



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 CML 16.0100

Issue No: 4

Certificate history:

Issue No. 4 (2019-08-28)

Issue No. 3 (2018-01-04)

Issue No. 2 (2017-11-01)

Issue No. 1 (2017-06-23)

Issue No. 0 (2016-10-05)

Status: **Current**

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Date of Issue: **2019-08-28**

Applicant: **Abtech Ltd.**
199 Newhall Road
Lower Don Valley
Sheffield
S9 2QJ
United Kingdom

Equipment: **HVJB and NKJB Junction Boxes**

Optional accessory:

Type of Protection: **Ex eb, Ex tb**

Marking:

Ex eb IIB or IIC T* Gb

Ex tb IIIC T*°C Db

Tamb = -20°C to +40°C or -50°C to +55°C* or -50°C to +60°C*

* T-class, assigned maximum surface temperature and ambient range depend on the model and power rating. Refer to Annex.

Approved for issue on behalf of the IECEx
Certification Body:

H M Amos MIET

Position:

Technical Manager

Signature:
(for printed version)

Date:

August 28, 2019

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.

Certificate issued by:

Eurofins E&E CML Limited
Unit 1, Newport Business Park
New Port Road
Ellesmere Port, CH65 4LZ
United Kingdom





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Manufacturer: **Abtech Ltd.**
199 Newhall Road
Lower Don Valley
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S9 2QJ
United Kingdom

Additional 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 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 Explosive atmospheres - Part 0: General requirements

Edition:6.0

IEC 60079-31 : 2013 Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"

Edition:2

IEC 60079-7 : 2015 Explosive atmospheres – Part 7: Equipment protection by increased safety "e"

Edition:5.0

*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

Test Report:

[GB/CML/ExTR16.0140/00](#)

[GB/CML/ExTR17.0108/00](#)

[GB/CML/ExTR17.0202/00](#)

[GB/CML/ExTR18.0001/00](#)

Quality Assessment Report:

[GB/CML/QAR16.0021/02](#)



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Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

HVJB and NKJB range of high voltage junction boxes.

Refer to Annex for full description and conditions of manufacture.

SPECIFIC CONDITIONS OF USE: NO



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

Issue 1

1. To include an option to allowed the enclosure to be painted with a coating thickness up to 2mm for 'IIB' applications. The description and marking has been modified accordingly.

Issue 2

1. To allow the ambient temperature to be optionally increased to +60°C.

Issue 3

1. To allow the terminal arrangements to be fitted in an alternative Nautilus enclosure. The description has been modified accordingly.

Issue 4

1. To update QAR reference

Annex:

[Certificate Annex IECEx CML 16.0100 Issue 4.pdf](#)

Annexe to: IECEx CML 16.0100 Issue 4
Applicant: Abtech Ltd.
Apparatus: HVJB and NKJB Junction Boxes



Description

The HVJB and NKJB are a range of high voltage junction boxes with maximum rated working voltages of 11 kV. The maximum dissipated power is dependent on enclosure size and model. The enclosures utilise a previously certified stainless steel enclosure, certified under IECEx CML 15.0039U and coded Ex e IIB/IIC Gb or Ex tb IIC Db. Alternatively, the terminal arrangements may be fitted inside a Nautilus enclosure.

Internally are an arrangement of up to four copper bus bars supported on insulators which provide connection facilities for a single cable per phase or a combination, depending on the arrangement. Insulated partitions are fitted between bus bars to maintain creepage and clearance distances between live parts. Additional separately certified terminals and internal BPG terminal boxes may be fitted.

Maximum Power Dissipation – High voltage and medium voltage terminals:

| Type/Model | Ambient Temperature Range | Maximum Dissipated Power (W) | T Class | Dust Surface Temperature Marking |
|-------------------|---------------------------|------------------------------|---------|----------------------------------|
| HVJB-7 | -20°C to +40°C | 259 | T4 | T70°C |
| | -50°C to +55°C | 129.5 | T4 | T70°C |
| | -50°C to +60°C | 103.6 | T4 | T70°C |
| | -50°C to +55°C | 259 | T150°C | T110°C |
| HVJB-8 & HVJB-125 | -20°C to +40°C | 346 | T4 | T70°C |
| | -50°C to +55°C | 173 | T4 | T70°C |
| | -50°C to +60°C | 138.4 | T4 | T70°C |
| | -50°C to +55°C | 246 | T150°C | T110°C |
| NKJB-7 | -20°C to +40°C | 259 | T4 | T70°C |
| | -50°C to +55°C | 259 | T150°C | T110°C |
| NKJB-8 | -20°C to +40°C | 346 | T4 | T70°C |
| | -50°C to +55°C | 346 | T150°C | T110°C |



