



1 **EC TYPE-EXAMINATION CERTIFICATE**

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

3 Certificate Number: **Sira 08ATEX3017X** Issue: **2**

4 Equipment: **ABJB 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 1127-1: 1997 EN 60079-28: 2007 EN 61241-0: 2006 EN 61241-1: 2004 inc. Corr. 1 & 2
With reference to EN 60079-7: 2006

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 G D
Ex tD A21 IP66 T70°C

or when fibre optics are incorporated



II 2 G D IIC T4
Ex tD A21 IP66 T70°C
Ex op is IIC T4 Gb

Project Number 51A20039
C. Index 04

C Ellaby
Certification Officer

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SCHEDULE

EC TYPE-EXAMINATION CERTIFICATE

**Sira 08ATEX3017X
Issue 2**

13 DESCRIPTION OF EQUIPMENT

The ABBJ Range of Junction Boxes are rated at 15 kV and are available in the following sizes:

- ABJB-7* with a maximum dissipated power of 259 W
- ABJB-8* with a maximum dissipated power of 346 W
- ABJB-125 with a maximum dissipated power of 346 W

Where: * is either 2 (2 way), 3 (3 way), or 4 (4 way)

The empty enclosures of the ABBJ Junction Boxes (Type SX Range of Enclosures) are covered by IEC certificate IECEX SIR 05.0046U, coded Ex e II (the ABBJ-8* and the ABBJ-125 use the same size enclosure, whilst the ABBJ-7* uses a smaller version). Inside the enclosure, the ABBJ Range of 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.

The ABBJ-8* or ABBJ-125 may be fitted with 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".

Variation 1 - This variation introduced the following change:

- i. To permit larger S7 and S8 component certified enclosures to be used for the ABBJ-7* and ABBJ-8* Junction Boxes respectively.

Variation 2 - This variation introduced the following changes:

- i. The use of an isolated earth connection on the ABBJ 125 was permitted.
- ii. To recognise that when fibre optic cables are fitted to the optional additional terminal compartment they comply with EN 60079-28:2007.
- iii. The introduction of Special Conditions for Safe Use associated with the above changes and the consequential addition of an 'X' suffix to the certificate number.

14 DESCRIPTIVE DOCUMENTS

14.1 Drawings

Refer to Certificate Annexe.

14.2 Associated Sira Reports and Certificate History

Issue	Date	Report No	Comment
0	24 January 2008	R51A17666A	The release of the prime certificate.
1	20 August 2008	R51A18757A	The introduction of Variation 1.
2	20 May 2009	R51A20039A	The introduction of Variation 2 (Note, an 'X' suffix was added to the certificate number).

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SCHEDULE

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Sira 08ATEX3017X
Issue 2

- 15 **SPECIAL CONDITIONS FOR SAFE USE** (denoted by X after the certificate number)
- 15.1 The main supply screen (copper shield tape) shall be twisted and crimped to a terminal lug at the end prior to being covered with heat shrink sleeving, and connected to the isolated earth bar insulator.
- 15.2 The end user is to supply and fit suitable earth connecting leads between the isolated pillar and the isolated earth cable gland fixing bar, and between this bar and the isolated earth, exiting the enclosure via a suitable certified IP66 cable gland. The earth connecting lead CSA (Cross-Sectional Area) must be equal to at least half that of the main supply leads. All connections must be suitably connected i.e. crimped, to terminal lugs and cables must be clamped to the support rails to prevent reduction of the creepage and clearance distances.
- 15.3 The following minimum creepage and clearance distances shall be maintained:
Phase to phase creepage distance = 194 mm
Phase to phase clearance distance = 150 mm
Phase to earth creepage distance = 115 mm
Phase to earth clearance distance = 90 mm
- 15.4 In accordance with (IAW) EN 60079-28: 2007: Clause 5.2.2 & Table 2, for optical radiation – inherently safe “op is”, the maximum permitted optical power is 5 mW/mm².
- 15.5 In accordance with (IAW) EN 60079-28: 2007: Clause 5.2.5, for optical radiation – inherently safe “op is”, the optical supply shall provide over-power fault protection suitable for EPL level Gb.
- 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 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.
- 17.4 When a Type ABB-8* or ABB-125 is fitted with an optional heater, then any suitably certified and dimensioned heater that is fitted with a thermostat set to a maximum of 25°C may be used.

