



IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: **IECEx SIR 05.0047** issue No.:1
Status: **Current**
Date of Issue: **2012-10-25** Page 1 of 4

Certificate history:
Issue No. 1 (2012-10-25)
Issue No. 0 (2006-10-25)

Applicant: **ABTECH Limited**
A B Control and Technology
Sanderson Street
Sheffield
South Yorkshire S9 2UA
United Kingdom

Electrical Apparatus: **SX Range of Junction Boxes**
Optional accessory:

Type of Protection: **Increased Safety and Dust**

Marking: **Ex e IIC T* Gb or Ex ib IIC T***
Ex tb IIIC T85°C Db (Ta = -65°C to +40°C, +55°C,)
(Ta = -65°C to +°C)
Temperature class is T6 or T3, Marking for dust is T85°C or T200°C and Ta maximum is +40°C, +55°C, +60°C or +65°C; refer to Annexe

Approved for issue on behalf of the IECEx
Certification Body:

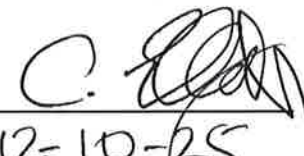
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Position:

Deputy Certification Manager

Signature:
(for printed version)

Date:


2012-10-25

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the [Official IECEx Website](http://www.iecex.com).

Certificate issued by:

SIRA Certification Service
Rake Lane
Eccleston
Chester
CH4 9JN
United Kingdom

sira
CERTIFICATION



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Manufacturer: **ABTECH Limited**
A B Control and Technology
Sanderson Street
Sheffield
South Yorkshire S9 2UA
United Kingdom

Manufacturing location(s):

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

STANDARDS:

The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0 : 2011 Edition: 6.0	Explosive atmospheres - Part 0: General requirements
IEC 60079-11 : 2011-06 Edition: 6.0	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
IEC 60079-31 : 2008 Edition: 1	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"
IEC 60079-7 : 2006-07 Edition: 4	Explosive atmospheres - Part 7: Equipment protection by increased safety "e"

*This Certificate **does not** indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.*

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in

IECEx ATR:	File Reference:
GB/SIR/ExTR06.0099/00, GB/SIR/ExTR12.0245/00	51L12177, 51L25164
GB/SIR/QAR06.0046/00, /01, /02, /03, /04	



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Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

The SX Junction Boxes comprise an SX Enclosure, component certified as IECEx SIR 05.0046U, that is fitted with terminals. Refer to the certificate Annexe for a full product description.

CONDITIONS OF CERTIFICATION: NO



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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above):

Issue 1 – this Issue introduced the following changes:	
1	<p>The Description was aligned with certificate no. Sira 99ATEX3171 associated with this Junction Box, this included recognising the following changes assessed as part of that certificate.</p> <ul style="list-style-type: none">* The introduction of alternative marking that allows component certified, intrinsically safe terminals to be fitted, additional marking being applicable,* 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".* The option to fit slotted trunking inside the enclosures, this trunking may be sited as required.* When fitted with silicone gaskets only, the Junction Boxes are permitted to be used up to an 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).
2	<p>Following appropriate re-assessment to demonstrate compliance with the requirements of the latest standards, the documents previously used for assessment were replaced by those currently listed, the markings were updated accordingly. In addition, the enclosure was allowed to be used for intrinsically safe applications and IEC 60079-11:2012 Edition 6 was included in the list of supporting standards.</p>
4	<p>The Conditions of Manufacture were rationalised to bring them into line with Sira 99ATEX3171.</p>
5	<p>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.</p>

Annexe to: IECEx SIR 05.0047 Issue 1
Applicant: ABTECH Limited
Apparatus: SX Range of Junction Boxes



The SX range of Junction Boxes utilises an SX Enclosure to Sira 99ATEX3170U fitted with an arrangement of suitably certified terminals. Before the Junction Box is installed, its total dissipated power for the particular application will be calculated in accordance with IEC 60079-7, Annex E, E.2 and will not exceed the values given in the table below:

