EU Type Examination Certificate CML 14ATEX3025X Issue 6

1 Equipment intended for use in Potentially Explosive Atmospheres Directive 2014/34/EU

2 Equipment **4TJB & SC36JB High Voltage Junction Box**

3 Manufacturer **Abtech Limited**

4 Address **199 Newhall Road, Lower Don Valley, Sheffield, S9 2QJ, United Kingdom**

5 The equipment is specified in the description of this certificate and the documents to which it refers.

6 Eurofins CML B.V., Chamber of Commerce No 67386717, Koopvaardijweg 32, 4906CV Oosterhout, The Netherlands, Notified Body Number 2776, in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, 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 12.

7 If an 'X' suffix appears after the certificate number, it indicates that the equipment is subject to conditions of safe use (affecting correct installation or safe use). These are specified in Section 14.

8 This EU Type Examination certificate relates only to the design and construction of the specified equipment or component. Further requirements of Directive 2014/34/EU Article 13 apply to the manufacture of the equipment or component and are separately certified.

9 Compliance with the Essential Health and Safety Requirements, with the exception of those listed in the confidential report, has been demonstrated through compliance with the following documents:

EN IEC 60079-0:2018	EN 60079-28:2015	EN 60079-31:2014
EN 60079-33:2012	Reference to: EN 60079-7:2015+A1:2018	

10 The equipment shall be marked with the following:

4TJB or SC36JB High Voltage Enclosure	**4TJB Optical Enclosure**	**4TJB Optical Enclosure**
Ⓔx II 2 G D	Ⓔx II 2 G D	Ⓔx II 2 G D
Ex sb IIC/IIB T4 Gb	Ex * op is IIC/IIB T4 Gb	Ex * op pr IIC/IIB T4 Gb
Ex tb IIIC T135°C Db	Ex op is IIIC T70/80°C	Ex op pr IIIC T70/80°C Db
Ta=-50°C to +55°C	Ta=-50°C to +55°C	Ta=-40°C to +55°C

*« * » Where enclosure also has electrical connections, marking will also include Ex eb marking*

Note : Protection concept symbols and the minimum/maximum ambient applied depend on the parts installed. The limits of the ambient range are shown here.

11 Description

The 4TJB and SC36JB Junction Boxes are high voltage 3 Phase junction boxes, which are rated up to a maximum of 45kV and 346W, depending on variant and the ambient temperature.

Table 1 – Ratings for High Voltage Enclosure

Junction box reference	Ambient temperature range (°C)	Maximum Voltage rating (V)	Maximum Current rating (A)	Maximum Power Dissipation (Watts)	Temperature class
4TJB	-50°C to +40°C	45kV	980A	346W	T4 / T135°C
4TJB	-50°C to +55°C	45kV	882A	288W	T4 / T135°C
SC36JB	-50°C to +40°C	36kV	1250A	346W	T4 / T135°C
SC36JB	-50°C to +55°C	36kV	1250A	288W	T4 / T135°C

Table 2 – Optical Power

'op pr' applications	**'op is' applications**
T4/T70ºC at a maximum ambient of ≦40ºC T4/T80ºC at a maximum ambient of ≦55ºC	T4/T70ºC at a maximum ambient of ≦40ºC T4/T80ºC at a maximum ambient of ≦55ºC
When 'op pr' is used with or without terminals, the splice case is limited to 100mW and a -40ºC to 55ºC ambient temperature.	When 'op is' is used with or without terminals. Fibre optic source is limited to a maximum irradiance of 5 mW/mm^2 (surface area not exceeding 400mm^2) Signal power is limited to 35 mW@T4.

The 4TJB and SC36JB Junction Boxes use the Abtech Ltd, SX enclosures, which are component approved CML15ATEX3078U/IECEx CML 15.0039U and marked Ex eb IIC Gb / Ex tb IIIC Db. Typical minimum dimensions are 1300x1500x500mm (4TJB) & 1250x1250x1000mm (SC36JB), but may be up to 2000mm x 2000mm x 500mm.

