



# 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](http://www.iecex.com)

Certificate No.: **IECEX CSA 23.0005** Page 1 of 4 [Certificate history:](#)  
Status: **Current** Issue No: 1 [Issue 0 \(2023-05-17\)](#)  
Date of Issue: 2024-03-22  
Applicant: **Rosemount Inc**  
10241 W Little York Road  
Houston  
Texas 77040  
USA  
**United States of America**  
Equipment: **Gas Chromatograph, Model 470XA**  
Optional accessory:  
Type of Protection: **Flameproof**  
Marking: Ex db IIB+H2 T6 Gb  
Ta = -20°C to +60°C

Approved for issue on behalf of the IECEx  
Certification Body:

**Dave Magee**

Position:

**Senior Director of Operations, Toronto**

Signature:  
(for printed version)

Date:  
(for printed version)

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Certificate issued by:

**CSA Group**  
178 Rexdale Boulevard  
Toronto, Ontario M9W 1R3  
Canada





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Date of issue: 2024-03-22

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Manufacturer: **Rosemount Inc**  
10241 W Little York Road  
Houston  
Texas 77040  
USA  
**United States of America**

Manufacturing  
locations: **Rosemount Inc**  
10241 W Little York Road  
Houston  
Texas 77040  
USA  
**United States of America**

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 60079-0:2017](#) Explosive atmospheres - Part 0: Equipment - General requirements  
Edition:7.0

[IEC 60079-1:2014](#) Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"  
Edition:7.0

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:

[CA/CSA/ExTR23.0016/00](#)

[CA/CSA/ExTR23.0016/01](#)

Quality Assessment Report:

[GB/SIR/QAR08.0016/10](#)



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## **EQUIPMENT:**

Equipment and systems covered by this Certificate are as follows:

The 470XA analyzer is a high speed gas chromatograph (GC) which measures multiple hydrocarbon stream's compositions and concentrations. The analyzer is housed in a proprietary flameproof enclosure, which is divided into two compartments. The upper compartment is mainly composed of analytical components and electrical hardware and the lower compartment primarily contains the electronic printed circuit board assemblies and associated hardware. The two compartments are isolated by a threaded bulkhead and potted seals.

### **Upper Compartment**

The upper compartment contains the analytical components of the GC. The analytical assembly includes the columns, detectors, pneumatically operated switching valves, solenoids, and some of the supporting electronic hardware. The assembly is temperature controlled through an RTD and electrical heater. Insulation is used to isolate the heated space from the outer enclosure. The analytical components and electrical hardware interface with the lower compartment using wiring that is fed through the bulkhead using potted seals. The entire upper compartment is contained mechanically inside of the dome and mating bulkhead.

### **Lower Compartment**

The lower compartment contains the analytical PCBA's and user interface. The user interface assembly interfaces with the electronic PCBA's using operating rods which penetrate the casting. Each of the operating rods uses a retaining ring as a mechanical retention method. Also, a glass window is embedded within the casting using epoxy. The sheet metal assembly behind the operating rods and the glass window acts as the mechanical retention device for the window. An overlay is attached to the outside of the enclosure covering the operating rods and glass window. The overlay is attached using an adhesive backing. The lower compartment also contains a tubing feed-thru assembly for connection of all gases required for operation. An adapter fitting is used to interface between the tubing feed-thru assembly and casting wall. A threaded side cover is provided for internal access of the lower compartment. Three M32 entries are provided for external field connections

**Refer to the Annexe for additional information.**

**SPECIFIC CONDITIONS OF USE: NO**



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

**This issue recognises the following change;**

1. Revision to Model 470XA to include a design change in the feed through assembly. This change was originally assessed on CSA Report 2447828.

### **Annex:**

[IECEX CSA 23.0005 Annexe Issue 1.pdf](#)

Annexe to: IECEx CSA 23.0005 Issue 1

Applicant: Rosemount Inc.

Apparatus: Gas Chromatograph, Model 470XA



## Flamepath Details

Side Cover: A side cover with M160x3-6g threads mates with the lower compartment of the enclosure, which contains the matching M160x3-6H threaded joint. Seven threads of engagement have been established between the threaded joint. Loctite Graphite 50 or H2O H2OTL08BC lubricants may be applied on the threaded joints. An o-ring is located outside of the flame path and is used for IP purposes.

Bulkhead/Dome: A dome with M190x3-6H threads mates with a bulkhead, which contains the matching M190x3-6g threaded joint. Seven threads of engagement have been established between the threaded joint. Loctite Graphite 50 or H2O H2OTL08BC lubricants may be applied on the threaded joints. An o-ring is located outside of the flame path and is used for IP purposes.

Bulkhead/Enclosure: The bulkhead contains M190x3-6g threads and mates with the lower compartment of the enclosure, which contains the matching M190x3-6H threaded joint. Seven threads of engagement have been established between the threaded joint. Loctite Graphite 50 or H2O H2OTL08BC lubricants may be applied on the threaded joints.

