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

Certificate No.:	**IECEx TSA 09.0013X**	Page 1 of 4	Certificate history:
Status:	**Current**	Issue No: 11	Issue 10 (2017-08-17) Issue 9 (2016-07-19) Issue 8 (2015-09-10) Issue 7 (2014-06-13) Issue 6 (2013-08-21) Issue 5 (2011-08-26) Issue 4 (2011-05-19) Issue 3 (2011-03-16) Issue 2 (2010-08-23) Issue 1 (2009-12-17)
Date of Issue:	2020-03-04		
Applicant:	**MSA - The Safety Company** 1000 Cranberry Woods Drive Cranberry Township PA 16066-5207 **United States of America**		
Equipment:	**Altair 5X Diffusion/pumped Multi-gas Detector**		
Optional accessory:			
Type of Protection:	**Intrinsic safety "ia" & Flameproof enclosures "da"**		
Marking:	Ex ia I Ma Ex ia IIC T4 Ga (with Ex sensor not installed) Ex da ia IIC T4 Ga (with Ex sensor installed) -40°C ≤ Ta ≤ +50°C		

Approved for issue on behalf of the IECEx Certification Body: **Ujen Singh**

Position: **Quality & Certification Manager**

Signature: (for printed version)

Date: 04 MARCH 2020.

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.

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919 Londonderry Road
Londonderry NSW 2753
Australia

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Certificate No.: **IECEx TSA 09.0013X**

Date of issue: 2020-03-04

Issue No: 11

Manufacturer: **MSA - The Safety Company**
1000 Cranberry Woods Drive
Cranberry Township PA 16066-5207
United States of America

Additional manufacturing locations:

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 equipment 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: General requirements
Edition:6.0

IEC 60079-1:2014-06 Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
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 equipment listed has successfully met the examination and test requirements as recorded in:

Test Reports:

AU/TSA/ExTR07.0035/00
AU/TSA/ExTR10.0043/00
AU/TSA/ExTR11.0009/00
AU/TSA/ExTR11.0018/00
AU/TSA/ExTR11.0045/00
AU/TSA/ExTR13.0039/00
AU/TSA/ExTR13.0043/00
AU/TSA/ExTR15.0026/00
AU/TSA/ExTR16.0016/00
AU/TSA/ExTR16.0016/01
AU/TSA/ExTR16.0016/02

Quality Assessment Report:

FR/INE/QAR08.0011/09

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EQUIPMENT:
Equipment and systems covered by this Certificate are as follows:

The Altair 5X Multi-gas Detector is a 5 Gas instrument. It contains one dual XCell toxic electrochemical cell, one single XCell toxic electrochemical cell, one XCell combustible cell, and one XCell oxygen electrochemical cell.

It measures 170 mm by 90 mm by 45 mm. The body is made of polycarbonate and the overmoulding is conductive, of the same material as the Altair 4 gas detector. The display may be mono or colour. The apparatus has options of gas sensing by diffusion or pump. The internal battery has available options of rechargeable or replaceable cells. The rechargeable battery is Lithium Ion – one cell. The alkaline battery is AA size alkaline cells – 3 cells (Duracell MN1500, Energizer E91).

The equipment has been separately tested against the requirements of IEC 60529 and it meets IP65.

The equipment contains already tested and certified devices/Ex component, summarized in Table 1.

Table 1 - Item list

Item #	Designation	Type	Ex certificate number/ ExTR number	Standards with Editions	Ex marking code
1	SENS1	Combustible Gas Sensor XCell™ Ex	IECEx FTZU 09.0023U	IEC 60079-0:2011 Ed.6 IEC 60079-1:2014 Ed.7 IEC 60079-11:2011 Ed.6	Ex ia I Ma Ex da ia IIC Ga

SPECIFIC CONDITIONS OF USE: YES as shown below:

1. The rechargeable battery shall be charged only in a safe area, the charge voltage (Um) and current (Im) shall not exceed 6.7 Vdc and 1.7 Adc.
2. For alkaline models, only Duracell MN1500 and Energizer E91 AA size alkaline cells can be used in the apparatus.

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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

Details of certificate changes for issue 11:

1. Amended the equipment marking code to match the XCell combustible cell marking code for protection "da" with EPL Ga.
2. Amended the assessment for the infrared sensor.
3. Add optional Mosfet for Q2 & Q3.
4. Correct the ingress protection IP67 to IP65 given in previous Test Report 35611 & 36021.

Refer to attached annexe for Details of Certificate Changes for Issues 1 to 10

Annex:

Annexe for IECEx TSA 09.0013X-11.pdf

IECEx Certificate of Conformity Annexe

Annexe for Certificate No.:	IECEx TSA 09.0013X	Issue No.:	11

Drawing list pertaining to Issue 11 of this Certificate:

Drawing / Document Number:	Page/s:	Title:	Revision Level:	Date: (yyyy-mm-dd)
3098-1187	98	*TestSafe Approvals, Altair5X/Altair5XIR	7	2019-11-19
SK3025-1076	3	*Artwork, Australian Approvals, Altair 5X (Marking Label)	2	2020-02-11
SK3098-1394	1	ATT DWG, ALT ASSY, A5X, CLR DSPLY, IECEx	0	2017-02-16

Note: An "*" is added before the title of documents that are new or revised.

