



GASERA

PHOTOACOUSTIC GAS ANALYZER

GASERA ONE HF



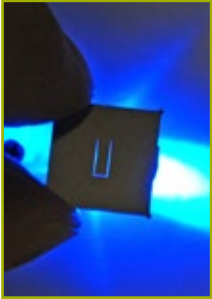
Monitoring low levels of hydrogen fluoride in ambient air

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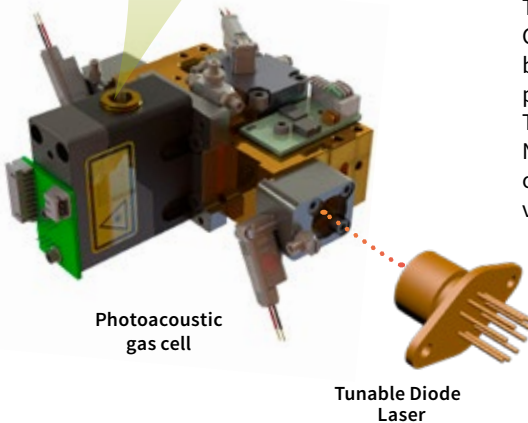
Measurement need

Hydrogen fluoride (HF) is a colorless, highly irritating, toxic and corrosive gas and can exist as a fuming liquid. HF is a severe irritant to the eyes, skin, and nasal passages already at 2 ppm levels. It may penetrate easily and quickly through the skin or lungs and into the tissues in the body causing serious damage to cells and organs.

HF is a common industrial compound used in manufacturing of fluorine, superacids, refrigerants, pharmaceuticals, polymers, among others. The continuous monitoring of low ppb levels of HF is needed to ensure product quality, reduce waste and for occupational and environmental safety.



Ultra-sensitive patented optical cantilever microphone



Photoacoustic gas cell

Tunable Diode Laser



Easy-to-use – one dial operation

GASERA ONE HF provides the user with a simple and intuitive interface with high resolution display and a single rotating dial.

Technology

GASERA ONE HF analyzer is based on combining ultrasensitive cantilever enhanced photoacoustic detection technology with Tunable Diode Laser source operating at a NIR fundamental spectral absorption line of hydrogen fluoride. This combination provides enough sensitivity to reliably measure ambient background levels of hydrogen fluoride. It also gives an exceptionally high level of stability with a recommended re-calibration period of 12 months, offering a low total cost of ownership.

Benefits

- Standalone system with built-in gas exchange unit
- Low cost of ownership: 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
- Highly selective measurement

Features

- Selective monitoring of hydrogen fluoride with below 0.5 ppb detection limit
- Response time user configurable from 10 seconds to a few minutes
- Dynamic range of 0 - 10 ppm and stable operation
- Gas cell stabilized to 50 °C and 300 mbar to avoid drifts due to changes in environmental conditions
- Low sample volume (few ml)
- Recommended re-calibration interval of 12 months
- User configurable monitoring tasks
- Intuitive user interface
- Built-in display presents results both numerically and graphically

Application examples

Aluminum smelters

Monitoring emissions of HF into the air as a consequence of high temperature processes.

Phosphate fertilizer plants

Measurement of emission of HF and monitoring the HF exposure in areas immediately surrounding industries that emit HF into the air.

Hazardous waste treatment and disposal

Measurement of HF in the waste stream and in surrounding areas of waste treatment plants.

Metal refining

Monitoring emissions of HF into the air as a consequence of high temperature processes.

Fluorocarbon and fluoride production

Measurement of emission of HF and monitoring the HF exposure in areas immediately surrounding industries that emit HF into the air.

Petroleum industry

Monitoring the process leakages of HF and monitoring the HF exposure in areas immediately surrounding industries that emit HF into the air.

Occupational safety

Measuring toxic HF concentrations due accidental release such as spills and leakages in the workplace to prevent worker exposure to HF.

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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: Tunable Diode 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
- Electrical connections:
Input voltage: 90...264 Vac, 47...63 Hz
Input power: 75 W max.
- Interface: Ethernet, USB and optionally Serial over USB, current message or voltage message. Supports MODBUS and AK-protocol.

Standards

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

Environment

- Operational conditions:
Temperature range: 0°C...+40°C
Humidity: non-condensing
Pressure range: 750 mbar...1050 mbar
Dust/water resistance: IP20 (IEC 529)
- Storage conditions:
Temperature range: -20 °C – +60 °C
- Sample gas conditions:
Temperature: 0 – +49 °C
Humidity: non-condensing, maximum relative humidity 80% for temperatures up to 35°C, decreasing linearly to 35% relative humidity at 49°C
Pressure: 750 mbar...1050 mbar
Gas flow: approx 0.6 liters/minute during the gas exchange.
Particulates < 1 µm

Measurement specifications

- Response time: 10 seconds to few minutes depending on user configurable channel integration time (C.I.T.) and gas exchange routine.
- Detection limit: below 0.5 ppb with 60 s response time.
- Dynamic range: 0 - 10 ppm. HF concentrations above 15 ppm will damage the product.
- Repeatability: less than 1 % of measured value in operational conditions at the calibration concentration.
- Accuracy: 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.

Gasera Ltd. reserves the right to change specifications without notice.