



Field Certification Certificate of Compliance

Certificate: 2566551

Date Issued: October 11, 2012

Project: 2566551

Issued to: Galvanic Applied Sciences Inc
7000 Fisher Road SE
Calgary, Alberta, T2H 0W3

Attention: Mr. Rex Peters

*The products listed below are eligible to bear CSA Field Certification Labels,
bearing the CSA Mark shown*



Issued by: Larry DeWald

Field Certification

PRODUCTS

Part A

CLASS – 2258-02: PROCESS CONTROL EQUIPMENT - For Hazardous Locations

Class I, Division 2, Group B, C and D, Temperature Code T3, Type Z Purge

H2S Analyzer, Model: 842 DI

Electrical rating 115 V, 10 A, 50/60 Hz, 1 Ph

CSA Field Certification Label issued: serial number FB 514215.

Part B

CLASS – 2258-02: PROCESS CONTROL EQUIPMENT - For Hazardous Locations

Class I, Division 2, Group B, C and D, Temperature Code T3

Gas Chromatograph, Model: PLGCII

Electrical Rating: 24 Vdc, 3 A

CSA Field Certification Label issued: serial number FB 514216.

Certificate: 2566551

APPLICABLE REQUIREMENTS

The specific products described in this report were evaluated against:

- | | | |
|----------------------------------|---|---|
| CSA Standard C22.1-09 | - | Canadian Electrical Code Part I. |
| CSA Standard C22.2 No. 0-10 | - | General Requirements - Canadian Electrical Code Part II. |
| CSA Standard C22.2 No. 142-M1987 | - | Process Control Equipment. |
| CSA Standard C22.2 No. 213-M1987 | - | Non-Incendive Electrical Equipment for Use in Class I, Division 2 Hazardous Locations. |
| LTR No. E-010-2005 | - | Purged and Pressurized Enclosures for Use in Class I, Division 1 or 2 Hazardous Locations |

MARKINGS

- (1) Submitter's name
- (2) Model designation
- (3) Complete electrical rating
- (4) Serial number traceable to month and year of manufacture
- (5) Hazardous Location designations
- (6) Temperature code

The following additional markings:

- (7) WARNING: EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIV. 2.

The following additional markings on Part A only:

- (8) WARNING: THE SAFETY OF THIS EQUIPMENT RELIES ON THE PROVISION OF PROPER PURGING AND PRESSURIZING WHEN USED IN HAZARDOUS LOCATIONS. IT MUST NOT BE PUT INTO USE WITHOUT "SPECIAL PERMISSION" FROM THE INSPECTION AUTHORITY HAVING JURISDICTION.
- (9) WARNING: REMOVE POWER BELOW 0.1 INCH OF WATER COLUMN.
- (10) WARNING: ENCLOSURE SHALL NOT BE OPENED UNLESS THE AREA IS KNOWN TO BE NON-HAZARDOUS, OR UNLESS ALL DEVICES WITHIN THE ENCLOSURE HAVE BEEN DE-ENERGIZED. POWER MUST NOT BE RESTORED AFTER THE ENCLOSURE HAS BEEN OPENED UNTIL THE ENCLOSURE HAS BEEN PURGED FOR 20 MINUTES, AT A FLOW RATE OF 80 SCFH.
- (11) WARNING: HOT INTERNAL PARTS: MAINTAIN PURGE FOR 20 MINUTES AFTER POWER HAS BEEN REMOVED BEFORE OPENING ENCLOSURE. INTERNAL COMPONENT TEMPERATURE 750° C MAX.
- (12) TYPE Z PURGE.
- (13) WARNING: HIGH VOLTAGE: 8000 VAC DO NOT OPEN UNLESS POWER IS DISCONNECTED.

Note: If the products are to be installed in French speaking areas, markings in both English and French languages must be provided by the manufacturer.

Method of marking

An adhesive backed plastic nameplate is affixed to the unit as per the manufacturer's certified product.



