



1 **EC TYPE-EXAMINATION CERTIFICATE**

2 Equipment intended for use in Potentially Explosive Atmospheres Directive 94/9/EC

3 Certificate Number: **Sira 99ATEX3175X** Issue: **10**

4 Equipment: **ZAG Range of Junction Boxes**

5 Applicant: **ABTECH Limited**

6 Address: Sanderson Street  
Lower Don Valley  
Sheffield S9 2UA  
UK

7 This equipment and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

8 Sira Certification Service, notified body number 0518 in accordance with Article 9 of Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in the confidential reports listed in Section 14.2.

9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the schedule to this certificate, has been assured by compliance with the following documents:

EN 60079-0:2012 EN 60079-7:2007 EN 60079-11:2012 EN 60079-26:2007 EN 60079-31:2009

10 If the sign 'X' is placed after the certificate number, it indicates that the equipment 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 and construction of the specified equipment. If applicable, further requirements of this Directive apply to the manufacture and supply of this equipment.

12 The marking of the equipment shall include the following:



II 1 GD  
Ex ia IIC Tj Ga  
Ex ta IIIC Tk Da IP6X

Or



II 2 G D  
Ex e IIC Tj Gb  
Ex tb IIIC Tk Db IP6X  
Ambient Range -1 °C to +m°C

Or



II 2 G D  
Ex ib IIC Tj Gb  
Ex tb IIIC Tk Db IP6X

- j** The temperature class may be T6, T5, T4 or T3 depending on the application, see Table 2 in the description.  
**k** The maximum surface temperature for dust may be T85°C, T100°C, T135°C or T180°C depending on the application, see Table 1 in the description.  
**l** The minimum ambient temperature may be either -60°C or -65°C depending upon the use of a glass window. If the equipment is without the window the minimum ambient may be -65°C.  
**m** The maximum ambient temperature may be either +40°C, +55°C, +70°C, +90°C, +105°C, +135°C or +150°C depending on the application see Table 2 in the description.

Project Number 30711

C Ellaby  
Deputy Certification Manager

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13 DESCRIPTION OF EQUIPMENT

The ZAG Range of Junction Boxes are manufactured from aluminium alloy and are fitted with an arrangement of suitably certified terminals. The enclosures are covered by certificate number Sira 99ATEX3174U. The total dissipated power for the enclosure is to be calculated in accordance with EN 60079-7: 2003, Annex E, E.2. and shall not exceed the figures given in the table below:

Table 1								
ZAG Box Ref.	Max. Power Dissipation for T6/T85°C		Max. Power Dissipation for T5/T100°C		Max. Power Dissipation for T4/T135°C		Max. Power Dissipation for T3/T180°C	
	Ta +40°C	Ta +55°C	Ta +55°C	Ta +70°C	Ta +90°C	Ta +105°C	Ta +135°C	Ta +150°C
<b>Ga Gb Db</b>								
2	0.9	0.45	0.9	0.45	0.9	0.45	0.9	0.45
3	1.2	0.6	1.2	0.6	1.2	0.6	1.2	0.6
4	1.7	0.85	1.7	0.85	1.7	0.85	1.7	0.85
5	1.5	0.75	1.5	0.75	1.5	0.75	1.5	0.75
6	2.2	1.1	2.2	1.1	2.2	1.1	2.2	1.1
7	2.9	1.45	2.9	1.45	2.9	1.45	2.9	1.45
9	3.4	1.7	3.4	1.7	3.4	1.7	3.4	1.7
10	5.4	2.7	5.4	2.7	5.4	2.7	5.4	2.7
10/9	5.4	2.7	5.4	2.7	5.4	2.7	5.4	2.7
11	5.4	2.7	5.4	2.7	5.4	2.7	5.4	2.7
12	8.0	4.0	8.0	4.0	8.0	4.0	8.0	4.0
13	10.4	5.2	10.4	5.2	10.4	5.2	10.4	5.2
15	9.5	4.75	9.5	4.75	9.5	4.75	9.5	4.75
16	14.0	7.0	14.0	7.0	14.0	7.0	14.0	7.0
<b>Da</b>								
2	0.45	0.225	0.45	0.225	0.45	0.225	0.45	0.225
3	0.6	0.3	0.6	0.3	0.6	0.3	0.6	0.3
4	0.85	0.425	0.85	0.425	0.85	0.425	0.85	0.425
5	0.75	0.375	0.75	0.375	0.75	0.375	0.75	0.375
6	1.1	0.55	1.1	0.55	1.1	0.55	1.1	0.55
7	1.45	0.725	1.45	0.725	1.45	0.725	1.45	0.725
9	1.7	0.85	1.7	0.85	1.7	0.85	1.7	0.85
10	2.7	1.35	2.7	1.35	2.7	1.35	2.7	1.35
10/9	2.7	1.35	2.7	1.35	2.7	1.35	2.7	1.35
11	2.7	1.35	2.7	1.35	2.7	1.35	2.7	1.35
12	4	2	4	2	4	2	4	2
13	5.2	2.6	5.2	2.6	5.2	2.6	5.2	2.6
15	4.75	2.375	4.75	2.375	4.75	2.375	4.75	2.375
16	7	3.5	7	3.5	7	3.5	7	3.5