Feedthru/Enclosure: A feedthru adaptor contains M32x1.5-6g threads and mates with the lower compartment of the enclosure, which contains the matching M32x1.5-6H threaded joint. Seven threads of engagement have been established between the threaded joint. Loctite Graphite 50 or H2O H2OTL08BC lubricants may be applied on the threaded joints. An o-ring is located outside of the flame path and is used for IP purposes.

Window Glass: An approximately 12.7mm tempered glass window is embedded within the casting wall of the lower compartment of the enclosure. The window is cemented using a Stycast 2850FR-FT and Catalyst 9 epoxy mixture with a COT of -40 -> 130°C (An alternative window/epoxy combination is listed in project 2548848). A neoprene gasket is located outside of the flamepath and is used for spacing and IP purposes. A sheet metal/LCD assembly, located behind the window, acts as the mechanical retaining feature for the glass window feature.

Operating Rod: Nineteen stainless steel cylindrical operating rods are inserted through the lower compartment of the enclosure. A lubricant may be used to prevent corrosion between the operating rods and the casting. Retaining rings are located outside the flamepath to keep the operating rods in normal operating position.

Shoulder Screw: Three M5x0.8 cylindrical shoulder screws are inserted through the lower compartment of the enclosure.

Set screw: Two set screws contain M5x0.8-6g threads and mates with the lower compartment of the enclosure, which contains the matching M5x0.8-6H threaded joint. Seven threads of engagement have been established between the threaded joint. Loctite 209 lubricants may be applied on the threaded joints.

Feedthru/Tube entry: The tube feed thru fitting slides inside the tube feed thru adapter located in the lower compartment. The length of the cylindrical flame path between the fitting and the adaptor is approximately 26.16 mm and maintains a gap of approximately 0.038mm.

Bulkhead/Feedthru: Refer to dwg. 7R04011 for details.

Cable Gland/Bulkhead: Refer to dwg. 7R04011 for details.

Capillary Tubes: Tubing, 1/16", 0.040" ID, manufactured from 316 SST, Fully Annealed, crimp length 27.9mm (1.10 in) at max. 0.750mm (0.0295")/ min.0.615mm (0.0242").

Capillary Tubes: Tubing, 1/16", 0.010" ID, manufactured from 316 SST, Fully Annealed, minimum length of 479.8mm (18.89").

Analytical Valves – Emerson 6 Port XA Valve, Model 2-3-0710-100. Three valves are used to control the flow of gas through the analyser, and have been evaluated as a gas containment system under CSA Project

Date: 22 March 2024

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178 Rexdale Boulevard,  
Toronto, Ontario M9W 1R3

Annexe to: IECEx CSA 23.0005 Issue 1

Applicant: Rosemount Inc.

Apparatus: Gas Chromatograph, Model 470XA



80134806. The valves are installed in the upper compartment of the 470XA, as shown in drawing 7R04011 Page 2.

NPT adapter: CSA certified threaded M32x1.5 to 3/4in NPT.

Plug: CSA certified threaded M32x1.5.

### FLAMEPATH DIMENSIONS

Flame-path #	Joint type	Minimum length L	Maximum gap G
1. (Side Cover)	Threaded M160x3	25.7mm (1.011") 7 THD (casting)	class 2 fit tolerance 6H/6g
2. (Bulkhead/Dome)	Threaded M190x3	28.25mm (1.112") 7 THD (bulkhead)	class 2 fit tolerance 6H/6g
3. (Bulkhead/Enclosure)	Threaded M190x3	29.25mm (1.151") 7 THD (bulkhead)	class 2 fit tolerance 6H/6g
4. (Feedthru/Enclosure)	Threaded M32x1.5-6g/ M32x1.5- 6H	14.6mm (0.574") 7 THD (casting)	class 2 fit tolerance 6H/6g
5. (Window Glass)	Cemented	18.60mm (0.73 in) (12.7mm + 5.9mm) (window)	
6. (Operating Rod)	Cylindrical (Operating Rod)	28mm (1.102in) (casting)	0.03mm
7. (Shoulder Screw/ Enclosure)	Threaded M5x0.8-6g/ M5x0.8-6H	38.00mm (1.496in)	0.09mm
8. (Set screw)	Threaded M5x0.8	15.7mm (0.618in) 7THD (casting)	
9. (Feedthru/ Tube entry)	Cylindrical	26.16mm (1.030in) (Feedthru)	0.151mm
10. (Bulkhead/Feedthru)	Cylindrical	27.80mm (1.09in) (Feedthru)	0.142mm
11. (Cable Gland/ Bulkhead)	Cylindrical	26.10mm (1.02in)	0.152mm
12. NPT adapter	Threaded M32x1.5 to 3/4in NPT		
13. Plug	Threaded M32x1.5		

Internal free volume: 15,378 cc (938 cubic inches), approximately.

Annexe to: IECEx CSA 23.0005 Issue 1

Applicant: Rosemount Inc.

Apparatus: Gas Chromatograph, Model 470XA



## Full certificate change history

Issue 1 – this Issue introduced the following changes:

- i. Revision to Model 470XA to include a design change in the feed through assembly. This change was originally assessed on CSA Report 2447828.