Descriptive and Test Report

REPORT: 2566551

PROJECT: 2566551

Edition 1: October 11, 2012, Project - 2566551
Issued by Larry DeWald

Contents: Certificate of Compliance - Page 1 to 2
Description and Tests - Pages 1 to 9

PRODUCTS

Part A

CLASS - 2258-02: PROCESS CONTROL EQUIPMENT - For Hazardous Locations

Class I, Division 2, Group B, C and D, Temperature Code T3, Type Z Purge
H2S Analyzer, Model: 842 DI
Electrical rating 115 V, 10 A, 50/60 Hz, 1 Ph

Serial Number
123884D083

CSA Label Number
FB 514215

Part B

CLASS - 2258-02: Process Control Equipment - For Hazardous Locations

Class I, Division 2, Group B, C and D, Temperature Code T3
Gas Chromatograph, Model: PLGCII
Electrical Rating: 24 Vdc, 3 A

Serial Number
1236GC2319

CSA Label Number
FB 514216

Location of Examination

Galvanic Applied Sciences Inc.
7000 Fisher Road SE
Calgary, Alberta

APPLICABLE REQUIREMENTS

The specific products described in this report were evaluated against:

CSA Standard C22.1-09 - Canadian Electrical Code Part I.

The test report shall not be reproduced, except in full, without the approval of CSA International.

1707-94 Street N.W., Edmonton, AB, Canada T6N 1E6

Telephone: 780.450.2111 1.800.463.6727 Fax: 780.461.5322 www.csa-international.org

- CSA Standard C22.2 No. 0-10 - General Requirements - Canadian Electrical Code Part II.
- CSA Standard C22.2 No. 142-M1987 - Process Control Equipment.
- CSA Standard C22.2 No. 213-M1987 - Non-Incendive Electrical Equipment for Use in Class I, Division 2 Hazardous Locations.
- LTR No. E-010-2005 - Purged and Pressurized Enclosures for Use in Class I, Division 1 or 2 Hazardous Locations

MARKINGS

- (1) Submitter's name
- (2) Model designation
- (3) Complete electrical rating
- (4) Serial number traceable to month and year of manufacture
- (5) Hazardous Location designations
- (6) Temperature code

The following additional markings:

- (7) WARNING: EXPLOSION HAZARD – SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIV. 2.

The following additional markings on Part A only:

- (8) WARNING: THE SAFETY OF THIS EQUIPMENT RELIES ON THE PROVISION OF PROPER PURGING AND PRESSURIZING WHEN USED IN HAZARDOUS LOCATIONS. IT MUST NOT BE PUT INTO USE WITHOUT "SPECIAL PERMISSION" FROM THE INSPECTION AUTHORITY HAVING JURISDICTION.
- (9) WARNING: REMOVE POWER BELOW 0.1 INCH OF WATER COLUMN.
- (10) WARNING: ENCLOSURE SHALL NOT BE OPENED UNLESS THE AREA IS KNOWN TO BE NON-HAZARDOUS, OR UNLESS ALL DEVICES WITHIN THE ENCLOSURE HAVE BEEN DE-ENERGIZED. POWER MUST NOT BE RESTORED AFTER THE ENCLOSURE HAS BEEN OPENED UNTIL THE ENCLOSURE HAS BEEN PURGED FOR 20 MINUTES, AT A FLOW RATE OF 80 SCFH.
- (11) WARNING: HOT INTERNAL PARTS: MAINTAIN PURGE FOR 20 MINUTES AFTER POWER HAS BEEN REMOVED BEFORE OPENING ENCLOSURE. INTERNAL COMPONENT TEMPERATURE 750° C MAX.
- (12) TYPE Z PURGE.
- (13) WARNING: HIGH VOLTAGE: 8000 V_{AC} DO NOT OPEN UNLESS POWER IS DISCONNECTED.

Note: If the products are to be installed in French speaking areas, markings in both English and French languages must be provided by the manufacturer.

Method of marking

An adhesive backed plastic nameplate is affixed to the unit as per the manufacturer's certified product.

ALTERATIONS

- 1. Markings as above.

