



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 ITS 14.0014X** Page 1 of 4 Certificate history:
Status: **Current** Issue No: 2 Issue 1 (2015-03-17)
Issue 0 (2014-07-18)
Date of Issue: 2021-10-07
Applicant: **KAISER OPTICAL SYSTEMS, INC.**
371 Parkland Plaza
Ann Arbor
MI 48103
USA
United States of America
Equipment: **Optograf / RXN5 Analyser**
Optional accessory:
Type of Protection: **Ex pzc Ex op sh Ex ia**
Marking: Ex ec ic [ia Ga] [op sh Gb] pzc IIC T4 Gc
Tamb -20°C to +50°C
IECEX ITS 14.0014X

Approved for issue on behalf of the IECEx
Certification Body:

Mark Newman

Position:

Certificate Officer

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:

Intertek Testing & Certification Limited
ITS House, Cleeve Road
Leatherhead
Surrey, KT22 7SA
United Kingdom

intertek



IECEx Certificate of Conformity

Certificate No.: **IECEx ITS 14.0014X**

Page 2 of 4

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Issue No: 2

Manufacturer: **KAISER OPTICAL SYSTEMS, INC.**
371 Parkland Plaza
Ann Arbor
MI 48103
USA
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 60079-11:2011 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition:6.0

IEC 60079-2:2014-07 Explosive atmospheres - Part 2: Equipment protection by pressurized enclosure "p"
Edition:6

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

IEC 60079-7:2017 Explosive atmospheres - Part 7: Equipment protection by increased safety "e"
Edition:5.1

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/ITS/ExTR14.0014/00](#)

[GB/ITS/ExTR14.0014/01](#)

[GB/ITS/ExTR15.0004/00](#)

Quality Assessment Report:

[DE/TUR/QAR11.0001/03](#)



IECEx Certificate of Conformity

Certificate No.: **IECEx ITS 14.0014X**

Page 3 of 4

Date of issue: 2021-10-07

Issue No: 2

EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

The Kaiser Optical Systems, Inc. Optograf / RXN5 Analyser consists of an enclosure fabricated from steel (painted mild steel or stainless steel) protected by a purge and pressurization system and housing a computer controlled spectrometer and laser for the purpose of on-line analysis of chemical processes. The enclosure may be mounted on a fixed structure or on a trolley fitted with anti-static wheels.

The enclosure is purged and pressurized by compressed air with leakage compensation.

The probe may be any type manufactured by Kaiser Optical Systems, Inc. certified under IECEx Certificate of Conformity IECEx ITS 14.0015X.

For additional details and details of required routine tests, refer to the annex to this certificate.

SPECIFIC CONDITIONS OF USE: YES as shown below:

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.

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 equipment protection level Ga. 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.

The user shall purge the enclosure prior to start-up and upon loss of pressurization in accordance with the instructions marked on the Optograf enclosure. An appropriate means of isolation shall be provided by the user, appropriately certified for the area of use and correctly installed.

Parts of the enclosure may represent an electrostatic risk. Refer to the manufacturer's instruction.

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 60°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.



IECEx Certificate of Conformity

Certificate No.: **IECEx ITS 14.0014X**

Page 4 of 4

Date of issue: 2021-10-07

Issue No: 2

DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

Issue 1:

Update to certification drawings.

Addition of name "RXN5" to "Optograf".

Issue 2:

Update to standards.

Modification to the laser power interlock and associated drawing update.

Annex:

[Annex for IECEx Certificate of Conformity IECEx ITS 14.0014X Issue 2.pdf](#)



Annex to IECEx Certificate of Conformity

Certificate No:	IECEx ITS 14.0014X	Issue No. 2
Annex No. 1		

Technical Documents			
Title:	Drawing No.:	Rev. Level:	Date:
*Assembly, base unit Optograf (3 sheets)	2011827	X11	03/11/2019
*Purge diagram, Optograf	2011828	X6	12/02/2011
*Block diagram, Optograf Fan Unit	2011829	X4	10/21/2011
Laser Power control and safety interlock	4002017	X1	6/4/2009
Safety statement, RXN Invictus Laser, IS Barrier, Interlock connector and probe system	4002019	X1	-
*Block Diagram, Thermal Interlock System, Optograf	2011376	X3	02/13/2014
*Block Diagram, Laser Interlock System, Optograf	2011881	X3	03/08/2021
*ATEX Label, Optograf Base in Haz Zone Schematic (2 sheets)	4002315	R5	-
*Schematic, Invictus Laser with Laser Power Interlock, Alt Scheme	2017540	X1	11/28/2017
*Optograf™ Analyzer Operations Manual	2011849	R9	-



Annex to IECEx Certificate of Conformity

Certificate No:	IECEX ITS 14.0014X	Issue No. 2
Annex No. 1		

Item	Description	Manufacturer	Certificate No. / Standards
1	Cyclops Purge indicator	Purge Solutions Inc.	IECEX EXV 19.0006X* IEC 60079-0 Ed.6 IEC 60079-11 Ed.6 IEC 60079-2 Ed.6 IEC 60079-7 Ed.5
2	Cable Glands HSK-M-Ex	Hummel AG	IECEX BVS 07.0019X IEC 60079-0 Ed.7 IEC 60079-7 Ed.5.1
3	D1032 Galvanic Isolator	G.M. International S.R.L.	IECEX BVS 07.0027X* IEC 60079-0 Ed.6 IEC 60079-11 Ed.6

* No relevant technical differences.

Required Manufacturer Routine Testing		
Test	Title/Description of Test	Standard and Clause
1	The pressurized enclosure shall be subject to the routine tests: Leakage test Functional test of the pressurization controls and purge timer.	IEC 60079-2 Clause 17.1 & 17.2
2	The laser power interlock and fibre-breakage interlock systems operation shall be verified.	