



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 09.0005X** Page 1 of 5 Certificate history:
Status: **Current** Issue No: 2 [Issue 1 \(2009-07-22\)](#)
Date of Issue: 2021-08-19 [Issue 0 \(2009-02-27\)](#)
Applicant: **Nautitech Mining Systems Pty Limited**
Unit 3/9 Packard Ave
Castle Hill NSW 2154
Australia
Equipment: **Resistive Power Supply CT5005AA [XX-YY-Z]**
Optional accessory:
Type of Protection: **Intrinsic Safety "ia"**
Marking: [Ex ia] I / IIB
IECEX ITA 09.0005X

Approved for issue on behalf of the IECEx
Certification Body:

Ajay Maira

Position:

Certification Authority

Signature:
(for printed version)

Ajay Maira

Date:

2021-08-19

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:

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



TESTING & CERTIFICATION



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Issue No: 2

Manufacturer: **Nautitech Mining Systems Pty Limited**
Unit 3/9 Packard Ave
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 60079-0:2004 Electrical apparatus for explosive gas atmospheres - Part 0: General requirements
Edition:4.0

IEC 60079-11:2006 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "I"
Edition:5

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/ITA/ExTR09.0007/00](#)

[AU/ITA/ExTR09.0007/01](#)

Quality Assessment Report:

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



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EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

The Resistive Power Supply Type CT5005AA [XX-YY-Z] is designed to restrict the transfer of energy from unspecified non-hazardous area equipment to the hazardous area circuits by limitation of voltage and current.

The equipment comprises of electronic components mounted on a double sided printed wiring board all encapsulated within a metallic enclosure. External connections are made integral flying leads or integral plugs/sockets mounted in the wall of the enclosure.

SPECIFIC CONDITIONS OF USE: YES as shown below:

See Annex for details



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



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Additional information:

Job 21105

Annex:

[IECEX ITA 09.0005X-2 Annex final.pdf](#)

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Annexe



Annexe for Certificate No.:

IECEX ITA 09.0005X

Issue No.:

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Description:

As provided in 'Equipment' section of the certificate.

Specific Conditions of Use pertaining to Issue 0 of this Certificate:

1. Input Parameters Red Cable with respect to Black Cables (earth) or Non-Intrinsically Safe Input Connector pin 1 with respect to pins 2, 3, 4

$$U_m = 60V$$

Hazardous Area Connections

Brown Cable with Respect to Blue Cable OR Intrinsically Safe Output Connector	
U _o	8.9V
I _o	2.8A
P _o	12.5W
C _i	1.1uF
L _i	Negligible

2. The capacitance and either the inductance or the inductance to resistance (L/R) ratio of the hazardous area load connected to the Brown cable with respect to the Blue Cable OR Intrinsically Safe Output Connector must not exceed the following values;

Group	Capacitance (uF)	Inductance (mH) OR L/R Ratio (uH/Ω)
I	283.9	0.060 152

- a. The external circuit contains no combined lumped inductance (L_i) or lumped capacitance (C_i) greater than 1% of the above values. OR
 - b. The external circuit contains either only lumped inductance (L_i) or lumped capacitance (C_i) in
 - c. The inductance and capacitance are distributed as in a cable.
 - d. In all other situations e.g. the external circuit contains combined lumped inductance and capacitance, up to 50% of each of the inductance and capacitance values are allowed.
3. The equipment must be installed within a suitable enclosure offering a degree of protection not less than IP20.
 4. In earth reference systems the non-hazardous area Black Cables (3 off) must be connected to the main intrinsically safe system earth in an earth reference system or infallibly connected to the secondary circuit 0 V node in a galvanically isolated power supply system.

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Annexe



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Issue No.:

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Drawing list pertaining to Issue 0 of this Certificate:

Manufacturer's Documents

Title:	Drawing No.:	Pages	Rev. Level:	Date:
IS Resistive Power Supply-Mechanical assembly	ExMD500501 Sheets 1 & 2	2	1.0	2009-01-09
Device Markings IS Resistive Power Supply Type 500501	Ex MK500501-s1	1	1.0	2009-01-11
Device Markings IS Resistive Power Supply Type 500501	Ex MK500501-s2	1	1.0	2009-01-11
IS Resistive Power Supply Type 500501	ExpB500501-05	1	1.0	2009-02-09
IS Resistive Power Supply Type 500501	ExSH500501-05 Sheets 1 to 4	4	1.0	2009-02-09

Variations permitted by Issue 1 of this certificate:

This Issue 1 of this Certificate covers the following changes:

1. The introduction of a top/bottom board that provides galvanic isolation between the supply and the intrinsically safe output circuits.
2. A reduction in maximum supply voltage from $U_m = 60V$ to $U_m = 46 V$ for types CT5005AA [02-YY-Z] & CT5005AA [04-YY-Z].
3. The addition of capacitors to the energy limiting circuits.
4. The inclusion of Group IIB to the product range

Specific Conditions of Use pertaining to Issue 1 of this certificate:

Non Hazardous Area Connections

1. Input Parameters

Type CT5005AA[01-YY-2]
Red Cable with respect to Black Cables (earth) or
Non Intrinsically Safe Input Connector pin 1 with respect to pins 2, 3, 4

$$U_m = 60V$$

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Types CT5005AA[02-YY-Z] & CT5005AA[03-YY-Z] & CT5005AA[04-YY-Z]
 Red Cable with respect to Black Cables (earth) or
 Non Intrinsically Safe Input Connector pin 1 with respect to pins 2, 3, 4

$$U_m = 46V$$

2. Output Hazardous Area Connections Parameters Brown Cable with Respect to Blue Cable OR Intrinsically Safe Output Connector

Model	Uo (V)	Io (A)	Po(W)	Ci(uF)	Li(mH)
CT5005AA[01-YY-1]	8.9	2.8	12.5	1.1	Negligible
CT5005AA[01-YY-2]	8.9	2.8	12.5	3.3	Negligible
CT5005AA[02-YY-2]	8.9	2.8	12.5	3.3	Negligible
CT5005AA[03-YY-2]	8.9	2.8	12.5	14.3	Negligible
CT5005AA[04-YY-2]	8.9	2.8	12.5	14.3	Negligible

3. The capacitance and either the inductance or the inductance to resistance (L/R) ratio of the hazardous area load connected to the Brown cable with respect to the Blue Cable or the hazardous area connector must not exceed the following values;

Model	Group I			Group IIA			Group IIB		
	Co (uF)	Lo (uH)	L/R (uH/Ω)	Co (uF)	Lo (uH)	L/R (uH/Ω)	Co (uF)	Lo (uH)	L/R (uH/Ω)
CT5005AA[01-YY-1]	283.9	60	152						
CT5005AA[01-YY-2]	281.7	60	152	586	36	92	39.7	18	46
CT5005AA[02-YY-2]	281.7	60	152	586	36	92	39.7	18	46
CT5005AA[03-YY-2]	270.7	60	152	576	36	†	28.7	18	†
CT5005AA[04-YY-2]	270.7	60	152	576	36	†	28.7	18	†

† = Ref IEC 60079-11 clause 6.2.3 no L/R specified as Ci exceed 1% of Co

The above load parameters apply where;

- The external circuit contains no combined lumped inductance (Li) or lumped capacitance (Ci) greater than 1% of the above values. OR
- The external circuit contains either only lumped inductance (Li) or lumped capacitance (Ci) in combination with a cable. OR
- The inductance and capacitance are distributed as in a cable.

In all other situations e.g. the external circuit contains combined lumped inductance and capacitance, up to 50% of each of the inductance and capacitance values are allowed.

4. The equipment must be installed within a suitable enclosure offering a degree of protection not less than IP20.

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5. In earth reference systems the non-hazardous area Black Cables (3 off) of the CT5005AA[01-01-Z] must be connected to the main intrinsically safe system earth in an earth reference system or infallibly connected to the secondary circuit 0 V node in a galvanically isolated power supply system

Conditions of Certification (Manufacturer's Responsibility) pertaining to Issue 1 of this Certificate:

It is a condition of manufacture that each of the transformers is subjected to a routine type test of not less than 1,500 Vrms between windings and not less than 500 Vrms between windings and core for a period not less than 60 seconds. Alternatively, the tests may be not less than 1,800 Vrms between windings and 600 Vrms between windings and core for a period not less than 1 second.

Drawings Associated with the Issue 1 of this Certificate:

Manufacturer's Documents

Title:	Drawing No.:	Pages	Rev. Level:	Date:
IS Resistive Power Supply-Mechanical Assy	ExMD500501 Sheets 1 & 2	2	1.1	2009-05-12
IS Resistive Power Supply with Galvanic Isolation	Ex MD500502 Sheets 1 to 3	3	1.0	2009-07-08 ¹
Device Markings IS Resistive Power Supply	Ex MK500501-s1 Sheet 1	2	2.0	2009-06-17 ²
Device Markings IS Resistive Power Supply	Ex MK500501-s2 Sheet 2	1	2.0	2009-06-17 ³
IS Resistive Power Supply with Galvanic Isolation	ExpB500502-05	1	1.0	2009-05-19
IS Resistive Power Supply with Galvanic Isolation and/or Isolated Communication	ExWD500502-01	1	1.0	2009-05-12
IS Resistive Power Supply Type 500501	ExSH500501-05 Sheets 1 to 4	4	1.1	2009-06-17 ⁴
IS Resistive Power Supply with Galvanic Isolation and/or Isolated Communication	ExSH500502-05	1	1.0	2009-05-15

¹ The drawing date listed was incorrect. Corrected during Issue 2 of this certificate

² The drawing date listed was incorrect. Corrected during Issue 2 of this certificate

³ The drawing date listed was incorrect. Corrected during Issue 2 of this certificate.

⁴ The drawing date listed was incorrect. Corrected during Issue 2 of this certificate

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Annexe



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Variations permitted by Issue 2 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.

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

There are no changes to the conditions of use.

Drawings Associated with the Issue 2 of this Certificate:

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