Junction Boxes of size not specified in the table may be manufactured subject to the maximum dissipated power being based on a smaller enclosure.

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**Variation 1** - This variation introduced the following change:

- i. The recognition of a minor revision of the information marked on the label

**Variation 2** - This variation introduced the following changes:

- i. A ZAG10/9 Junction Box was included in the range

**Variation 3** - This variation introduced the following changes:

- i. The introduction of alternative marking that allows component certified, intrinsically safe terminals to be used.

**Variation 4** - This variation introduced the following changes:

- i. Following appropriate re-assessment to demonstrate compliance with the requirements of the EN 60079 and the EN 61241 series of standards, the documents originally listed in section 9, EN 50014:1997 (amendments A1 to A2), EN 50019:2000 and EN 50281-1-1:1998, were replaced by EN 60079-0:2006, EN 60079-7:2003, EN 60079-11:2007, EN 61241-0:2006 and EN 61241-1:2006, the markings in section 12 were updated accordingly.

**Variation 5** - This variation introduced the following changes:

- i. The use of the following, alternative marking was introduced for Junction Boxes that are fitted with a closed cell silicone gasket.  
Ex e II T4 or Ex ia IIC T4 or Ex ib IIC T4  
Ex tD A21 IP66 T135°C  
(Ta -65°C to +90°C)

**Variation 6** – This variation introduced the following changes:

- i. The use of the following, alternative markings was introduced for Junction Boxes that are fitted with the closed cell silicone gasket.  
Ex e II T5 or Ex ia IIC T5 or Ex ib IIC T5  
Ex tD A21 IP66 T100°C  
(Ta -65°C up to +70°C as applicable)  
Ex e II T3 or Ex ia IIC T3 or Ex ib IIC T3  
Ex tD A21 IP66 T180°C  
(Ta -60°C up to +150°C as applicable)  
The the original table in the Description of Equipment was amended, now Table 1, to recognise all combinations of alternative markings. In addition, condition of certification clause 17.4 was modified to include the new temperatures and T classes.
- ii. When operating at half the rated power dissipation, the Junction Boxes were allowed to be used in higher upper ambient temperatures; the original table in the Description of Equipment was amended, now Table 1, to recognise the new and original values.
- iii. The high operating temperature of the closed cell silicone rubber 'O' ring gaskets was allowed to be reflected in the marking of the products; the following table clarifies the markings applicable to each combination and recognises the markings applicable when a window is fitted:



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Table 2				
'O' ring material	Use of glass window	Applicable markings depending upon the power dissipation		
		T class	Dust	Ambient temp. range
Closed cell silicone rubber	With	T6	T85°C	-60°C to +40°C
				-60°C to +55°C
Closed cell silicone rubber	Without	T6	T85°C	-65°C to +40°C
				-65°C to +55°C
		T5	T100°C	-65°C to +55°C
				-65°C to +70°C
		T4	T135°C	-65°C to +90°C
				-65°C to +105°C
		T3	T180°C	-60°C to +135°C
				-60°C to +150°C

**Variation 7** - This variation introduced the following changes:

- i. The option to fit slotted trunking inside the Junction Boxes, this trunking may be sited as required. The instructions were modified to recognise additional restrictions associated with this change and a new Condition of Manufacture was introduced.

