

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

ANZEx Scheme

Certificate of Conformity

Certificate No.: ANZEx 08.3018X	Issue No.: 4	Date of Issue: 02/08/2012
	Issue No.: 0	Date of Issue: 12/03/2008

Applicant: Mine Safety Appliances Co.
1000 Cranberry Woods Drive
Cranberry Township PA 16066
United States of America

Electrical Apparatus: Altair 4 / 4X Diffusion Multi-gas Detector

Type of Protection: Ex ia s Zone 0

Marking Code:

Altair 4:	Ex ia s Zone 0 I IP54 (Ta = 50 °C) Ex ia s Zone 0 IIC T4 IP54 (Ta = 50 °C)
Altair 4X:	Ex ia I IP67 Ex ia mb d IIC T4 IP67 - When Combustible XCell Sensor is installed Ex ia IIC T4 IP67 - When Combustible XCell Sensor is not installed.

Manufacturer: Mine Safety Appliances Co.
1000 Cranberry Woods Drive
Cranberry Township PA 16066
United States of America

Manufacturing Location(s): As above

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

 <p>Test Safe AUSTRALIA</p>	<p>Certificate issued by:</p> <p><i>TestSafe Australia</i> 919 Londonderry Road, Londonderry NSW 2753 Australia Phone: +61 2 4724 4900 Fax: +61 2 4724 4999 http://www.testsafe.com.au</p>	 <p>JAS-ANZ</p> <p>www.jas-anz.org/register</p>
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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 60079-0:2004	Electrical apparatus for explosive atmospheres – Part 0: General requirement
IEC 60079-11:2006	Explosive atmospheres – Part 11: Equipment protection by intrinsic safety “i”
AS 1826:2006	Electrical equipment for explosive gas atmospheres – Special Protection – Type of protection ‘s’
IEC 60529:2001	Degrees of protection provided by enclosure (IP Code)

*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:	33787, TestSafe Australia
Quality Assessment Report No. and Issuing Body:	FR/INE/QAR08.0011/03, INERIS
File Reference:	2012/012031



Ujen Singh

Signed for and on behalf of issuing body

Quality & Certification Manager

Position

02/08/2012

Date of Issue

**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 Altair 4 Multi-gas Detector is a 4 Gas instrument. It contains one dual toxic electrochemical cell, one combustible cell, and one oxygen electrochemical cell. It measures 75 mm by 120 mm by 35 mm. The body is made of ABS and the overmoulding is conductive, of the same material as the Altair single gas detector. The display is a mono-colour LCD (Philips PCF8533 series).

The rechargeable battery is Lithium polymer (Sony battery) – one cell. The battery is encapsulated in a plastic container with soft polyurethane based encapsulant.

CONDITIONS OF CERTIFICATION:

It is a condition of safe use that the input parameters for the battery charger, which may be connected only in a safe area, are shown below:

Maximum Charger Voltage U_m	6.7 V
Maximum Charger Current I_m	1.7 A

DOCUMENTS:

Document No.	Sheets	Document Title	Issue	Date (yyyy-mm-dd)
SK3098-1038	21	4-Gas Detector, 4GD, Altair4, TestSafe	0	2007-11-29
SK3098-1059	1	Label, AS/NZS and IEC Approvals, Altair4	0	2008-03-06

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Schedule of Variations

Variations Permitted by Issue 1:

- Adding an alternate case overmould material RTP 2099E X 118617 B (Black) to the apparatus.

This change has been assessed in Test Report 30309.

Condition of Certification Relating to Issue 1:

1. The previous conditions are still applicable.

Drawings Relating to Issue 1:

Document No.	Sheets	Document Title	Issue	Date (yyyy-mm-dd)
SK3098-1038	11 of 21	4-Gas Detector, 4GD, Altair4, TestSafe	0A	2008-05-05

Variations Permitted by Issue 2:

- The drawing SK3098-1038 Rev.0 is replaced by drawing SK3098-1038 Rev.1. The changes are:
 1. Sheet 1, 2 & 5: Added illustration of missing non-protective resistor R94 (unmarked) in the combustible associated schematic. (Note: This information was accidentally left out on this schematic, but, the part was previously already on p.c. board artwork drawing sheet 19 which has remained unchanged, thus spacing analysis still remains unaffected).
 2. Sheet 3: Added maximum capacitance and minimum voltage rating of C12 in the BATT SAFETY SCHEMATIC (Note: This information was previously already noted on sheet 12).
 3. Sheet 4: Added R94, its specifications and its analysis of missing non-protective resistor R94 to the COMB CIRCUIT schematic.
 4. Sheet 11: Corrected ratings of 5 resistors to 0.125W for a typographical error. (Note: The correct values were previously already noted in the analysis contained within preceding sheets).
 5. Sheet 11: Corrected dimension of minimum wall (non-floor) thickness of the battery tray/carrier from 0.86 mm to 0.50 mm. (Note: The correct dimension was previously already noted on sheet 20).
 6. Sheet 11: Corrected revision of printed circuit board artwork from revision 2 to revision 4. (Note: The correct artwork revision was previously already noted on sheets 14 through 19).
 7. Sheet 11: Added the calibration cap anti-static material type.
 8. Sheet 12: Corrected quantities of components from 3 to 5 in two places for typographical errors. (Note: There were previously already noted 5 parts for Q1, Q3, Q4, Q12, Q13 and D2, D6, D7, D12, D13).

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9. Sheet 12: Added missing non-protective resistor R94. (Note: As in 1. above, this information was accidentally left out on this schematic, but, the part was previously already on p.c. board artwork drawing which has remained unchanged, thus spacing analysis still remains unaffected).
10. Sheet 21: Added optional double-sided adhesive tape between optional clip and instrument.
11. Sheet 21: Added illustration for optional calibration cup.
12. Sheet 11: Added RoHS compliant Littelfuse 0466.200 0.2A SMT alternate fuse having the same UL and CSA approval file numbers as the previous 0433.200 fuse.
13. Sheet 11: Added alternate static dissipative overmold material RTP2099 EX 118617 B BLK/BLK in two places and removed "IP 64 Minimum" in five places.

These changes have been assessed in Test Report 30699.

Condition of Certification Relating to Issue 2:

The previous conditions are still applicable.

Drawings Relating to Issue 2:

Document No.	Sheets	Document Title	Issue	Date (yyyy-mm-dd)
SK3098-1038	21	4-Gas Detector, 4GD, Altair4, TestSafe	1	2008-07-18

Variations Permitted by Issue 3:

Added new model Altair 4X to the certificate. Altair 4X is identical to Altair 4 only Altair 4X uses XCell sensors and has a different sensor circuit.

Altair 4X has been assessed in Test Report 32207.

Quality Assessment Report has been updated

Condition of Certification Relating to Issue 3:

The previous conditions are still applicable.

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Drawings Relating to Issue 3:

Document No.	Sheets	Document Title	Issue	Date (yyyy-mm-dd)
SK3098-1134	22	Altair4X, TestSafe, ANZEx	0	2010-07-21
SK3098-1157	1	Label, AS/NZS and IEC Approvals, Altair4X	0	2010-09-01
SK3098-1085	24	Approval, XCell Ex Combustible Sensor, FTZU	-	2010-03-30

Variations Permitted by Issue 4:

The drawing SK3098-1134 Rev.0 is replaced by drawing SK3098-1134 Rev.1. The changes are:

1. The IR Transceiver (component designator U1) Sharp GP2W0110YP0F is being replaced by a similar device Vishay TFBS4650.
2. Associated capacitor C6 decreased in nominal capacitance from 1.0 μ F to 0.1 μ F.
3. Protective resistor R7 36.5 Ω nominal, \pm 1% tolerance, 1 W rating, 2512 SMD has changed to 100 Ω nominal, \pm 5% tolerance, 1 W rating, 2512SMD. However, in the design requirement drawing, it is still described as \geq 36.135 Ω with no change.
4. A label with battery capacity and other information was added to the internal battery pack.
5. Corrections (no design changes) were made in regards to infallible via designations (circle-I) and colours used to describe the plated through holes for connecting to the gas sensors' sockets as shown on new sheets 15, 16, 17, 18, 19, & 20.

These changes have been assessed in Test Report 33787.

Quality Assessment Report has been updated

Condition of Certification Relating to Issue 4:

The previous conditions are still applicable.

Drawings Relating to Issue 4:

Document No.	Sheets	Document Title	Issue	Date (yyyy-mm-dd)
SK3098-1134	22	Altair4X, TestSafe, AS/NZS	1	2012-06-06

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