



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

Ex COMPONENT CERTIFICATE

Certificate No.: **IECEX MSC 21.0011U** Page 1 of 3 [Certificate history:](#)

Status: **Current** Issue No: 0

Date of Issue: 2022-04-04

Applicant: **Nautitech Mining Systems Pty Limited**
Unit 3/9 Packard Ave
CASTLE HILL NSW 2154
Australia

Ex Component: Voltage Shunt Types 5006-01, 5006-02 & 5006-03

This component is NOT intended to be used alone and requires additional consideration when incorporated into other equipment or systems for use in explosive atmospheres (refer to IEC 60079-0).

Type of Protection: **Intrinsic safety "ia"**

Marking: [Ex ia Ma Ga] I / IIC
-20°C to + 60°C (5006-02 and 5006-03)

Approved for issue on behalf of the IECEx
Certification Body:

Geoff Slater

Position:

MSTC Manager

Signature:
(for printed version)

Date:
(for printed version)

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:

MSTC Mine Safety Technology Centre
8 Hartley Drive
Thornton NSW 2322
PO Box 343
Australia



**Regional
NSW**



IECEX Certificate of Conformity

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Page 2 of 3

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Manufacturing locations: **Nautitech Mining Systems Pty Limited**
Unit 3/9 Packard Ave
CASTLE HILL NSW 2154
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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 component 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 component listed has successfully met the examination and test requirements as recorded in:

Test Reports:

[AU/ITA/ExTR08.0018/00](#)

[AU/ITA/ExTR08.0018/01](#)

[AU/MSC/ExTR21.0011/00](#)

Quality Assessment Report:

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



IECEX Certificate of Conformity

Certificate No.: **IECEX MSC 21.0011U**

Page 3 of 3

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Ex Component(s) covered by this certificate is described below:

The NTMS Shunt Type: 5006-01, 5006-02 and 5006-03 are 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 plastic enclosure. External connections are made via solder pins located in the base of the equipment.

SCHEDULE OF LIMITATIONS:

See Annex of this Certificate for the Schedule of Limitations.

Annex:

[IECEX MSC 21.0011U ANNEX.pdf](#)



IECEX Certificate of Conformity Annex

Annex for Certificate No.: IECEx MSC 21.0011U Issue No:0

SCHEDULE OF LIMITATIONS

1. Input Parameters Non-Hazardous Area Terminals

Shunt Type:	Pins	U_m
5006-01, 5006-02 5006-03	JP2 Pins 1 & 2 with respect to earth (pins JP3 pins 1, 2 & 3)	250 V

2. Output Parameters Hazardous Area Output Terminals

Shunt Type:	Pins	U_o	I_o	P_o	C_i	L_i
5006-01	JP1 pin 1 wrt JP3 pins 1 to 3	12.6 V	132.7 mA	418 mW	Negligible	Negligible
	JP1 pin 2 wrt JP3 pins 1 to 3	12.6 V	132.7 mA	418 mW	Negligible	Negligible
	JP1 pin 1 & 2 wrt JP3 pins 1 to 3	12.6 V	265.4 mA	835.6 mW	Negligible	Negligible
	JP1 pin 1 wrt JP1 pin 2	14.1 V	74.3 mA	262 mW	Negligible	Negligible
5006-02	JP1 pin 1 wrt JP3 pins 1 to 3	10.5 V	111 mA	290 mW	Negligible	Negligible
	JP1 pin 2 wrt JP3 pins 1 to 3	10.5 V	111 mA	290 mW	Negligible	Negligible
	JP1 pin 1 & 2 wrt JP3 pins 1 to 3	10.5 V	222 mA	580 mW	Negligible	Negligible
	JP1 pin 1 wrt JP1 pin 2	12.0 V	63.2 mA	190 mW	Negligible	Negligible
5006-03	JP1 pin 2 wrt JP1 pin 1 & JP3 pins 1 to 3	10.5 V	111 mA	290 mW	Negligible	Negligible

The capacitance and either the inductance or the inductance to resistance (L/R) ratio of the hazardous area load must not exceed the following values;

2a Shunt Type 5006-01

Shunt Type 5006-01	GROUP	Capacitance (μF)	Inductance OR L/R Ratio (mH) (μH/Ω)	
Single Channel JP1 pin 1 OR JP1 pin 2 wrt JP3 pins 1, 2 & 3	IIC	1.15	2.02	85
	IIB	7.40	8.08	340
	IIA	27.00	16.16	680
	I	29.00	26.52	1116
Both Channels in parallel JP1 pins 1 & 2 with respect to JP3 pins 1, 2 & 3	IIC	1.15	0.5	42
	IIB	7.40	2.0	170
	IIA	27.00	4.0	340
	I	29.00	6.6	558
Both Channels in series JP1 pin 1 with respect to JP1 pin 2	IIC	0.71	6.44	135
	IIB	4.49	25.76	543
	IIA	16.70	51.52	1087
	I	19.70	84.53	1783

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IECEX Certificate of Conformity Annex

Annex for Certificate No.: IECEx MSC 21.0011U **Issue No:** 0

2b Shunt Type 5006-02

Shunt Type 5006-02	GROUP	Capacitance (μ F)	Inductance OR L/R Ratio (mH) (μ H/ Ω)	
Single Channel JP1 pin 1 OR JP1 pin 2 wrt JP3 pins 1, 2 & 3	IIC	2.41	2.88	123
	IIB	16.8	11.5	490
	IIA	75.0	23.0	980
	I	66.0	37.8	1608
Both Channels in parallel JP1 pins 1 & 2 with respect to JP3 pins 1, 2 & 3	IIC	2.41	0.72	61.2
	IIB	16.8	2.88	245
	IIA	75.0	5.77	490
	I	66.0	9.46	804
Both Channels in series JP1 pin 1 with respect to JP1 pin 2	IIC	1.41	8.9	187
	IIB	9.0	35.6	750
	IIA	36.0	71.2	1501
	I	35.0	116.8	2462

2c Shunt Type 5006-03

Shunt Type 5006-03	GROUP	Capacitance (μ F)	Inductance OR L/R Ratio (mH) (μ H/ Ω)	
Single Channel JP1 pin 2 with respect to JP1 pin 1 and JP3 pins 1, 2 & 3	IIC	2.41	2.88	123
	IIB	16.8	11.5	490
	IIA	75.0	23.0	980
	I	66.0	37.8	1608

The above load parameters apply where:

1. The external circuit contains no combined lumped inductance (Li) or lumped capacitance (Ci) greater than 1% of the above values. OR
2. The external circuit contains either only lumped inductance (Li) or lumped capacitance (Ci) in combination with a cable. OR
3. 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.

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

In earth reference systems the JP3 pins 1, 2 & 3 must be infallibly connected to the main 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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Technical Documents			
Title:	Drawing No.:	Rev. Level:	Date:
NTMS Shunt	ExPS500601-03	1.0	2008-08-24
NTMS Shunt - Assembly	ExMD500602	3.0	2012-01-12
NTMS Shunt Device Markings	ExMK500601	6	2022-03-22
NTMS Shunt Wiring Diagram	ExWD500601	2	2012-12-09
IS BARRIER – DUAL CHANNEL – 60 DEG.C	ExSH500602-A	2	2022-03-25
IS BARRIER – SINGLE CHANNEL – 60 DEG.C	ExSH500603-A	3	2022-03-25
NTMS Shunt	ExPB500601	2.0	2012-01-12

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Mine Safety Technology Centre