IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification System for Explosive Atmospheres

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Certificate No.:	**IECEx CML 20.0003X**	Page 1 of 4	Certificate history:
Status:	**Current**	Issue No: 2	Issue 1 (2022-11-08) Issue 0 (2020-06-11)
Date of Issue:	2023-12-05		
Applicant:	**ABTECH Limited** 199/201 Newhall Road Lower Don Valley Sheffield S9 2QJ **United Kingdom**		
Equipment:	**BPG Range of Junction Boxes**		
Optional accessory:			
Type of Protection:	**Ex eb ia, ib ta, tb, op is, op pr, op sh**		
Marking:	**See certificate annex**		

Approved for issue on behalf of the IECEx Certification Body: **L A Brisk**

Position: **Assistant Certification Manager**

Signature: (for printed version)

Date: (for printed version) 05 Dec 2023

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IECEx Certificate of Conformity

Certificate No.: **IECEx CML 20.0003X**

Date of issue: 2023-12-05

Issue No: 2

Manufacturer: **ABTECH Limited**
199/201
Newhall Road
Lower Don Valley
Sheffield S9 2QJ
United Kingdom

Manufacturing locations: **ABTECH Limited**
199/201
Newhall Road
Lower Don Valley
Sheffield S9 2QJ
United Kingdom

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 equipment 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 60079-0:2017 Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

IEC 60079-11:2011 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition:6.0

IEC 60079-28:2015 Explosive atmospheres - Part 28: Protection of equipment and transmission systems using optical radiation
Edition:2

IEC 60079-31:2022 Explosive atmospheres – Part 31: Equipment dust ignition protection by enclosure "t"
Edition:3.0

IEC 60079-7:2017 Explosive atmospheres - Part 7: Equipment protection by increased safety "e"
Edition:5.1

This Certificate **does not** indicate compliance with 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 Reports:

GB/CML/ExTR20.0114/00 GB/CML/ExTR22.0199/00 GB/CML/ExTR23.0281/00

Quality Assessment Report:

GB/CML/QAR16.0021/09

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EQUIPMENT:
Equipment and systems covered by this Certificate are as follows:

The BPG range of enclosures are glass reinforced polyester (GRP) enclosures of cuboid shape with the primary function of electrical or optical terminal boxes or control stations.

See Annex for full description and Conditions of Manufacture.

SPECIFIC CONDITIONS OF USE: YES as shown below:
See Annex for Specific Conditions of Use.

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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)
Issue 1
This variation introduces the following changes:

1. To include another T5/T100°C and ambient option.
2. Minor editorial change to condition of manufacture for terminal insulting material temperature limitationsand removing the condition for selectionof cable to specific conditions of use.
3. Correction to certification drawings to include missing BPG size and CE/UKCA marks.

Issue 2
This variation introduces the following changes:

1. Introduction of an alternative sealing material
2. Assessment of the inclusion of optional plug and socket assemblies
3. Update to the latest version of the standards

Annex:

IECEx CML 20.0003X Iss. 2 Certificate Annex _1.pdf

Annexe to: IECEx CML 20.0003X Issue 2

Apparatus: BPG range of junction boxes

Applicant: ABTECH Limited

Marking

Ex ia ④IIC T①Ga	Ex eb ③④ IIC T①Gb	Ex ib ④ IIC T①Gb
Ex ta IIIC T②°C Da	Ex tb IIIC T②°C Db	Ex tb IIIC T②°C Db

① Temperature Class T4, T5, T6. See product description
② Maximum Surface Temperature T85°C, T100°C. See product description
③ Marking to include db if fitted with flameproof connector
④ When fitted with fibre optic cassette, marking to include either op is, op pr, op sh. See product description

Description

The BPG range of enclosures are glass reinforced polyester (GRP) enclosures of cuboid shape with the primary function of electrical or optical terminal boxes or control stations.

