



EU Notified Body
No. 2549

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EN ISO/IEC 17065
S1-499

(1) EU-TYPE EXAMINATION CERTIFICATE

(2) Equipment and protective systems intended for use in potentially explosive atmospheres – Directive 2014/34/EU

(3) EU-Type Examination Certificate Number: **ICQC 20 ATEX 0434 X** **Issue: 0**

(4) Equipment: **The dew point analyzer "Hygrovision-BL"**

(5) Manufacturer: **SPA Vympel LLC**

(6) Address: **143530, Moscow region, Istra district, Dedovsk, School passage, 11, Russia**

(7) This equipment and any acceptable variation, also documents which are specified in the schedule to this certificate.

(8) The certification body ICQC, Notified body No. 2549 in accordance with Article 17 of the Directive 2014/34/EU of the European Parliament and the Council of 26 February 2014, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.

The examination and test results are recorded in confidential report no **434/2020/08/ATEX**

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:
EN IEC 60079-0:2018, EN 60079-1:2014, EN 60079-11:2012, EN 60079-18:2015

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

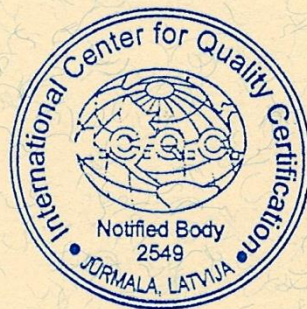
(11) This EU-Type Examination Certificate relates only to the design and the construction of the specified equipment in accordance with Directive 2014/34/EU. Further requirements of this Directive apply to the manufacture and supply of this equipment. These are not covered by the certificate

(12) The marking of the equipment or protective system shall include the following:



II 2G Ex db ib [ib] mb IIB T5 Gb
-10 °C ≤ Ta ≤ +50 °C

Head of Certification Body:



Sergey Kovalev

Date of issue: 18 December, 2020
Jurmala, Latvia

(13) **SCHEDULE**

(14) **to EU-TYPE EXAMINATION CERTIFICATE: ICQC 20 ATEX 0434 X**

Issue: 0

(15) **Description of Equipment:**

The dew point analyzer "Hygrovision-BL" (hereinafter - analyzer) is an automatic condensation hygrometer designed to measure the dew point temperature and condensation temperature of hydrocarbons in natural or other gases at operating pressure, as well as for visual control of the condensation processes of water and hydrocarbons by using the condensation measurement method (chilled mirror).

The analyzer has two modifications: KRAU2.844.007 and KRAU2.844.007-01 which differ only in the set of accessories and the maximum working pressure of the analyzed gas.

The analyzer is a monobloc consisting of a high-pressure chamber, a primary measuring transducer PIP, included in the measuring unit; removable optical system; electronic unit with touch display, power supply device BP-06 KRAU5.549.006 with built-in battery and connector for connecting an alternative external power source.

When self-powered, the connector is covered with a flameproof plug, and for using an external DC power source a VMPL4.841.023SB cable is used.

The measuring unit, the electronic unit with touchscreen display and the power supply are housed in a metal enclosure with three compartments. Two adjacent interconnected compartments (measuring unit and power supply unit) form a flameproof enclosure.

The high-pressure chamber is designed to supply/remove the analyzed gas at the pressure up to 23 MPa, and is equipped with a temperature-controllable mirror and an optical window for docking with a microscope. Electrical units - thermopile, thermal sensor, photodiodes are placed inside the chamber under the pressure of the measured gas, where the explosive atmosphere is not present.

All bare electrical parts between the electronic unit and the measuring chamber are hermetically sealed with a compound.

The control of the cooling and heating processes, the measurement of the mirror temperature, as well as the control of the photoelectronic registration system is carried out by an electronic unit. External control of the electronic unit is carried out using control buttons and a touch-screen display.

The analyzer is equipped with an IR port and an RS-485/Modbus/RTU interface for connection to the terminal computer.

