



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 CCVE 23.0005X** Page 1 of 3 [Certificate history:](#)

Status: **Current** Issue No: 0

Date of Issue: 2023-09-19

Applicant: **Dynamics Scientific**
District Nura
Street E 251
bld. 13/1
Z05T2D4
Astana
Kazakhstan

Equipment: **7822 Compacs®-R System**

Optional accessory:

Type of Protection: **intrinsic safety 'i', flameproof enclosures 'd'**

Marking: 2101 Intrinsic safety barrier - [Ex ia Ga] IIC
2102 Intrinsic safety barrier - [Ex ia Ga] IIC
2103 Intrinsic safety barrier - [Ex ia Ga] IIC
2105 Intrinsic safety barrier - [Ex ia Ga] IIC
1245 Measuring unit - Ex db [ia IIC Ga] IIB+H₂ T4 Gb
1246 Measuring unit - Ex db [ia IIC Ga] IIB+H₂ T4 Gb
4523 Converter - Ex ia IIC T4 Gb
4402.1 Module - Ex ia IIC T4 Gb
5150 Vibration Sensor - Ex ia IIC T4 Ga
5134 Vibration Sensor - Ex ia IIC T4 Ga
5607 Inductive Tachosensor - Ex ia IIC T4 Ga
5007.2 Displacement Sensor - Ex ia IIC T4 Ga
5002 Displacement Sensor - Ex ia IIC T4 Ga
5205.1 Temperature Sensor - Ex ia IIC T4 Ga
5207.1 Temperature Sensor - Ex ia IIC T4 Ga
5211 Temperature Sensor - Ex ia IIC T4 Ga
5705 Transducer - Ex ia IIC T4 Ga
5402 Pressure Sensor - Ex ia IIC T4 Ga

Approved for issue on behalf of the IECEx
Certification Body:

Nickolay Prelovski

Position:

Deputy Head of CB NANIO CCVE

Signature:
(for printed version)

Date:
(for printed version)

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Certificate issued by:

NANIO CCVE
Zavod ECOMASH, VUGI Settlement
Lyubertsy, Moscow region
140004
Russian Federation





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Manufacturer: **Dynamics Scientific**
District Nura
Street E 251
bld. 13/1
Z05T2D4
Astana
Kazakhstan

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](#) 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

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 Report:

[RU/CCVE/ExTR23.0005/00](#)

Quality Assessment Report:

[RU/CCVE/QAR23.0002/00](#)



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EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

7822 COMPACS®-R System is a customized hardware package with a distributed structure designed to amplify, pre-process and transmit signals and their parameters from various types of sensors for the purpose of diagnostics and monitoring of machinery.

7822 COMPACS®-R System includes various types of sensors, among them absolute and relative vibration, temperature, linear displacement, strain, alternating current, and rotor speed sensors.

The composition of 7822 COMPACS®-R System depends on the version agreed upon with the customer and may include:

- 5134, 5150 Vibration Sensor to convert vibration acceleration into alternating voltage;
- 5607 Inductive Tachosensor to convert the speed of the rotors of the monitored machines to a sequence of electrical pulses;
- 5211 Temperature Sensors to measure temperature;
- 5205.1, 5207.1 Temperature Sensors to measure temperature and transmit the readings via a 1-Wire bus;
- 5007.2 Displacement Sensor with 4523 Converter to convert relative displacement and strain into direct voltage, vibratory displacement into alternating voltage, rotational speed into a sequence of electrical pulses;
- 5002 Displacement Sensor to convert relative displacement and strain into direct voltage, vibratory displacement into alternating voltage, rotational speed into a sequence of electrical pulses;
- 4402.1 Module for receiving, amplifying and pre-processing signals and their transmission over the 1-Wire bus;
- 5402 Pressure Sensor to measure pressure into alternating voltage;
- 5705 Transducer to convert acoustic emission signal into alternating voltage.
- 1245 Measuring unit, 1246 Measuring unit to receive, amplify and pre-process signals and their parameters from various types of sensors over eight universal channels and digital 1-Wire bus.

The measuring units consist of a measuring module 3333.2 and Intrinsic safety barriers 2101, 2102, 2103 and 2105, housed in a flameproof enclosure.

It is allowed to place the 3333.2 measuring modules and the 2101, 2102, 2103 and 2105 Intrinsic safety barrier outside the hazardous area without using a flameproof enclosure.

Intrinsic safety barrier 2101, 2102, 2103 and 2105 are designed to connect explosion-proof sensors to the measuring unit (measuring module).

Measuring units (measuring modules) are connected to a power source 110 V, installed outside the hazardous area.

IECEX certified flameproof enclosures (IECEX INE 13.0083U) with IECEX certified cable glands (IECEX CML 18.0182X, IECEX CML 18.0184X, IECEX CML 18.0179X, IECEX CML 18.0183X), adapters and blanking elements (IECEX CML 18.0177X) were certified to the same editions of the standards as 7822 COMPACS®-R System.