FACTORY TESTS

n/a

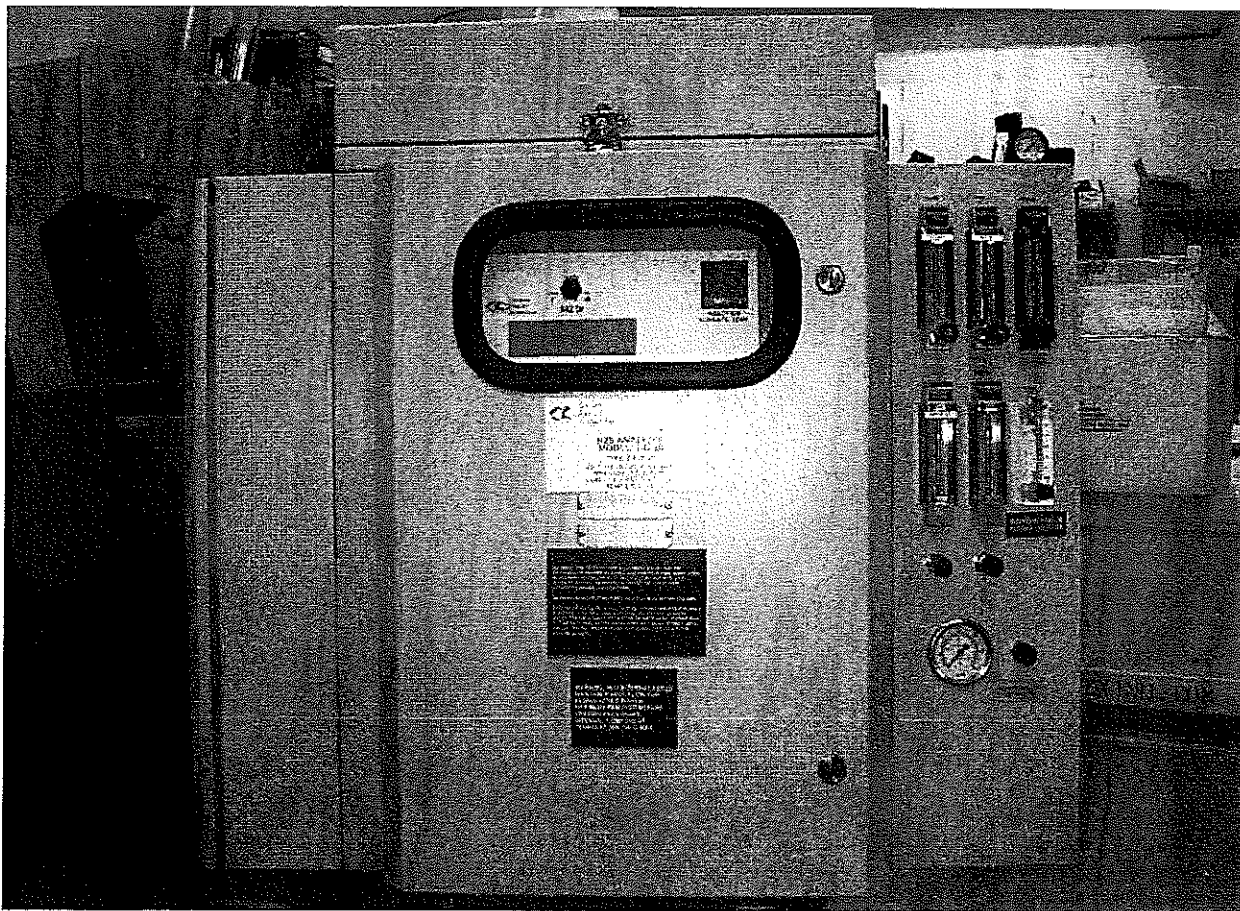
DESCRIPTION

Part A

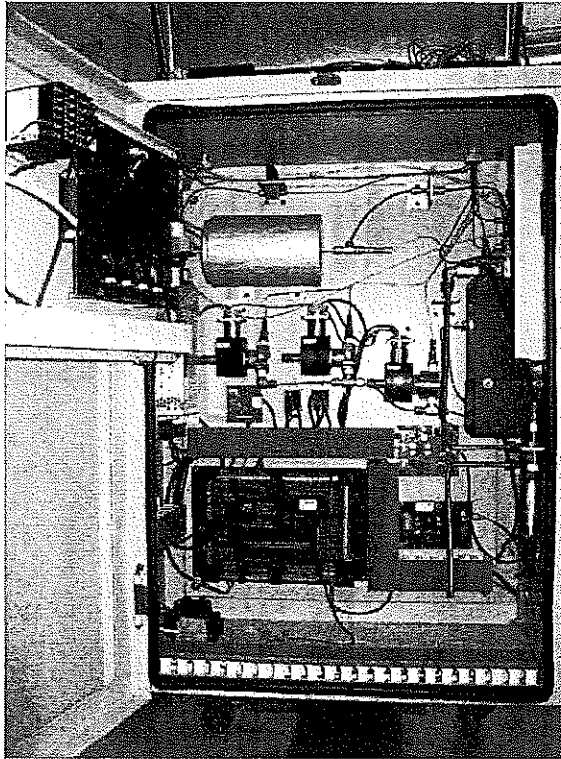
The H2S Analyzer is housed in a custom 14 gauge metal enclosure with three compartments and a side bracket for gauge mounting. The main compartment housing the analyser has a lockable, hinged access door, hinged internal swing plate and internal mounting plate. The side compartment housing the ozone generator and top compartment housing the oven have tool operated, hinged access doors. The temperature indicator and display are mounted to the swing plate and are visible through a viewing window in the main cover. The display assembly including three LEDs, two piezo switches and a configuration pin connector are the same as that used in the PLGCII covered under certification report 1346119, Project 1711878. The over all dimensions are approximately 38 