



# IECEX Certificate of Conformity

## INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit [www.iecex.com](http://www.iecex.com)

Certificate No.: **IECEX CML 20.0085X** Page 1 of 4 Certificate history:  
Status: **Current** Issue No: 2 [Issue 1 \(2021-10-29\)](#)  
[Issue 0 \(2020-12-17\)](#)  
Date of Issue: 2023-08-02  
Applicant: **BARTEC AS**  
Vestre Svanholmen 24  
Sandnes 4313  
Norway  
Equipment: **EXtreme® MV Junction Box**  
Optional accessory:  
Type of Protection: **Special Protection "sb"/"sc", Increased Safety "eb"/"ec", Enclosure "tb"/"tc", Optical Radiation "op pr"**  
Marking: Ex sb IIB/IIC T4/T5/T6 Gb  
Ex eb sb IIB/IIC T4/T5/T6 Gb  
Ex eb sb [op is] IIB/IIC T4/T5/T6 Gb  
Ex eb sb [op is] op pr IIB/IIC T4/T5/T6 Gb  
Ex eb sb op pr IIB/IIC T4/T5/T6 Gb  
Ex [op is] sb IIB/IIC T4/T5/T6 Gb  
Ex [op is] op pr sb IIB/IIC T4/T5/T6 Gb  
Ex op pr sb IIB/IIC T4/T5/T6 Gb  
Ex tb IIIC T85/100/135°C Db  
  
Ex sc IIB/IIC T4/T5/T6 Gc  
Ex ec sc IIB/IIC T4/T5/T6 Gc  
Ex ec sc [op is] IIB/IIC T4/T5/T6 Gc  
Ex ec sc [op is] op pr IIB/IIC T4/T5/T6 Gc  
Ex ec sc op pr IIB/IIC T4/T5/T6 Gc  
Ex [op is] sc IIB/IIC T4/T5/T6 Gc  
Ex [op is] op pr sc IIB/IIC T4/T5/T6 Gc  
Ex op pr sc IIB/IIC T4/T5/T6 Gc  
Ex tc IIIC T85/100/135°C Dc  
  
 $T_{amb} = -50/-40/-20^{\circ}\text{C}$  to  $+45/+50/+55/+60^{\circ}\text{C}$

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)

02 Aug 2023

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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: **BARTEC AS**  
Vestre Svanholmen 24  
Sandnes 4313  
Norway

Manufacturing locations: **BARTEC AS**  
Vestre Svanholmen 24  
Sandnes 4313  
Norway

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 60079-28:2015](#) Explosive atmospheres - Part 28: Protection of equipment and transmission systems using optical radiation  
Edition:2

[IEC 60079-31:2013](#) Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"  
Edition:2

[IEC 60079-33:2012](#) Explosive atmospheres – Part 33: Equipment protection by special protection "s"  
Edition:1.0

[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/ExTR20.0117/00](#)

[GB/CML/ExTR20.0252/00](#)

[GB/CML/ExTR23.0188/00](#)

Quality Assessment Report:

[NO/DNV/QAR23.0002/01](#)



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**EQUIPMENT:**

Equipment and systems covered by this Certificate are as follows:

The EXtreme® MV Junction Box, is a high voltage junction box, and comprises a component certified enclosure (IECEX DNV 09.0005U), with busbar arrangements consisting of 2 +PE (Typically for DC applications), 3 + PE (3 phase), 4+PE (3 phase + Neutral).

**Refer to Certificate Annex for full product description and Conditions of Manufacture.**

**SPECIFIC CONDITIONS OF USE: YES as shown below:**

**Refer to Certificate Annex.**



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Date of issue: 2023-08-02

Issue No: 2

## **DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)**

### **Issue 1**

This issue introduces the following changes:

1. Increase of the rated voltage to 40kV
2. Permit the removal of the internal enclosure for 'op pr'
3. Permit the use of an alternative thermostat

### **Issue 2**

This issue introduces the following changes:

1. Update to Applicant/Manufacturer name

### **Annex:**

[Certificate Annex IECEx CML 20.0085X Iss. 2\\_1.pdf](#)

