



Mining And Surface Certification (Pty) Ltd

2015/021934/07

THIS CERTIFICATE IS ISSUED AS AN I.A. CERTIFICATE IN TERMS OF THE RELEVANT REGULATIONS OF THE MINERALS ACT (INCORPORATING THE MINE HEALTH AND SAFETY ACT) AND THE ELECTRICAL MACHINERY REGULATIONS OF THE OCCUPATIONAL HEALTH AND SAFETY ACT.

IA CERTIFICATE				1	Issue	3				
Issue Date	9 Octo	9 October 2020			Expiry Date	9 October 2023				
** Based on Certificate No	AN7F	Ex 09.4080X			Issue / Variatio	1				
Requested by	Nautitech Mining Systems Ptv Ltd									
· · · · · · · · · · · · · · · · · · ·	Unit 3, 9 Packard Avenue, Castle Hill NSW 2154, Australia									
Manufacturer	Nautitech Mining Systems Pty Ltd									
	Unit 3, 9 Packard Avenue, Castle Hill NSW 2154, Australia									
Description	The Intrinsically safe Battery apparatus is intended for installation where the outputs are only									
	intrinsically safe when the external connected system power sources are de-energised, and either the									
	isolation switch assembly contacts are open or the isolation switch assembly is disconnected or the									
	shutdown inputs are not driven.									
	The apparatus consists of a nickel cadmium battery using six (6) or ten (10) cells and protective									
	components limiting the maximum current and energy available at the connections to prevent spark									
	ignition. The complete assembly is housed in a rectangular mild steel cup and fully encapsulated.									
	Connections to external circuits are made with flying cables and wires from the enclosure, each									
	connection is distinguished by colour coding of the emerging cables and wires.									
					074400000					
	The ty	pe of the	e battery is indic	ated by	y CT11164[XX].	(and the second			
		Design	nation Ge		eral rating and In	terconnection Des	cription			
			alu ard with	0.2V	unit with interfe	eaus.	ng terminals / plugs and			
	U2 Standard		onnection PCR	0.2V	ets. Flving lead	s used with no inter	rob incorporating terminals / plugs and			
	03	12V for C7		12V unit with Interface PCB. All internal circuits connected via						
		applica	ation	inter	nal connections.	No flying leads us	sed.			
	04	12V w	ith internal	12V	unit with Interfac	e PCB. All interna	l circuits connected via			
		charge	er	inter	nal connections.	No flying leads us	ed.			
	05	Mini Lo	Mini Loader		unit with Interfa	ce PCB. All interna	al circuits connected via			
Faultan ant		Interconnection		Inter	internal connections. No flying leads used.					
Equipment	Flamo	Ically Sa	Te Battery For U	ise in	туре	according to the	voltage and type designation)			
MARKING:	Type		[YY]V Battery:	CT11	164[XX] ([YY] a	nd [XX] according to	the voltage and type designation			
Original marking as per	i ype.		designation)				the voltage and type			
certificate * remains	Ex Ma	arking:	Ex ia I or [Ex i	a] I						
applicable.	-20°C <tamb<60°c< th=""></tamb<60°c<>									
IA number must be	IA Number: MASC M/11-014X (To be additionally marked on equipment)									
added.	Warnings: See Base Certificate ** (original marking must be applied)									
Quality Assurance report (ance report (QAR) / AU/ITA/QAR08.0004/12									
Compliance:	ate:									
Compliance:										
 SANS (IEC) 60079-0: 20 	009 (201	1) Fauin	ment - General	require	ements	<u>ulliz</u>				
• SANS (IEC) 60079-1: 20	09 (200)7) Equip	ment protection	by fla	meproof enclosu	res "d", Annex E				
• SABS IEC 60079-11:199	SABS IEC 60079-11:1999 "Equipment protection by intrinsic safety "i";									
Special conditions of safe u	use "X"	:								
See page 2										
Conditions of manufactures										
• See page 2						1				
Dismonci						Relie				
Terine	Orsmo	nd				🖔 Regardt Ze	eelie			
TECHNIC	AL OFF	ICER				TECHNICAL SP	ECIALIST			
According to the relevant requirem	ents of the	i nis certi MHS Act a	and the OHS Act, pro	s sold as duction u	iong as the QAR/QAN inits of explosion prote	remains valid. ected equipment are requ	ired to comply with third party quality			
-	assu	irance (an a	approved mark schen	ne or bat	ch testing by an accre	dited test laboratory).				
			Apparatus in hazardo	ous locati	ions is subject to the fol	lowing provisions				
SANS 10086 requirements; Page 1 of 3										
	Any conditions mentioned in the above report									
	Any restrictions and conditions enforced by the chief inspector of mines or chief inspector of factories									
	Any relevant requirements of the MHS Act.									
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	Mining And Surface Certification (Pty) Ltd Unit 5 Lelyta Park, 45 Jurg Ave, Hennopspark Ext 87 Centurion, 0157									

