



1 **EC TYPE-EXAMINATION CERTIFICATE**

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

3 Certificate Number: **Sira 02ATEX3266** Issue: **7**

4 Equipment: **HVJB Junction Boxes**

5 Applicant: **ABTECH Ltd**

6 Address: **Sanderson Street
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 61241-0: 2006

EN 60079-7: 2003

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 2GD

Ex e II T4

Ex tD A21 IP 66 T70°C

Project Number 19589

C Ellaby
Deputy Certification Manager

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SCHEDULE

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13 DESCRIPTION OF EQUIPMENT

The HVJB junction boxes are rated at 11 kV with a maximum dissipated power of 259 W for the HVJB-7 and 346 W for the HVJB-8. The enclosures of the HVJB Junction Boxes are covered by certificate Sira 99ATEX3170U, coded EEx e II. Inside the enclosure, the HVJB Junction Boxes utilise an arrangement of up to four copper busbars to provide connection facilities. These busbars are supported on insulators and may accommodate two cables per phase, a single cable per phase or a combination depending on the arrangement. Connecting cables are terminated in crimped cable lugs that are sandwiched between bus bars. Insulated partitions are fitted between bus bars to improve clearance distances between live parts.

Variation 1 - This variation introduced the following change:

- i. The addition to the range of an HVJB-8 Junction Box with 2 way, or 3 way main terminals and a selection of EEx e auxiliary "field" terminals.
 - Maximum dissipated power of EEx e auxiliary "field" terminals and wiring = 86.5 W
 - Maximum dissipated power of 3 main terminals and wiring = 259.5 W
 - Total maximum dissipated power = 346 W

Variation 2 - This variation introduced the following changes:

- i. The inclusion of a suitably certified and dimensioned heater, this heater is defined as "Any suitably certified and dimensioned heater that is fitted with a thermostat set to a maximum of 25°C".
- ii. An increase in the sizes of the enclosure

Variation 3 - This variation introduced the following changes:

- i. The addition to the range of a HVJB-7 and a HVJB-8 Junction Box with top insulators, forming the Type NKJB-7 or NKJB-8 Junction Box, respectively.
- ii. The introduction of an alternative polyester label material.

Variation 4 - This variation introduced the following change:

- 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 61241-0:2006 and EN 61241-1:2006, the markings in section 12 were updated accordingly.


Variation 5 - This variation introduced the following change:

- i. The addition of an Abtech Limited, Type BPG Junction Box (sizes 6, 7 and 8) approved by Sira 99ATEX3173, coded EEx e II T4 (Ta -65°C to +90°C) to the HVJB Junction Boxes.

Variation 6 - This variation introduced the following change:

- i. The depth of the enclosures was increased.

Variation 7 - This variation introduced the following changes:

- i. The ambient temperature range was increased from -20°C to 40°C, to -50°C to 55°C.
- ii. The use of larger, empty, "SX" Type enclosures covered by Sira 99ATEX3170U (coded  II 2 GD, EEx e II) was endorsed, these enclosures have a minimum depth (height) of 300 mm and the same power rating as previously specified, , in addition dust code IP code on the label has been changed to recognise IP67 or IP68 to reflect the marking on Sira 99ATEX3170U
- iii. The dated reference to EN 61241-1 was corrected.
- iv. The conditions of manufacture were rationalised to clarify previous changes and to take account of the increase in the ambient temperature range detailed above.

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Sira Certification Service

Rake Lane, Eccleston, Chester, CH4 9JN, England

Tel: +44 (0) 1244 670900
Fax: +44 (0) 1244 681330
Email: info@siracertification.com
Web: www.siracertification.com



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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 no.	Comment
0	11 October 2002	R53A9233A	The release of the prime certificate.
1	22 June 2005	R53A10486A	The introduction of Variation 1.
2	15 August 2006	R51A15308A	The introduction of Variation 2.
3	26 March 2007	R51A16371A	The introduction of Variation 3.
4	22 February 2008	R51A17090C	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	3 December 2010	R21870A/00	The introduction of Variation 5.
6	6 December 2010	R23750A/00	The introduction of Variation 6.
7	03 June 2011	R19589A/00	The introduction of Variation 7.

