



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 ITA 14.0009X** Page 1 of 5 Certificate history:
Status: **Current** Issue No: 3 [Issue 2 \(2019-12-20\)](#)
Date of Issue: 2021-08-20 [Issue 1 \(2018-02-11\)](#)
[Issue 0 \(2014-04-16\)](#)
Applicant: **Nautitech Mining Systems 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: 7.2V Battery Pack: ME5070-2-99-151
Ex ia I Ma (Um withdrawn) / [Ex ia Ma] I (Um available)
IECEX ITA 14.0009X
-20°C ≤ Tamb ≤ +60°C

Approved for issue on behalf of the IECEx
Certification Body:

Ajay Maira

Position:

Certification Authority

Signature:
(for printed version)

Ajay Maira

Date:

2021-08-20

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.
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Certificate issued by:

Ex Testing and Certification Pty Ltd
1/30 Kennington Drive
Tomago NSW 2322
Australia



TESTING & CERTIFICATION



IECEX Certificate of Conformity

Certificate No.: **IECEX ITA 14.0009X**

Page 2 of 5

Date of issue: 2021-08-20

Issue No: 3

Manufacturer: **Nautitech Mining Systems Pty Ltd**
Unit 3, 9 Packard Avenue
Castle Hill NSW 2154
Australia

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 60079-0:2017 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

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:

[AU/EXTC/ExTR18.0002/00](#)

[AU/EXTC/ExTR19.0024/00](#)

[AU/ITA/ExTR14.0018/00](#)

Quality Assessment Report:

[AU/MSQ/QAR21.0001/00](#)



IECEX Certificate of Conformity

Certificate No.: **IECEX ITA 14.0009X**

Page 3 of 5

Date of issue: 2021-08-20

Issue No: 3

EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

The battery pack is installed within a safe area such as a host flameproof enclosure with the Um 90V 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 90V 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:

See Annex for details



IECEX Certificate of Conformity

Certificate No.: **IECEX ITA 14.0009X**

Page 4 of 5

Date of issue: 2021-08-20

Issue No: 3

DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)
See Annex for details



IECEX Certificate of Conformity

Certificate No.: **IECEX ITA 14.0009X**

Page 5 of 5

Date of issue: 2021-08-20



Issue No: 3

Additional information:

Job 21105

Annex:

[IECEX ITA 14.0009X-3 Annex - final.pdf](#)

<h1>IECEX Certificate of Conformity</h1>		
	<h2>Annexe</h2>	
Annexe for Certificate No.:	IECEX ITA 14.0009X	Issue No.: 3

Description:

As provided in 'Equipment' section of the certificate.

Variations permitted by Issue 2 of this certificate:

This pertains to the equipment 7.2V IS Battery Revision 03.

- a) Change in design of the battery pack to allow Um on JA-2 Non-IS Power connection to increase to 90V (during Um available condition)
- b) Change in the design of the battery pack to make all intrinsically safe outputs from the battery pack galvanically isolated from the JA-2 Non-IS Power connections
- c) Addition of a heater connection (powered only during JA-2 Non-IS Power Um available condition)
- d) Revised the certificate for compliance to the later Standard IEC 60079-0:2017
- e) Addition of the RTC coin cell in the assessment to Standard IEC 60079-1:2014 for use in a flameproof enclosure

Information on earlier equipment covered by Issues 0 and 1 of the certificate has been removed to avoid confusion. For earlier equipment, refer to earlier issues of the certificate.

Compliance assessment has been provided in test report AU/EXTC/ExTR19.0024/00

Specific Conditions of Use pertaining to Issue 2 of this Certificate :

1. The following parameters shall be taken into account when connecting into the system:

Battery Interconnect Board	External Connections at JA-1 "Charger" (same area as JA-5)
Um available	
Um	20V

IECEX Certificate of Conformity



Annexe



Annexe for Certificate No.:	IECEX ITA 14.0009X	Issue No.:	3
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Battery Interconnect Board	External Connections at JA-2 "Non-IS Power Input" (galvanic isolation from i.s. outputs)
Um	90V

Battery Interconnect Board	External Connections at JA-3 "Heater Element" (galvanic isolation from i.s. outputs)
Um	20V

Battery Interconnect Board	External Connections at JA-5 "Air Solenoid and Display" (same area as JA-1)
Um available	
Um	20V 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	11.4V
Io	0.006A
Po	0.015W
Co	20uF
Lo	100uH

Battery Interconnect Board	External Connections at JB-4 "Air Switch Input"
Um available and Um withdrawn condition	
Uo	11.4V
Io	0.026A
Po	0.075W
Co	20uF
Lo	100uH

IECEX Certificate of Conformity



Annexe



Annexe for Certificate No.:

IECEX ITA 14.0009X

Issue No.:

