatus as defined in ANSI/NFPA70. For Canadian installations classified location equipment shall be NRTL or CSA Approved Nonincendive Field Wiring Apparatus.
4. Simple Apparatus as defined in the National Electrical Code ANSI/NFPA 70, or for installations in Canada by the Canadian Electrical Code C22.2 or as defined in note 3.
5. When mounting the BA407E, BA408E, BA427E and the BA428E panel mounting Setpoint Stations in an enclosure to maintain Type 4 front panel rating:

Minimum panel thickness should be

	2mm (0.08inches) Steel
	3mm (0.12inches) Aluminium

Outside panel finish should be smooth, free from particles, inclusions, runs or build-ups around cut-out.

Panel cut-out for BA407E and BA427E shall be:

90.0 x 43.5mm -0.0 +0.5mm
(3.54 x 1.71 inches -0.00 +0.02)

Two panel mounting clips are required and each shall be tightened to between:

20 & 22cNm (1.77 to 1.95inLb)


Panel cut-out for BA408E & BA428E shall be:

136.0 x 66.2mm -0.0 +0.5mm
(5.35 x 2.60 inches -0.00 +0.02)

Four panel mounting clips are required and each shall be tightened to between:

20 & 22cNm (1.77 to 1.95inLb)

6. The BA407E, BA408E, BA427E and the BA428E Setpoint Stations shall be mounted where they are shielded from direct sunlight.

Title		Drawn	Checked	Scale
ETL Nonincendive Control Drawing for BA407E & BA408E 4 DIGIT SETPOINT STATIONS BA427E & BA428E 5 DIGIT SETPOINT STATIONS		RC		-
		Drawing No.		CI400-13
Iss.	Date	Sheet 2		
1	28.03 2013			

Iss.	Date	Modification	Ckd.	Appd.
1	27.08 2013	New drawing		
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Iss.	Date	Modification	Ckd.	Appd.

7. Safety parameters

4/20mA output terminals 1, 2, 3 & 4

$U_i = 30V$
 $I_i = 200mA$
 $P_i = 0.84W$

 $C_i = 2.2nF$
 $L_i = 0.01mH$

Terminals 1, 2, 3, 4, (loop output) connected in series with the Terminals 12 & 13 (loop powered backlight).

$U_i = 30V$
 $I_i = 200mA$
 $P_i = 0.84W$

 $C_i = 2nF$
 $L_i = 0.01mH$

Separately powered backlight terminals 12 & 14.

$U_i = 30V$
 $I_i = 200mA$
 $P_i = 0.84W$

 $C_i = 11nF$
 $L_i = 0.01mH$

Optional remote encoder terminals 5, 6 & 7.

$U_i = 30V$
 $I_i = 200mA$
 $P_i = 0.84W$

 $C_i = 0$
 $L_i = 0$

 $U_o = 5V$
 $I_o = 1mA$

8. BA407E, BA408E, BA427E & BA428E Setpoint Stations.

9. Series connection of Setpoint Station 4/20mA output, loop powered Backlight and Hazardous Location Equipment may be in alternative sequence.

10. **CAUTION** The BA407E, BA408E, BA427E and the BA428E Setpoint Station enclosures may carry the following potential electrostatic warning:

WARNING
Potential electrostatic charging hazard clean only with a damp cloth

AVERTISSEMENT
Risque potentiel de charge
électrostatique Nettoyer uniquement
avec un chiffon humide

Alternatively, the enclosures may be manufactured from a conducting plastic per Article 250 of the National Electrical Code.

11. Optional remote encoder.

Title		Drawn	Checked	Scale
ETL Nonincendive Control Drawing for BA407E & BA408E 4 DIGIT SETPOINT STATIONS BA427E & BA428E 5 DIGIT SETPOINT STATIONS		RC		-
Iss.	Date	Drawing No.		
1	27.08 2013	Sheet 3 CI400-13		