



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 SIR 20.0035X** Page 1 of 4 [Certificate history:](#)
Issue 0 (2021-02-18)

Status: **Current** Issue No: 1

Date of Issue: 2021-07-01

Applicant: **SpectraSensors Inc.**
11027 Arrow Route
Rancho Cucamonga, CA 91730
USA
United States of America

Equipment: **J22 TDLAS Gas Analyzer, J22 TDLAS Gas Analyzer SCS on Panel, J22 TDLAS Gas Analyzer Encl. SCS, J22 TDLAS Gas Analyzer Encl. SCS Heated**

Optional accessory:

Type of Protection: **Flameproof db, Intrinsically Safe ib, Optical Isolation op is and Mechanical**

Marking: **J22 TDLAS Gas Analyzer**
Ex db ib op is IIC T4 Gb
-20°C ≤ Ta ≤ +60°C

J22 TDLAS Gas Analyzer SCS on Panel or J22 TDLAS Gas Analyzer Encl. SCS
Ex db ib op is h IIC T4 Gb
-20°C ≤ Ta ≤ +60°C

J22 TDLAS Gas Analyzer Encl. SCS Heated
Ex db ib op is h IIC T3 Gb
-20°C ≤ Ta ≤ +60°C

Approved for issue on behalf of the IECEx
Certification Body:

Neil Jones

Position:

Certification Manager

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 www.iecex.com or use of this QR Code.



Certificate issued by:

CSA Group Testing UK Ltd
Unit 6, Hawarden Industrial Park
Hawarden, Deeside CH5 3US
United Kingdom





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Issue No: 1

Manufacturer: **SPECTRASENSORS Inc.**
11027 Arrow route
Rancho Cucamonga, CA, 91730
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 60079-0:2017 Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

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

IEC 60079-28:2015 Explosive atmospheres - Part 28: Protection of equipment and transmission systems using optical radiation
Edition:2

ISO 80079-36:2016 Explosive atmospheres - Part 36: Non-electrical equipment for explosive atmospheres - Basic methods and requirements
Edition:1.0

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:

[GB/CSAE/ExTR21.0012/00](#)

[GB/SIR/ExTR21.0010/00](#)

[GB/SIR/ExTR21.0011/00](#)

Quality Assessment Report:

[FR/LCI/QAR10.0011/10](#)



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EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

The core model of the J22 TDLAS Gas Analyzer consists of a flameproof electronics compartment, intrinsically safe optical head and a measurement cell.

The J22 TDLAS Gas Analyzer with Sample Conditioning System, henceforth referred to as the 'SCS', on a panel combines the J22 TDLAS Gas Analyzer with the non-electrical SCS to precondition the analyte before examination within the cell.

The J22 TDLAS Gas Analyzer with SCS in an enclosure can be configured with or without a pre-certified terminal box, heater and thermostat.

The J22 TDLAS Gas Analyzer is a laser-based gas analyzer that measures the concentration of a compound or "analyte" such as H₂O. The technology employed is Tunable Diode Laser Absorption Spectroscopy (TDLAS). The measurement output is a volumetric concentration, or ratio of a specific analyte in a gas mixture such as natural gas or air. The volumetric ratio can be converted to other units of measure using internal conversion factors and calculations.

The analyzer is comprised of a sample cell, intrinsically safe optical head and an electronics assembly platform within a pre-certified flameproof enclosure. The cell is a sealed tube through which the gas mixture flows. The cell has a gas inlet and a gas outlet. On one end of the tube is a window through which a beam of infrared laser light travels, which in turn reflects from a mirror. In this arrangement, the gas mixture does not contact the laser or any other optoelectronics. Pressure, and in some cases temperature sensors, are employed in the cell assembly to compensate for the effects of pressure and temperature changes in the gas.

The optical head is mounted on top of the cell and contains the laser, optical detector and a thermoelectric cooler to control the laser temperature. The optical head also contains the optical head electronics which are directly connected to the optoelectronics in the optical head. The optical head electronics board also communicates with the electronics assembly.

The electronics assembly is mounted on top of the optical head, within a flameproof enclosure. The electronics assembly, which can be powered by 100-240 VAC \pm 10% or 19.2-28.8 VDC source, contains the sensor electronics which connects to the optical head via the RS232 protocol through a 10-pin ribbon cable assembly. The sensor electronics and the optical head electronics operate on a 30V dc supply using the same 10-pin ribbon cable. The sensor electronics generate the laser drive signal that is sent through the optical head electronics and to the laser in the optical head. Signals from the detectors are amplified by the optical head electronics and sent to the sensor electronics where they are digitized. The sensor electronics process the digital data and sends the gas concentration measurements the electronics display and I/O modules.