**Variation 8** - This variation introduced the following changes:

- i. Following appropriate re-assessment to demonstrate compliance with the requirements of the EN 60079 series of standards, the documents previously listed in section 9, EN 60079-0:2006, EN 60079-7:2003, EN 60079-11:2007EN 61241-0:2006 and EN 61241-1:2006, were replaced by those currently listed. As part of this change, the markings in section 12 were updated accordingly and the 'ia' marking was removed.
- ii. Change iii in Variation 6 and the markings in section 12 were amended to recognise that closed cell polychloroprene gaskets are no longer used.
- iii. It was recognised that a new procedure for selecting terminals has been adopted by the manufacturer; this allows the terminals to be chosen from an Approved Component Document, Sira 12AC087, that is issued and controlled by Sira. Condition of Certification clause 17.4 was amended to recognise this change.

**Variation 9** - This variation introduced the following changes:

- i. To assess the enclosures and junction boxes to meet Ex ia and Ex ta concepts for EPL levels Ga and Da and hence additionally assess to EN 60079-26, the marking was amended accordingly.
- ii. The maximum power dissipation table was modified.
- iii. As a result of the assessment, Special Conditions for Safe Use were introduced and therefore an 'X' suffix was added to the certificate number.
- iv. IEC 60079-0:2011 was replaced by EN 60079-0:2012 in the list of standards.
- v. It was clarified that, when the window is fitted, the maximum surface temperature marking shall not exceed T85°C maximum and the ambient temperature range must be within -60°C to +55°C, this was recognised in the a new Condition of Certification.

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#### 14 DESCRIPTIVE DOCUMENTS

##### 14.1 Drawings

Refer to Certificate Annexe.

##### 14.2 Associated Sira Reports and Certificate History

Issue	Date	Report/File no.	Comment
0	18 January 2000	R51X6055D	The release of the prime certificate.
1	28 September 2001	53V7936	The introduction of Variation 1
2	30 October 2001	53V8484	The introduction of Variation 2
3	30 March 2005	R53V10438A	The introduction of Variation 3
4	28 February 2008	R51A17090F	This Issue covers the following changes: <ul style="list-style-type: none"><li>All previously issued certification was rationalised into a single certificate, Issue 4, Issues 0 to 3 referenced above are only intended to reflect the history of the previous certification and have not been issued as documents in this format.</li><li>The introduction of Variation 4.</li><li>The change of the company name from AB Controls and Technology, first recognised 31 January 2007.</li></ul>
5	16 February 2009	R51A19103A	The introduction of Variation 5.
6	19 April 2011	R23487A/00	The introduction of Variation 6.
7	03 April 2012	R26585A/00	The introduction of Variation 7.
8	11 June 2012	R26585A/01	Report R26585A/01 replaced report R26585A/00.
9	24 October 2012	R25164A/00	The introduction of Variation 8.
10	07 April 2014	R30711A/00	The introduction of Variation 9.

#### 15 SPECIAL CONDITIONS FOR SAFE USE (denoted by X after the certificate number)

15.1 When used in an EPL ta (Da) application the power supply to the equipment is to be rated for a prospective short circuit current of not more than 10 kA.

15.2 The materials used in the construction of this equipment contain levels of Al, Mg, Ti and Zr that are greater than that allowed for EPL Ga by clause 8.3 of EN 60079-0, therefore, in rare cases, ignition sources due to impact and friction sparks could occur. The equipment shall therefore be protected from such impact and friction when installed.

#### 16 ESSENTIAL HEALTH AND SAFETY REQUIREMENTS OF ANNEX II (EHSRs)

The relevant EHSRs that are not addressed by the standards listed in this certificate have been identified and individually assessed in the reports listed in Section 14.2.

#### 17 CONDITIONS OF CERTIFICATION

17.1 The use of this certificate is subject to the Regulations Applicable to Holders of Sira Certificates.

17.2 Holders of EC type-examination certificates are required to comply with the production control requirements defined in Article 8 of directive 94/9/EC.