IA CERTIFICATE: MASC M/11-014X

Equipment: Intrinsically Safe Battery For Use In Flameproof Enclosures

(Rev 3: Annual review)

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ANNEX A

This document is based on and must be read in conjunction with certificate ANZEx 09.4080X									
Description (According to Base Certificate **)									
"Refer to description in Base Certificate ** (and any applicable schedules/issues/variations)."									
Standard	See Base Certificate **	See Base Certificate **							
compliance	A The fellowing groups						- C		
Special conditions	1. The following parame	eters are t	o be take	n into acco	ount during	g installa	ation:		
	When the external connect	ted syste	m power	sources a	re de-enei	rgised, a	and either the isolate	switch	
	assembly contacts are op	en or the	isolate sv	vitch asser	nbly is dis	connect	ed or the shutdown i	inputs are	e open
	circuited or the shutdown	inputs are	e not drive	en, the con	necting fly	ving cab	les and wires from th	ne Intrinsi	cally
	Safe Battery apparatus have the following intrinsic safety entity parameters:								
	For the type CT11164[01], CT11164[02] and CT11164[05] types:								
		Uo	lo	Co	10	Ui	li	Ci	Li
	Charging Connection	22mV	20µA	1F	20mH	9V	Internally Limited	0F	OH
	Power Output	37mV	50µA	0.4F	10mH	9V	Internally Limited	0F	0H
	Data Port	0V	0A	*	*	24V	Internally Limited	100nF	OH
	Control Inputs	9V	25mA	113µF	500µH	9V	Internally Limited	0F	OH
	*No practical limit, po clos	9V ²	∠omA	nternal opt	HUUUC Ical isolati	9V 00	Internally Limited	UF	UH
		uncai ouq		itemai opt	ical isolali	011.			
	For the type CT11164[03]	and CT1	1164[04]	types, cov	ered by th	is Issue	of the certificate:		
		Uo	lo	Co	10	Ui	li	Ci	Li
	Charging Connection	22mV	20µA	1F	20mH	15	V Internally Limite	d 0F	OH
	Power Output	<1.1V	<200µ	A 40µF	- 10mH	15	V Internally Limite	d OF	OH
	Shutdown Inputs	15V	44mA	14µF	200m	H 15'	V Internally Limite	d OF	0H
	The isolate connection is specifically for connection to switch contacts, and cable parameters are specified for this connection.								
	Isolate Connection Cabl	۵	0.1.	Cable Cap F	Jacitance			clance	
	 The Intrinsically Safe Battery shall otherwise be treated as associated apparatus with no intrinsic safety outputs and installed using a separate means of explosion protection when in the hazardous area. All connections to the Intrinsically Safe Battery apparatus are limited by Um=24 V on all connections. It is a condition of safe use that the Intrinsically Safe Battery terminal blocks / plugs and sockets be located and installed in accordance with intrinsic safety wiring practice, especially considering clearance distances from other circuits / terminals blocks. It is a condition of safe use that the Intrinsically Safe Battery Apparatus must be installed in accordance with drawing No 1116-001. It is a condition of safe use that the isolate switch assembly and connecting wiring must be installed in accordance with drawing No. 1116-001. It is a condition of safe use that the thickness of insulation between the isolation switch assembly wiring conductors and any other conductor must be at least 0.5mm. It is a condition of safe use that the intrinsically Safe Battery apparatus including connecting cable to the isolation switch and the isolation switch assembly shall be installed in one enclosure that provides ingress protection to IP55 and mechanical protection against a 20 Joule impact. It is a condition of safe use that the exposed surface of the encapsulation shall be inspected and the Intrinsically Safe battery apparatus rejected for service if signs of physical wear or damage are evident. 								
	 Additional compliance and achieved. The battery is for use The battery pack was temperature rise cons Compliance with insta recommendations sh 	e with the in group estimate sideration allation ru all be ach	safety re I flamepro d to dissi s of the fl les accorr ieved.	quirements pof enclos pate a mas ameproof ding to the	s of releva ures only. kimum of enclosure relevant o	ant indus 11.5W o codes of	trial standards must f power under norma practice and manuf	be invest al condition acturers	tigated

