



PHOTOACOUSTIC MULTI-GAS ANALYZER

# GASERA ONE PULSE

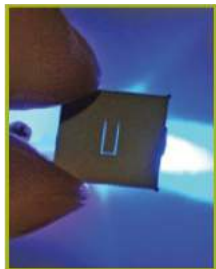


The flexible and easy to use multi-gas monitoring solution  
offering class leading performance at unbeatable prices

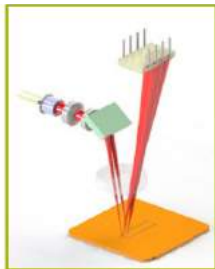


## Concept

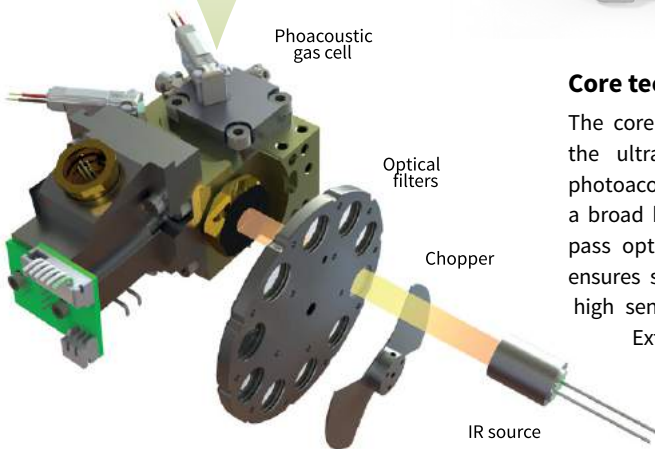
GASERA ONE PULSE can be configured for several applications and it measures up to 9 gases in one instrument. Gases are measured selectively by choosing up to 10 optical filters with narrow spectral bands for target and interfering gases.



Ultra-sensitive patented optical cantilever microphone



Photoacoustic gas cell



## Advanced multi-component analysis

In the unique analysis method several mid-IR spectral regions can be used for analysing each gas component with minimal cross-sensitivity. Unlike in conventional NDIR systems, the analysis in GASERA ONE PULSE is based on a chemometric least squares fit of sample response to calibration data providing unmatched selectivity.

## Enclosure options

For field use, a portable enclosure option is available with battery powered operation.



## Core technology

The core “engine” is based on combining the ultra sensitive cantilever enhanced photoacoustic detection technology with a broad band IR source and narrow band-pass optical filters. This unique approach ensures stable and reliable operation with high sensitivity and wide dynamic range.

Extremely versatile by design, GASERA ONE PULSE can measure down to trace levels of almost any gas that absorbs infrared light.

## Application examples

### Animal husbandry

Monitoring emissions from livestock, individual animals and air quality in animal shelters.

### Fume hood performance testing

Leak testing from fume hoods using SF<sub>6</sub>.

### Greenhouse gases research

Measuring GHG emissions from air, soil and water in situ to evaluate the climatic effects.

### Occupational health and safety

Measuring toxic gas leakage from industry.

### Photocatalysis

Measuring several gases in photocatalytic equipment performance evaluation.

### Refrigerant leakage

Monitoring refrigerant leakage from HVAC systems.

### SF<sub>6</sub> leakage

SF<sub>6</sub> leak detection in power utilities and switch-gear manufacturing.

### Soil analysis

Evaluating the need for fertilization by measuring the ratio of N<sub>2</sub>O and ammonia in the soil.

### Tracer gases

Measuring air exchange using tracer gases.

### Waste anesthetic gases

Monitoring the levels of anesthetic gases such as fluranes and N<sub>2</sub>O in hospital operating theatres.

## Features include

- Multiple gases analyzed simultaneously
- ppb to sub-ppm detection limits
- Response time from 5 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 analyzer

## Measurable gases include

- Anesthetics: desflurane, enflurane, isoflurane, sevoflurane etc.
- Greenhouse gases: CF<sub>4</sub>, C<sub>2</sub>F<sub>6</sub>, R13, R-134a, CO<sub>2</sub>, N<sub>2</sub>O etc.
- Tracer gases: SF<sub>6</sub>, R-134a, HFO-1234yf
- Hydrocarbons: CH<sub>4</sub>, C<sub>2</sub>H<sub>2</sub>, C<sub>2</sub>H<sub>4</sub>, C<sub>2</sub>H<sub>6</sub> etc.
- Inorganics: CO, CO<sub>2</sub>, H<sub>2</sub>O, NO, NO<sub>2</sub>, N<sub>2</sub>O, NF<sub>3</sub>, NH<sub>3</sub>, SF<sub>6</sub>, SO<sub>2</sub>
- VOCs: acetone, benzene, ethanol, formaldehyde, methanol, toluene, xylenes etc.

### 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 (model dependent)
- Built-in computer with a 7" WSVGA display
- Data storage capacity sufficient for at least 1 year of continuous monitoring of a full set of gases with the shortest sampling interval
- Total internal gas volume 10–30 ml (model dependent)
- 2 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: 100-200 W (model dependent)
- Interface: Ethernet, USB
- GASERA ONE PULSE can be remotely operated via smartphone, tablet, laptop or another GASERA ONE.

### Standards

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

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

### Measurement specifications

- Response time: dependent on user configurable channel integration time (C.I.T.) and gas exchange routine. Typically from 5 seconds to a few minutes (model dependent)
- Detection limit: gas and light source dependent. Typically from sub-ppb to sub-ppm
- Dynamic range: typically 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: limited by the calibration gas accuracy at the calibration concentration. Typically 2–5 %
- 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

### 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: 850 mbar – 1100 mbar  
Gas flow: approx 1 liters/minute  
Particulates < 1 µm