



# 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 TSA 24.0004X** Page 1 of 5 [Certificate history:](#)  
Status: **Current** Issue No: 0  
Date of Issue: 2024-07-29  
Applicant: **Nautitech Mining Services Pty Ltd**  
Unit 3, 9 Packard Avenue  
CASTLE HILL, NSW, 2154  
**Australia**  
Equipment: **7.2v Battery Pack ME5070-2-99-151**  
Optional accessory:  
Type of Protection: **Intrinsic safety "ia"**  
Marking: Ex ia I Ma (Um withdrawn)  
[Ex ia Ma] I (Um available)  
-20°C ≤ Tamb ≤ +60°C

Approved for issue on behalf of the IECEx  
Certification Body:

**Ujen Singh**

Position:

**Quality & Certification Manager**

Signature:  
(for printed version)

Date:  
(for printed version)

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Certificate issued by:

**TestSafe Australia**  
919 Londonderry Road  
Londonderry NSW 2753  
**Australia**





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Manufacturer: **Nautitech Mining Services Pty Ltd**  
Unit 3, 9 Packard Avenue  
CASTLE HILL NSW 2154  
**Australia**

Manufacturing locations: **Nautitech Mining Services Pty Ltd**  
Unit 3, 9 Packard Avenue  
CASTLE HILL NSW 2154  
**Australia**

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 60079-1:2014](#) Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"  
Edition:7.0

[IEC 60079-11:2011](#) Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"  
Edition:6.0

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:

[AU/TSA/ExTR23.0011/00](#)

Quality Assessment Report:

[AU/MSC/QAR21.0001/02](#)



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## EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

The Nautitech shutdown system typically includes a 7.2 V battery pack, alternator, charger module, Air solenoid/relay, Nautitech Hawkeye Graphics display, CH4 monitor, real-time clock. Um is monitored by a separate protection circuit within the alternator (protected by flameproof) to check that circuits connected to alternator power are isolated from the chassis.

The battery pack is installed within a safe area such as a host flameproof enclosure with the Um 90 V available. The battery pack itself is encapsulated inside a metallic container, with all intrinsically safe outputs from the battery pack suitable for Group I with a safety factor greater than 1.5.

With the Um withdrawn (alternator off), prior to opening the flameproof enclosure, a push button with locking mechanism is depressed which places all outputs from the battery pack, including within the flameproof enclosure, into intrinsically safe mode.

The equipment contains a Battery pack with 6 nickel cadmium cells and its associated printed circuit board with protective components, connected internally to a Battery interconnect board that provides the external connections.

The Non-IS Power Input Um of 90 V is typically provided from a flameproof alternator or external DC supply for the charging of the battery (JA-2). The charger module (JA-1), a display (JA-5) (both of these are connected internally in the same area), a heater connection to the display (JA-3), an Air Solenoid/Relay that controls the pressurised air to start the engine (also at JA-5), lights (again at JA-2) are all installed in separately certified flameproof enclosures and are connected to the non-intrinsically safe connections of this equipment. None of these retain any power when the Um from the Non-IS Power Input power is withdrawn.

The equipment also provides intrinsically safe connections to an isolation switch (JB-1, JB-2, JB-3), air switch input (JB-4), Methane detector (JB-5), Aux in/out (JB-6), IS Isolator (JB-7), Deputy bypass Interface (JB-8). An Boot Enable switch accessible from the top panel has internal contacts protected using intrinsic safety.

If the Um is not available, and the isolation switches are not in continuity, the entire assembly has been considered for compliance with Ex ia I. In this case, it may be installed in the explosive area without the need for an external flameproof enclosure, but an enclosure providing IP54 ingress protection to the external connections is required, unless the equipment is being transported and changed and there is no accumulation of dust expected on the external connection facility during this brief period.

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

The Battery Pack shall be used only within a separately certified flameproof enclosure suitable for Group I and will be fitted with a Warning label "Not to be opened when explosive atmosphere is present. Isolate elsewhere before opening cover" and with another label "Enclosure Isolator – Depress push button & lock in before opening cover".



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## Equipment (continued):

### Electrical parameters:

Battery Interconnect Board	External Connections at JA-1 "Charger" (same area as JA-5)
Um	20 V
Battery Interconnect Board	External Connections at JA-2 "Non-IS Power Input" (galvanic isolation from i.s. outputs)
Um	90 V
Battery Interconnect Board	External Connections at JA-3 "Heat Element" (galvanic isolation from i.s. outputs)
Um	20 V
Battery Interconnect Board	External Connections at JA-5 "Air Solenoid and Display" (same area as JA-1)
Um	20 V for Air Solenoid and Display
Battery Interconnect Board	External Connections at JB-1, JB-2, JB-3 "Isolate Inputs"
Um available and Um withdrawn condition	
Uo	11.4 V
Io	0.006 A
Po	0.015 W
Co	20 $\mu$ F
Lo	100 $\mu$ H
Battery Interconnect Board	External Connections at JB-4 "Air Switch Input"
Um available and Um withdrawn condition	
Uo	11.4 V
Io	0.026 A
Po	0.075 W
Co	20 $\mu$ F
Lo	100 $\mu$ H
Battery Interconnect Board	External Connections at JB-5 "Ex ia Gas Sensor"
Um available at JB-5	
Um	20 V (die to Um on the same cable as JA-5)
Um withdrawn condition	
Uo	11.4 V
Io	2.62 A
Po	2.8 W