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 SCS 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 If the terminals are fitted with cables by the manufacturer, then a routine electric strength test shall be carried out in accordance with EN 60079-7: 2003 clause 6.1.



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17.4 The products covered by this certificate incorporate previously certified devices, it is therefore the responsibility of the manufacturer to continually monitor the status of the certification associated with these devices, and the manufacturer shall inform Sira of any modifications of the devices that may impinge upon the explosion safety design of their products.

In addition, this certificate relies on the following previously certified products, when used as part of a Junction Box that is fitted with anti-condensation heater that includes a thermostat, the key attributes listed in the table below shall still be maintained by their original certificate.

Description	Certificate no.	Key attributes
Anti-condensation heater fitted with a thermostat	As appropriate	Suitably certified by a notified body as a piece of equipment with a T6 temperature classification.

The manufacturer shall ensure that the previously certified heater that includes a thermostat is being used within the scope, the ratings and any special conditions for safe use that are specified in its associated certificate.

17.5 The maximum dissipated power for the Junction Boxes shall be limited to:

Type	Ambient temperature range	Maximum dissipated power (W)
HVJB-7	-20°C to 40°C	259
	-50°C to +55°C	129.5
HVJB-8	-20°C to 40°C	346
	-50°C to +55°C	173
NKJB-7	-20°C to 40°C	259
NKJB-8	-20°C to 40°C	346

17.6 When the HVJB-8 Junction Box is fitted with field terminals in accordance with Variation 1, the terminals shall have at least 12 mm creepage and 10 mm clearance between live parts and conductive metal parts.

17.7 When the HVJB-8 Junction Box is fitted with field terminals in accordance with Variation 1, the total dissipated power for the "field" terminals and wiring shall be calculated in accordance with EN 60079-7:2003, Annex E, E.2 and shall not exceed the values in the table below:

Ambient temperature range	Maximum dissipated power (W)	
	'Field' terminals	'Main' terminals
-20°C to 40°C	86.5 W	259.5
-50°C to +55°C	43.25 W	129.75

17.8 When the HVJB Junction Box is fitted with BPG Junction Boxes in accordance with Variation 5, the total dissipated power and current shall not exceed the values in the table below:

Type	Maximum Power Dissipation and Maximum Current - Main Terminals and Wiring					
	4-Way		3-Way		2-Way	
	Power (W)	Current (A)	Power (W)	Current (A)	Power (W)	Current (A)
HVJB-7	Not permitted	Not permitted	248	938	165	624
HVJB-8	335	949	251	710	167	473

17.9 Junction Box that are marked with the ambient temperature range -50°C to +55°C shall only be constructed using an empty SX enclosure with a minimum depth of 300 mm, without windows and fitted with silicone gaskets, as approved by Sira 99ATEX3170U.

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Certificate Annexe

Certificate Number: Sira 02ATEX3266
Equipment: HVJB Junction Boxes
Applicant: ABTECH Ltd



Issue 0

Drawing No.	Sheet	Rev.	Date	Description
ABT12013	1 of 1	A	19 Jun 02	HVJB Certification Label
ABT12009	1 of 1	A	17 Jun 02	HVJB-8
ABT12010	1 of 1	A	17 Jun 02	HVJB-7

Issue 1

Drawing No.	Sheet	Rev.	Date	Description
ABT13132	1 of 1	A	20 Jun 03	HVJB-8 – 2 or 3 way with Field Terminals

Issue 2

Drawing No.	Sheet	Rev.	Date (Sira Stamp)	Description
ABT16360	1 of 1	A	11 Jul 06	HVJB125

Issue 3

Drawing No.	Sheet	Rev.	Date (Sira stamp)	Description
ABT 17056	1 of 1	A	26 Mar 07	NKJB Series – General Arrangement
ABT 12013	1 of 1	B	26 Mar 07	HVJB / NKJB Label

