Certificate of Compliance

Certificate:	80116486	**Master Contract:**	247499
Project:	80176238	**Date Issued:**	2023-08-08

Issued To: **Endress+Hauser Optical Analysis, Inc.**
371 Parkland Plaza
Ann Arbor, Michigan, 48103
United States

Attention: Nicholas Taylor

The products listed below are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US or with adjacent indicator 'US' for US only or without either indicator for Canada only.

Issued by: Daniel Ergezi

Daniel Ergezi

PRODUCTS

CLASS - C225804 - PROCESS CONTROL EQUIPMENT Intrinsically Safe, Entity - For Hazardous Locations

CLASS - C225884 - PROCESS CONTROL EQUIPMENT - Intrinsically Safe Entity - For Hazardous Locations - Certified to US Standards

Associated Apparatus for Class I, Division 1, Groups A, B, C and D or [Ex ia] Class I, Division 1, Groups A, B, C, and D:
[Ex ia Ga] IIC

Raman Analyzer with only Intrinsically Safe Output for Probe and Sensors; Models RXN2, RXN4, RXN2 IoT, RXN4 IoT; 110-240 Vac, 50-60 Hz, 10A; 5°C $\leq$ Tamb $\leq$ 35°C

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Associated Apparatus for Class I, Division 2, Groups A, B, C and D:
[Ex ia Ga] [op sh Gb] IIC

Raman Analyzer with Intrinsically Safe Output and Fibre Optic Output for Probe and Sensors; Models RXN2, RXN4, RXN2 IoT, RXN4 IoT; 110-240 Vac, 50-60 Hz, 10A; 5°C ≤ Tamb ≤ 35°C

Non-IS Input:

Um = 253 Vac

Interlock IS Loop Parameters

Voltage Uo / Voc	9.6 VDC
Current Io / Isc	10 mA
Power Po	24 mW
Max External Capacitance Co / Ca	3.6 µF
Max External Inductance Lo / La	379 mH
Max Inductance/Resistance Ratio Lo/Ro	1.53 mH/Ω

Conditions of Acceptability

1. To be installed in accordance with all applicable local and national codes, and in accordance with control drawing 4002396.
2. This product is intended for indoor, non-hazardous locations only.
3. Sensor probes and other associated apparatus are not included under the scope of this project.
4. The manufacturer is responsible for conformity with suitable laser safety standards.
5. The fibre optic cable linking the laser output to the pilot probe shall be installed so that the minimum bend radius specified by the cable manufacturer is not exceeded.
6. Where it is necessary to monitor the process level to ensure that the optical beam is not exposed to a potentially explosive atmosphere, the devices used to monitor the level shall be intrinsically safe or classed as simple apparatus, and be installed so as to provide a fault tolerance of 2 for Category 1 equipment or fault tolerance of 1 for Category 2 equipment. The functional safety of this arrangement has not been assessed as part of this certification and it is the responsibility of the installer / user to ensure that an appropriate mechanism is in place.
7. Where IS Galvanic Isolators are added to the main enclosure in order to produce IS signals to external apparatus not covered by this certification, the IS Galvanic Isolators shall have an ambient working temperature upper limit of at least 55°C. The IS parameters pertaining to these isolators shall be conveyed to the user in an appropriate manner. The IS nature of any such circuits has not been assessed as part of this certification and this certificate is not to be taken as indication that these IS circuits comply with relevant requirements.

APPLICABLE REQUIREMENTS

CSA-C22.2 No. 61010-1-12 Ed. 3	Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements
CAN/CSA C22.2 No. 60079-0:19	Explosive Atmospheres – Part 0: Equipment – General requirements
CAN/CSA C22.2 No. 60079-11:14	Explosive atmospheres – Part 11: Equipment protection by intrinsic safety "i"
CAN/CSA C22.2 No. 60079-28:16	Explosive atmospheres – Part 28: Protection of equipment and transmission systems using optical radiation
ANSI/UL 913-2019, Eighth Edition	Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division 1, Hazardous (Classified) Locations
UL 61010-1, 3rd edition (2012) + R:15Jul2015	Electrical Equipment For Measurement, Control, and Laboratory Use; Part 1: General Requirements
UL 60079-0 Seventh Edition	UL Standard for Safety Explosive atmospheres – Part 0: Equipment – General requirements
UL 60079-11 Sixth Edition	UL Standard for Safety Explosive Atmospheres – Part 11: Equipment Protection by Intrinsic Safety 'i'
ANSI/UL 60079-28 Second Edition	Explosive atmospheres – Part 28: Protection of equipment and transmission systems using optical radiation

MARKINGS

The manufacturer is required to apply the following markings:

- Products shall be marked with the markings specified by the particular product standard.
- Products certified for Canada shall have all Caution and Warning markings in both English and French.

Additional bilingual markings not covered by the product standard(s) may be required by the Authorities Having Jurisdiction. It is the responsibility of the manufacturer to provide and apply these additional markings, where applicable, in accordance with the requirements of those authorities.

The products listed are eligible to bear the CSA Mark shown with adjacent indicators 'C' and 'US' for Canada and US (indicating that products have been manufactured to the requirements of both Canadian and U.S. Standards) or with adjacent indicator 'US' for US only or without either indicator for Canada only.

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The following markings are provided on Velvet Polycarbonate (5 mil thick) attached with an adhesive, manufactured by 3M, designated type 9502. Nameplate is affixed to the exterior of the enclosure. Alternatively, the markings may be stamped engraved, or etched onto the enclosure surface.

- Manufacturer's name or CSA Master Contract Number "247499", adjacent to the CSA Mark in lieu of manufacturer's name.
- Model designation: As specified in the PRODUCTS section, above.
- Electrical ratings: As specified in the PRODUCTS section, above.
- Ambient temperature rating: As specified in the PRODUCTS section, above.
- Manufacturing date, or serial number, traceable to year and month of manufacture.
- Enclosure ratings: As specified in the PRODUCTS section, above.
- The CSA Mark, as shown on the Certificate of Conformity.
- The designation "CSA 22CA80116486X"
- Hazardous Location designation: As specified in the PRODUCTS section, above
- The manufacturing location shall be identified if the equipment can be produced in more than one facility.
- Reference to control drawing 4002396 for interconnection to other apparatus or circuits.
- Entity parameters: As specified in the PRODUCTS section, above.

Notes:

Products certified under Class C225804, C225884 have been certified under CSA's ISO/IEC 17065 accreditation with the Standards Council of Canada (SCC). www.scc.ca

Supplement to Certificate of Compliance

Certificate: 80116486 **Master Contract:** 247499

The products listed, including the latest revision described below, are eligible to be marked in accordance with the referenced Certificate.

Product Certification History

Project	Date	Description
80176238	2023-08-08	Update to report 8011648 for new revision of scheduled drawing 4002396 to change units of length back to the initial correct units of "foot".
80116486	2023-03-22	Original Certification of Raman Analyzer, models RXN2, RXN4, RXN2 IoT, RXN4 IoT. Evaluation is based on acceptance of Intertek Reports 100461392CRT-001, 103149589DAL-001, and 103806740LHD-002 and CSA Report IECEx CSAE 22.0024X. Class I, Division 1, Groups A, B, C, and D Ambient Temperature Range: +5°C ≤ Tamb ≤ 35°C