Refer to the Annexe for additional information and the Model Code Structure

SPECIFIC CONDITIONS OF USE: YES as shown below:

1. The flameproof joints of this equipment are other than the minimums specified in IEC/EN 60079-1 and shall not be repaired by the user.
2. Adhesive labels and the powder coating of models of the equipment with an aluminium enclosure are non-conducting materials and may generate an ignition-capable level of electrostatic discharge under certain extreme conditions. The user should ensure that the Equipment is not installed in a location where it may be subjected to external conditions (such as high-pressure steam) which might cause a build-up of electrostatic charges on these non-conducting surfaces. Additionally, cleaning of the equipment should be done only with a damp cloth.
3. The optional stainless-steel label tag is not bonded to earth. The maximum average capacitance of the tag determined by measurement is max. 30 pF. This shall be considered by the user to determine suitability of the equipment in a specific application.
4. For models of the J22 TDLAS Gas Analyzer with SCS mounted within an enclosure, the inner sheath of the supply cable for the heater circuit shall be sheathed with thermoplastic, thermosetting, or elastomeric material. It shall be circular and compact. Any bedding or sheath shall be extruded. Fillers, if any, shall be non-hygroscopic. The minimum length of the cable shall exceed 3 meters.
5. The temperature of the process medium shall be within the ambient temperature rating of the equipment.



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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

Issue 1 – this Issue introduced the following changes:

1. Introduction of new modified versions of the ISEM Analog Board, ISEM MCU Board and OHE printed circuit board assemblies.
2. Mechanical modification to Detector Module assembly.
3. Changes to the equipment type identifications to align with those specified on the associated Certificate of Conformity CSA 80053040 and corresponding changes to the marking.
4. Update equipment description to align with that specified on the associated Certificate of Conformity CSA 80053040.
5. Update certificates to include equipment ratings.

Annex:

[IECEX SIR 20.0035X Annexe Issue 1.pdf](#)

Annexe to: IECEx SIR 20.0035X Issue 1

Applicant: SpectraSensors Inc.



Apparatus: J22 TDLAS Gas Analyzer, J22 TDLAS Gas Analyzer SCS on Panel, J22 TDLAS Gas Analyzer Encl. SCS, J22 TDLAS Gas Analyzer Encl. SCS Heated

The electronics assembly displays the concentration measurement on an LCD display and has a through-the-glass 3-button keypad interface for user input. The flameproof enclosure of the electronics assembly also houses the electrical terminals for field wiring connections. The J22 TDLAS Gas Analyzer comes with various analogue and digital outputs which may be employed in automation or communication systems to deliver its measurements and applicable diagnostic messages and alarms to remote devices. Additionally, the electronics assembly has a webserver which allows the user to interact with the J22 TDLAS Gas Analyzer on a standard web browser using a laptop or tablet.

The J22 TDLAS Gas Analyzer is used as an “extractive” measuring device, where the gas sample is extracted from a vessel or pipeline and transported to the analyzer which may be mounted up to 100 meters from the sample tap point. The J22 TDLAS Gas Analyzer may be configured without sample conditioning. Optional hardware is also available to condition the sample before it enters the gas analyzer. An optional IP66 rated enclosure may be included which surrounds the “cell” and the sample conditioning system. The sample conditioning system (SCS) is required to filter and remove solid and liquid particulate and to control the flow and pressure of the gas. In some cases, an optional heater (powered independently from the analyzer) is used to control the temperature inside the enclosed SCS. An optional pressure relief valve and purge system are available. The effectiveness of this purge system has not been assessed by CSA.

The J22 TDLAS Gas Analyzer operates at near-atmospheric pressure and at an ambient temperature between -20 to +60 degrees centigrade. After the passing through the J22 TDLAS Gas analyzer, the sample is routed and vented to a safe location in the atmosphere or vented to a flare or other apparatus.

The equipment has been separately tested against the requirements of IEC 60529 and it meets IP66.

J22 TDLAS Gas Analyzer & J22 TDLAS Gas Analyzer SCS on Panel & J22 TDLAS Gas Analyzer Encl. SCS

Rated: 100 - 240Vac, 50/60 Hz \pm 10%, Um = 250V or 19.2 – 28.8 Vdc, max., Um 250V, 10 W.