Details of certificate changes for issue 1 to 10

Details of certificate changes for issue 1:

- Removed Firmware page (page 4 of 4) from drawing 10099650 – Color Display Global Assembly Altair5.

This change did not affect the intrinsic safety assessment of the product. No test report required.

Details of certificate changes for issue 2:

- The pump filtering structure has some changes – removal of the filter, shorten length of the tube. These changes are shown on the drawing 10088609.

These changes are assessed in Test Report AU/TSA/ExTR10.0043/00.

Details of certificate changes for issue 3:

Addition of Altair 5X Multi-gas Detector: This is a 5 Gas instrument. It contains one dual XCell toxic electrochemical cell, one single XCell toxic electrochemical cell, one XCell combustible cell, and one XCell oxygen electrochemical cell.

The Ex code for the apparatus is as follows:

Altair 5X (with XCell Ex sensor not installed)
Ex ia I IP65 (Zone 0)
Ex ia IIC T4 IP65 (Zone 0), Tamb = -40°C to +50°C

Altair 5X (with XCell Ex sensor installed)
Ex ia I IP65 (Zone 0)
Ex d ia IIC T4 IP65 (Zone 1), Tamb = -40°C to +50°C

Details of certificate changes for issue 4:

The following are changes in regards to adding alternate battery pack part numbers of identical construction and materials with differences on colour of the overmold only.

On Sheet 2 of Drawing SK3098-1187 revision 0 to revision 1:

- Changed from "NUMBER 10093415" to "NUMBERS 10093415 OR 10114838"
- Changed from "NUMBER 10083507" to "NUMBERS 10083507 OR 10114837"
- Changed from "NUMBER 10083508" to "NUMBERS 10083508 OR 10114836"
- Changed from "NUMBER 10090521" to "NUMBERS 10090521 OR 10114835"

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- Changed from "NUMBER 10093416" to "NUMBERS 10093416 OR 10114851 OR 10114852"
- Changed from "NUMBER 10088522" to "NUMBERS 10088522 OR 10114839 OR 10114840"

On Sheet 62, added "OR ALTAIR5X" next to "ALTAIR5" for item 2 (battery pack door)
On Sheet 63, added "OR ALTAIR5X" next to "ALTAIR5" for item 1 (battery pack door)
On Sheet 64, added "OR ALTAIR5X" next to "ALTAIR5" for item 10 (battery pack door)

These changes were assessed in Test Report AU/TSA/ExTR11.0018/00.

Details of certificate changes for issue 5:
The changes are described in their Agency Change Request 490298 and 490316.
In the Main Board, resistor R94 changed from 10 Ω 0.5 W to 110 Ω 0.75 W.
The following are changes made to the design documentation. These relate to deleting a via, minor change to layout of tracks, increasing track width, and designator changes.
Drawing SK3098-1187 revision 1 to revision 2:
1.) Sheet 14:
a.) Previous R88 designator changed to R114, and, previous R114 designator changed to R88
b.) Previous R85 designator changed to R112, and, previous R112 designator changed to R85.
c.) Trace was thickened between D26 to D24.
d.) Previous D18 designator changed to D20, previous D19 designator changed to D18, and previous D20 designator changed to D19.
2.) Sheets 16 through 23: Describes the revised alternate main printed circuit board artwork and component placement, for p/n 10105252 Revision 3, and the changes made are as follows:
a.) Sheets 16 to 23: Typographical error references to part number 10105250 were changed to 10105252.
b.) Sheet 21: corrected the typographical error in the naming of the PCB layer description from INNER 4 to BOTTOM.
c.) Sheet 20: The tracks on inner layer 4 were shifted to provide greater segregation around one ground 'via'.
d.) Sheet 21: One portion of the 'ground' track on the bottom layer was removed, and the corresponding 'via' to this deleted track was deleted throughout the other layers (on sheets 16 to 20).
e.) All references to revision of the artwork were changed from Revision 2 to Revision 3.
3.) All sheets: the revision date in the title block was revised to, 24-June-2011, and the revision number changed from Revision 1 to Revision 2.

These changes were assessed in Test Report AU/TSA/ExTR11.0045/00.

Details of certificate changes for issue 6:
The alternative battery cells Panasonic / Sanyo UR18650A now added in the battery cell list.

These changes were assessed in Test Report AU/TSA/ExTR13.0039/00.

Details of certificate changes for issue 7:
Replaced LCD display from Sharp LQ022B8UD05 to All Shore Industries ASI-T-2201-DA0EN/D. Drawing 3098-1187 was updated accordingly. The new LCD drawings were added from 75 – 85. Others kept the same as previous revision 3.

These changes were assessed in Test Report AU/TSA/ExTR13.0043/00.

Details of certificate changes for issue 8:
1. The company name changed from Mine Safety Appliances Company to Mine Safety Appliances Company, LLC.

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2. Adding a Bluetooth wireless board, RFID tag (self-contained, separately certified), and pads tracks change on the main board. The outer enclosure has not been changed.

These changes were assessed in Test Report 35287.

Details of certificate changes for issue 9:
1. Update the standards to IEC 60079-0:2011, IEC 60079-1:2014 and IEC 60079-11:2011.
2. Removed Altair 5 model

Details of certificate changes for issue 10:
1. Create new drawing to describe an alternative construction of the display.
2. Company name changed to MSA - The Safety Company.