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Certificate Annexe

Certificate Number: Sira 08ATEX3017X
Equipment: ABJB Range of Junction Boxes
Applicant: ABTECH Limited



Issue 0

Drawing No.	Sheet	Rev.	Date	Description
ABT17467	1 of 1	A	13 Nov 07	ABJB-7* General Arrangement
ABT17468	1 of 1	A	13 Nov 07	ABJB-8* General Arrangement
ABT17469	1 of 1	A	13 Nov 07	ABJB 125 General Arrangement
ABT18152	1 of 1	A	18 Jan 08	Label
ABT18153	1 of 1	A	01 Oct 07	Rear Insulation Panel
ABT18154	1 of 1	A	01 Nov 07	Acrylic Cover
ABT18155	1 of 1	A	01 Nov 07	Door Insulation Panel

Issue 1

Drawing No.	Sheet	Rev.	Date	Description
ABT17467	1 of 1	B	8 Aug 08	ABJB-7* General Arrangement
ABT17468	1 of 1	B	8 Aug 08	ABJB-8* General Arrangement

Issue 2

Drawing No.	Sheets	Rev.	Date (Sira Stamp)	Description
ABT 19838	1 of 1	A	05 May 09	ABJB 125 – Ex OMV – Isolated Earth
ABT 19906	1 of 1	A	05 May 09	ABJB 125 – Label - fibre optics fitted

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INSTALLATION, OPERATION & MAINTENANCE INSTRUCTIONS FOR ABTECH 'ABJB' series – SIRA 08ATEX3017



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

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) Unfasten and remove the transparent cover sheet (it will bow slightly) and put in a safe place.
- 6) Install and secure the cable glands in accordance with the manufacturers instructions.

Main Power Cable Connections

- 7) Remove the top half on each power core cable clamp and put safely aside.
- 8) Remove the terminal post lock nuts, washers and the upper current bars and put safely aside.
- 9) Pull the cables into the box leaving trailing leads long enough to reach their respective crimp lugs after routing through the cable clamps.
- 10) 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.
- 11) Strip the insulation of each cable core by the length of the crimping barrel plus 2mm.
- 12) Remove each crimping lug in turn from the terminal post and place the securing nuts to one side.
- 13) 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.
- 14) 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.
- 15) 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.
- 16) 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.
- 17) If no field terminals are used proceed to point 29.
- 18) If the terminal insulating pillar should rotate during cable installation it is necessary to remove the pillar entirely, clean off the residue of the silicone RTV rubber from both the pillar and the insulating back board mating surface, apply a new continuous bead of silicone RTV rubber to either mating surface and reassemble immediately.

Instrument cables

The ABB 125 includes a separate compartment for a separate terminal box for instrument connections.

- 1) Install and secure the cable entry devices, cable glands and blanking plugs in accordance with the manufacturer's instructions.
- 2) 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.
- 3) Terminate the cables in the terminals provided in accordance with the requirements of BS EN 60079-14. Consideration must be given to any use limitations or special conditions detailed on the certificates for the terminals fitted.
- 4) Secure the lid by closing the lid and tightening the lid fixing screws.

Earthing/Grounding

The ABB 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 ABB 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

Spares

Any parts identified during installation and/or maintenance as requiring replacement must be sourced from ABTECH. If parts are sourced elsewhere the certification provided with the ABB unit will not be valid.

Chemical attack

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

Neoprene or silicone rubber, Copper, Brass, Cast epoxy resin, Glass reinforced polyester, Acrylic & 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 ABJB does not present a hazard from static electricity except if it becomes necessary to clean the transparent acrylic cover.

CLEAN ONLY WITH A DAMP CLOTH to avoid the build up of static electricity.

Vibration

The ABJB 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.