Issue 4

Drawing No.	Sheet	Rev.	Date	Description
ABT 13132	1 of 1	B	06 Dec 07	General Assembly with Field Terminals
ABT 16360	1 of 1	B	06 Dec 07	General Assembly with Field Terminals
ABT 12013	1 of 1	C	06 Dec 07	Certification Label

Issue 5

Drawing No.	Sheets	Rev.	Date	Description
ATB21081	1 of 1	A	03 Dec 10	HVJB Series (additional BPG enclosure)

Issue 6

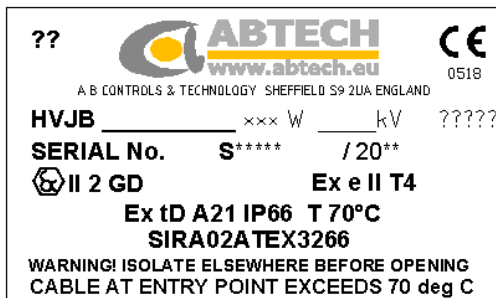
Drawing No.	Sheets	Rev.	Date (Sira stamp)	Description
ABT12009	1 of 1	B	24 Nov 10	HVJB-8?
ABT12010	1 of 1	B	24 Nov 10	HVJB-?? Series
ABT13132	1 of 1	C	24 Nov 10	HVJB with field terminals
ABT16360	1 of 1	C	24 Nov 10	HVJB 125
ABT17056	1 of 1	B	24 Nov 10	NKJB Series

Issue 7

Drawing No.	Sheets	Rev.	Date (Sira stamp)	Description
ABT12009	1 of 1	B	18 May 11	HVJB-8
ABT12010	1 of 1	B	18 May 11	HVJB-7
ABT 17056	1 of 1	B	18 May 11	NKJB Series – General Arrangement
ABT 13132	1 of 1	D	18 May 11	General Assembly with Field Terminals
ABT 12013	1 of 1	D	03 Jun 11	Certification Label

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INSTALLATION, OPERATION & MAINTENANCE INSTRUCTIONS FOR ABTECH 'HVJB' series – SIRA01ATEX3266



Marking

The maximum power dissipation and voltage permitted in this terminal box are marked on the label and identified as ***W and ___kV. The ambient temperature range for which this product is suitable is -20 to +40°C

Installation

- 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 either M8 or M9 fixing studs.
- 3) Insert the top two studs leaving 8 to 10mm protruding and lift the enclosure into position using such assistance as may be necessary to avoid injury and hang the top fixing brackets of the box onto the studs. Ensuring that the box is secure, insert and tighten the bottom two studs. Now complete tightening the top two studs.
- 4) Unfasten the lid securing screws and remove the enclosure lid. Put the lid in a safe place.
- 5) Install and secure the cable glands in accordance with the manufacturers instructions.

Main Power Cable Connections

- 6) Remove the top half on each power core cable clamp and put safely aside.
- 7) Remove the terminal post lock nuts, washers and the upper current bars and put safely aside.
- 8) Pull the cables into the box leaving trailing leads long enough to reach their respective crimp lugs after routing through the cable clamps.
- 9) Trim each cable core so that the conductor end will reach the inside stop of the crimp lug on which it is to be terminated.
- 10) Strip the insulation of each cable core by the length of the crimping barrel plus 2mm.
- 11) Remove each crimping lug in turn from the terminal post and place the securing nuts to one side.
- 12) Crimp each lug onto the respective conductor using Cembre die sets or equivalent. Ensure that the crimp die set used is suitable for the conductor size and is not damaged or excessively worn. The crimp die set may produce either a hexagon type crimp or an indent type crimp. With hexagon die sets execute at least two crimps on each lug.
- 13) Route the cable core through the appropriate cable clamp and place the hole in the palm of the now attached cable lug on to its respective terminal post, on top of the lower current bar.
- 14) Replace the upper current bar and secure it in place with the flat washer, spring washer and two locknuts provided. Ensure that the spring washer is fully compressed by the first lock nut then apply a further 1/8 to 1/4 turn. Secure the fitting with the second lock nut.
- 15) When all the cable lugs have been attached and correctly tightened replace the top halves of the power core cable clamps and tighten each one to secure the cables.
- 16) If no field terminals are used proceed to point 28.

