



1 **EC TYPE-EXAMINATION CERTIFICATE**

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

3 Certificate Number: **Sira 99ATEX3171** Issue: **11**

4 Equipment: **SX 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 50 014:1997 EN 50 019:1994 EN 50281-1-1:1998

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 or II 2 G
EEx e II T6 (Ta = -40°C or -50°C refer to the table in section 13 for maximum temperatures)

Project Number 27815

D R Stubbings BA MIET
Certification Manager

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SCHEDULE

EC TYPE-EXAMINATION CERTIFICATE

Sira 99ATEX3171
Issue 11

13 DESCRIPTION OF EQUIPMENT

The SX range of Junction Boxes utilises an SX Enclosure to Sira99ATEX3170U fitted with an arrangement of suitably certified terminals.

The total dissipated power for the junction box shall be calculated in accordance with EN 50 019:1994, Annex C,C.2 and shall not exceed the values given in the table below:

SX Ref.	Group and Category	Length (mm)	Width (mm)	Depth (mm)		Max Power Dissipation (W) Ta =						
				Min.	Max.	+40°C T6	+55°C T6	+60°C T6	+65°C T6	+80°C T3*+	+80°C T3*x	+175°C T3*
SX0	II 2 G D	229	152	140	2000	19	3.34	2.23	1.84	2.23	3.34	1.84
SX0.5	II 2 G D	274	184	140	2000	22	3.9	2.8	2.1	2.8	3.9	2.1
SX1	II 2 G D	324	234	140	2000	29	4.97	3.86	2.7	3.86	4.97	2.7
SX1.5	II 2 G D	306	306	140	2000	32	5	4	2.8	4	5	2.8
SX2	II 2 G D	324	372	140	2000	36	5.64	4.23	2.88	4.23	5.64	2.88
SX3	II 2 G D	448	372	140	2000	42	5.9	4.1	3	4.1	5.9	3
SX4	II 2 G D	510	372	140	2000	44	6.1	4.36	3.19	4.36	6.1	3.19
SX5	II 2 G D	510	510	140	2000	50	9.35	6.19	4.2	6.19	9.35	4.2
SX6	II 2 G D	780	510	140	2000	57	10.1	7.97	5.6	7.97	10.1	5.6
SX7	II 2 G D	950	650	140	2000	68	17.14	9.36	6.67	9.36	17.14	6.67
SX8	II 2 G D	1250	800	140	2000	119	15.95	15.17	10.74	15.17	15.95	10.74
SX225	II 2 G	2000	2000	140	2000	359	NA	103	NA	103	NA	NA
SX45	II 2 G D	114	114	51 (Nominal)		8	1.65	1.28	1.57	1.28	1.65	1.57
SX64	II 2 G D	152	102	63 (Nominal)		10	0.7	0.5	0.3	0.5	0.7	0.3
SX66	II 2 G D	152	152	102 (Nominal)		14	2	1.9	1.5	1.9	2	1.5

NA = Not Applicable

* Silicone gasket only

+ Minimum temperature range of terminal on component certificate = 100°C

x Minimum temperature range of terminal on component certificate = 110°C

Junction boxes may also be manufactured to sizes not specified in this table. This assumes that any given dimension is not larger than the respective dimension of the largest enclosure or smaller than the respective dimension of the smallest enclosure. The power rating applied to a junction box of intermediate size is that of the next smallest enclosure.

The enclosure joints are sealed by closed cell polychloroprene, neoprene bonded cork or closed cell silicone rubber gaskets. The ambient temperature range of the junction boxes is extended to -50°C when closed cell silicone rubber gaskets are used on the lid and neoprene bonded cork gaskets on the gland plates.

Junction boxes larger than SX8 have an ingress protection rating of IP54 and are not marked as suitable for use in the presence of combustible dust.

Cable entries may be provided either through gland plates or directly into the box and threaded bosses for cable entries may be provided welded, brazed or soldered into position.

Internal and external earthing facilities are provided.



SCHEDULE

EC TYPE-EXAMINATION CERTIFICATE

Sira 99ATEX3171
Issue 11

Variation 1 - This variation introduced the following change:

- i. The maximum ambient temperature was approved to be raised with a corresponding reduction in power dissipation, in addition, the range of temperature options has also been increased as shown in the table above.