For the 4TJB there are three bus bars available, one per phase, each providing connections for either two, three or four conductors per phase. Each bus bar is supported by two insulators and each phase is separated by an insulated base and cover partitions, as well as partitions on both sides to ensure adequate creepage and clearance distances are met.

The terminals can be sized either M10 or M20, the manufacturer supplies the cable lugs for use by the end user. The cable lugs are not part of this approval.

For the SC36JB there are 1 or 2 separate enclosure compartments, one, or one front and one rear with a divider between fitted with up to 4 Type C equipment hanger or bushings and up to 4 separable couplers per phase in each compartment for a total of 32 couplers. Each phase is separated by partitions between phases and side, top and divider barrier providing adequate creepage and clearance distances.

The Junction Boxes can be supplied with appropriately Ex certified IECEx anti-condensation heater, thermostat, hygrostat, gas sensor, MCB, RCBO, indicator lamps, power supply isolator switch as required.

Both types consist of a main HV enclosure as above, but additionally includes the option of a separate signal enclosure fitted to the side, covered under CML 14ATEX3123X.

Ex auxiliary equipment intended to be installed with the Ex-Equipment :

Part Type	Manufacturer	Model/Type	Certificate No.	Ex Marking String
Switch Modules	CZ Explosion-Proof Appliances Co. Ltd	CZ0201	CML 19ATEX1177U	Ex db eb IIC Gb
Signal Lamp Module	CZ Explosion-Proof Appliances Co. Ltd	CZ0202	CML 19ATEX1176U	Ex db eb IIC Gb
Controle Module	CZ Explosion-Proof Appliances Co. Ltd	CZ0203	Presafe 16ATEX9214U	Ex db eb IIC Gb
MCB/RCBO	CZ Explosion-Proof Appliances Co. Ltd	CZ0511	CML 19ATEX1181U	Ex db eb IIC Gb Ex db eb IIB Gb
Window and control devices for MCB/RCBO	CZ Explosion-Proof Appliances Co. Ltd	CZ8000	CML 17ATEX3102U	Ex eb IIC Gb Ex tb IIIC Db
Empty Enclosure	Abtech Limited	SX Range of Empty Enclosures	CML 15ATEX3078U	Ex eb IIB/IIC Gb or Ex ia IIB/IIC Ga or Ex ib IIB/IIC Gb or Ex ta IIIC Da or Ex tb IIIC Gb or Ex ec IIC Gc or Ex nR IIC Gc
Explosion protected electrical sensor	Schischek GmbH	ExBin-...	EPS 14 ATEX 1 657	Ex e mb [ia Ga] IIC T6...T4 Gb Ex tb [ia Da] III C T80°C...T130°C Db IP66
Gas Detector	Crowcon Detection Instruments Ltd.	XGard Bright	TÜV 16 ATEX 7908 X	Ex db IIC T6 Gb Ex tb IIIC T80°C Db Ex db IIC T4/T3 Gb Ex tb IIIC T80°C Db
Control and signal device actuators	BARTEC GmbH	07-3400-****/****	CML 21ATEX31132U	Ex eb IIC Gb Ex tb IIIC Db
Switch modules, Illiminated indicator and push button modules, potentiometer module	BARTEC GmbH	07-33**	CML 22ATEX1135U	Ex db eb I Mb, Ex db eb IIC Gb Ex db ia I Mb, Ex db ia IIC Gb
Switch module	Quintex GmbH	QX0201	EPS 11ATEX1396U	Ex db eb IIC Gb Ex tb IIIC Db
Signal lamp module	Quintex GmbH	QX0202	EPS 11ATEX1397U	Ex db eb IIC Gb Ex tb IIIC Db
Mini-thermostat	Quintex GmbH	IRM**/***	EPS 19 ATEX 1218 X	Ex mb IIC T4 Gb Ex tb IIIC T100°C Db

Components used which are covered by Ex Certificates issued to older editions of Standards:

Component	Certificate Numbers	Standards Applied	Differences Considered?
Control Module	Presafe 16ATEX9214U	IEC 60079-0 Ed. 6.0 IEC 60079-1 Ed. 7.0 IEC 60079-7 Ed. 5.0	Technical differences evaluated and found satisfactory. For detail see ExTR.