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Co 18  $\mu$ F  
Lo 10  $\mu$ H

Battery Interconnect Board External Connections at JB-6 "Aux In/Out"

Um available and Um withdrawn condition

Uo 11.4 V  
Io 0.021 A  
Po 0.015 W  
Co 20  $\mu$ F  
Lo 100  $\mu$ H

Battery Interconnect Board External Connections at JB-7 "IS Isolator"

Um available and Um withdrawn condition

Uo 11.4 V  
Io 0.002 A  
Po 0.004 W  
Co 20  $\mu$ F  
Lo 100  $\mu$ H

Battery Interconnect Board External Connections at JB-8 "Deputy Bypass"

Um available and Um withdrawn condition

Uo 11.4 V  
Io 0.023 A  
Po 0.066 W  
Co 20  $\mu$ F  
Lo 100  $\mu$ H

**Annex:**

[Annexe for IECEX TSA 24.0004X.pdf](#)



# IECEX Certificate of Conformity Annexe

<b>Annexe for Certificate No.:</b>	IECEX TSA 24.0004X	<b>Issue No.:</b>	<b>0</b>
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## Drawing list pertaining to Issue 0 of this Certificate:

Drawing/Document No.:	Page/s:	Title:	Revision Level:	Date: yyyy-mm-dd
ME5070-2-12-125	1 of 18	ME5070-2-12-125 Cover Sheet	01	2019-12-19
ME5070-2-12-036	2 of 18	ME5070-2-12-036 Battery Interconnect 7V2 with IS	10	2018-11-23
ME5070-2-12-036	3 of 18	ME5070-2-12-036 Inerconnection Board - 7V2 Battery With IS	10	2018-11-23
ME5070-2-12-036	4 of 18	ME5070-2-12-036 Battery Interconnect 7V2 with IS	10	2023-08-04
ME5070-2-12-036	5 of 18	ME5070-2-12-036 Battery Interconnect 7V2 with IS	10	2018-11-23
ME5070-2-12-036	6 of 18	ME5070-2-12-036 Battery Interconnect 7V2 with IS	10	2018-11-23
ME5070-2-12-036	7 of 18	ME5070-2-12-036 Battery Interconnect 7V2 with IS	10	2023-08-04
ME5070-2-12-036	8 of 18	ME5070-2-12-036 Battery Interconnect 7V2 with IS	10	2023-08-04
ME5070-2-12-036	9 of 18	ME5070-2-12-036 Battery Interconnect 7V2 with IS	10	2023-08-04
ME5070-2-12-036	10 of 18	ME5070-2-12-036 Battery Pack - 7V2 With IS Output	10	2018-11-23
ME5070-2-12-036	11 of 18	ME5070-2-12-036 Battery Interconnect 7V2 with IS	10	2018-11-23
ME5070-2-12-035	12 of 18	ME5070-2-12-035 Battery Pack 7V2 with IS	10	2023-08-04
ME5070-2-12-035	13 of 18	ME5070-2-12-035 Battery Pack 7V2 with IS	10	2023-08-04
ME5070-2-12-035	14 of 18	ME5070-2-12-035 Battery Pack 7V2 with IS	10	2023-08-04
ME5070-2-12-035	15 of 18	ME5070-2-12-035 Battery Pack 7V2 with IS	10	2023-08-04
ME5070-2-12-035	16 of 18	ME5070-2-12-035 Battery Pack 7V2 with IS	10	2023-08-04
7598	17 of 18	7598 Flyback	10	2024-06-06
7598	18 of 18	7598 Flyback	1.3	2024-06-06
ME5070-2-12-035	7	ME5070-2-12-035 Battery Pack 7V2 with IS PCB Artwork	08	2019-10-09
ME5070-2-12-036	9	ME5070-2-12-036 Battery Interconnect 7V2 with IS PCB Artwork	09	2019-12-04
ZUQPTY4FSNWN-191-465	9	7598 UPS PCB5 Flyback PCB Artwork	1.1	2015-01-21
ME5070-2-99-151-A	1	BATTERY ASSEMBLY - 7.2V IS	6	2019-11-19
ME5070-1-25-001-A	1	LABEL - 7.2V BATTERY – IS	1	2024-04-08
ME5070-0-25-031-A	1	LABEL - 7.2V BATTERY – IS	5	2019-09-06

Note: An “\*” is added before the title of documents that are new or revised.

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	<b>TestSafe Australia</b> 919 Londonderry Road Londonderry NSW 2753 Australia
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