On the right side of the enclosure there are:

1) Non-intrinsically safe circuit connectors:

- XP1 - for connecting an external power supply and data transmission via the RS-485 interface using the standard Modbus / RTU protocol.

2) Intrinsically safe circuit connectors:

- XP2 - for connecting an external pressure sensor;

- XP3 - for connecting the mirror illumination through the microscope.

Technical characteristics:

Parameter	Value
Operating pressure: - for modification KRAU2.844.007 - for modification KRAU2.844.007-01	from 0,1 up to 23 MPa from 0,1 up to 16 MPa
Ingress Protection code (IP)	IP66/IP67
Rated supply voltage - from the built-in power supply device BP-06 KRAU5.549.006 - from an external power source	DC 20...27V 8,4...12,6 V, 4 A.h 19...27 V
Power consumption	15 W
Ambient temperature	-10oC≤Ta≤+50oC
Medium temperature	-20oC≤Ta≤+80oC
Maximum voltage Um (XP1connector)	DC 32 V

Maximum output parameters of intrinsically safe electrical circuit Ex ib IIB:	
1) Pressure sensors supply circuit (XP2 connector)	
- output voltage U ₀	7 V
- output current I ₀	224 mA
- output power P ₀	392 mW
- external capacitance C ₀	100 µF
- external inductance L ₀	1 mH
2) Power supply circuit of the illuminator in the microscope (XP3 connector)	
- output voltage U ₀	7 V
- output current I ₀	208 mA
- output power P ₀	364 mW
- external capacitance C ₀	100 µF
- external inductance L ₀	1 mH

Routine tests:

1. The equipment is exempted from the overpressure routine test, according to clause 16.2 of the EN 60079-1 standard, since it has been submitted to an overpressure test at 4 times reference pressure.
2. The primary measuring transducer PIP ("m" part) shall be subjected to a visual inspection according to clause 9.1 of the EN 60079-18 standard and dielectric strength test of 500V r.m.s. applied for at least 1 s or 600 V applied for at least 0,1 s according to clause 9.2 of EN 60079-18 standard.

(16) Descriptive Documents:

KRAU2.844.007 OM – Higrovision-BL Dew Point Analyzer. Operation manual
The drawings are listed in Evaluation report No. 434/2020/08/ATEX

Issue/Date	Evaluation report	Comment
Issue 0 from 18.12.2020	434/2020/08/ATEX	The release of the prime certificate.

(17) Specific conditions of use:

- 1) Before switching on the analyzer, it is necessary to purge the gas chamber with the analyzed gas for at least five minutes with a gas flow rate of at least 2 dm³/min. at a pressure of up to 8.0 MPa or at least 5 dm³/min at a pressure of 8.0 to 23 MPa to remove a potentially explosive mixture. Switching on the analyser is allowed only after filling the measuring chamber with the measured gas at the established working pressure.
IT IS STRICTLY FORBIDDEN to switch on the analyzer without purging the gas chamber.
- 2) For self-powering of the analyzer only power supply device BP-06 KRAU5.549.006 should be used. DO NOT use any other power device.
- 3) The infrared terminal adapter IRDA should not be used in the hazardous area.
- 4). Only the VMPL4.841.023SB connection cable should be used for for powering the analyser from an external source. Connecting and disconnecting the VMPL4.841.023SB cable is allowed only in safe area.
- 5) The mirror should be cleaned only in a safe area.
- 6) For fixing the cover of the measuring unit and a primary measuring transducer PIP only fasteners with a strength class of at least A2-70 and a minimum yield strength 450 MPa should be used.
- 7) The Exd compartment of the analyzer has flamepaths which differ from those in EN 60079-1. Repairs shall be conducted only by the manufacturer.
- 8) Only assessed devices which meet the requirements of clause 6.2.5 of EN 60079-11: 2012 or certified intrinsically safe associated apparatus with $U_0 \leq U_m = 32$ V DC should be used for the supply of power and data transmission through the RS-485 interface (connector XP1).

(18) Essential Health and Safety Requirements:

Met by compliance with the standards mentioned in clause (9).