inches high by 36 inches wide by 13.75 inches deep. The product is constructed the same as previously units approved under the CSA Special Acceptance and Field Certification programs covered under CSA reports 1273486 and 1469347 and has been accepted based on these reports. Copies of reports 1346119, 1273486 and 1469347 are retained in file 2566551 at CSA Edmonton facility.

The purge system consists of a purge regulator and a flow indicator. Purge air enters the analyser enclosure on the right side and is exhausted from the ozone generator enclosure. The purged enclosure is 5.63 cubic feet. The required volume of air for four air changes is 22.52 cubic feet. The flow rate is designed to be 80 cubic feet per hour (1.33 ft³/min). The minimum initial purge time is calculated to be 16.9 minutes.

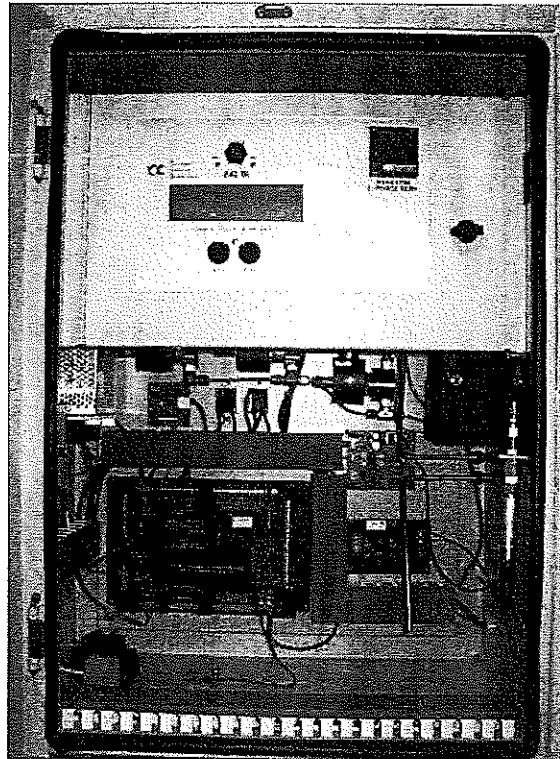
General views are shown following:



