



1 EC TYPE-EXAMINATION CERTIFICATE

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

3 Certificate Number: Sira 99ATEX3175 Issue: 6

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: 2006 EN 60079-7: 2003 EN 60079-11:2007 EN 61241-0: 2006 EN 61241-1: 2004

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 2 GD
Ex e II T₁ or Ex ia IIC T₁ or Ex ib IIC T₁
Ex tD A21 IP66 T₁ °C
(Ta = - °C up to + °C)

- The temperature class may be T6, T5, T4 or T3 depending on the application, see Table 2 in the certificate schedule.
- The maximum surface temperature for dust may be T85°C, T100°C, T135°C or T180°C depending on the application, see Table 2 in the certificate schedule.
- The minimum ambient temperature may be either -20°C, -60°C or -65°C depending upon the type of 'O' ring used in the construction of the enclosure or the use of a glass window.
- 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 t Table 2 in the certificate schedule.

Project Number 23487

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:

ZAG Box Ref.	Max. Power Dissipation for T6/T85°C (W)		Max. Power Dissipation for T5/T100°C (W)		Max. Power Dissipation for T4/T135°C (W)		Max. Power Dissipation for T3/T180°C (W)	
	Ta +40°C	Ta +55°C	Ta +55°C	Ta +70°C	Ta +90°C	Ta +105°C	Ta +135°C	Ta +150°C
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

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

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.

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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:

Table 2				
'O' ring material	Use of glass window	Applicable markings depending upon the power disipation		
		T class	Dust	Ambient temp. range
Closed cell polychloroprene	With	T6	T85°C	-20°C to +40°C
				-20°C to +55°C
Closed cell polychloroprene	Without	T6	T85°C	-20°C to +40°C
				-20°C to +55°C
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

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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">• 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.• The introduction of Variation 4.• The change of the company name from AB Controls and Technology, first recognised 31 January 2007.
5	16 February 2009	R51A19103A	The introduction of Variation 5.
6	19 April 2011	R23487A/00	The introduction of Variation 6.

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

None

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.

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

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- 17.4 This certificate does not cover terminals that may be fitted to the enclosure. All terminals fitted must be suitably ATEX 'Ex e II' certified and installed in accordance with their certificate conditions and the relevant codes of practice/wiring regulations. 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 BS EN 60529: 1992 code IP64 or better
- 17.6 The maximum dissipated power in Watts for each junction box shall be calculated in accordance with EN 60079-7: 2003, Annex E, E.2. and shall not exceed the figures given in the table detailed in Section 13 above.
- 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.

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Certificate Annexe

Certificate Number: Sira 99ATEX3175
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)

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INSTALLATION, OPERATION & MAINTENANCE INSTRUCTIONS FOR ABTECH 'ZAG' Range Enclosures – SIRA99ATEX3175



Marking

The marking shown is for an apparatus certified Ex e (increased safety) terminal box rated T6.

The maximum power dissipation permitted in this terminal box is marked on the label and identified by RATING _____ WATTS.

The ambient temperature range for which this product is suitable is marked on the label and identified by Ta _____.

Alternative protection concept marking includes Ex ia or Ex ib. These marking may replace the usual Ex e marking.

Alternative markings for temperature ratings as follows.

T6 with Ta range of $-65^{\circ}\text{C} \leq \text{Ta} \leq +55^{\circ}\text{C}$ and T85°C for dust
Warning – Cable temperature can reach 85°C

T5 with Ta range of $-65^{\circ}\text{C} \leq \text{Ta} \leq +70^{\circ}\text{C}$ and T100°C for dust
Warning – Cable temperature can reach 100°C

T4 with Ta range of $-65^{\circ}\text{C} \leq \text{Ta} \leq +105^{\circ}\text{C}$ and T135°C for dust
Warning – Cable temperature can reach 135°C

T3 with Ta range of $-60^{\circ}\text{C} \leq \text{Ta} \leq +150^{\circ}\text{C}$ and T180°C for dust
Warning – Cable temperature can reach 180°C

Installation

These instructions assume that the required cable entries have been pre-drilled. Cable entries may be threaded. Entries may be drilled on site by a competent person.