Variation 1
This variation introduces the following changes:

i. To update the certificate to refer to the 2014/34/EU Directive.
ii. To update EN 60079-7:2007 standard reference to the latest edition, EN 60079-7:2015
iii. Update of a Special Condition for Safe Use to refer to standard EN 60079-7:2015

Variation 2
This variation introduces the following changes:

i. To include a 4TJB-125 option, which consists of an additional separate signal enclosure fitted to the side of the main high voltage enclosure.
ii. To replace current approval drawings in line with other certification.
iii. To include assessment against IEC 60079-33:2012, Special Measures to the approval.
iv. To include an option to allowed the enclosure to be painted with a coating thickness up to 2mm for 'IIB' applications.
v. To allow option to lower the marked ambient temperature from -20°C to -50°C.
vi. The description, drawing list, as well as the Conditions of Manufacture and Special Conditions of Safe Use have been amended in accordance with the above modifications.

Variation 3
This variation introduces the following change:

i. To recognise clarifications in the documentation with regards to the enclosure sizes and types of connection facilities that are permitted.

Variation 4
This variation introduces the following change:

i. To allow a description change to reflect the clarification modification listed in variation 3 above.

Variation 5
This variation introduces the following changes:

i. To transfer the CML UK ATEX Certificate to CML BV.
ii. Correction of typographical errors.

Variation 6
This variation introduces the following changes:

i. To introduce new Ex parts to the scope of this equipment,
ii. The introduction of a 36kV model to the certificates,
iii. To update to the latest standards,
iv. To clarify and correct the conditions of manufacture.

12 Certificate history and evaluation reports

Issue	Date	Associated report	Notes
0	27 May 2014	R154A/00	Issue of prime certificate
1	22 Aug 2016	R976C/00	Introduction of Variation 1
2	31 May 2017	R1328A/00	Introduction of Variation 2
3	02 Mar 2018	R11596A/00	Introduction of Variation 3
4	28 Mar 2018	R11596A/01	Introduction of Variation 4
5	13 Sep 2019	R12524A/00	Introduction of Variation 5
6	11 Aug 2026	R21302A/00	Introduction of Variation 6

Note: Drawings that describe the equipment or component are listed in the Annex.

13 Conditions of Manufacture

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

i. 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 many 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 Ex eb, with a T6 temperature class and suitable for the exposed ambient temperature. The integral thermostat of the incorporated heater shall have a limiting temperature set to no higher than 10°C below the maximum upper ambient temperature marked on the enclosure (e.g. 30°C for Tamb +40°C, 45°C for Tamb +55°C). Appropriate creepage and clearances are still maintained

ii. 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 EN 60079-7:2017, 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 EN 60079-7:2017, clause 6.1.

No flashover or breakdown shall occur.

iii. When the equipment is marked for ‘op pr’ the extreme ambient temperature limit marking that can be applied is -40°C to +55°C.

iv. Junction Boxes that are marked with the ambient range -50°C to +55°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 CML 15ATEX3078U.

v. The maximum Power of the equipment is dependent on the ambient and current rating. The maximum ambient, power and voltage ratings shall be marked in accordance with the Description on this certificate and with the approved drawings listed on this certificate.

vi. When fitted with the Gas Detector, model XGard Bright, the following conditions must be met:
   a. Unused cable entries must be sealed using an ATEX/IECEx Ex db and Ex tb certified stopping plug with minimum IP65/IP66 ingress protection.
   b. Only the cables/wires which are specified in the user manual can be used.
   c. External earthing should be considered and installed according to user manual before use.