SX Ref.	Group & Category	Max Power Dissipation (W), Temperature Class, Max. Surface Temp. for Dust & Ta Max.						
		T6 & T85°C				T3 & T200°C		
		+40°C	+55°C	+60°C	+65°C	+80°Cⓐ	+80°Cⓑ	+175°Cⓒ
SX0	II 2 G D	19	3.34	2.23	1.84	2.23	3.34	1.84
SX0.5	II 2 G D	22	3.9	2.8	2.1	2.8	3.9	2.1
SX1	II 2 G D	29	4.97	3.86	2.7	3.86	4.97	2.7
SX1.5	II 2 G D	32	5	4	2.8	4	5	2.8
SX2	II 2 G D	36	5.64	4.23	2.88	4.23	5.64	2.88
SX3	II 2 G D	42	5.9	4.1	3	4.1	5.9	3
SX4	II 2 G D	44	6.1	4.36	3.19	4.36	6.1	3.19
SX5	II 2 G D	50	9.35	6.19	4.2	6.19	9.35	4.2
SX6	II 2 G D	57	10.1	7.97	5.6	7.97	10.1	5.6
SX7	II 2 G D	68	17.14	9.36	6.67	9.36	17.14	6.67
SX8	II 2 G D	119	15.95	15.17	10.74	15.17	15.95	10.74
SX225	II 2 G	359	NA	103	NA	103	NA	NA
SX45	II 2 G D	8	1.65	1.28	1.57	1.28	1.65	1.57
SX64	II 2 G D	10	0.7	0.5	0.3	0.5	0.7	0.3
SX66	II 2 G D	14	2	1.9	1.5	1.9	2	1.5

NA = Not Applicable

Notes ⓐ, ⓑ and ⓒ are related to the limiting temperature of the terminal insulation, refer to Condition of Manufacture clause 17.4.

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 silicone rubber gaskets and 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.

Conditions of manufacture

The Manufacturer shall comply with the following:

- i. 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: IEC 60947
 - measurement, control and laboratory use: IEC 61010
- ii. The marking of the ambient temperature range and the power rating on the certification label will be allocated in accordance with the table of values detailed in the Description of Equipment. The terminals used in these Junction Boxes will be IECEx approved devices chosen from the Approved Component Document number Sira 12AC087 that is issued by Sira. All terminals will 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, where applicable.
 The limiting temperature of the terminal insulation will be at least:
 - 100°C for Junction Boxes used in accordance with Note ⓐ in the table
 - 110°C for Junction Boxes used in accordance with Note ⓑ in the table
 - 200°C for Junction Boxes used in accordance with Note ⓒ in the table (175°C high temperature versions)
- iii. 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 code IP64 or better.
- iv. The glass window will not be fitted in the junction boxes that have a maximum service temperature in excess of 80°C.
- v. 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 will inform Sira of any modifications of the devices that may impinge upon the explosion safety design of their products.

Annexe to: IECEx SIR 05.0047 Issue 1
Applicant: ABTECH Limited
Apparatus: SX Range of Junction Boxes



- vi. When the Junction Boxes are fitted with Phoenix Type SSK 0525 Ker-Ex Terminals, then a dielectric strength test at 1836 V will be applied between each adjacent terminal and between each terminal and earth in accordance with EN 60079-7 Clause 7.1.
- vii. When plugs and sockets are fitted that are certified as Ex de, then the marking of the junction boxes will include the symbol d and the gas group IIA, IIB or IIC as defined by the plug and socket.
- viii. This certificate does not cover plugs and sockets that may be fitted to the enclosure. All plugs and sockets fitted will be appropriately designed and certified to the ATEX Directive 94/9/EC for this type of apparatus. In addition, they will:
 - 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
- ix. When plugs and sockets are fitted the creepage and clearance distances will maintain compliance with EN 60079-7 Table 1 requirements.
- x. When the Junction Boxes are used for intrinsically safe applications, a 3 mm separation distance between the enclosure is required, there will also be a minimum of 6 mm between different intrinsically safe circuits.
- xi. When trunking is fitted, it may be sited as required and the minimum creepage and clearance distances will still be met.
- xii. 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 Annex E, E2.

Date: 25 October 2012

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Form XXXX Issue 1

Sira Certification Service

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

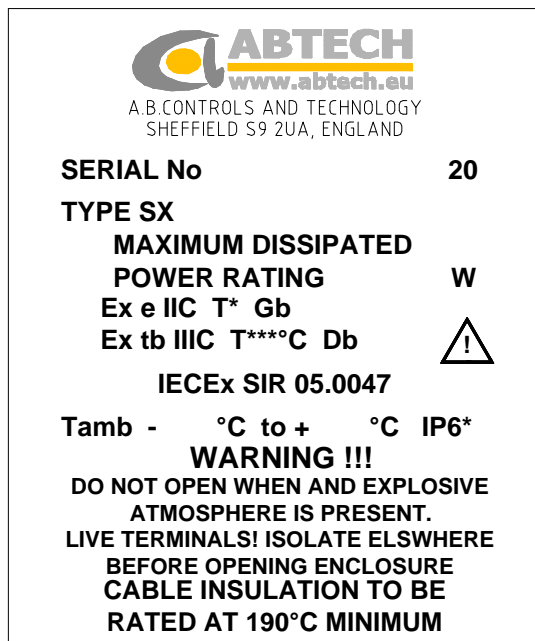
Tel: +44 (0) 1244 670900

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INSTALLATION, OPERATION & MAINTENANCE INSTRUCTIONS FOR ABTECH 'S' RANGE TERMINAL BOXES – IECEx SIR 05.0047



Marking

The marking shown is for an apparatus certified terminal box.

