



Mining And Surface Certification (Pty) Ltd

2015/021934/07



Certificate Number: MASC MS/11-127X

Issue: 09 October 2017

Expire: 09 October 2020

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IA – CERTIFICATE

(Annual review required by MASC covered by an additional letter)
(Revision 2- Review & Review)

IN TERMS OF REGULATION 21.17.2 OF THE MINERALS ACT (INCORPORATION THE MINE HEALTH AND SAFETY ACT) AND REGULATION 9 (1) OF THE ELECTRICAL MACHINERY REGULATIONS OF THE OCCUPATIONAL HEALTH AND SAFETY ACT

Ex – Type Examination

Certificate number:

MASC MS/11-127X

Equipment:

CAN GAUGE CT5002AA[xx-yy]

Serial No:

(See “Conditions of Certification”)

Applicant:

NAUTITECH MINING SYSTEMS PTY LTD

Address:

Unit 3/9 Packard Avenue
Castle Hill
2154
NSW
Australia

Manufacturer:

NAUTITECH MINING SYSTEMS PTY LTD

Address:

Unit 3 9 Packard Avenue
Castle Hill
2154
NSW
Australia

DESCRIPTION:

The CAN GAUGE CT5002AA [XX-YY] are designed to provide Digital Data related to measured field values, diagnostics and status of the device. The apparatus comes in two types of enclosure a single channel module and up to 12 channel module.

The single channel module comprises an interface board, a bottom board, a top board fitted with an optional Liquid Crystal Display and either up to 50 integral float boards or gas connection boards all housed in a metallic enclosure fitted with either integral flying leads or plug and sockets mounted in the wall of the enclosure for the connection of external circuits and an optional window.

The CAN Gauge Concentrator types are totally encapsulated modules that comprises up to 12 Standard Can Gauge modules mounted in the same stainless steel enclosure with the exception of the loop power input connection each can gauge output separated from adjacent circuits.

The model references are detailed in the manufacturers instruction manual noting that Gas CAN Gauge Type CT5002AA [XX-01] is only to be used in Group I atmospheres in ambient temperatures up to 40°C.

/ The combinations...

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The combinations covered are identified by AA[xx-yy] associated with the model reference identified as follows:

AA = 00 to ZZ Device configuration not effecting Certification

XX

- 01 Gas Sensor fitted.
- 02 Float Sensor fitted.
- 03 External Sensing.
- 04 to 15 Concentrator with 1 up to 12 Concentrator units fitted

YY

- 01 Plug/Socket connections
- 02 Flying leads

The IS Relay - CT5002AA[20-01] comprises of an encapsulated CAN gauge assembly and an encapsulated Relay board containing two relays and protective components all housed in a metallic enclosure. External connections are made via integral plugs and sockets located in the wall of the enclosure for the CAN connections and a cable entry gland for the connection of the high voltage supply. (pilot line)

The Pilot connections are to be made to a Group I pilot circuit which can be considered to be a non-intrinsically safe circuit in certain circumstances. The pilot circuit connects to the switch contacts of the IS Relay-CT5002AA[20-01] and is separated from the rest of the apparatus circuits by infallible separation.

MARKING

TUV marking remains applicable.

The following MASC Certificate number (IA number) should be additionally applied to the unit.

I.A. No: MASC MS/11-127X

COMPLIANCE:

The unit / system as described above and in MASC letter 11-127 R2 is hereby certified "Explosion Protected" Ex ia I / IIB T4 Ga Ma and is suitable for use in hazardous locations as stated below and as tested, assessed and inspected in accordance with the relevant requirements of SANS/IEC Standards:

The evaluation was conducted according to the requirements of:

- SANS 60079-0: 2005 "General requirements"**
- SANS 60079-11: 2007 "Equipment protection by intrinsic safety 'i' "**

Location	Zone 0,1	Underground (incl. coal dust).
Hazard Frequency	---	Intermittent as could occur under normal operating conditions in hazardous area
Environment	Group I/IIB	Methane and coal dust / Ethylene
Limiting Temperature	150°C / T4	Mining / Surface
Ambient Temperature	-20°C ≤ Tamb ≤ +40°C	

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The use of apparatus in hazardous locations is subject to the following provisions as applicable, which shall be adhered to:

- i) SANS 10086 requirements;
- ii) Any conditions mentioned in the above report;
- iii) Codes of Practice enforced in terms of Regulations 21.17.2 of Minerals Act, by Chief Inspector of Mines;
- iv) Any restrictions and conditions enforced by Chief Inspectors of Mines, Principal Inspector (Group I equipment) of Chief Inspector of Factories (Group II equipment);
- v) Any relevant requirements of the MHS Act or the OHS Act.