**Annexe to:** IECEx CML 20.0085X Issue 2  
**Applicant:** BARTEC AS  
**Apparatus:** EXtreme® MV Junction Box

### Description

The EXtreme® MV Junction Box is comprised of a component certified enclosure (IECEX DNV 09.0005U and DNV-2008-OSL-ATEX-42438U), with busbar arrangements consisting of 2 +PE (Typically for DC applications), 3 + PE (3 phase), 4+PE (3 phase + Neutral), each busbar is supported by 3 insulators. There are multiple options for entry arrangements and entries are via plain, threaded holes depending upon configuration or cable transit frames.

Connections to the busbars are via studs and cable lugs, both internal and external earthing points are provided. The enclosures have a minimum size of 1500mm x 1000mm, 500mm and are manufactured from stainless steel and may have a single or multiple doors for accessing the connections.

The maximum power dissipation is dependent upon ambient temperature, temperature class and is detailed in the table below:

Power	Ambient Ta	T Class	Dust	Cable temperature
475 W	-50/-20°C to 60°C	T6	T85°C	78°C
620 W	-50/-20°C to 50°C	T6	T85°C	73°C
	-50/-20°C to 60°C	T5	T100°C	83°C
785 W	-50/-20°C to 45°C	T6	T85°C	72°C
	-50/-20°C to 60°C	T5	T100°C	87°C
969 W	-50/-20°C to 55°C	T5	T100°C	88°C
	-50/-20°C to 60°C	T4	T135°C	93°C
1 173 W	-50/-20°C to 45°C	T5	T100°C	86°C
	-50/-20°C to 60°C	T4	T135°C	101°C
1 515 W	-50/-20°C to 60°C	T4	T135°C	112°C

The maximum current that may pass through any single busbar is 1250A and the maximum nominal voltage is 40kV.

Optional accessories	Description
Heaters	The heaters are equipment approved and limited to a maximum of 300W and connection to them is via convention screw terminals. The heaters shall de-energise at 18°C.

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Certificate Annex IECEx  
 Version: 9.0 Approval: Approved

Optional accessories	Description
Thermostats	The thermostats are equipment approved and used in conjunction with some heaters, they are set for a high point of 18°C
Sensors	The sensors are equipment approved and sit in cable entries into the enclosure, they are very low powered devices used to measure humidity, temperature or vibration.
Optical enclosure	This is an additional stainless-steel enclosure that mounts externally for 'op is' and internally for 'op pr'.
Lifting lugs	The lifting lugs may be either welded to the enclosure or removable and suitably approved blanking device are used to blank the holes off.

## 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. The equipment 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 the design.

In addition, this certificate relies on the following previously certified equipment.

When the junction box is fitted with an anti-condensation heater that includes a thermostat; the key attributes listed in the table 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.  The integral thermostat to the incorporated heater shall have a limiting temperature set to no higher than 18°C.  Maximum power dissipation shall be 300W

Description	Certificate No.	Key attributes
		Appropriate creepage and clearances are still maintained.

When the junction box is fitted with sensors for vibration/humidity/temperature the key attributes listed in the table shall still be maintained by their original certificate.

Description	Certificate No.	Key attributes
Sensor	As appropriate	Suitably certified by a notified/certification body as a piece of equipment. Their total power dissipation shall be less than 1W Appropriate creepage and clearance are still maintained.

- iii. If HV 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 60079-7:2015, clause 7.1. The test voltage shall be determined based on the marked maximum rated voltage, with the appropriate safety factor and test duration applied in accordance with EN 60079-7:2015, clause 6.1.
- iv. The enclosure shall be fitted with silicon gaskets for ambient temperatures lower than -20°C.
- v. The ambient temperature shall be no lower than -40°C if the Lexan window is fitted.
- vi. If heaters are fitted, they shall be set to de-energise at least 25°C below the rated ambient of the enclosure.
- vii. When fitted with the adjustable thermostat the equipment shall only be used for T5 applications.
- viii. When fitted, the adjustable thermostat stated in certificates IECEx EPS 13.0015U / EPS 11 ATEX 1 354 shall achieve an IPL of at least IPL1 (SIL 1 / HFT=0 SIF).

