GASERA

PHOTOACOUSTIC GAS ANALYZER

GASERA ONE
FORMALDEHYDE

Monitoring low levels of formaldehyde in ambient air

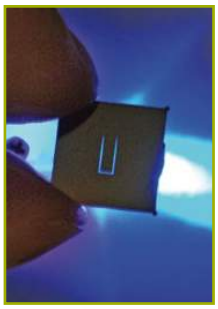
GASERA
ONE
FORMALDEHYDE

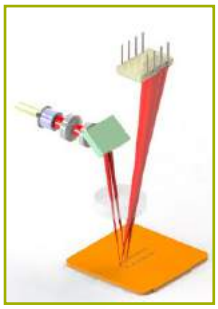
Measurement need

Formaldehyde levels above 0.1 ppm can cause acute health problems, e.g. sore throat, skin irritation, nausea, scratchy eyes and cough. It is also classified as highly carcinogenic compound. Exposure to moderate amounts of formaldehyde has been linked to cancer, such as leukemia.

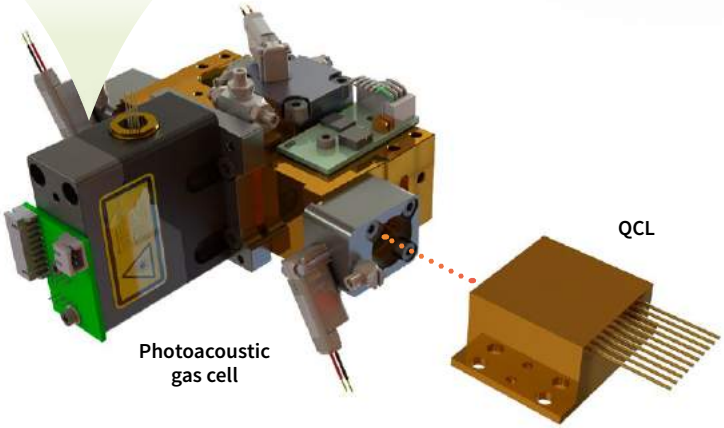
Easy-to-use – one button operation

GASERA ONE FORMALDEHYDE provides the user with a simple and intuitive interface with high resolution display and a single rotating knob. In addition, the user can control the GASERA ONE FORMALDEHYDE wirelessly with smartphone, tablet or other devices.





Ultra-sensitive patented optical cantilever microphone



Technology

GASERA ONE FORMALDEHYDE analyzer is based on combining ultra sensitive cantilever enhanced photoacoustic detection technology with Quantum Cascade Laser source operating at a Mid-IR fundamental spectral absorption line of formaldehyde. This combination provides enough sensitivity to reliably measure ambient background levels of formaldehyde. It also gives an exceptionally high level of stability with a re-calibration period ranging from several months up to several years, and thus it offers a low total cost of ownership.

Benefits

- Standalone system with built-in gas exchange unit
- Requires no consumables or wet chemistry
- Portability that enables the field use
- Short optical path that provides industry-leading dynamic range with single-point calibration
- Drift-free operation due to direct absorption measurement
- Two built-in sample inputs and wide dynamic range provide the possibility of before-after comparison in different processes
- Highly selective against aldehydes and other VOCs

Features

- Selective monitoring of formaldehyde
- Below 1 ppb detection limit
- Response time user configurable from 10 seconds to few minutes
- Wide dynamic range and stable operation
- No consumables
- Low sample volume (few ml)
- Built-in gas exchange system
- Long re-calibration interval (several months)
- User configurable monitoring tasks
- Intuitive user interface
- Built-in display presents results both numerically and graphically
- Remote operation via tablet, smartphone or another GASERA ONE

Application examples

Fence-line monitoring

Formaldehyde may leak from industrial facilities e.g. generating electricity. These undetected leaks are a significant source of pollution.

Biogas plants

Another Formaldehyde producer is biogas plants that are increasingly built for energy production.

New buildings

Formaldehyde is used worldwide in the manufacturing of building materials and household products, and is also a by-product of combustions. As a result, it is one of the most abundant toxic pollutants in indoor air.

Wood products

Wood products produced in or imported to various countries have to be tested and proven not to emit too much formaldehyde.

Traffic emissions

Formaldehyde can be found in the exhaust fumes emitted into the atmosphere by cars, buses and trucks.

Indoor air quality

Fuel burners, burning wood in open fireplaces, cooking and tobacco smoking are all sources of formaldehyde polluting the indoor air. But even the carpet on our floors and the materials our furniture is made from, can be a potential source of formaldehyde.

Occupational safety

Formaldehyde is common to the chemical industry. It is well known as a preservative in medical laboratories, as an embalming fluid, and as a sterilizer. Its primary use is in the production of resins and as a chemical intermediate.

GASERA ONE FORMALDEHYDE

Technology

- Principle of operation: photoacoustic infrared spectroscopy
- Patented ultra-sensitive optical microphone based on MEMS cantilever sensor coupled with a laser interferometer to measure microscopic movement of the cantilever
- Light source configuration: Distributed Feedback Quantum Cascade Laser
- Gas cell stabilized up to 50°C temperature

General

- 19” 3U (unit) housing for both table top and rack mount operation
- Dimensions: 48,4 cm W x 13,9 cm H x 44 cm D (19.1 in W x 5.5 in H x 17.3 in D)
- Weight: approx 13 kg
- Built-in computer with a 7” WSVGA display
- Data storage capacity sufficient for at least 1 year of continuous monitoring with the shortest sampling interval
- Total internal gas volume 30 ml
- 4 gas connections in the rear including 2 sample input connections equipped with user changeable filters for dust and small particles
- Electrical connections:
  Input voltage: 110-240 VAC, 50-60 Hz
  Input power: less than 100 W
- Interface: Ethernet, USB
- GASERA ONE FORMALDEHYDE can be remotely operated via smartphone, tablet, laptop or another GASERA ONE. (coming soon)

Environment

- Operational conditions:
  Temperature range: 0 °C – +40 °C
  Humidity: below 90% RH, non-condensing
  Pressure range: ambient level
  Dust/water resistance: IP20 (IEC 529)
- Storage conditions:
  Temperature range: -20 °C – +60 °C
- Sample gas conditions:
  Temperature: 0 – +49 °C
  Humidity: non-condensing
  Pressure: 930 mbar – 1100 mbar
  Gas flow: approx 1 liters/minute
  Particulates < 1 µm

Measurement specifications

- Response time: dependent on user configurable channel integration time (C.I.T.) and gas exchange routine. From approx. 10 seconds to few minutes.
- Detection limit: below 1 ppb
- Dynamic range: over 5 orders of magnitude (i.e. 100 000 times the detection limit)
- Repeatability: less than 1 % of measured value in operational conditions at the calibration concentration
- Accuracy: Better than 5% at the calibration concentration. Limited by the calibration gas accuracy.
- Temperature stability: ambient temperature change within the operational temperature range will not cause drift
- Pressure stability: Sample gas pressure change within the pressure range will not cause drift

Standards

- Complies with the Low Voltage Directive 2014/35/EU, EMC Directive 2004/108/EC and ROHS 2 directive 2011/65/EU

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