CONDITIONS OF MANUFACTURE

None

SPECIAL CONDITIONS OF SAFE USE (X):

1. The following parameters are to be taken into account in the installation

1.1. Inputs

CT5002AA [01-YY] CT5002AA [02-YY] CT5002AA [03-YY] "BUS Power + CAN"		
$U_i =$	8.9	V
$C_i =$	2.3	μF
$L_i =$	Negligible	mH

CT5002AA [04-YY] to CT5002AA [15-YY] "BUS Power + CAN"		
$U_i =$	8.9	V
$P_i =$	25	W
$C_i =$	***	μF
$L_i =$	Negligible	mH

*** See table below. The C_i is determined from the number of CAN Concentrator units fitted. See table below;

*** CAN Concentrator Model Number	C_i
CT5002AA [04-YY]	2.3 μF
CT5002AA [05-YY]	4.6 μF
CT5002AA [06-YY]	6.9 μF
CT5002AA [07-YY]	9.2 μF
CT5002AA [08-YY]	11.5 μF
CT5002AA [09-YY]	13.8 μF
CT5002AA [10-YY]	16.1 μF
CT5002AA [11-YY]	18.4 μF
CT5002AA [12-YY]	20.7 μF
CT5002AA [13-YY]	23.0 μF
CT5002AA [14-YY]	25.3 μF
CT5002AA [15-YY]	27.6 μF

/ . Outputs...

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1.2. Outputs

Multiple Output Version CT5002AA-[03-YY] "Sensor"		
$U_o =$	8.9	V
$I_o =$	As supply	
$P_o =$	1.92	W
$C_i =$	30	μ F
$L_i =$	Negligible	mH

Concentrator Versions CT5002AA-[04-YY] To CT5002AA-[15-YY] Per Channel "Sensor"		
$U_o =$	8.9	V
$I_o =$	As supply	
$P_o =$	1.92	W
$C_i =$	30	μ F
$L_i =$	Negligible	mH

2. The Gas CAN Gauge Type CT5002AA [01-YY] is only to be used in Group I atmospheres in ambient temperatures up to 40°C.
3. When fitted with an integral cable the electrical connections to the integral cable must be housed within a suitable enclosure offering a degree of protection not less than IP20.

Conditions (for issues 1 and above)

The IS Relay-CT500201[20-01] may only be used for connection to a Group I pilot circuit which can be considered as non-intrinsically safe under certain circumstances. This must be taken into consideration in the installation / application.

Inputs

CT5002AA[20-YY] "BUS Power + CAN"		
$U_i =$	8.9	V
$C_i =$	2.3	μ F
$L_i =$	Negligible	mH

CT5002AA[20-01] Pilot Circuit		
$U_m =$	1,575	V _{peak}
$I_m =$	1.0 A	A

Outputs

CT5002AA[20-01] Pilot Circuit		
$U_o =$	0	V
$I_o =$	0	A
$P_o =$	0	W
$C_i =$	Negligible	μ F
$L_i =$	Negligible	mH

/ . CONDITIONS...

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CONDITIONS OF CERTIFICATION:

1. This Certificate remains valid based on a three yearly review covered by an official MASC letter.
2. The apparatus should be additionally marked with the MASC marking details above.
3. 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.
4. The equipment does not need to be re-tested when used on the conditions and with such restrictions as prescribed by TUV and in this approval.
5. The TUV certification must remain valid.
6. The extent of the requirements in the ARP 0108 (or regulations) and SANS 10108 on the certification of the equipment must remain unchanged.
7. The Ex quality assurance notification for the equipment must remain valid.



F du Toit
TECHNICAL SPECIALIST

Mining And Surface Certification

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

MASC takes no responsibility for any non-conformances, exclusions or any results / assessments not in compliance with the standards. By marking the equipment in accordance with the documentation / standard, the manufacturer attests on his own responsibility that the equipment has been constructed in accordance with the applicable requirements of the relevant standards and that the routine verifications and routine tests have been successfully completed and the product 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 practises.

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Mining And Surface Certification (Pty) Ltd Reg No: 2015/021934/07
Directors: Roelof Viljoen & Francois du Toit
Unit #5, Lelyta Park, 45 Jurg Avenue, Hennospark 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