The enclosures range in size from 80 mm x 75 mm x 55 mm (WHD) up to 600 mm x 250 mm x 120 mm (largest rectangular shape, denoted as Type B enclosures in table 1) and 400 mm x 405 mm x 201 mm (largest square shape and deepest enclosure, denoted as Type A enclosures in table 1). All sizes consist of a base and cover. The cover is attached to the base with four or six stainless steel captive screws.

The cover retains, within a square groove, a closed cell silicone sponge or solid silicone rubber tube gasket that is displaced by a raised sealing edge on the base and providing a seal between the base and cover when secured together.

The junction boxes may be provided with cable entry holes. The holes may be located either through the side walls or the rear of the enclosure base. The holes may be provided with a metric parallel thread, or without thread (clearance hole). Suitably certified blanking plugs, reducers and adapters and breather drains may be installed via threaded or clearance holes, provided they meet the minimum IP requirements marked on the enclosure. The terminal boxes may be fitted with plug and socket arrangements.

Internal or external, or internal and external threaded earth stud of a minimum size of M6 may be provided through the wall of the enclosure.

Within the base are metal inserts, on the left and right, with M4 or M6 female threads for the mounting of components such as terminal rails or mounting plates.

BPG Enclosure	Enclosure Type	Width	Height	Depth
		(mm)	(mm)	(mm)
1	B	80	75	55
2	B	110	75	55
3	B	160	75	55
4	B	190	75	55
4.5	B	190	75	75
5	A	230	75	55
6	B	122	120	90

BPG Enclosure	Enclosure Type	Width	Height	Depth
7	B	220	120	90
8	B	160	160	90
9	B	260	160	90
10	B	360	160	90
11	A	560	160	90
12	B	255	250	120
12.5	B	205	200	120
13	B	400	250	120
13.5	B	400	250	160
14	A	600	250	120
15	B	400	405	120
15.5	B	400	405	201

Table 1: BPG Enclosure Sizes

Before the junction box is installed, its total dissipated power for the particular application will be calculated in accordance with IEC 60079-7 Ed 5:2015/ EN 60079-7:2015, Annex E, E.2 and will not exceed the values given in the tables below (junction boxes of size not specified in the tables may be manufactured subject to the maximum dissipated power being based on a smaller enclosure):

EPL Ga Gb Db				
BPG Ref.	**Max. Power Dissipation (W), Temperature Class, Max. Surface Temp. & Ta Max.**			
	(*) T6/T85ºC @40ºC (*) T5/T100ºC @55ºC (*) T4/T100ºC @90ºC ΔT=+40K Max.	**(*) T6/T85ºC @55ºC (*) T5/T100ºC @70ºC ΔT=+25K Max.**	**(*) T6/T85ºC @60ºC ΔT=+20K Max.**	**(*) T6/T85ºC @65ºC ΔT=+15K Max.**
BPG1	8.39	2.23	1.73	1.45
BPG2	8.551	2.00	1.70	1.45
BPG3	8.833	2.00	1.70	1.45
BPG4	9.012	2.07	1.80	1.29
BPG4.5	9.012	2.07	1.80	1.29
BPG5	9.260	2.00	1.70	1.10
BPG6	9.378	2.00	1.70	1.45
BPG7	10.500	2.30	1.70	1.10
BPG8	10.348	2.00	1.70	1.10

EPL Ga Gb Db				
BPG Ref.	Max. Power Dissipation (W), Temperature Class, Max. Surface Temp. & Ta Max.			
	(*) T6/T85ºC @40ºC (*) T5/T100ºC @55ºC (*) T4/T100ºC @90ºC ΔT=+40K Max.	(*) T6/T85ºC @55ºC (*) T5/T100ºC @70ºC ΔT=+25K Max.	(*) T6/T85ºC @60ºC ΔT=+20K Max.	(*) T6/T85ºC @65ºC ΔT=+15K Max.
BPG9	11.933	2.30	1.70	1.10
BPG10	13.793	4.50	3.29	2.10
BPG11	18.338	6.68	5.20	4.00
BPG12	15.474	2.30	1.70	1.10
BPG12.5	15.474	2.30	1.70	1.10
BPG13	20.867	5.20	4.00	3.00
BPG13.5	20.867	5.20	4.00	3.00
BPG14	30.384	7.97	6.59	4.79
BPG15	31.350	8.26	6.00	4.40
BPG15.5	31.350	8.26	6.00	4.40
Notes: The table above relate to the limiting temperature of the terminal insulation, refer to the 'Conditions of Manufacture'. *For given T ratings, the maximum ambient temperature may be reduced to allow terminals with lower limiting temperatures to be fitted.				