See Annex 1 for additional information.

SPECIFIC CONDITIONS OF USE: YES as shown below:

1. Measuring units (measuring modules) are connected to a power source with output parameters $U = 110 \text{ V}$ and $I = 0.5 \text{ A}$.
2. 5134 Vibration Sensor, 5150 Vibration Sensor, 5205.1 Temperature Sensor, 5207.1 Temperature Sensor, 5211 Temperature Sensor; 5402 Pressure Sensor, 5705 Transducer are designed for direct connection to an external heating source (process equipment). The temperature of the technological process (external source of heating) does not exceed the operating temperature of the equipment.

Annex:

[Annex 1 to IECEX CCVE 23_0005X_issue 0.pdf](#)



7822 COMPACS®-R System

Table 1 - Technical data

Designation of equipment	Main technical data
5150 Vibration Sensor	Ex ia IIC T4 Ga, $-50^{\circ}\text{C} \leq \text{Ta} \leq +80^{\circ}\text{C}$, not less than IP20 U _i : 10.5 V, I _i : 40 mA, P _i : 94 mW, C _i : 0.038 μF, L _i : 0.001 mH
5134 Vibration Sensor	Ex ia IIC T4 Ga, $-50^{\circ}\text{C} \leq \text{Ta} \leq +80^{\circ}\text{C}$, not less than IP20 U _i : 7.14 V, I _i : 0.168 A, P _i : 0.3 W, C _i : 0.001 μF, L _i : 0.001 mH
5607 Inductive Tachosensor	Ex ia IIC T4 Ga, $-50^{\circ}\text{C} \leq \text{Ta} \leq +80^{\circ}\text{C}$, not less than IP20 U _i : 10.5 V, I _i : 40 mA, P _i : 94 mW, C _i : 0.001 μF, L _i : 0.001 mH
5007.2 Displacement Sensor	Ex ia IIC T4 Ga, $-50^{\circ}\text{C} \leq \text{Ta} \leq +80^{\circ}\text{C}$, not less than IP20 U _i : 14.7 V, I _i : 7 mA, P _i : 26 mW, C _i : 0.001 μF, L _i : 0.057 mH
5002 Displacement Sensor	Ex ia IIC T4 Ga, $-60^{\circ}\text{C} \leq \text{Ta} \leq +80^{\circ}\text{C}$, not less than IP20 U _i : 7.14 V, I _i : 55 mA, P _i : 98 mW, C _i : 0.001 μF, L _i : 1.3 mH
5205.1 Temperature Sensor	Ex ia IIC T4 Ga, $-50^{\circ}\text{C} \leq \text{Ta} \leq +80^{\circ}\text{C}$, not less than IP20 U _i : 7.14 V, I _i : 0.168 A, P _i : 0.3 W, C _i : 0.001 μF, L _i : 0.001 mH
5207.1 Temperature Sensor	Ex ia IIC T4 Ga, $-50^{\circ}\text{C} \leq \text{Ta} \leq +80^{\circ}\text{C}$, not less than IP20 U _i : 7.14 V, I _i : 0.168 A, P _i : 0.3 W, C _i : 0.001 μF, L _i : 0.001 mH
5211 Temperature Sensor	Ex ia IIC T4 Ga, $-60^{\circ}\text{C} \leq \text{Ta} \leq +80^{\circ}\text{C}$, not less than IP20 U _i : 7.14 V, I _i : 55 mA, P _i : 98 mW, C _i : 0.001 μF, L _i : 0.001 mH
5402 Pressure Sensor	Ex ia IIC T4 Ga, $-50^{\circ}\text{C} \leq \text{Ta} \leq +80^{\circ}\text{C}$, not less than IP20 U _i : 7.14 V, I _i : 55 mA, P _i : 98 mW, C _i : 0.001 μF, L _i : 0.001 mH
5705 Transducer	Ex ia IIC T4 Ga, $-50^{\circ}\text{C} \leq \text{Ta} \leq +80^{\circ}\text{C}$, not less than IP20 U _i : 17.64 V, I _i : 0.178 A, P _i : 0.785 W, C _i : 0.001 μF, L _i : 0.001 mH