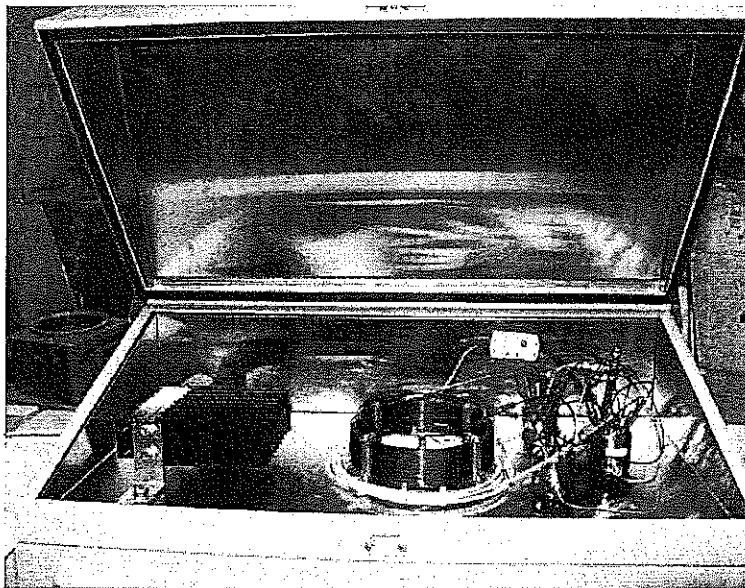
Front View



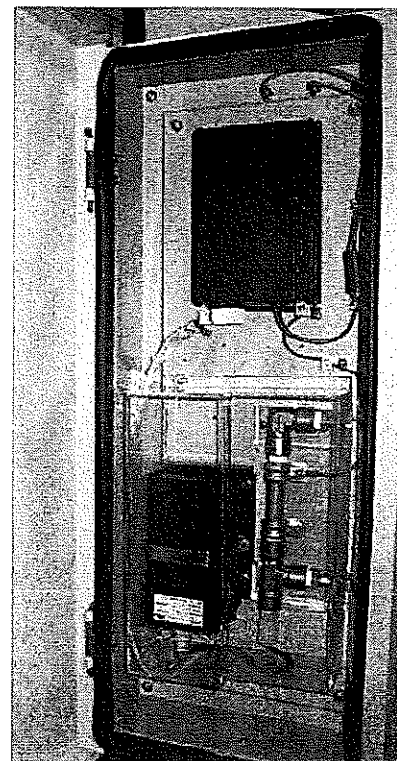
Main Analyzer Compartment



Main Analyzer Compartment (Swing plate closed)



Oven Compartment



Ozone Generator Compartment

List of components deemed safety critical:

1. Main Power Supply [Total of 1]
Manufacturer: Lambda
Model: JWS150-24/A
Status: UL Recognized c/us, accepted as part of the assembly.
Rating: Primary 120-240 Vac, 2.10 A, Secondary 24 Vdc.
Mounting: Bolted to mounting plate.
2. Temperature Indicator [Total of 1]
Manufacturer: Fuji
Model: PXZ4-TCY1-4V0A1
Status: CSA certified
Rating: 85 – 265 Vac, 24 Vdc
Mounting: Through machined opening in swing plate.
3. Solenoid Valve [Total of 1]
Manufacturer: Asco
Model: EF8314G301
Status: CSA Certified and UL Listed, Class I, Division 1, Group A, B, C and D, Temperature 85° C.
Rating: 24 Vdc, 1.4 W
Mounting: Bolted to mounting plate.
4. Relay [Total of 2]
Manufacturer: Magnacraft
Model: 70S2-04-C-06-N
Status: CSA Certified and UL Recognized
Rating: Coil: 3-30 Vdc, Contacts: 240 Vac.
Mounting: Bolted to mounting plate.
5. Circuit Boards
The circuit boards have been accepted for use in this application based upon the previous CSA Special Acceptance and Field Certification 1273486 and 1469347. The bills of materials and schematics for the circuit boards shown below are retained in CSA file 1469347 at CSA Edmonton facility.

PT 0847	PMT Power Supply Board; (2 pages)
PT 1574	841 Pre-Amp Assembly Board; (2 pages)
PT 2044	μPLGC II Board Rev 1.0; (24 pages)
PT 2127	μPLGC II Board TCD Excitation ver. 0.0; (3 pages)
PT 2131	12C Driver Board Rev 0.0; (2 pages)
PT 2133	Receiver & LCD Board Rev 0.0; (3 pages)
6. Circuit Breaker [Total of 1]
Manufacturer: Weidmuller
Model: 9101903500
Status: CSA Certified and UL Recognized
Rating: 250 V, 10 A
Mounting: Secured to rail that is screwed to the internal mounting plate.

7. Terminal Block [Total of 6]
Manufacturer: Weidmuller
Model: SAK 2.5
Status: CSA Certified and UL Recognized
Rating: 600 V, 25 A
Mounting: Secured to rail that is screwed to the internal mounting plate.
8. Disconnect Terminal Block [Total of 6]
Manufacturer: Weidmuller
Model: SAKR
Status: CSA Certified and UL Recognized
Rating: 300 V, 10 A
Mounting: Secured to rail that is screwed to the internal mounting plate.
9. Terminal Block [Total of 1]
Manufacturer: Weidmuller
Model: SAK 4
Status: CSA Certified and UL Recognized
Rating: 600 V, 36 A
Mounting: Secured to rail that is screwed to the internal mounting plate.
10. Fused Terminal Block [Total of 1]
Manufacturer: Weidmuller
Model: ASK 1
Status: CSA Certified and UL Recognized
Rating: 300 V, 15 A
Mounting: Secured to rail that is screwed to the internal mounting plate.
 - 10.1. Fuse [Total of 1]
Manufacturer: Bussman
Model: S501-5-R
Status: CSA certified
Rating: 250 V, 5 A
11. Heater [Total of 1]
Manufacturer: Watlow
Model: VC-400N060D
Status: UL Recognized, accepted as part of the assembly.
Rating: 120 V, 200 W
Mounting: Bolted to mounting plate.
12. Photomultiplier Tube [Total of 1]
Manufacturer: Electron Tubes Ltd.
Model: 9125WB
Status: Accepted as part of the assembly.
Rating: 850 - 1100 Vdc.
Mounting: Bolted to mounting plate.