Variation 2 - This variation introduced the following changes:

- i. The range of junction boxes to include a high temperature version that has the certification code EEx e II T3 (Ta = -40°C to +175°C); this version is fitted with silicone rubber gaskets and incorporates Phoenix Type SSK 0525 Ker-Ex ceramic terminals that are covered by certificate number BAS Ex 90C3200U.
The maximum power dissipation figures apply to the high temperature version (Note - the total dissipated power for the high temperature junction box shall be calculated in accordance with EN 50 019:1994, Annex C,C.2 and shall not exceed the values given in the table above)
- ii. The option to add an 8mm minimum thickness glass window fitted to the inside wall of the enclosure was approved.
- iii. The option to fit flameproof plugs and sockets, coded EEx de, through the walls of the enclosure on any of the range of junction boxes was endorsed.
- iv. Modification and additions to the conditions of certification were accepted.

Variation 3 - This variation introduced the following change:

- i. A minor revision of the information marked on the label was sanctioned.

Variation 4 - This variation introduced the following change:

- i. The introduction of an alternative assembly that comprises an SX6/200 enclosure fitted with an arrangement of Weidmuller terminals and Raychem BTV trace heating cable that is used as an anti-condensation heater and is self-limiting at 85°C. The terminals are as follows:
 - Three pairs of linked Weidmuller SAKG 32 11 terminal that are rated at 108 A per pair.
 - One pair of Weidmuller SAKG 32 11 terminals for neutral connections.
 - One pair of Weidmuller SAK 2..5 terminals for heater connections
 - A Weidmuller EK 4 earth terminal

All the terminals are suitably certified in accordance with clause 17.10 in the conditions of certification.

Variation 5 - This variation introduced the following change:

- i. The recognition of a change of issue of a drawing that was amended in variation 2 of Sira 99ATEX3170U.

Variation 6 - This variation introduced the following change:

- i. The introduction of alternative marking that allows component certified, intrinsically safe terminals, the following, additional marking being applicable, a new condition of Certification is introduced as a result.

EEx ia IIC T6 (Ta = -50°C to +40°C)
EEx ia IIC T6 (Ta = -50°C to +55°C)
EEx ia IIC T6 (Ta = -50°C to +60°C)
EEx ia IIC T6 (Ta = -50°C to +65°C)
EEx ia IIC T3 (Ta = -50°C to +175°C)

EEx ib IIC T6 (Ta = -50°C to +40°C)
EEx ib IIC T6 (Ta = -50°C to +55°C)
EEx ib IIC T6 (Ta = -50°C to +60°C)
EEx ib IIC T6 (Ta = -50°C to +65°C)
EEx ib IIC T3 (Ta = -50°C to +175°C)

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Sira Certification Service

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SCHEDULE

EC TYPE-EXAMINATION CERTIFICATE

Sira 99ATEX3171
Issue 11

Variation 7 - This variation introduced the following change:

- i. The inclusion of reinforcement, as required, to the inside or outside of the enclosure to withstand possible submersion pressures was allowed.

Variation 8 - This variation introduced the following changes:

- i. A suitably certified and dimensioned heater was approved to be fitted, 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 9 - 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.
- ii. The recognition of minor drawing modifications including the introduction of a new company logo; these amendments are administrative or involve changes to the design that do not affect the aspects of the product that are relevant to explosion safety.

Variation 10 - This variation introduced the following changes:

- i. When fitted with silicone gaskets only, the junction boxes are permitted to be used up to an increased maximum ambient of 80°C with a Temperature Class of T3, This results in an ambient temperature range of -50°C to +80°C for T3 versions only. Note: with this option windows are not permitted
- ii. The details are to be added to the description and the table showing Power Dissipation above is amended accordingly.
- iii. Condition of Certification 17.5 is amended to reflect this change

14 DESCRIPTIVE DOCUMENTS

14.1 Drawings

Refer to Certificate Annexe.

14.2 Associated Sira Reports and Certificate History

Issue	Date	Report/File number	Comment
0	24 February 2000	R51X6055C	The release of the prime certificate.
1	10 April 2001	R53A6747A	The introduction of Variation 1.
2	29 August 2001 1 February 2005	R53A7998A	The introduction of Variation 2. Issued to correct a typographical error.
3	28 September 2001	NA	The introduction of Variation 3.
4	6 August 2004 18 July 2006	NA	The introduction of Variation 4. Issued to correct a typographical error.
5	23 September 2004	V53V11576A	The introduction of Variation 5.
6	30 March 2005 18 July 2006	R53V10438A	The introduction of Variation 6. Issued to correct a typographical error.
7	16 March 2006	R51V14842A	The introduction of Variation 7.
8	15 August 2006	R51A15308A	The introduction of Variation 8.

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Issue 11

Issue	Date	Report/File number	Comment
9	03 April 2012	R26585A/00	This Issue covers the following changes: <ul style="list-style-type: none">All previously issued certification was rationalised into a single certificate, Issue 9, Issues 0 to 8 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 9.
10	27 April 2012	R27815A/00	The introduction of Variation 10.
11	11 June 2012	R26585A/01	Report R26585A/01 replaced report R26585A/00.