4523 Converter	Ex ia IIC T4 Gb, $-50^{\circ}\text{C} \leq \text{Ta} \leq +60^{\circ}\text{C}$, IP20 U _{ss} – U _i : 7.14 V, I _i : 0.36 A, P _i : 0.65 W, C _i : 0.001 μF, L _i : 0.183 mH Out – U _i : 7.14 V, I _i : 55 mA, P _i : 98 mW, C _i : 0.232 μF, L _i : 0.172 mH Upst – U _i : 7.14 V, I _i : 0.36 A, P _i : 0.65 W, C _i : 0.001 μF, L _i : 0.172 mH In – U _o : 14.7 V, I _o : 7 mA, P _o : 26 mW, C _o : 0.3 μF, L _o : 10 mH
4402.1 Module	Ex ia IIC T4 Gb, $-50^{\circ}\text{C} \leq \text{Ta} \leq +60^{\circ}\text{C}$, IP20 U _i : 7.14 V, I _i : 0.168 A, P _i : 0.3 W, C _i : 3.315 μF, L _i : 0.013 mH U _o : 7.14 V, I _o : 55 mA, P _o : 98 mW, C _o : 10 μF, L _o : 9 mH
1245 Measuring unit	Ex db [ia IIC Ga] IIB+H ₂ T4 Gb, $-20^{\circ}\text{C} \leq \text{Ta} \leq +40^{\circ}\text{C}$ U: 110 V, I: 0.5 A 2101 - U _o : 17.64 V, I _o : 0.178 A, P _o : 0.785 W, C _o : 0.3 μF, L _o : 1 mH 2102 - U _o : 9.33 V, I _o : 40 mA, P _o : 94 mW, C _o : 4 μF, L _o : 10 mH 2103 (1) - U _o : 7.14 V, I _o : 0.168 A, P _o : 0.3 W, C _o : 9 μF, L _o : 1.5 mH 2103 (2) - U _o : 7.14 V, I _o : 0.168 A, P _o : 0.3 W, C _o : 9 μF, L _o : 1.5 mH 2105 (1) - U _o : 7.14 V, I _o : 0.3 A, P _o : 0.54 W, C _o : 9 μF, L _o : 0.3 mH 2105 (2) - U _o : 4.665 V, I _o : 40 mA, P _o : 46 mW, C _o : 50 μF, L _o : 10 mH
1246 Measuring unit	Ex db [ia IIC Ga] IIB+H ₂ T4 Gb, $-20^{\circ}\text{C} \leq \text{Ta} \leq +40^{\circ}\text{C}$ U: 110 V, I: 0.5 A 2101 - U _o : 17.64 V, I _o : 0.178 A, P _o : 0.785 W, C _o : 0.3 μF, L _o : 1 mH 2102 - U _o : 9.33 V, I _o : 40 mA, P _o : 94 mW, C _o : 4 μF, L _o : 10 mH 2103 (1) - U _o : 7.14 V, I _o : 0.168 A, P _o : 0.3 W, C _o : 9 μF, L _o : 1.5 mH 2103 (2) - U _o : 7.14 V, I _o : 0.168 A, P _o : 0.3 W, C _o : 9 μF, L _o : 1.5 mH 2105 (1) - U _o : 7.14 V, I _o : 0.3 A, P _o : 0.54 W, C _o : 9 μF, L _o : 0.3 mH 2105 (2) - U _o : 4.665 V, I _o : 40 mA, P _o : 46 mW, C _o : 50 μF, L _o : 10 mH
2101 Intrinsic safety barrier	[Ex ia Ga] IIC, $-50^{\circ}\text{C} \leq \text{Ta} \leq +60^{\circ}\text{C}$, IP20 U _m : 250 V U _o : 17.64 V, I _o : 0.178 A, P _o : 0.785 W, C _o : 0.3 μF, L _o : 1 mH, L _o /R _o : 45.25 μH/Ohms
2102 Intrinsic safety barrier	[Ex ia Ga] IIC, $-50^{\circ}\text{C} \leq \text{Ta} \leq +60^{\circ}\text{C}$, IP20 U _m : 250 V U _o : 9.33 V, I _o : 40 mA, P _o : 94 mW, C _o : 4 μF, L _o : 10 mH, L _o /R _o : 384 μH/Ohms
2103 Intrinsic safety barrier	[Ex ia Ga] IIC, $-50^{\circ}\text{C} \leq \text{Ta} \leq +60^{\circ}\text{C}$, IP20 U _m : 250 V Out1 - U _o : 7.14 V, I _o : 0.168 A, P _o : 0.3 W, C _o : 9 μF, L _o : 1.5 mH, L _o /R _o : 119 μH/Ohms Out2 - U _o : 7.14 V, I _o : 0.168 A, P _o : 0.3 W, C _o : 9 μF, L _o : 1.5 mH, L _o /R _o : 119 μH/Ohms
2105 Intrinsic safety barrier	[Ex ia Ga] IIC, $-50^{\circ}\text{C} \leq \text{Ta} \leq +60^{\circ}\text{C}$, IP20 U _m : 250 V Out1 - U _o : 7.14 V, I _o : 0.3 A, P _o : 0.54 W, C _o : 9 μF, L _o : 0.3 mH, L _o /R _o : 66 μH/Ohms Out2 - U _o : 4.665 V, I _o : 40 mA, P _o : 46 mW, C _o : 50 μF, L _o : 10 mH, L _o /R _o : 776 μH/Ohms