



# IECEX Certificate of Conformity

## INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit [www.iecex.com](http://www.iecex.com)

Certificate No.: IECEx QPS 15.0017X Issue No: 2 Certificate history:  
Status: **Current** Issue No. 2 (2018-09-24)  
Date of Issue: **2018-09-24** Page 1 of 5 Issue No. 1 (2016-10-06)  
Issue No. 0 (2015-11-27)

Applicant: **Galvanic Applied Sciences Inc.**  
7000 Fisher Road South East,  
Calgary, Alberta,  
T2H 0W3  
**Canada**

Equipment: **Air Demand Analyzer**

*Optional accessory:*

Type of Protection: **Flameproof 'd', Increased Safety 'e', Intrinsic Safety 'ia', Encapsulation 'mb', Pressurized 'px'**

Marking:

IECEX QPS 15.0017X

### 1. Air Demand Analyzer model: 943-TGX-CE.

Ex db eb ia mb pxb IIC T3 Gb

T<sub>amb</sub> = -20°C to +60°C

100-240 Vac: 50/60Hz, Single Phase: 800 W.

Protective Gas: Air. P<sub>max</sub> = 9.96 mbar; P<sub>min</sub> = 0.62 mbar

### RAPID PURGING

Min. Flow Rate: 0.14 m<sup>3</sup>/Min; Min Purging during: 5min.

### PURGING

Min. Supply pressure: 3.8 bar; Max. Supply pressure: 8 bar

Min. flow rate: 5 L/min; max leakage rate: 2L/Min

### 2. Air Demand Analyzer Model 943-TGS-CE

#### 2.1 Air Demand Analyzer Controller.

Ex eb ia mb pxb IIC T3 Gb IP65

T<sub>amb</sub> = -20°C to +60°C

100-240 Vac; 50/60 Hz; single phase; 800 W

Protective gas: Air P<sub>max</sub> = 9.96 mbar; P<sub>min</sub> = 0.62 mbar

### RAPID PURGING:

Min. flow rate: 0.14 m<sup>3</sup>/min; Min. purging duration: 5 min

### PURGING:

Min. supply pressure: 3.8 bar ; Max. supply pressure: 8 bar

Min. flow rate: 5 l/min; Max. leakage rate: 2 l/min



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## 2.2. Air Demand Analyzer Oven.

Ex db eb ia mb IIC T3 Gb IP65

$T_{amb} = -20^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$

Approved for issue on behalf of the IECEx  
Certification Body:

D, Adams, P.Eng.

Position:

Manager, Hazardous Locations Department [Ex Equipment]

Signature:  
(for printed version)

Date:

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 the [Official IECEx Website](#).

Certificate issued by:

**QPS**  
**Evaluation Services Inc.**  
81 Kelfield St  
Unit 8  
Toronto, Ontario M9W 5A3  
Canada





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Manufacturer: **Galvanic Applied Sciences Inc.**  
7000 Fisher Road South East,  
Calgary, Alberta, T2H 0W3  
**Canada**

Additional Manufacturing location(s):

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 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:

<b>IEC 60079-0 : 2017</b> Edition:7.0	Explosive atmospheres - Part 0: Equipment - General requirements
<b>IEC 60079-11 : 2011</b> Edition:6.0	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
<b>IEC 60079-18 : 2014</b> Edition:4.0	Explosive atmospheres – Part 18: Equipment protection by encapsulation "m"
<b>IEC 60079-2 : 2014-07</b> Edition:6	Explosive atmospheres - Part 2: Equipment protection by pressurized enclosure "p"
<b>IEC 60079-7 : 2015</b> Edition:5.0	Explosive atmospheres – Part 7: Equipment protection by increased safety "e"

*This Certificate **does not** indicate compliance with electrical 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 Report:

[CA/QPS/ExTR15.0011/00](#)

[CA/QPS/ExTR15.0011/02](#)

Quality Assessment Report:

[GB/ITS/QAR14.0026/00](#)



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## Schedule

### EQUIPMENT:

*Equipment and systems covered by this certificate are as follows:*

The model 943-TGS-CE is an alternate construction of model 943-TGX-CE. The model 943-TGX-CE has the Controller Cabinet and Oven Cabinet mounted side by side. The operation, function and the method of protection of both models are identical excepted the model 943-TGS-CE has split installation between the Controller Cabinet and the Oven Cabinet.