13. Pressure Transducer [Total of 1]
Manufacturer: Omega
Model: PX615-30VACI
Status: Accepted as part of the assembly.
Rating: 10 – 30 Vdc, 4 – 20 mA
Mounting: Secured to the inside of the enclosure with a bolted bracket.

14. Voltage Converter [Total of 1]
Manufacturer: ExelTech
Model: XP1-1-2-6-2-07
Status: UL listed c/us
Rating: Input: 24 Vdc, 6.0 A / Output: 117 Vac, 1.07 A
Mounting: Bolted to mounting plate in side compartment.

15. Ozone Generator Transformer [Total of 1]
Manufacturer: PTI
Model: 35-10827
Status: UL Recognized c/us, accepted as part of the assembly.
Rating: Primary 120 V, Secondary 8,000 V, 27 mA
Mounting: Bolted to mounting plate in side compartment.

16. Oven Heater [Total of 1]
Manufacturer: Intertec
Model: SL MINITHERM CFA T3
Status: CSA certified c/us, Class I, Division 1, Group A, B, C and D, Temperature Code T3
Rating: 110 – 265 Vac, 75 W
Mounting: Bolted to bracket in top compartment.

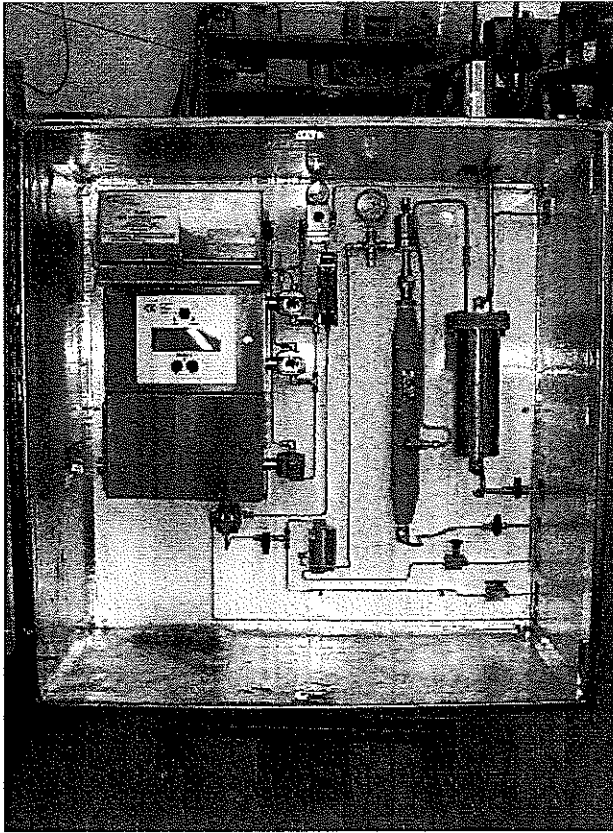
17. Oven RTD [Total of 1]
Manufacturer: Omega
Model: RTD830
Status: CSA certified and UL listed.
Rating: 24 V

18. Solenoid Valve [Total of 2]
Manufacturer: Asco
Model: EF8314H301
Status: CSA Certified and UL Listed, Class I, Division 1, Group A, B, C and D, Temperature 85° C.
Rating: 24 Vdc, 0.55 W
Mounting: Bolted to bracket on side of panel.

