Australian/New Zealand
Certification Scheme for
EXPLOSION-PROTECTED ELECTRICAL EQUIPMENT
ANZEx Scheme

Certificate of Conformity

Certificate No.: **ANZEx13.3008X** Issue No.: **0** Date of Issue: **16/07/2013**

Applicant: Ampcontrol CSM Pty Ltd
7 Billbrooke Close
Cameron Park NSW 2285
Australia

Electrical Apparatus: Voice Control Type A: VCA

Type of Protection: [Ex ia]

Marking Code: [Ex ia] I
ANZEx 13.3008X

Manufacturer: Ampcontrol CSM Pty Ltd
7 Billbrooke Close
Cameron Park NSW 2285
Australia

Manufacturing Location(s): As above

The EPEE certification database located at ***http://www.anzex.com.au*** *shows the validity of this Certificate.*

Test Safe AUSTRALIA

Certificate issued by:

TestSafe Australia
919 Londonderry Road, Londonderry NSW 2753
Australia
Phone: +61 2 4724 4900 Fax: +61 2 4724 4999
http://www.testsafe.com.au

JAS-ANZ

www.jas-anz.org/register

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*This certificate is granted subject to the conditions as set out in Standards Australia/Standards New Zealand Miscellaneous Publication **MP87.1:2008**.*

STANDARDS:

The electrical apparatus 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 60079.0:2011	Explosive atmospheres – Part 0: Equipment - General requirements
IEC 60079.11:2011	Explosive atmospheres – Part 11 Equipment protection by intrinsic safety "i"

*This Certificate **does not** indicate compliance with electrical safety and performance requirements other than those expressly included in the Standard(s) listed above.*

ASSESSMENT & TEST REPORTS:

The equipment listed has successfully met the assessment and test requirements as recorded in:

Test Report No. and Issuing Body:	**34091, TestSafe**
Quality Assessment Report No. and Issuing Body:	**06.002/2012, TestSafe**
File Reference:	**2013/001977**

Ujen Singh

Signed for and on behalf of issuing body

16/07/2013

Date of Issue

Quality & Certification Manager

Position

This certificate is not transferable and remains the property of the issuing body and must be returned in the event of it being revoked or not renewed.

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Schedule

EQUIPMENT:

The Voice Control Type A: VCA is a controller for Ampcontrol's Voice Communication / Pre-start warning system. It is intended to be used on longwall faces and conveyors in underground coal mines.

The VCA has a sheet metal case with a membrane keypad on the front. It is installed in a safe area, and contains several circuits with a U_m of 250 V. It contains a set of barriers that provide intrinsically safe inputs and outputs.

VCA Line Interface Barrier: six sets of fuse protected zener diodes followed by current limiting resistors protect the signals to/from the main part of the VCA to the Audio Line Interface.

VCA Audio Line Interface: This contains opto-isolators, audio isolation transformers, voltage clamps and current limiting resistors to provide isolation and further limitation of voltage and current from the VCA Line Interface to each of the outgoing I.S. Lines: Line 1 and Line 2. These lines are connected to equipment in the hazardous area.

Power is delivered on the hazardous area terminals from a separately certified power supply connected at the Audio LINE 1 and LINE 2 connectors. The power supply is located in a safe area, either within the VCA safe area or an alternative safe area. Note only one power supply is allowable on each line.

VCA Audio Barrier: two sets of fuse protected zener diodes provide voltage clamping of the audio signals from the main part of the VCA to the Audio Line Interface. Current limiting resistors provide current limitation to the Audio Out. The Audio Out connects to equipment in the hazardous area.

VCA IS Keypad Barrier: This contains a set of opto-isolators to provide intrinsically safe 'keypad' terminals that can connect to an external keypad or discrete pushbuttons in the hazardous area. Power for the keypad is delivered from a separately certified power supply connected at the connector J1.

The design of the equipment is such that it offers an IP20 protection to all safety components.

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CONDITIONS OF CERTIFICATION:

1. It is a condition of safe use that the following parameters shall be taken into account during installation:

PARAMETERS	Non-IS Connectors COMMs, DIGITAL I/O, RELAY/PWR	IS LINE I/F Connectors LINE 1, LINE 2 (0V, Audio, Call, -VLine, -VPS)	J1 – IS EXT KPD Connector (KP1, KP2, … KP8, COM)
Maximum non-IS Voltage U_m	250 V		
Maximum Input Voltage U_i		19 V	19 V
Maximum Input Current I_i		3 A	
Maximum Input Capacitance C_i		Negligible	Negligible
Maximum Input Inductance L_i		Negligible	Negligible

However, in the actual installation with the hazardous area circuits connected to the certified power supply, it is the output parameters of the power supply that will need to be taken into consideration.

PARAMETERS	IS LINE I/F Connector: AUX (Audio +, Audio -)	IS LINE I/F Connectors LINE 1, LINE 2 (0V, Audio, Call, -VLine, -VPS)	IS EXT KPD Connector (KP1, KP2, … KP8, COM)
Maximum Output Voltage U_o	8.94 V	Parameters of the certified power supply used to connect to LINE 1 / LINE 2 (19V max)	Parameters of the certified power supply used to connect to J1 (19V max)
Maximum Output Current I_o	23 mA		
Maximum Output Capacitance C_o	1.8 µF		
Maximum Output Inductance L_o	38 mH		

The IS power supply shall only be connected with polarity as shown in the drawing VCOM-Z-036, and this connection shall be protected by a minimum of IP20 from tampering.

2. It is a condition of safe use that the Voice controller Type A must be installed in a safe area.
3. It is a condition of safe use that the IS and non-IS cabling of the VCA are kept separated.
4. It is a condition of safe use that the two I.S. Earth terminals shall be each infallibly connected to the system earth using copper conductors having a minimum cross section of 4 mm^2.

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DOCUMENTS:

Document No.	Sheets	Document Title	Issue	Date (yyyy-mm-dd)
VCOM-Z-030	1 of 4	VCA IS Line Barrier Schematic	0	2003-03-21
VCOM-Z-031	2 of 4	VCA Line Interface Barrier Schematic	0	2003-03-21
VCOM-Z-032	4 of 4	VCA Audio Line Interface Schematic	0	2003-03-21
VCOM-Z-033	3 of 4	VCA Audio Barrier Schematic	0	2003-03-21
VCOM-Z-034	1	VCA IS Keypad Barrier Schematic	0	2003-01-17
VCOM-Z-035	1	VCA Line Power Mon. Schematic	0	2003-03-21
VCOM-Z-036	1	VCA Voice Communications Typical Connection Diagram	0	2003-03-18
VCOM-Z-038	1	Voice COMM Audio Transformer Details	0	2003-01-21
VCOM-Z-039	3	VCA IS (*Keypad*) Barrier Artwork	0	2003-03-21
VCOM-Z-040	3	VCA IS Line Barrier Artwork	0	2003-03-21
VCOM-Z-041	1	VCA Controller General Arrangement	2	2013-03-13
VCOM-Z-042	1	VCA Internal Arrangement	0	2003-03-18