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

Certificate No.: **IECEx CML 19.0177X**

Certificate history:

Status: **Current**

Issue No: 0

Date of Issue: 2019-12-16

Applicant: **Swift Energy Sdn Bhd**
Lot 48521 (PT 25145) Batu 6
Off Jalan Bukit Kemuning
Section 34
Shah Alam
Selangor 40470
Malaysia

Equipment: **SBX Range of Junction Boxes**

Optional accessory:

Type of Protection: **Increased Safety "eb", Intrinsic Safety "ia", "ib", optical radiation "op is", "op pr", Dust Ignition "ta", "tb"**

Marking:

Ex ia IIB/IIC T* Ga Ex ia op is IIB/IIC T* Ga Ex op is IIB/IIC T* Ga Ex ta IIIC T*°C Ga Ex eb IIB/IIC T* Gb Ex ib IIB/IIC T* Gb	Ex eb op is IIB/IIC T* Gb Ex ib op is IIB/IIC T* Gb Ex eb op pr IIB/IIC T* Gb Ex ib op pr IIB/IIC T* Gb Ex ia op pr IIB/IIC T* Gb Ex op pr IIB/IIC T* Gb Ex tb IIIC T*°C Db

Ta: -**°C to +**°C

** Note: Refer to description for Temperature Class, Maximum Surface Temperature, and Ambient Temperature Ranges.*

Approved for issue on behalf of the IECEx Certification Body: **R C Marshall**

Position: **Certification Officer**

Signature: (for printed version)

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 www.iecex.com or use of this QR Code.

Certificate issued by:

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

IECEx Certificate of Conformity

Certificate No.: **IECEx CML 19.0177X**

Date of issue: 2019-12-16 Issue No: 0

Manufacturer: **Swift Energy Sdn Bhd**
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Additional manufacturing locations:

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 60079-0:2011 Explosive atmospheres - Part 0: General requirements
Edition:6.0

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

IEC 60079-28:2006-08 Explosive atmospheres - Part 28: Protection of equipment and transmission systems using optical radiation
Edition:1

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 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/ExTR19.0218/00

Quality Assessment Report:

NL/DEK/QAR11.0005/06

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

The SBX Range of Junction Boxes are fitted with an arrangement of suitably certified terminals.

Refer to Annex for full description and conditions of manufacture.

SPECIFIC CONDITIONS OF USE: YES as shown below:
Refer to Annex for specific conditions of use.

Annex:

IECEx CML 19.0177X Iss. 0 Certificate Annex.pdf

Annexe to: **IECEx CML 19.0177X Issue 0**

Applicant: **Swift Energy Sdn Bhd**

Apparatus: **SBX Range of Junction Boxes**

Description

The SBX Range of Junction Boxes are fitted with an arrangement of suitably certified terminals.

Before the junction box is installed, its total power for particular application will be calculated in accordance with EN 60079-7, Annex E, E.2 and will not exceed the values given in the table below:

Table 1 - Ratings for all Junction Boxes options

SBX Ref.	EPL	Max. Power Dissipation (W), Temperature Class, Max. Surface Temp. & Ta Max. (See Table 2 below for power limits applied to equipment marked 'op is').			
		(a) T6/T85ºC @40ºC (b) T5/T100ºC @55ºC (c) T4/T135ºC @80ºC	(a) T6/T85ºC @55ºC (b) T5/T100ºC @70ºC (a) T4/T135ºC @60ºC (e) T3/T200ºC @80ºC	(a) T6/T85ºC @60ºC (b) T5/T100ºC @75ºC (b) T4/T135ºC @80ºC (b) T3/T200ºC @80ºC	(a) T6/T85ºC @65ºC (b) T5/T100ºC @80ºC (a) T4/T135ºC @60ºC (d) T3/T200ºC @175ºC
SBX0	Ga, Gb, Db	19	3.34	2.23	1.84
	Da	9.5	1.67	1.115	0.92
SBX0.5	Ga, Gb, Db	22	3.9	2.8	2.1
	Da	11	1.95	1.4	1.05
SBX1	Ga, Gb, Db	29	4.97	3.86	2.7
	Da	14.5	2.485	1.93	1.35
SBX1.5	Ga, Gb, Db	32	5	4	2.8
	Da	16	2.5	2	1.4
SBX2	Ga, Gb, Db	36	5.64	4.23	2.88
	Da	18	2.82	2.115	1.44
SBX3	Ga, Gb, Db	42	5.9	4.1	3
	Da	21	2.95	2.05	1.5
SBX4	Ga, Gb, Db	44	6.1	4.36	3.19
	Da	22	3.05	2.18	1.595
SBX5	Ga, Gb, Db	50	9.35	6.19	4.2
	Da	25	4.675	3.095	2.1
SBX6	Ga, Gb, Db	57	10.1	7.97	5.6
	Da	28.5	5.05	3.985	2.8
SBX7	Ga, Gb, Db	68	17.14	9.36	6.67
	Da	34	8.57	4.68	3.335
SBX8	Ga, Gb, Db	119	15.95	15.17	10.74
	Da	59.5	7.975	7.585	5.37
SBX225*	Ga, Gb, Db	359	-	103	-
	Da	179.5	-	51.5	-
SBX45	Ga, Gb, Db	8	1.65	1.57	1.28
	Da	4	0.825	0.785	0.64
SBX64	Ga, Gb, Db	10	0.7	0.5	0.3
	Da	5	0.35	0.25	0.15
SBX66	Ga, Gb, Db	14	2	1.9	1.5
	Da	7	1	0.95	0.75

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Table 2 – 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.
Notes: (a), (b), (c), (d) & (e) indicated in the table above relate to the limiting temperature of the terminal insulation, refer to the 'Conditions of Manufacture'.	

Table 3						
Busbar size (Width x Thickness) (mm)	Max. current (A) for a Δ30K rise	Max. current (A) for a Δ40K rise	Max. current (A) for a Δ50K rise	Max. current (A) for a Δ60K rise	Max. current (A) for a Δ70K rise	Max. current (A) for a Δ80K rise
25 x 6.3	372	438	496	548	601	655
50 x 4	515	607	687	763	830	904
50 x 6.3	654	771	874	971	1057	1150
63 x 6.3	791	933	1057	1173	1277	1390
80 x 6.3	975	1151	1305	1447	1576	1715
63 x 10	1017	1173	1364	1512	1649	1795
80 x 10	1216	1436	1631	1806	1969	2413
100 x 10	1443	1705	1936	2143	2336	2541
125 x 10	1710	2021	2294.	2538	2767	3008
Max. allowable ambient	Up to 90°C	Up to 80°C	Up to 70°C	Up to 60°C	Up to 50°C	40°C
Temperature Class and Max. ambient	T4@90°C T5@60°C T6@50°C	T4@80°C T5@50°C T6@40°C	T4@70°C T5@40°C	T4@60°C	T4@50°C	T4@40°C

Busbar sizes may be manufactured to sizes not specified to sizes in the table 3 above. These shall be permitted subject to a maximum current per mm^2 of the next smallest busbar size. The maximum allowable ambient and current will be marked on each arrangement.

The enclosures may also be manufactured to sizes not specified in the above Table 1. This assumes that any given dimension is not larger than the respective dimension of the largest or smaller than the respective dimension of the smallest enclosure. The power rating applied to a junction box of intermediate size is that of the next smallest enclosure.

Cable entries may be provided on the base, top, sides or back of the enclosure and alternatively, threaded bosses may be provided. An external and optional internal earth stud of minimum size M6 is provided on all enclosures.

The terminal boxes may be fitted with slotted trunking, an approved anti-condensation heater, plug and socket arrangements, busbars, as well as ‘op pr’ fibre optical splice cases and other ‘op is’ cable jointing facilities.