3

Battery Interconnect Board	External Connections at JB-5 "Ex ia Gas Sensor"
Um available at JB-5	
Um	20V (due to Um on same cable as JA-5)
Um withdrawn condition	
Uo	11.4V
Io	2.62A
Po	2.8W
Co	18uF
Lo	10uH

Battery Interconnect Board	External Connections at JB-6 "Aux In/Out"
Um available and Um withdrawn condition	
Uo	11.4V
Io	0.021A
Po	0.015W
Co	20uF
Lo	100uH

Battery Interconnect Board	External Connections at JB-7 "IS Isolator"
Um available and Um withdrawn condition	
Uo	11.4V
Io	0.002A
Po	0.004W
Co	20uF
Lo	100uH

Battery Interconnect Board	External Connections at JB-8 "Deputy Bypass"
Um available and Um withdrawn condition	
Uo	11.4V
Io	0.023A
Po	0.066W
Co	20uF
Lo	100uH

2. 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".

IECEx Certificate of Conformity



Annexe



Annexe for Certificate No.:

IECEx ITA 14.0009X

Issue No.:

3

- Infallible transformer T1 shall be routine tested in accordance with IEC 60079.11:2011 Clause 11.2 by applying a test voltage of 1500V r.m.s between the input and output windings for 60 seconds, or alternatively at 1800V r.m.s for 1 second duration.

Drawings Associated with the Issue 2 of this Certificate:

Manufacturer's Documents

Title:	Drawing No.:	Pages	Rev. Level:	Date:
Cover Sheet	ME5070-2-12-125	1 of 18	01	2019-12-19
Battery Interconnect 7V2 with IS	ME5070-2-12-036	2 of 18	09	2018-11-23
Inerconnection Board - 7V2 Battery With IS	ME5070-2-12-036	3 of 18	09	2018-11-23
Battery Interconnect 7V2 with IS	ME5070-2-12-036	4 of 18	09	2018-11-23
Battery Interconnect 7V2 with IS	ME5070-2-12-036	5 of 18	09	2018-11-23
Battery Interconnect 7V2 with IS	ME5070-2-12-036	6 of 18	09	2018-11-23
Battery Interconnect 7V2 with IS	ME5070-2-12-036	7 of 18	09	2018-11-23
Battery Interconnect 7V2 with IS	ME5070-2-12-036	8 of 18	09	2018-11-23
Battery Interconnect 7V2 with IS	ME5070-2-12-036	9 of 18	09	2019-07-16
Battery Interconnect 7V2 with IS	ME5070-2-12-036	10 of 18	09	2019-08-13
Battery Interconnect 7V2 with IS	ME5070-2-12-036	11 of 18	09	2018-11-23
Battery Pack 7V2 with IS	ME5070-2-12-035	12 of 18	08	2018-11-23
Battery Pack 7V2 with IS	ME5070-2-12-035	13 of 18	08	2019-08-05
Battery Pack 7V2 with IS	ME5070-2-12-035	14 of 18	08	2018-11-23
Battery Pack 7V2 with IS	ME5070-2-12-035	15 of 18	08	2018-11-23
Battery Pack 7V2 with IS	ME5070-2-12-035	16 of 18	08	2018-11-23
Flyback	7598	17 of 18	1.2	2018-11-23
Flyback	7598	18 of 18	1.2	2018-11-23
Battery Pack 7V2 with IS PCB Artwork (various titles)	ME5070-2-12-035	7	08	2019-10-09
Battery Interconnect 7V2 with IS PCB Artwork (various titles)	ME5070-2-12-036	9	09	2019-12-16
Part# 7598 UPS PCB5 Flyback PCB Artwork (various titles)	ZUQPTY4FSNWN-191-465	9	1.1	2015-01-21
Battery assembly – 7.2V IS	ME5070-2-99-151-A	1	6	2019-11-19*
Label – 7.2V Battery - IS	ME5070-0-25-031-A	1	5	2019-09-06

IECEX Certificate of Conformity



Annexe



Annexe for Certificate No.:

IECEX ITA 14.0009X

Issue No.:

3

Title:	Drawing No.:	Pages	Rev. Level:	Date:
Instruction Manual 7.2V Battery with IS Output (Section 1.2 Certifications and Markings, Section 2.3.2 is controlled – rest subject to change by manufacturer)	PR5070102	26	1.3	2019-12-11

**Drawing date corrected during Issue 3 of this certificate

Variations permitted by Issue 3 of this certificate:

- The manufacturer's Quality Assessment was changed from Ex Testing and Certification to another IECEx Certification Body, Mine Safety Technology Centre. QAR reference has been changed accordingly.
- Removed the Standard IEC 60079-1:2014 from the list of Standards in the certificate, as the equipment has not been certified under the complete Flameproof Standard.

Specific Conditions of Use pertaining to Issue 3 of this certificate:

There are no changes to the conditions of use.

Drawings Associated with the Issue 3 of this Certificate:

There are no drawings applicable to this issue of the certificate.