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 Tamb ____.

The T rating is variable depending on ambient temperature range and power dissipation.

Enclosures with windows are limited to a maximum operating temperature of +80°C and a minimum ambient temperature of -40°C.

The Ex e marking may be replaced by Ex ib. Enclosures marked Ex ib may only be used for terminating intrinsically safe circuits.

The 190°C cable insulation temperature requirement is only applicable to terminal boxes rated T3.

Alternative markings for temperature ratings as follows.

T6 with Ta range of $-60^{\circ}\text{C} \leq \text{Ta} \leq +40^{\circ}\text{C}$ and T85°C for dust
Warning – Cable temperature can reach 85°C

T6 with Ta range of $-60^{\circ}\text{C} \leq \text{Ta} \leq +55^{\circ}\text{C}$ and T85°C for dust
Warning – Cable temperature can reach 100°C

T6 with Ta range of $-60^{\circ}\text{C} \leq \text{Ta} \leq +60^{\circ}\text{C}$ and T85°C for dust
Warning – Cable temperature can reach 135°C

T6 with Ta range of $-60^{\circ}\text{C} \leq \text{Ta} \leq +65^{\circ}\text{C}$ and T85°C for dust
Warning – Cable temperature can reach 135°C


T3 with Ta range of $-60^{\circ}\text{C} \leq \text{Ta} \leq +80^{\circ}\text{C}$ and T200°C for dust
Warning – Cable temperature can reach 200°C

T3 with Ta range of $-60^{\circ}\text{C} \leq \text{Ta} \leq +175^{\circ}\text{C}$ and T200°C for dust
Warning – Cable temperature can reach 200°C

NOTE

All cable, cable entry devices and terminals used must be suitable for the minimum ambient temperature expected and the maximum operational temperature expected. Where high ambient temperature is expected the cable insulation must be suitable for a minimum of +190°C.

Windows and plugs and sockets are not permitted in boxes so marked.

Note: The symbol  is not always present. When it is present the installer must take particular note of these instructions.

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 (for size S64 upwards) or for M6 fixing studs for size S45.

- 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) Install and secure the cable glands in accordance with the manufacturers instructions.
- 5) 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.
- 6) Where slotted trunking has been supplied (solid trunking is not permitted) ensure that it is suitable for the proposed T classification of the final certified product. Where the T6 is the proposed rating and no windows are fitted any polymeric or metallic slotted trunking may be used. For other T classifications and where a window is fitted metallic slotted trunking must be used. Trunking may be mounted in any orientation in the box, vertically, horizontally or diagonally.
- 7) When laying cables into trunking; No more than 50% of the trunking internal area shall be occupied by conductors, when instrumentation currents of 1A or less are carried. All cabling used must be capable of carrying a minimum of 3A.
- 8) For cables carrying more than 1A - No more than 25% of the trunking internal area shall be occupied by conductors, these shall be de-rated to a maximum of 4A /sq mm. All cabling used must be capable of carrying a minimum of 10% higher current than the rating required
- 9) 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.
- 10) Secure the lid by closing the lid and tightening the lid fixing screws and ensure that all gland plate securing screws are tightened.
- 11) For additional security a padlock may be fitted to all box sizes larger than and including size S0.

NOTE: If the terminals provided with the enclosure are changed either in type or in quantity the terminal box certification may become invalid. Advice from ABTECH is recommended before any changes are made.

Earthing/Grounding

- 12) All S range enclosures are 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.
- 13) An earth connection between the lid and the box is provided. Care must be taken to ensure this is not damaged during installation or maintenance.

Operation

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

Maintenance

- 17) 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.
- 18) Additional checks that are advisable to ensure the efficiency of ABTECH 'S' range enclosures 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 lid earth strap is not frayed or damaged and is secure at both ends	Each time the enclosure is opened
5	Check lid earth strap continuity (hot work permit may be required)	Every 3 years
6	Check that the mounting bolts are tight and free of corrosion	Every 3 years
7	Check the security of all cable glands	Every 3 years
8	Check the enclosure for damage	Every 3 years

9	Check that all screw clamp terminals are secure	As manufacturers recommendation
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Chemical attack

The ABTECH S range enclosures are available in mild steel or 316 stainless steel. The following additional material are also used :-

Neoprene or silicone rubber,
Brass.

If the enclosure is of mild steel it may be zinc plated prior to painting. The standard paint finish is epoxy polyester grey hammer.

Stainless steel enclosures are not painted except to customer specifications.

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

S range enclosures do not present a hazard from static electricity.

Vibration

SX 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.