Optionally, the enclosure may be painted, and junction boxes marked T6/T85°C may be provided with a glass window.

The terminal boxes may be fitted with slotted trunking, an approved anti-condensation heater, plug and socket arrangements, busbars, as well as ‘op pr’ fibre optical splice cases and other ‘op is’ cable jointing facilities.

Optionally, the enclosure may be painted, and junction boxes marked T6/T85°C may be provided with a glass window.

Conditions of Manufacture

The following are conditions of manufacture:

i. Where the product incorporates certified parts or safety critical components the manufacturer shall ensure that any changes to those parts or components do not affect the compliance of the certified product that is the subject of this certificate.

ii. Where the equipment is marked with both ‘Ga’ and ‘Da’, the maximum allowable power indicated on the label shall be either the lower of the two or both shall be included.

iii. When the equipment is marked for ‘op pr’ the maximum ambient temperature that can be marked is -40ºC to +60ºC.

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

v. When marked for ‘Ex ta’, if terminals fitted are not suitable for a SCCA of 10 kA or above, then max. short circuit current is to be marked on the label.

vi. When terminals are supplied with the enclosure, having a maximum insulation temperature as below. All terminals shall be installed in accordance with their Conditions of Safe Use/Schedule of Limitations/Conditions of Certification and the relevant codes of practice/wiring regulations, specifically to the minimum creepage and clearance requirements and to any limitations to ratings that may be observed due to method of installation.

The letter in the brackets next to the Temperature class and associated upper ambient relates to the following maximum operating temperatures required of the terminals fitted.				
(a)	(b)	(c)	(d)	(e)
≥ 85ºC	≥ 100ºC	≥ 120ºC	≥ 190ºC	≥ 105ºC
Note: All terminals fitted shall be suitable for the lower operating temperature marked on the certification label.				

vii. The product may be fitted with an anti-condensation heater. The heater shall be ATEX approved for an ambient temperature range that matches or exceeds that for the terminal box and shall be compete with a thermostat which prevents the operation of the heater at temperatures above +30°C.

viii. When plug and sockets are fitted that are certified 'Ex d e' or 'Ex db eb', then the junction box marking shall include the symbol 'd' 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. Any plugs and sockets shall be equipment approved.

ix. The window option stated on the construction specification document is not permitted on the flanged lid enclosure arrangements.

x. 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 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 60079-7.
- Have a minimum ingress protection rating of IP54 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.

xi. When busbar arrangements are provided, the maximum current, ambient temperature, as well as the corresponding temperature class shall be marked for the specific arrangement. Additionally, the appropriate cable entry temperature shall be marked.

xii. Alternative busbar sizes other than those listed in Table 3 in the description. These shall be permitted subject to a maximum current per mm^2 of the next smallest busbar size in Table 3.

Specific Conditions of Use

The following conditions relate to the safe installation and/or use of the products:

i. When used for Ex ia, Ex ib and Ex ta applications, over-power fault protection shall be provided and shall take into account the 'EPL' fault requirements necessary:

- Ex ia – Two countable faults are to be applied to the current and/or voltage limiter.
- Ex ib or Ex ta – Gb and Da applications – One countable fault is to be applied to the current and/or voltage limiter.

ii. When used for Ex ia or Ex ib applications an anti-condensation heater may only be fitted when space permits the separation of the heater power conductors from the Ex ia or Ex ib conductors by a minimum of 50 mm.

iii. When fitted with ‘op pr’ splice case, the fibre cable outside the enclosure shall be installed such, that mechanical damage is prevented.

iv. 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 2 of the description apply.

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

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

vii. The fibre cables entering or exiting the increased safety enclosure must be suitably protected from breakages and satisfy the requirements of EN 60079-28 ‘op pr’.

viii. When the enclosure is provided with busbar arrangements, they shall be installed in accordance with the user instructions only.