



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 06.0088X issue No.:3

Status: **Current**

Date of Issue: 2017-02-01 Page 1 of 4

Applicant: **Pyroban Limited**
Dolphin Road
Shoreham-by-Sea
BN43 6QG
United Kingdom

Equipment: **ESB Offshore Battery Assembly**
Optional accessory:


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

Marking: Ex de IIB T4 Gb (Ta -20°C to +48°C)

Approved for issue on behalf of the IECEx Certification Body: N Jones

Position: Certification Manager

Signature:
(for printed version)



2017-02-01

Date:

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
CSA Group
Unit 6, Hawarden Industrial Park
Hawarden, Deeside, CH5 3US
United Kingdom

sira
CERTIFICATION





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Manufacturer: **Pyroban Limited**
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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 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 60079-1 : 2007-04 Edition: 6	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
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

Test Report:

GB/SIR/ExTR07.0019/00
GB/SIR/ExTR16.0312/00

GB/SIR/ExTR07.0019/01

GB/SIR/ExTR14.0232/00

Quality Assessment Report:

GB/SIR/QAR06.0001/00



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Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

The ESB Offshore Battery Assembly is suitable for use as deep cycle batteries and are available in four types:
ESB12 – 12 V battery
ESB24 - 24 V battery
ESB12T - 12 V battery with Ex e junction box
ESB24T - 24 V battery with Ex e junction box
Refer to the ANNEXE for additional Information

SPECIFIC CONDITIONS OF USE: YES as shown below:

Refer to Certificate Annexe.



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

Issue 1 to Issue 2 – for changes refer to Issue 2

Issue 3 – this Issue introduced the following change:

1 Issued to correct a typographical error.

Annexe to: IECEx SIR 06.0088X Issue 3
Applicant: Pyroban Limited
Apparatus: ESB Offshore Battery Assembly



Description continued.

The ESB Assemblies incorporate two, ESB55, Optima type, lead acid batteries that are certified under IECEx SIR 06.0089X, these are connected in series or parallel and are installed within either a stainless or a mild steel, acrylic painted enclosure. The batteries are prevented from moving within the enclosure by the installation of a steel, clamping bracket. The battery enclosure:

- provides a level of Ingress Protection of IP 23 minimum.
- has ventilation openings to prevent the build up of hydrogen gas in the event of the batteries venting.
- is provided with mounting facilities.
- has a bonding facility that comprises a stainless steel stud, nut and spring washer assembly.

The ESB55 type of batteries are protected by 50 A MCB isolators, which are contained within a flameproof enclosure, fitted with a certified bushing, Type 8174/.... manufactured by Stahl, that is bolted onto the battery enclosure.

The Ex e junction box utilised in the ESB12T and ESB24T Assemblies contains Type WDU and Type WPE terminal manufactured by Weidmuller and is marked with a maximum power dissipation value of 8 W or 17 W.

All enclosures will be provided with cable glands or stopping plugs, these are defined as suitably certified and will maintain the Ingress Protection rating that is appropriate to their use.

The scope of the approval does not cover the cable installed into the outer enclosure via the 'Ex e' cable glands or the battery clamps secured to the battery threaded terminal posts, however, internal cable connections between the battery, isolators and Ex e terminals are covered. An insulation shroud is provided to insulate the area where the threaded terminal post exits the battery and the unused taper terminal post secured by interference fit.

The ESB Offshore Battery Assembly incorporates the following, previously certified devices:

Manufacturer	Type	Coded	Certificate Number
Stahl	Non-sheathed cable bushing Type 8174/....	Ex d II	PTB 01ATEX1065 U IECEX PTB 06.0081U
Weidmüller	Type WDU Type WPE	Ex e II	Sira 02ATEX3242U KEMA 98ATEX1683U IECEX SIR 05.0040U IECEX ULD 05.008U

The battery cells used within the assembly meet IP 6X when supplied with silicone sealant used over the battery terminals.

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Applicant: Pyroban Limited
Apparatus: ESB Offshore Battery Assembly



Conditions of Manufacture

The Manufacturer shall comply with the following conditions of manufacture:

1. An insulation resistance test, as required by IEC 60079-7 Clause 6.6.2, shall be conducted. The insulation resistance shall be at least 1 MΩ.
2. An insulation test in accordance with IEC 60079-7 Clause 7.1 is to be conducted on all installed wiring.
3. Each flameproof enclosure shall be subjected to a minimum routine pressure test of 10.3 bar for at least 10 s, as required by clause 16.1 of IEC 60079-1. The stopping plug as per Drawing C0329 shall be fitted for this test where required. There shall be no damage or deformation as a result of the test.
4. The maximum dissipated power in watts, for each junction box, shall be calculated in accordance with IEC 60079-7, Annex E, E.2 and shall not exceed the limits specified of 8 W or 17 W.
5. 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 shall inform Sira of any modifications of the devices that may impinge upon the explosion safety design of the products.

Conditions of Certification

1. i. Any charging system that is installed within the potential explosive atmosphere shall be certified as compliant with IEC 60079-0 and any appropriate sub-standard.

The charging circuit shall be separated from any other voltage source(s) and the separation shall satisfy table 1 of IEC 60079-7. In addition, the charging system shall be such that, under the condition of one fault, the following charging parameters shall not be exceeded:

The parameters of the individual batteries are:

Type ESB55

Charging:

- Alternator: 13.65 to 15.0 V
- Battery Charger: 13.8 to 15.0 V 10 A max 6-12 hrs
- Float Charge: 13.2 to 13.8 V 1 A max
- Rapid Recharge: 15.6 V max, below 50°C
- Cyclic or Series: 14.7 V max, below 50°C

For, this assembly, two batteries are either connected in series or parallel, as such the charging parameters are:

12 V Units		24 V Units	
Alternator Charge:	15.0 V	Alternator Charge:	30 V max
Battery Charger:	15.0 V 10 A max	Battery Charger:	30 V max
Rapid Recharge:	15.6 V max	Rapid Recharge:	31.2 V max

2. The user shall ensure that the following are satisfied:
 Cables and terminals must be used suitably rated for current and likely operating temperatures. Only copper tube hydraulically crimped ring terminals must be used and are connected to the battery threaded terminal posts with nuts and shakeproof washers. Taper posts are not to be used.
 Cables must be routed to avoid mechanical damage and stress.
 When installing the cables and battery connections, terminals must be fitted with the insulators provided hence ensuring that there are no bare conductive parts.
 The maximum allowable creepage and clearance between the terminals or bare conductive parts to the battery casing must be a minimum of 10 mm.
3. The maximum constructional gap (ic) is less than that required by Table 1 of IEC 60079-1:2003 as detailed below:

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Applicant: Pyroban Limited
Apparatus: ESB Offshore Battery Assembly



Flamepath	Max Gap (mm)	Comment
Flange – Lid to Enclosure	0.05	
Cylindrical – Between Spindle & Enclosure	0.15	

4. The following flamepaths had gaps other than the maximums specified in IEC 60079-0:

Flamepath	Length, L (mm)	Gap, i (mm)
Flange lid to enclosure	17.5	0.05
Cylindrical actuator to enclosure	14.5	0.15