vii. When the equipment is fitted with the Control and signal device actuators type 07-3400-****/**** the following additional warning should be applied “WARNING – CLEAN ONLY WITH A DAMP CLOTH”.

viii. When fitted with the following components: CZ0201-***L, CZ0303-***L, CZ0203-***/*L, QX-0201 type L, QX-0202-**L and CZ0511 (IIB) the minimum ambient temperature limit marked on the equipment should be -40°C.

ix. When fitted with the QX-0202-**2L, QX-0202-**2H and CZ8000 (all models except terminals and busbars), the maximum ambient temperature limit marked on the equipment should be +50°C.

x. When fitted with the 07-3400-****/**** and 07-33*4-4***/****, the maximum ambient temperature limit marked on the equipment should be +40°C.

xi. When fitted with the CZ0511 (IIC) the minimum ambient temperature limit marked on the equipment should be -20°C.

xii. The installation of the specific models CZ8000-1200 and CZ8000-1300 with foam PU seal are forbidden on this equipment.

14 Specific Conditions of Use (Special Conditions)

The following conditions relate to safe installation and/or use of the equipment.

i. For junction boxes used at voltages over 11kV (Zone 1) or 15kV (Zone 2) and installed in a location where an explosive atmosphere is considered present under normal operation or fault conditions (Zones either 1, 2, 21 or 22), the installer/user shall take into account any additional risks the location/environmental conditions and installation may pose to electrical breakdown or corona discharge, such as moisture/condensation and contaminates (dust, oils/greases, etc). Additionally, the installer shall consider the cables installed to ensure they do not increase any ignition risks, (materials, size and secureness of connections, it is additionally considered that the high voltage cables should be armoured and screened, as well as used with appropriate connection sleeves) Although above points should be adhered to, a responsible site engineer shall be consulted to address these risks within each installation application.

ii. When fitted with high voltage (45 kV maximum working voltage) terminals, the maximum dissipated power of the Junction Boxes shall be calculated in accordance with EN 60079-7:2017, Annex E.2, and shall not exceed the maximum power rating defined in the Description on this certificate.

iii. An electric strength test shall be carried out on the 4TJB and SC36JB Junction Boxes after it has been installed. The test shall be carried out at a value of 73kVac (SC36JB) or 91kVac (4TJB) r.m.s. in accordance with EN 60079-7:2017, clause 7.1. This voltage may be reduced as appropriate for marked lower working voltages. Optionally the test may be performed using d.c. voltage at 140% of the specified a.c., r.m.s. test voltage in accordance with EN 60079-7:2017, clause 6.1.

iv. Moisture and condensation may reduce the effectiveness of the creepage distances, to reduce the risk, the environmental conditions during installation and maintenance activities shall be observed. The enclosure shall only be opened when the local ambient temperature is between 5°C and 40°C with a maximum relative humidity of 80% to temperatures up to 31°C, decreasing linearly to 50% at 40°C.

vi. The following minimum creepage and clearance distances shall be maintained:

Model (Voltage)	Location	Creepage (mm)	Clearance (mm)
4TJB (45kV)	Phase to phase	828	534
	Phase to earth	564	454
SC36JB (36kV)	Phase to phase	445	370
	Phase to earth	265	220

vii. When the separate optical signal enclosure is marked ‘Ex op is’, the fibre optic source supplying this equipment shall be suitably certified as compliant with at least EN 60079-28:2015 or later and provide an inherently safe optical source (op is), EPL Gb, subsequently the parameters in Table 2 in the description apply. Additionally, the optical supply shall provide over-power fault protection suitable for an ELP level ‘Gb’.

viii. When the separate optical signal enclosure is marked ‘Ex eb op pr’, the fibre ST connectors contained within the optical enclosure must not be separated whilst energised if an explosive atmosphere may be present.

ix. When Anti-condensation heaters and thermostats are fitted, the user/installer shall ensure the local ambient inside the junction box does not exceed the upper ambient temperature limit.