Table 2: BPG Range of Junction Boxes – Maximum Power Dissipation for EPL Ga Gb Db

EPL Da				
BPG Ref.	Max. Power Dissipation (W), Max. Surface Temp. & Ta Max.			
	(*) T6/T85ºC @40ºC (*) T5/T100ºC @55ºC (*) T4/T100ºC @90ºC ΔT=+40K Max.	(*) T6/T85ºC @55ºC (*) T5/T100ºC @70ºC ΔT=+25K Max.	(*) T6/T85ºC @60ºC ΔT=+20K Max.	(*) T6/T85ºC @65ºC ΔT=+15K Max.
BPG1	4.195	1.115	0.865	0.725
BPG2	4.2755	1	0.85	0.725
BPG3	4.4165	1	0.85	0.725
BPG4	4.506	1.035	0.9	0.645
BPG4.5	4.506	1.035	0.9	0.645

EPL Da				
BPG Ref.	Max. Power Dissipation (W), Max. Surface Temp. & Ta Max.			
	(*) T6/T85ºC @40ºC (*) T5/T100ºC @55ºC (*) T4/T100ºC @90ºC ΔT=+40K Max.	(*) T6/T85ºC @55ºC (*) T5/T100ºC @70ºC ΔT=+25K Max.	(*) T6/T85ºC @60ºC ΔT=+20K Max.	(*) T6/T85ºC @65ºC ΔT=+15K Max.
BPG5	4.63	1	0.85	0.55
BPG6	4.689	1	0.85	0.55
BPG7	5.25	1.15	0.85	0.55
BPG8	5.174	1	0.85	0.55
BPG9	5.9665	1.15	0.85	0.55
BPG10	6.8965	2.25	1.645	1.05
BPG11	9.169	3.34	2.6	2
BPG12	7.737	1.15	0.85	0.55
BPG12.5	7.737	1.15	0.85	0.55
BPG13	10.4335	2.6	2	1.5
BPG13.5	10.4335	2.6	2	1.5
BPG14	15.192	3.985	3.295	2.395
BPG15	15.675	4.13	3	2.2
BPG15.5	15.675	4.13	3	2.2
Notes: The table above relates to the limiting temperature of the terminal insulation, refer to the 'Conditions of Manufacture'. *For given T ratings, the maximum ambient temperature may be reduced to allow terminals with lower limiting temperatures to be fitted.				

Table 3: BPG Range of Junction Boxes – Maximum Power Dissipation for EPL Da

Optional fibre optic jointing facilities may be fitted within the terminal compartment; these are installed on a non-metallic, splice tray either alone or alongside the existing terminals. The jointing facilities are intended for use with fibre optic equipment supplied from a power source that is certified as compliant with IEC / EN 60079-28:2015. For "op pr" or "op sh" applications, the ABTECH fibre optic cassette type FJC under certificate CML 17ATEX9035U/ IECEx CML 17.0020U are used.

Optical Power	
'op pr' applications	**'op is' applications**
T6/T85ºC at a maximum ambient of ≤ 60ºC	T6/T85ºC at a maximum ambient of ≤ 65ºC or T4/T100ºC at a maximum ambient of ≤ 80ºC
When 'op pr' is used with or without terminals, the splice case is limited to 100mW and a -40ºC to 60ºC ambient temperature.	When 'op is' is used with or without terminals. Fibre optic source is limited for all T classes to a maximum irradiance of 5 mW/mm^2 (surface area not exceeding 400 mm^2) Signal power is limited to 15 mW @T6 and 35 mW @T4.