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 junction boxes are equipped with terminals by the manufacturer, 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 marking of the ambient temperature range and the power rating on the certification label shall be allocated in accordance with the table of values detailed in relevant data included in this variation or variation one.

17.5 This certificate does not cover terminals that may be fitted to the enclosure. All terminals fitted shall be suitably certified to the ATEX Directive 94/9/EC. In addition, all terminals shall be 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 either: 100°C for T3 (silicone gaskets) with 20K rise (see T3*+ in table), 110°C for T3 (silicone gaskets) with 25K rise (see T3*x in table), or 200°C for T3 (silicone gaskets) with an ambient of 175°C high temperature versions.

17.6 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.

17.7 The glass window shall not be fitted in the junction boxes that have a maximum service temperature in excess of 80°C.

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- 17.8 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.
- 17.9 When the junction boxes are fitted with Phoenix Type SSK 0525 Ker-Ex Terminals, then a dielectric strength test at 1836 V shall be applied between each adjacent terminal and between each terminal and earth in accordance with clause 6.1 of EN 50019:1994.
- 17.10 When plugs and sockets are fitted that are certified as EEx de, then the marking of the junction boxes shall include the symbol d and the gas group IIA, IIB or IIC as defined by the plug and socket.
- 17.11 This certificate does not cover plugs and sockets that may be fitted to the enclosure. All plugs and sockets fitted shall be appropriately designed and certified to the ATEX Directive 94/9/EC for this type of apparatus. In addition, they shall:
- be suitable for the intended temperature range of the junction box .
 - have a minimum Ingress Protection of IP54 or IP64 if the boxes are marked with the symbol D indicating that they are suitable for use in the presence of combustible dust
 - have a declared power dissipation rating or contact resistance
 - be installed in accordance with their certificate conditions and the relevant codes of practice/wiring regulations
- When plugs and sockets are fitted the creepage and clearance distances shall maintain compliance with EN 50019: 1994: Table 1 requirements.
- 17.12 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.
- 17.13 When trunking is fitted, it may be sited as required and the minimum creepage and clearance distances shall still be met.

Certificate Annexe

Certificate Number: Sira 99ATEX3171
Equipment: SX Range of Junction Boxes
Applicant: ABTECH Limited



Issue 0

Drawing No.	Sheet	Rev.	Date	Title
ABT 10258	1 of 1	A	21 Dec 99	External label (SX) Maximum Box Size S8
ABT 10302	1 of 1	A	16 Nov 99	SX Manufacturing specification

Issue 1 No new drawings were introduced.

Issue 2

Drawing No	Sheet	Rev	Date	Description
ABT 11319	1 of 1	A	04 Jul 01	External Label (SX) High Temperature Boxes
ABT 10302	1 of 1	B	05 Aug 01	SX Manufacturing Specification

Issue 3

Drawing No	Sheet	Rev	Date	Description
ABT 10258	1 of 1	B	20 July 01	External Label (SX) Maximum Box Size S8

Issue 4

Drawing No	Sheet	Rev	Date	Description
ABT 12713	1 of 1	A	28 Feb 03	SX6 with T6 Anti-Condensation Heater

Issue 5

Drawing No	Sheet	Rev	Date	Description
ABT 10302	1 of 1	C	04 Jul 02	SX Manufacturing Specification

Issue 6

Drawing No	Sheet	Rev	Date	Description
ABT 14841	1 of 1	-	01 Feb 05	SX Range EEx ia Label
ABT 14844	1 of 1	-	01 Feb 05	SX Range EEx ib Label

Issue 7

Drawing No	Sheet	Rev	Date (Sira stamp)	Description
ABT 10302	1 of 1	D	16 Mar 06	SX Manufacturing Specification
ABT 10371	1 of 1	B	16 Mar 06	SX Range of Enclosures

Issue 8

Drawing No.	Sheet	Rev.	Date (Sira Stamp)	Description
ABT10302	1 of 1	D	11 July 06	Manufacturing Specifications

Issue 9

Drawing No.	Sheets	Rev.	Date (Sira Stamp)	Title
ABT 10258	1 of 1	C	29 Mar 12	SX External label – Junction Boxes
ABT 10302	1 of 1	E	02 Apr 12	SX Manufacturing specification
ABT 14841	1 of 1	B	29 Mar 12	SX Range EEx ia Label
ABT 14844	1 of 1	B	30 Mar 12	SX Range EEx ib Label

Issue 10

Drawing	Sheets	Rev.	Date (Sira stamp)	Title
ABT 10258	1 of 1	D	27 Apr 12	SX External Label – Junction Boxes

Issue 11 (No new drawings were introduced.)

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