Before installation check the permitted operating temperature range of the terminals against the minimum ambient temperature of the box and the T rating of the box. Unsuitable terminals must be replaced prior to cable termination.

- 1) Using the mounting dimensions data provided, either in the product catalogue data sheets or on the drawings supplied, (as part of the project documentation), mark out the positions for the mounting holes on the surface where installation is required.
- 2) Drill the mounting holes for M4 fixing studs (for size ZAG1 to ZAG8) or for M6 fixing studs (for size ZAG9 to ZAG16) as applicable.
- 3) Tap thread into mounting holes if required.
- 4) Place a mounting screw through one mounting hole in the box so that the thread of the screw protrudes from the back of the box. Lift the enclosure into position using such assistance as may be necessary to avoid injury and:-
 - a) If clearance mounting holes are used, insert the protruding thread through the appropriate clearance hole and secure with a nut on the other side of the mounting surface.
 - Or
 - b) If threaded holes are used, locate the end of the mounting screw over the thread hole and, using an appropriate screwdriver tighten the screw.
- 5) Rotate the box to line up the remaining mountings and repeat (4) above for remaining mounting screws.
- 6) Install and secure the cable glands in accordance with the manufacturers instructions.
- 7) Pull the cables into the box, leaving trailing leads of a length specified by site practice or the site engineer and secure any cable armour in accordance with site practice.
- 8) Terminate the cables in the terminals provided in accordance with the requirements of BS EN 60079-14:1997. Consideration must be given to any limitations or special conditions detailed on the certificates for the terminals fitted
- 9) Secure the lid by closing the lid and tightening the lid fixing screws.

Earthing /Grounding

The enclosure is provided with an external earth/ground connection. This must be connected to the appropriate earth bonding circuit before electrical power is connected to the contents of the enclosure.

Operation

1. The lid must be secured using all of the lid screws provided in order to maintain the IP rating. Use a securing torque of 1Nm minimum, 2 Nm maximum (M4) or 3 Nm maximum (M6).
2. No attempt must be made to remove the enclosure lid whilst electrical power is connected to the contents of the enclosure.
3. The enclosure earth/ground facility must be connected to the earth bonding circuit at all times when power is connected to the enclosure.

Maintenance

Routine maintenance is likely to be a requirement of local Health and Safety legislation. The laws of the applicable country must be considered and maintenance checks carried out accordingly. Additional periodic checks that are advisable to ensure the efficiency of ABTECH range enclosures are:-

Activity	Frequency
1 Check that the lid seal is in place and not damaged	Each time the enclosure is opened
2 Check that all lid fixing screws are in place and secured	Each time the enclosure is closed
3 Check that the mounting bolts are tight and free of corrosion	Annually
4 Check the security of all cable glands	Annually
5 Check that all screw clamp terminals are secure	As manufacturers recommendation
6 Check for corrosion of the enclosure	Annually, Every 3 months in corrosive atmospheres

If lid seals are replaced they must be replaced by gaskets matching those originally fitted. Black foam lid seals are poly-chloroprene, pink foam seals are silicone. Black solid rubber lid seals are silicone

Chemical Attack

The ABTECH ZAG range of enclosures is manufactured using the following materials:

Aluminium – AISi 12;
Neoprene or silicone rubber;
316 stainless steel.

Consideration should be given to the environment in which these enclosures are to be used to determine the suitability of these materials to withstand any corrosive agents that may be present.

Static Hazard

The ZAG range enclosures do not present a hazard from static electricity.

Vibration

ZAG range terminal boxes are designed for use in areas subject to normal industrial levels of vibration. They are not designed for use in areas subject to intentional or extreme conditions of vibration.

Protection From Foreseeable Faults

Circuits connected in the enclosure must be externally protected using suitable circuit interruption devices to prevent overloading. Provided the enclosure is correctly installed, there should be no foreseeable faults.