Table 4: BPG Range of Junction Boxes – Optical Power Limits for "op pr" and "op is" applications

Conditions of Manufacture

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

i. Where the product incorporates certified parts or safety critical components, the manufacturer of the product defined on this certificate shall continually monitor these parts/components for any modifications introduced by the manufacturer(s) of these constituent parts. If the manufacturer of any constituent part introduces any changes which affect the compliance of the certified product that is the subject of this certificate, the manufacturer is required to have this certificate updated.

ii. When the manufacturer has equipped the junction boxes with wiring to the terminals, a routine electric strength test shall be carried out in accordance with IEC 60079-7:2015 Clause 7.1

iii. 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 terminals fitted into the junction boxes shall also conform to the following requirements:

Temperature class/ Dust marking	Requirement*
T6/T85°C	The terminals shall have an insulation limiting temperature of +85°C minimum.
T5/T100°C	The terminals shall have an insulation limiting temperature of +100°C minimum.
T4/T100°C	The terminals shall have an insulation limiting temperature of +130°C minimum.

iv. Suitably certified Ex e equipment such as breathing devices and blanks may be fitted to the enclosure providing the enclosure maintains compliance with IEC 60529 code IP65 or better.

v. 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 IEC 60079-7 Annex E, E2.

vi. 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.

vii. When trunking is fitted, it may be sited as required and the minimum creepage and clearance distances shall still be met

viii. If the enclosures are supplied fitted with blanking plugs, reducers, adapters or breather drains, the manufacturer shall ensure that the user/installer is provided with copies of the associated certificate for the fitted devices.

ix. When the optional earth bar is fitted it shall allow for a size of conductor connection in accordance with Clause 15.3 of IEC 60079-0.

x. When plug and sockets are fitted that are certified 'Ex d e', 'Ex db eb', Ex ia or Ex ib, then the junction box marking shall include the symbol 'd' or 'i' as part of the label marking code, as well as the appropriate gas/dust group marking if not 'IIC' and 'IIIC', as defined by the plug and socket approval.

xi. This certificate does not cover any plug and socket arrangements that may be fitted to the enclosure. All plug and socket arrangements fitted shall be appropriately designed to the ATEX (IECEx/UKEX) Directive for this type of apparatus_ Additionally, the plug and socket arrangements shall:

- Be suitable for the intended temperature range of the junction box
- Be suitable to maintain the required creepage and clearances in accordance with EN IEC 60079-7.
- Have a minimum ingress protection rating of IP54 (gas applications) or IP64 (if the boxes are marked for dust applications).
- Have a declared contact resistance or power dissipation rating.
- Be installed in accordance with their certificate conditions and the relevant codes of practice/wiring regulations.

Specific Conditions of Use

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

i. When used in an EPL ta (Da) application, the power supply to the equipment is to be rated for a prospective short circuit current of not more than 10 kA.

ii. When fitted with 'Ex op pr' splice case, the fibre cable outside the enclosure shall be installed such that mechanical damage is prevented, including where entering or exiting the increased safety enclosure.

iii. When marked ‘Ex op is’, the fibre optic source supplying this equipment shall be suitably certified as compliant with EN 60079-28:2007 and provide an inherently safe optical source (op is), EPL Gb, subsequently the parameters in Table 4 of the description apply.

iv. When marked ‘Ex op pr’, the fibre connectors contained within the increased safety enclosure must not be separated whilst energised if an explosive atmosphere may be present.

v. If not used, fibre ST connectors within the increased safety enclosure must have dust covers fitted.

vi. All optical components used with the Fibre Optic Cassette shall be suitable for the ratings and service temperature range of the cassette

vii. When marked “op sh”, the fibre optic source shall be suitably certified as compliant with IEC/EN 60079-28:2015 and provide an interlocked optical source (op sh).

viii. Cable insulation shall be rated at 30°C greater than max operation ambient.

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

None.