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Mining And Surface Certification (Pty) Ltd Reg No: 2015/021934/07 Directors: Roelof Viljoen & Francoius du Toit Unit #5, Lelyta Park, 45 Jurg Avenue, Hennopspark Ext 87, Centurion, 0157 P.O. Box 14344, Clubview, 0014 Tel: 012 653 2959 ◊ Fax: 086 605 8568 e-mail: info@masc-ex.co.za

IA CERTIFICATE: MASC M/11-014X Equipment: Intrinsically Safe Battery For Use In Flameproof Enclosures (Rev 3: Annual review)

	Page 3 of 3
	 Installation of the battery pack shall maintain sufficient segregation between intrinsically safe and non- intrinsically safe circuits.
	 The ambient temperature limitation of the certified battery shall not be exceeded considering the internal temperature rise and expected external ambient temperatures of the enclosure.
	 The flameproof enclosure should be marked (inside or outside) clearly indicating the manufacturer and the type of battery pack used. In addition, the information should appear in the instructions for the flameproof enclosure.
	 The warning label "WARNING – DO NOT OPEN WHEN AN EXPLOSIVE GAS ATMOSPHERE IS PRESENT" should be applied to the flameproof enclosure.
	 The battery pack must be securely mounted (e.g. held in place by a purpose designed clip or bracket). During installation, the segregation around the battery pack and its associated connections and circuitry shall comply with the requirements of table 1 of AS/NZS 60079.7:2006 (Ed 4.0), according to the highest voltage applicable around the relevant parts.
	 Safety devices shall ensure that the charging rate of 1.25A maximum is not exceeded. The flameproof enclosure internal free volume is limited to a minimum of 25 liters. For smaller enclosures the charge current shall be cut off when the battery / cells are overcharged (voltage) according to the battery / cell manufacturer's ratings
	 All safety devices must form safety related parts of a control system. It is the responsibility of the installer / Flameproof enclosure designer to assess that the safety integrity of the control system is consistent with the level of safety required by AS/NZS 60079.1:2007 (Ed 6.0).
Conditions of manufacture	 It is a condition of manufacture that each apparatus is to be capable of withstanding a test voltage of not less than 500 Volts 50 Hz applied between all connections and case for a period not less than 1 minute.
Conditions of Certification	 This IA Certificate covers all units sold from the date of this document to the expiry date of this certificate. As per ARP 0108 a maximum three yearly review is required on this IA Certificate (expiry is determined as per the QAR/QAN/QMS expiry date).
	 The apparatus must be additionally marked with the MASC marking details above. This approval only covers the equipment as certified above and does not include any scheduled additions or variations / amendments / new issues to the certificate(s), made after the above date.
	 The equipment does not need to be re-tested when used on the conditions and with such restrictions as prescribed by the certificate on which this IA Certificate is based and any other conditions in this IA Certificate.
	 The certification on which this IA Certificate is based must remain valid. The extent of the requirements in the ARP 0108 (or regulations), SANS 10108 and any other applicable regulations on the certification of the equipment must remain unchanged. The Ex quality assurance notification/report for the equipment must remain valid.
Conclusion:	 From the above and the selective examination of the documentation, nothing contrary to the requirements of the applicable standards was found, provided that the equipment / component is used as described in the above document / certificate and according to the MASC conditions below. A MASC IA certificate is issued based on the work done as per the Base Certificate **.
	 The routine tests for production units according to the Base Certificate in must be compiled with (if applicable)

This document is issued based on Mining And Surface Certification's Standard Contract terms and conditions available on request.

While every endeavour is made to ensure that a test / assessment / inspection is representative and accurately performed, and that a report / certificate is accurate in the quoted results and conclusions drawn from the test / assessment / inspection, MASC or its directors/employees shall in no way be liable for any error made in carrying out the test / assessment or for any errorneous statement, whether in fact or in opinion, contained in a report / certificate issued pursuant to a test / assessment / inspection.

MASC takes no responsibility for any non-conformances, exclusions or any results / assessments / inspections not in compliance with the standards. By marking the equipment in accordance with the documentation / standard, the manufacturer / applicant attests on his own responsibility that the equipment / installation has been designed and constructed in accordance with the applicable requirements of the relevant standards and documentation, that the routine verifications / routine tests have been correctly completed and the equipment / installation complies with the documentation and standard(s).

This document is only for use and application in South Africa. It is issued based on National interpretations and accepted practices.

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