The Model 943-TGS-CE Air Demand Analyzer is a multi-component ultraviolet (UV) absorption photometric analyzer packaged in two individual cabinets, the Oven Cabinet and the Control Cabinet. The connection between the cabinets is by electrical and fibre optic cabling. This connection method isolates the Control Cabinet from the Oven Cabinet and virtually eliminates the possibility of corrosion damage to components in the Control Cabinet due to a leak in the sample handling and conditioning system.

The main item in the Oven is the measuring (sample) cell block with and integrated aspirator to transport sample using instrument air or nitrogen as the aspirator drive gas is located in the oven. A sample of the tail gas stream is drawn from near the centre of the process duct through the sampling probe and measuring cell then returned to the process duct along with the aspirator drive gas. The oven is heated using electric heaters (2 pcs) and controlled at a nominal operating temperature of 150 °C to maintain the sample handling components above the sulphur dew point temperature. The temperature of the cell block and the gas exiting the sample probe are measured by RTDs. Pressure of the gas in the cell is measured using a pressure transmitter. Solenoid valves are used for switching the instrument air or nitrogen.

The control cabinet is fitted with a purge system and contains the UV source lamp and power supply, spectrometer, I/O board, controller and display, and keypad. The controller performs all of the normal operational procedures including oven temperature control, sample flow initiation, analysis, periodic zeroing, fault detection and fail safe back purge in case of a fault. Ultraviolet radiation from the source lamp is collected by a fibre optic cable and transmitted to the measuring cell. The radiation passes through the sample of tail gas in the measuring cell and is collected by a second fibre optic cable and transmitted to the spectrometer.

### SPECIFIC CONDITIONS OF USE: YES as shown below:

See attached Annex 1



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## DETAILS OF CERTIFICATE CHANGES (for issues 1 and above):

Issue 0 - Original **Model: 943-TGX-CE**

Issue 1 - Including following changes:

1. Maximum ambient to increase from +50°C to +60°C.
2. Option of an additional heater and change the current location of the heater.
3. Alternate resistance isolator and smart power supply.
4. Lower minimum protective gas supply pressure and lower routine leakage test pressure test requirement.
5. Description was updated to include the additional heater.

Issue 2 - Including following changes:

1. Split the original equipment construction package of frame mounted cabinet to individual cabinet. The connections between the cabinets are by electrical and fibre optic cabling. The connection method has no change from the original configuration.
2. The Oven cabinet is employing a new thermal insulated enclosure.
3. Employ two new flameproof electric heaters.
4. Employ multiple terminal boxes to allowing the electrical cables connects to the controller cabinet.
5. The split configuration is identified as the **Model 943-TGS-CE**.

## Annex:

[IECEX QPS 15.0017X Annex 1.pdf](#)



# QPS Evaluation Services Inc.

Testing, Certification and Field Evaluation Body  
Accredited in Canada, the USA, and Internationally

## ANNEX to IECEx QPS 15.0017X Issue No. 2, Date: 2018-09-25

### 1. Conditions of Certification:

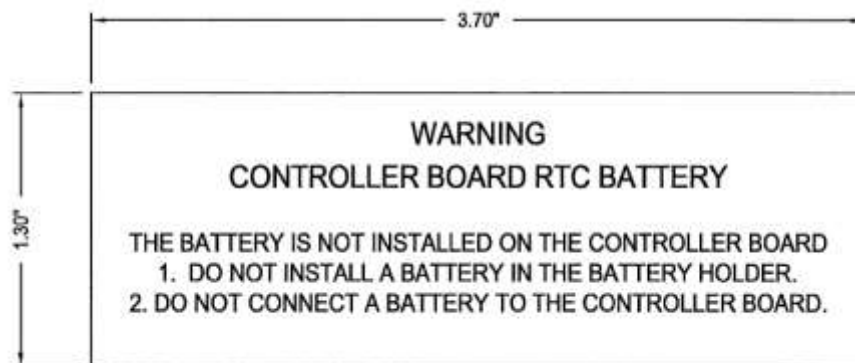
- l) For the purging panel the Conditions of Certification has been given as follows:

General warnings:

### Warning

1. DO NOT OPEN WHEN AN EXPLOSIVE (HAZARDOUS) ATMOSPHERE IS PRESENT, OR UNLESS ALL DEVICES WITHIN THE ENCLOSURE HAVE BEEN DE-ENERGIZED FOR A PERIOD OF FIVE (5) MINUTES.
2. A HOLDER FOR THE **RTC BATTERY** IS INSTALLED ON THE CONTROLLER BOARD. **DO NOT** INSTALL A BATTERY IN THE HOLDER. **DO NOT** CONNECT A BATTERY TO THE CONTROLLER BOARD.
3. DO NOT CONNECT, REMOVE OR OPERATE THE KEYPAD UNLESS THE AREA IS KNOWN TO BE NON-HAZARDOUS.
4. SYSTEM BYPASS IS NOT TO BE ENABLED UNLESS THE AREA AROUND THE ANALYZER IS KNOWN TO BE NON-HAZARDOUS.
5. THE ANALYZER IS NOT TO BE OPERATED WITH SYSTEM BYPASS ENABLED UNLESS PERSONNEL ARE CONTINUOUSLY IN ATTENDANCE AT THE ANALYZER AND THE AREA AROUND THE ANALYZER REMAINS NON-HAZARDOUS.
6. SHOULD THE AREA AROUND THE ANALYZER BECOME HAZARDOUS WHEN SYSTEM BYPASS IS ENABLED, IMMEDIATELY DISCONNECT MAINS POWER TO THE ANALYZER OR DISABLE SYSTEM BYPASS. THE ANALYZER MAY THEN BE POWERED UP BY FOLLOWING ANALYZER POWER UP.

Battery warning label:



### YOUR FULL SERVICE PARTNER IN GLOBAL CONFORMITY ASSESSMENT

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7700 Hub Parkway, Unit 1, Cleveland, OH 44125 Ph: 216-377-3191 Fax: 216-377-3192  
Web Site [www.qps.ca](http://www.qps.ca) and [www.qpscertainment.com](http://www.qpscertainment.com)  
Toll Free: 1- 877-746-4777

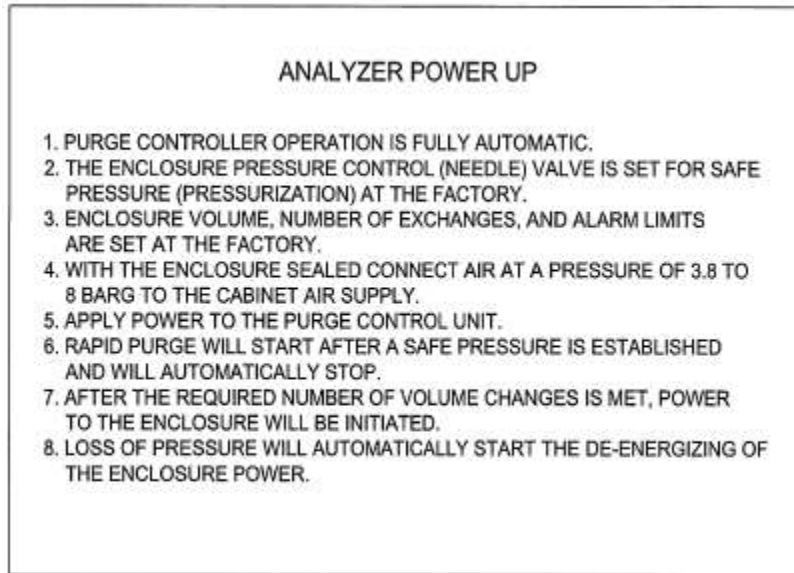


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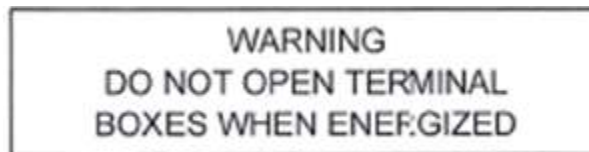
Analyzer power up label:



II) For already certified components as per individual certificates.

NOTE: For list of certified components see clause above "General product information".

III) For Terminal Box X11, X12, 13



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