Field Terminal Cable Connections

Note: Consideration must be given to any use limitations or special conditions detailed on the certificates for the terminals fitted.

- 17) Remove the top half on each field core cable clamp and put safely aside.
 - 18) Remove the terminal covers and put safely aside.
 - 19) Remove the terminal current bar connection studs and put safely aside.
 - 20) Pull the cable(s) into the box leaving trailing leads long enough to reach their respective crimp lugs after routing through the cable clamps.
 - 21) Trim each cable core so that the conductor end will reach the inside stop of the crimp lug on which it is to be terminated.
 - 22) Using the crimp lugs provided, **If the field cables are 10 mm² or larger** crimp each lug onto the respective conductor using Cembre die sets or equivalent. Ensure that the crimp die set used is suitable for the conductor size and is not damaged or excessively worn. The crimp die set may produce either a hexagon type crimp, (2 crimps per lug), or an indent type crimp.
 - 23) **If the filed cables are smaller than 10 mm²** crimp each lug using a Newey and Eyre Crimstar crimping tool or equivalent. Ensure that the crimping tool is not damaged or excessively worn.
- NOTE:** *If the crimp lug is damaged during installation a replacement should be purchased from either ABTECH, Cembre (+44 (0)1675 470440, or one of their stockists. If the site engineer requires to source from a local supplier then that engineer will be responsible for ensuring that the crimp lug and its associated crimping tool comply with BS EN 31238-1:2003.*
- 24) Route the cable core through the appropriate cable clamp and place the hole in the palm of the now attached cable lug above the hole on its respective terminal current bar.
 - 25) Retrieve the current bar connection stud and use it to secure the lug in place.
 - 26) When all the cable lugs have been attached and correctly tightened replace the terminal covers.
 - 27) Replace the top halves of the field core cable clamps and tighten each one to secure the cables.
 - 28) Replace the lid and secure it by closing the lid and tightening the lid fixing screws. Ensure that all gland plate securing screws are tightened.
 - 29) Test the installation

Earthing/Grounding

The HVJB unit is provided with an internal and external earthing/grounding facility. This must be connected to the appropriate earth bonding circuit before electrical power is connected to the contents of the enclosure. Any earth/ground conductor brought into the enclosure must be terminated onto the enclosure internal earth/ground stud.

Operation

1. The lid must be secured using all the lid screws provided in order to maintain the IP rating.
2. No attempt must be made to remove the enclosure lid whilst electrical power is connected to the contents of the enclosure.
3. The earthing/grounding facility must be connected to the earth bonding circuit at all times when electrical power is connected to the enclosure.

Maintenance

The laws of the applicable country must be considered and maintenance checks carried out accordingly.

Additional checks that are advisable to ensure the efficiency of ABTECH 'S' range enclosures on which the HVJB is based are:-

Activity	Frequency
1 Check that the lid seal is not damaged and is in place	Each time the enclosure is opened
2 Check that all lid fixing screws are in place and secured	Each time the enclosure is opened
3 Check that all gland plate fixing screws are in place and secured	Each time the enclosure is opened
4 Check that the mounting bolts are tight and free of corrosion	Annually
5 Check the security of all cable glands	Annually
6 Check the enclosure for damage	Annually

Chemical Attack

The ABTECH HVJB is manufactured from 316 stainless steel. The following additional material are also used:

Neoprene or silicone rubber,
Copper,
Brass,
Cast epoxy resin,
Polyamide.

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 HVJB does not present a hazard from static electricity.

Vibration

The HVJB is 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.