Maximum Dissipated Power when fitted with field terminals:

| Ambient Temperature Range | Maximum Dissipated Power (W) | |
|---------------------------|------------------------------|------------------------|
| | Field terminals | High Voltage terminals |
| -20°C to +40°C | 86.5 | 259.5 |
| -50°C to +55°C | 43.25 | 129.75 |
| -50°C to +60°C | 34.6 | 103.8 |

Maximum Dissipated Power when fitted with internal BPG junction box:

| Type | Maximum Dissipated Power 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 |

Note: BPG Junction Boxes shall not be fitted into HVJB junction boxes marked T150°C for gas or T110°C for dust.

Marking

The equipment shall be marked with the following:

Ex eb IIB or IIC T* Gb

Ex tb IIIC T*°C Db

Ta = -20°C to +40°C or -50°C to +55°C* or -50°C to +55°C* or -50°C to +60°C*

* The temperature class, assigned maximum surface temperature and ambient range are dependent on the model, the component enclosure used and the power rating. Refer to Description and Conditions of Manufacture.

Note: Where the 'standard' ambient range of -20°C to +40°C applies, it is not essential that this is marked.

Conditions of Manufacture

The following conditions are required of the manufacturing process for compliance with the certification.

- i If the terminals are fitted with cables/wiring by the manufacturer; then a routine dielectric strength test shall be carried out on each unit in accordance with IEC 60079-7:2015, clause 7.1.
The test voltage shall be determined on the basis of the marked maximum rated voltage, with the appropriate safety factor and test duration applied in accordance with IEC 60079-7:2015, clause 6.1.
No flashover or breakdown shall occur.
- ii The products covered by this certificate incorporate separately certified devices, it is therefore the responsibility of the manufacturer to continually monitor the status of the certification associated with these devices. The manufacturer shall inform CML of any modifications of the devices that may impinge upon the explosion safety of their design.

In addition, this certificate relies on the following previously certified products. When the Junction Box 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/certification body as a piece of equipment with a T6 temperature class and suitable for the exposed ambient temperature. The thermostat of the incorporated heater shall have a limiting temperature set to no higher than 30°C. |

- iii When fitted with high voltage (11 kV maximum working voltage) or medium voltage (3.3 kV maximum working voltage) terminals, the maximum dissipated power of the Junction Boxes shall be calculated in accordance with IEC 60079-7:2015, Annex E.2, and shall not exceed the maximum power rating defined in the Description on this certificate.
- iv When installed, the increased safety auxiliary “field” terminals shall have at least 12 mm creepage and 10 mm clearance between live parts and conductive metal parts.
- v When the HVJB-8 Junction Box is fitted with field terminals, the total dissipated power for the “field” terminals and wiring shall be calculated in accordance with IEC 60079-7:2015, Annex E.2 and shall not exceed the values defined the Description on this certificate.
- vi When the HVJB Junction Boxes are fitted with BPG Junction Boxes, as approved under IECEx SIR 06.0087X, the total dissipated power and current shall not exceed the values in defined in the Description on this certificate.

- vii Junction Boxes that are marked with the ambient range -50°C to $+55^{\circ}\text{C}/+60^{\circ}\text{C}$ shall only be constructed using an SX component enclosure with a minimum depth of 300 mm, without windows and fitted with silicone gaskets, as approved by IECEx CML15.0039U.
- viii The maximum ambient temperature, temperature class and assigned maximum surface temperature of the equipment are dependent on the model and maximum power dissipation/current rating. The maximum ambient, temperature class, assigned maximum surface temperature, power and voltage ratings shall be marked in accordance with the Description on this certificate and with the approved drawings listed on this certificate.
- ix. BPG Junction Boxes shall not be fitted into HVJB junction boxes marked $T150^{\circ}\text{C}$ for gas or $T110^{\circ}\text{C}$ for dust.