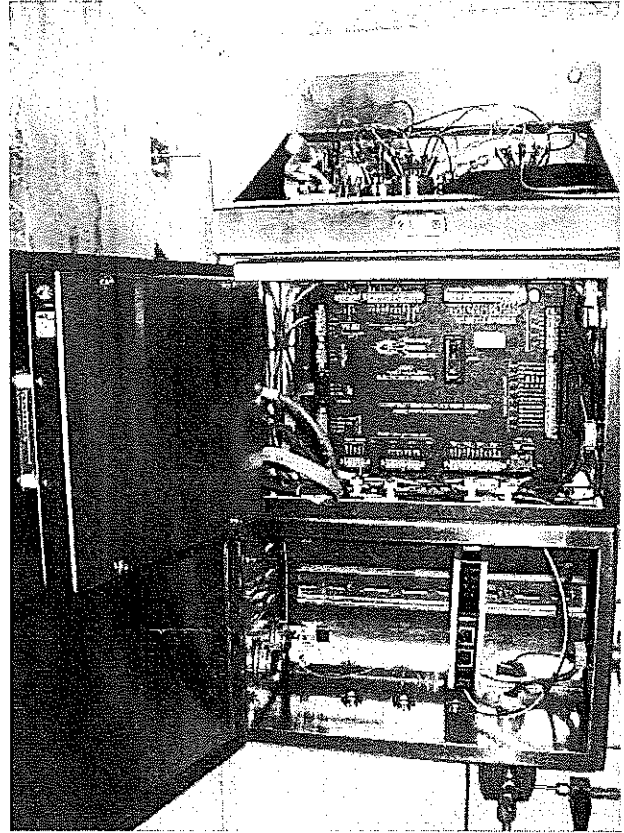
Part B

The PLGCII Gas Chromatograph is the same as the certified version covered under CSA report 155976 -1346119, Project 1711878 with the exception of the solenoid valves which have been changed to a different model and the addition of the Ethernet switch. A copy of CSA report 155976 -1346119, Project 1711878 is retained in file 2566551 at CSA Edmonton facility. The PLGCII Gas Chromatograph consists of three stainless steel enclosures. The upper enclosure houses the oven assembly; the middle enclosure houses the electronics and the lower enclosure that houses the power supply on the certified version, houses the Serial to Modbus Gateway. The middle and lower enclosures have tool operated hinged covers; the upper has a lockable cover. The enclosures are bolted to each other. The conductors pass through grommet protected knockouts in the enclosure. Four solenoid

valves are interconnected to the middle and lower enclosures with rigid conduit nipples. The PLGCII Gas Chromatograph and associated instrumentation mounted in an insulated stainless steel enclosure. The overall dimensions are approximately 40 inches high by 40 inches wide by 17 inches deep. General views are shown following.



Front View



Interior View

List of components deemed safety critical:

1. Oven Section [Total of 1]
The oven section is the same as the certified model including the Ohmite heater resistors, excitation board, TCD detector and RTD.
2. Electronics Enclosure [Total of 1]
The electronics enclosure is the same as the certified model including the main board, display board, and display. Two piezo configuration switches, three LEDs, configuration connector and display window are on the cover of the enclosure.
3. Power Supply Enclosure [Total of 1]
The power supply enclosure is the same as the certified model except the power supply is not installed and a Serial to Modbus Gateway is installed.

- 3.1. Serial to Modbus Gateway [Total of 1]
Manufacturer: Moxa
Model: MGate MB3170
Status: cULus listed, Class I, Division 2, Group A, B, C, D, T4
Rating: 12-48 Vdc, 435 mA, Class 2
Mounting: Secured to rail that is bolted to enclosure.

4. Solenoid Valves [Total of 4]
Manufacturer: Asco
Model: EF8314H301
Status: CSA c/us certified, UL listed, Class I, Division 1, Group B, C and D, Temperature 85° C
Rating: 24 Vdc, 0.55 W
Mounting: Secured to the enclosure with rigid conduit nipples.

TEST REPORT

Dielectric withstand tests as required in CSA in C22.2 No. 142-M1987 Clause 6.8 were performed by the submitter as per their certified product covered under CSA report 1346119. The submitter's Confirmation of Dielectric-Strength Testing reports are retained in CSA file 2566551 at CSA Edmonton facility.

Temperature Code Rating, C22.2 No. 213, Clause 6.2. – Temperature tests were waived as unit is an assembly of certified components or previously accepted components. The temperature code is based on the marked rating on the hottest component and previous reports.

No further tests considered necessary.

End of Report