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- 17.3 When the manufacturer has equipped the Junction Boxes with terminals, a routine electric strength test shall be carried out only if the components are wired, this test shall be carried out according to the following standards:
- industrial control equipment: EN 60947
  - measurement, control and laboratory use: EN 61010
- 17.4 The terminals used in these Junction Boxes shall be ATEX approved devices chosen from the Approved Component Document number Sira 12AC087 that is issued by Sira. All terminals must be installed in accordance with their certificate conditions and the relevant codes of practice/wiring regulations paying particular attention to the following:
- The maximum service temperature range.
  - The minimum creepage and clearance distances shall be maintained.
  - The rated voltages and currents may vary if cross-connection facilities are used.)
  - The reduction in rating of adjacent terminals shall be observed.
- The limiting temperature of the terminal insulation shall be at least equal to the minimum temperature range exposed and the upper operating temperature shall be at least equal to or above, 85°C for T6 Junction Boxes, 100°C for T5 Junction Boxes, 135°C for T4 Junction Boxes and 180°C for T3 Junction Boxes.
- 17.5 Suitably certified Ex e equipment such as breathing devices and blanks may be fitted to the enclosure providing the enclosure maintains compliance with EN 60529 code IP64 or better.
- 17.6 The manufacturer will take all reasonable steps to ensure that the power dissipated by the Junction Box does not exceed the maximum value stipulated in the table detailed in the Description of Equipment, in addition, the manufacturer will supply all the relevant information that will enable the user/installer to calculate the dissipated power in Watts for each Junction Box in accordance with EN 60079-7:2007 Annex E, E2.
- 17.7 When the Junction Boxes are used for intrinsically safe applications, a 3 mm separation distance between the enclosure is required, there shall also be a minimum of 6 mm between different intrinsically safe circuits.
- 17.8 When trunking is fitted, it may be sited as required and the minimum creepage and clearance distances shall still be met.
- 17.9 When the window is fitted the maximum surface temperature marking is to be a maximum of T85°C and the ambient must be within the following range -60°C to +55°C.

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# Certificate Annexe

Certificate Number: Sira 99ATEX3175X  
Equipment: ZAG Range of Junction Boxes  
Applicant: ABTECH Limited



## Issue 0

Drawing	Sheet	Rev.	Date	Title
ABT 10262	1 of 1	A	21 Dec 99	External Label (ZAG)
ABT 10306	1 of 1	A	16 Nov 99	ZAG Manufacturing Specification

## Issue 1

Drawing	Sheet	Rev	Date	Description
ABT 10262	1 of 1	B	23 Jul 01	External Label (ZAG)

Issue 2 No new drawings were introduced.

## Issue 3

Drawing	Sheet	Rev	Date	Description
ABT 14843	1	-	01 Feb 05	ZAG Range EEx ia Label
ABT 14846	1	-	01 Feb 05	ZAG Range EEx ib Label

## Issue 4

Drawing	Sheet	Rev	Date	Description
ABT 10262	1 of 1	C	06 Dec 07	Certification Label
ABT 14843	1 of 1	B	05 Feb 08	Certification Label Ex ia
ABT 14846	1 of 1	B	05 Feb 08	Certification Label Ex ib
ABT 10306	1 of 1	B	06 Dec 07	Manufacturing Specification

## Issue 5

Drawing	Sheet	Rev	Date (Sira stamp)	Description
ABT10262	1 of 1	D	12 Feb 09	External Label (ZAG)

## Issue 6

Drawing	Sheet	Rev	Date (Sira stamp)	Description
ABT 10262	1 of 1	E	19 Apr 11	Certification Label (ZAG)

## Issue 7

Drawing	Sheets	Rev.	Date (Sira Stamp)	Description
ABT 10306	1 of 1	E	02 Apr 12	ZAG Manufacturing specification

Issue 8 No new drawings were introduced.

## Issue 9

Drawing	Sheets	Rev.	Date (Sira Stamp)	Description
ABT 10262	1 of 1	F	30 Sep 12	ZAG Nameplate – Junction Box
ABT 10306	1 of 1	D	30 Sep 12	ZAG Manufacturing specification

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Drawing	Sheets	Rev.	Date (Sira stamp)	Description
ABT14843	1 of 1	C	10 Oct 13	External Label ZAG
ABT10262	1 of 1	G	29 Oct13	External Label ZAG

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