### Specific Conditions of Use

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 or 2), 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 contaminants (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).
- ii. The enclosure shall be free from all dust, moisture and any other pollutants before use.
- iii. Cable sleeves and connection covers shall be considered as a part of the cable termination.
- iv. Cables and lugs shall be suitably rated for the installation.

- v. Connections using M12 bolts shall be torqued to 30 Nm when the connection is done directly on the insulators and torqued to 68 Nm when the connection is done on the copper bus bars and cables routed and mounted so as not to apply lateral forces that could cause the connection to rotate.
- vi. The minimum creepage and clearances specified below shall be observed during installation.

	<b>Minimum permitted distance between Phase and Phase and Phase and earth</b>	
	<b>Creepage</b>	<b>Clearance</b>
<b>Voltage</b>		
12 kV	150 mm	120 mm
17.5 kV	219 mm	175 mm
24 kV	300 mm	240 mm
30 kV	375 mm	300 mm
31 kV	388 mm	310 mm
36 kV	450 mm	360 mm
40kV	500 mm	400 mm

- vii. Due to the possibility of corona discharge the following shall be considered:
  - Sharp edges and corners shall be minimised on bared cable and lugs.
  - Bends in cables shall be kept to a minimum and shall be of as large a radius as installation permits without compromising minimum creepage and clearances.
  - Sharp bends in cables are not permitted.
- viii. 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.
- ix. The maximum power dissipated shall not exceed the values in the table shown in the description. These figures are based on the power being evenly distributed between all 3 busbars, therefore no single busbar shall exceed one third of the specified power. The maximum power shall be calculated in accordance with IEC/EN 60079-7 Annex E.2.
- x. When the marking includes 'op pr' or 'op is' the optical compartment shall not dissipate more than 100mW.
- xi. When the marking includes 'op pr' the cables entering or exiting the enclosure shall be suitably protected from damages/breakages and satisfy the requirements of EN/IEC 60079-28 'op pr'.
- xii. When the marking includes 'op is' the fibre optic source supplying this equipment shall be suitably certified as compliant with EN/IEC 60079-28 and provide an EPL of Gb or better.





- xiii. An electric strength test shall be carried out on the EXtreme® junction box after it has been installed. The test shall be carried out at 2Um + 1000V in accordance with IEC/EN 60079-7 clause 7.1. When fitted the heater should be separately tested at 2Um plus 1000V in accordance with IEC/EN 60079-7 clause 7.1.
- xiv. It is the responsibility of the end user to eliminate circulating currents by the correct selection of cables, their installation method and associated gland plate material.
- xv. If the enclosure has no coating or window this condition may be ignored.  
Under certain extreme circumstances, the non-metallic parts incorporated in the enclosure of this equipment may generate an ignition-capable level of electrostatic charge. Therefore, the equipment shall not be installed in a location where the external conditions are conducive to the build-up of electrostatic charge on such surfaces (e.g. steam generation, pneumatic processes, windblown dust, etc). In addition, the equipment shall only be cleaned with a damp cloth.
- xvi. Only fusion splice connections are permitted for op pr and the fibre cables shall be suitably protected from damage.
- xvii. If the Lexan window is fitted the enclosure shall be protected from sources of U.V. such as sunlight.
- xviii. If heaters are fitted, they shall be set to de-energise at least 25°C below the rated ambient of the enclosure.
- xix. When fitted with the adjustable thermostat the equipment shall only be used for T5 applications.
- xx. The flameproof joints are not intended for repair, refer to the manufacture.

**Components covered by Ex Certificates issued to older editions of Standards**

Certificate number	Standards (incl Ed)	Assessment result
IECEX DNV 09.0005U	IEC 60079-0 Ed 6 IEC 60079-0 Ed 6 IEC 60079-7 Ed 4 IEC 61241-0:2004 IEC 61241-1:2004	No applicable technical differences