I/01: Terminal 26 and 27, Un = 30Vdc, Um = 250Vac

I/02: Terminal 24 and 25, Un = 30Vdc, Um = 250Vac or Un = 30Vdc, In = 100mAac/500mAac, Um = 250Vac

I/03: Terminal 22 and 23, Un = 30Vdc, Um = 250Vac or Un = 30Vdc, In = 100mAac/500mAac, Um = 250Vac

J22 TDLAS Gas Analyzer Encl. SCS Heated

Rated: 100 - 240Vac, 50/60 Hz \pm 10%, Um = 250V or 19.2 – 28.8 Vdc, max., Um = 250V, 10 W.

Heater: 100 - 240 Vac, 50/60 Hz \pm 10%, 80 W.

I/01: Terminal 26 and 27, Un = 30Vdc, Um = 250Vac

I/02: Terminal 24 and 25, Un = 30Vdc, Um = 250Vac or Un = 30Vdc, In = 100mAac/500mAac, Um = 250Vac

I/03: Terminal 22 and 23, Un = 30Vdc, Um = 250Vac or Un = 30Vdc, In = 100mAac/500mAac, Um = 250Vac

Annexe to: IECEx SIR 20.0035X Issue 1
Applicant: SpectraSensors Inc.
Apparatus: J22 TDLAS Gas Analyzer, J22 TDLAS Gas Analyzer SCS on Panel, J22 TDLAS Gas Analyzer Encl. SCS, J22 TDLAS Gas Analyzer Encl. SCS Heated



Model Code Structure

J22 – ABCDEFGHIJKLMNOPQRSTUVWXYZ

- A – Approval
 - BA - ATEX / IECEx Zone 1
- B – Analyte
- C – Measurement Range
- D – Measurement Range 2
- E – Stream Composition
- F – Venting to
- G – Process Wetted Materials
 - V - 316 Stainless Steel; FKM Seals
- H – Supply Parameters
 - A - 100-240 VAC (50/60 Hz) \pm 10%
 - D – 24 VDC \pm 20%
- I – Output; Input 1
- J – Output; Input 2
- K – Output; Input 3
- L – Electronics Housing
 - 1 - Coated Copper-Free Aluminum
- M – Controller Mounting
- N – Sample Conditioning System (SCS)
 - A - On Panel, Aluminum
 - B - Enclosed, 304 Stainless Steel
 - N – None
- O – Filtration
- P – Sample System Gas Connections
 - A – Imperial
 - B – Metric
- Q – Pressure Regulation
- R – Flow Meter
 - A - Armored, factory default
 - B - Armored, Krohne
 - F - Glass Tube, factory default
 - K - Glass Tube, Krohne
 - N - None
- S – Heating Options
 - 1 - Heated + Heat-Trace Boot, 100 - 240 VAC \pm 10%
 - 8 – None
- T – Purge
- U – Operating Language Display
- V – Test/Certificate/Declaration
- W – Marking

Headings without sub-options are not considered critical to the design of the equipment. Where sub options are shown, these are the only options endorsed by CSA.

Date: 01 July 2021

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Unit 6 Hawarden Industrial Park,
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Applicant: SpectraSensors Inc.

Apparatus: J22 TDLAS Gas Analyzer, J22 TDLAS Gas Analyzer SCS on Panel, J22 TDLAS Gas Analyzer Encl. SCS, J22 TDLAS Gas Analyzer Encl. SCS Heated



Conditions of Manufacture

1. The equipment covered by this certificate incorporates previously certified devices; it is therefore the responsibility of the manufacturer to continually monitor the status of the certification associated with these devices, and the manufacturer shall inform CSA UK of any modifications of the devices that may impinge upon the explosion safety design of the equipment.

Description	Certificate Number
E+H G305 and G307 Enclosures	IECEx SIR 11.0050U
Intertec SL-***THERM Block Heater	IECEx PTB 07.0055X
Intertec TA Thermostat	IECEx PTB 07.0054X
Adalet XIHS Terminal Box	IECEx UL 12.0019U
CMP Type 737 Adapter/Reducer	IECEx CML 18.0177X
CMP A2F Cable Gland	IECEx CML 18.0179X
Hazardous Locations Solutions Type N conduit elbow	Sira 07ATEX1174U
Proline 300/500 Electronics	IECEx CSA 16.0006U
Display Type DP-PA**	IECEx KEM 08.0048X

Date: 01 July 2021

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