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

Ex COMPONENT CERTIFICATE

Certificate No.: **IECEx CES 12.0008U**

Page 1 of 5

Certificate history:
Issue 0 (2012-04-24)

Status: **Current**

Issue No: 1

Date of Issue: 2025-10-22

Applicant: **N.E.T. S.r.l. (Nano Environmental Technology)**
Via Campania, 5
I-20006 Pregnana Milanese (MI)
Italy

Ex Component: Gas sensors series IRNEX and IRPEX

This component is NOT intended to be used alone and requires additional consideration when incorporated into other equipment or systems for use in explosive atmospheres (refer to IEC 60079-0).

Type of Protection: **Flameproof enclosures 'd', Intrinsic Safety 'ia'**

Marking: **Ex db IIC Gb**

Ex db I Mb

Ex db+ia I Ma

Approved for issue on behalf of the IECEx Certification Body: **Alessandro Fedato**

Position: **Head of IECEx CB**

Signature: (for printed version)

Date: 2025-10-22 (for printed version)

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.
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Certificate issued by:

CESI
Centro Elettrotecnico
Sperimentale Italiano S.p.A.
Via Rubattino 54
20134 Milano
Italy

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Certificate No.: **IECEx CES 12.0008U**

Date of issue: 2025-10-22

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Manufacturer: **N.E.T. S.r.l. (Nano Environmental Technology)**
Via Campania, 5
I-20006 Pregnana Milanese (MI)
Italy

Manufacturing locations: **N.E.T. S.r.l. (Nano Environmental Technology)**
Via Campania, 5
I-20006 Pregnana Milanese (MI)
Italy

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 component 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 Edition:7.0 — Explosive atmospheres - Part 0: Equipment - General requirements

IEC 60079-1:2014 Edition:7.0 — Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"

IEC 60079-11:2011 Edition:6.0 — Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"

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 component listed has successfully met the examination and test requirements as recorded in:

Test Reports:

IT/CES/ExTR12.0007/00 IT/CES/ExTR12.0007/01

Quality Assessment Report:

IT/CES/QAR08.0001/19

IECEx Certificate of Conformity

Ex Component(s) covered by this certificate is described below:

Gas sensors series **IRNEX** and series **IRPEX** are components used for the detection of flammable or toxic gases. They are manufactured with a flameproof enclosure inside which are installed the sensing element and any electronic circuitry for the signal amplification or transmission. On the one hand, the enclosure is closed by a sealed bushing with the pins for the connection to external circuits, on the other side a double-layer mesh (with a PTFE membrane filter inside) locked and sealed on the enclosure is placed.

The various type of gas sensors series **IRNEX** and series **IRPEX** are identified by the following code:

**** * 20 *** * EX *****

** IN = IRNEX *(infrared sensor IRNET)*

IP = IRPEX *(infrared sensor IRPELL with output signal like pellistor sensor)*

* E = *version* PRO *(with electronic circuits), standard enclosure*

X = *version with 7 pins without electronic circuits (only for IRNET), standard enclosure*

P = *version* PRO *(with electronic circuits), open enclosure*

7 = *version with 7 pins without electronic circuits (only for IRNET), open enclosure*

20 = *sensor size (diameter 20 mm)*

*** *Type of gas*

* *Gas measuring range*

EX version

*** *other codes not relevant for the type of protection of the component*

The complete identification codes of sensors series IRNEX and IRPEX , with their constructional characteristics, are detailed in the Manufacturer's documents.

SCHEDULE OF LIMITATIONS:

- The gas sensors series IRNEX and IRPEX shall be properly protected against the mechanical risks (impact and drop) by installation into a suitable enclosure.
- The maximum ambient temperature around the component must not exceed:

  +60 °C for group II devices;

  +45 °C for group I devices.

- For group II application, with a local ambient temperature around the component up to +60 °C, the gas sensors series IRNEX and IRPEX respect the temperature class T6.
- These limits take in account the external ambient temperature and the temperature rise inside the enclosure due to local heating.
- The connection pins shall be protected with a type of protection listed in IEC 60079-0; a minimum degree of protection IP54 shall be guaranteed.
- The devices shall not be installed or removed when an explosive atmosphere is present.
- The devices with type of protection Ex db+ia I Ma shall be supplied by an intrinsic safety barrier with suitable output electrical parameters.

IECEx Certificate of Conformity

DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)
Variation 1.1:

The **Gas sensors IRNEX, IRPEX** originally assessed in compliance with IEC 60079-0:2011, IEC 60079-1:2007, IEC 60079-11:2011 and IEC 60079-26:2006 have been re-assessed on the basis of the new editions IEC 60079-0:2017, IEC 60079-1:2014 (the standard IEC 60079-26 is not more used because its application is excluded in the Scope of the standard).

Variation 1.2:

Change of company address from *Via Legnano 2, I-20010 Cornaredo (MI), Italy* to *Via Campania 5, I-20006 Pregnana Milanese (MI), Italy*.

Variation 1.3:

IP54 degree of protection applied to all types (the use of PTFE filter placed inside the double mesh is extended to all Gas sensors **IRNEX, IRPEX** series).

Variation 1.4:

Update of electronic components and PCBs (replacement of microprocessor on IRNEX PIN boards: have no influence on the type of protection of the sensor).

Variation 1.5:

Minor mechanical changes were applied (changes introduced to the optical paths: have no influence on the type of protection of the sensor).

Unchanged the other constructional characteristics of Gas sensors **IRNEX, IRPEX** series.

IECEx Certificate of Conformity

Additional information:
Electrical characteristics:

- Maximum supply voltage: 5.5 Vdc
- Maximum absorbed current: 100 mA

For models with type of protection Ex db+ia I Ma:

- Maximum input voltage Ui: 5.5 Vdc
- Maximum input current Ii: 100 mA

- Minimum ambient temperature: - 40 °C for group II devices
  - 20 °C for group I devices