x. The 4TJB & SC36JB High Voltage Junction Boxes shall be installed in accordance with manufacturer’s instructions document IOM0013.

xi. When fitted with the Mini-thermostat type IRM**/***, the final user must ensure that the circuit of the mini-thermostat is protected by a circuit breaker with tripping characteristic C to the rated current of 16A.

xii. Where the equipment is fitted with the explosion-protected electrical sensor type ExBin-… and/or the CZ0202 Series Explosion-proof Signal Lamp Modules, the intrinsically safe function shall be rendered inoperative. Under this configuration, the intrinsically safe circuit(s) shall not be used, connected, or made available for operation, as the requirements for intrinsic safety protection are not ensured when this sensor type is installed.”

xiii. The flameproof joints incorporated within the certified Ex-component modules (e.g. CZ0201 Switch Modules, CZ0202 Signal Lamp Modules…) are not permitted to be repaired. If damage to a flameproof joint is identified, the component shall be replaced.

Certificate Annex

Certificate Number	**CML 14ATEX3025X**
Equipment	**4TJB & SC36JB High Voltage Junction Box**
Manufacturer	**Abtech Limited**

The following documents describe the equipment or component defined in this certificate:

Issue 0

Drawing No	Sheets	Rev	Approved date	Title
ABT24705	1 of 1	A	27 May 2014	HV45 Junction Box
ABT24707	1 of 1	A	27 May 2014	40Kv Phase Barriers
ABT24708	1 of 1	A	27 May 2014	Insulator Support Plate (HV45)
ABT24709	1 of 1	A	27 May 2014	Rear Insulator
ABT24710	1 of 1	A	27 May 2014	side Insulator
ABT24711	1 of 1	A	27 May 2014	Phase Covers
ABT24712	1 of 1	A	27 May 2014	Transparent Acrylic Cover
ABT24713	1 of 1	A	27 May 2014	Cooper Bus Bars
ABT27187	1 of 1	A	27 May 2014	Certification Label 4TJB

Issue 1

None.

Issue 2

Drawing No	Sheets	Rev	Approved date	Title
ABT31885	1 of 1	A	31 May 2017	4TJB Junction Box
ABT31886	1 of 1	A	31 May 2017	45 kV Phase Barrier
ABT31887	1 of 1	A	31 May 2017	Insulator Support Plate (4TJB)
ABT31888	1 of 1	A	31 May 2017	Rear Insulator (45kV)
ABT31889	1 of 1	A	31 May 2017	Side Insulator (45kV)
ABT31890	1 of 1	A	31 May 2017	Phase Covers (4TJB)
ABT31891	1 of 1	A	31 May 2017	Transparent Acrylic Cover
ABT31892	1 of 1	A	31 May 2017	Copper Bus Bars
ABT31893	1 of 1	A	31 May 2017	Certification Label 4TJB
ATB32242	1 of 1	A	31 May 2017	4TJB-125 Junction Box

Issue 3

Drawing No	Sheets	Rev	Approved date	Title
ABT31885	1 of 1	B	02 Mar 2018	4TJB Junction Box
ABT31887	1 of 1	B	02 Mar 2018	Insulator Support Plate (4TJB)
ABT31892	1 of 1	B	02 Mar 2018	Copper Bus Bars

Certificate Annex

Certificate Number **CML 14ATEX3025X**

Equipment **4TJB & SC36JB High Voltage Junction Box**

Manufacturer **Abtech Limited**

Drawing No	Sheets	Rev	Approved date	Title
ATB32242	1 of 1	B	02 Mar 2018	4TJB-125 Junction Box

Issue 4
None.

Issue 5
None.

Issue 6

Drawing No	Sheets	Rev	Approved date	Title
ABT45478	1 to 1	A	11 Aug 2026	SC36JB Certification Label
ABT45463	1 to 1	A	11 Aug 2026	SC36JB Certification Details
ABT45601	1 to 2	A	11 Aug 2026	Permitted auxiliary and control devices for 4TJB, SC36JB