1314/1412

PHOTOACOUSTIC

INNOVA

MULT-GAS ANALYZER

APPLICATIONS

- Process Quality Control
- Stack Gases
- VOC/THC Analysis
- Fermentation/Greenhouse Gases
- Vehicle Emissions
- Trace Gas Analysis
- Occupational Health and Safety
- Monitoring of Livestock Emissions

OPTIONS

- Analog Interface Module for 0-10 Volt or 4-20 mA
- Battery Pack for Battery Operation
- Microprobe for Liquid/Headspace Sampling
- Additional Carousel for up to Five Additional Gases
- Multipoint Sampler

FEATURES

- Measures up to Five Gases Plus H2O
- Measurement Capability for Large Number of Gases
- Sensitivity from PPB to % Levels
- Extreme Stability Minimizes Calibration Frequency
- Highly Accurate and Free From Interfering Gases
- Temperature and Pressure Compensation
- Rack Mounted Version (1314)
- Standard IEEE-488 and RS-232 Interfaces
- Minimal Maintenance Required—Only Replacement of the Air Filter
- User-Friendly Operation/1 Hour Warm Up
- Self-Testing Internal Diagnostics Assure High Reliability

CAI

1312 West Grove Avenue
Orange, CA 92865-4134
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www.gasanalyzers.com

1314/1412
PHOTOACOUSTIC ANALYZER

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DESCRIPTION

The Innova Photoacoustic gas analyzers are highly accurate, reliable, and stable. Two versions of the analyzer are offered, the Model 1412 which is configured for bench top operation and the Model 1314 which is configured for rack mounted operation. The measurement system is based on photoacoustic Infrared detection and provides the capability of measuring virtually any gas that absorbs in the infrared spectrum. Gas selectivity is achieved through the use of optical filters which provide both a means of detecting the gas of interest and compensating for interfering gases and water.

METHOD OF OPERATION

SPECIFICATIONS

DETECTION LIMIT: Gas Dependent but typically in the ppb Region. Consult factory for specific data.

DYNAMIC RANGE: Typically 4 orders of magnitude

ZERO DRIFT: Typically +/- detection limit per 3 months

SPAN DRIFT: Typically +/- 2.5% of measured value per 3 months

REPEATABILITY: 1% of measured value

INFLUENCE OF TEMPERATURE: +/- 0.3% of measured value

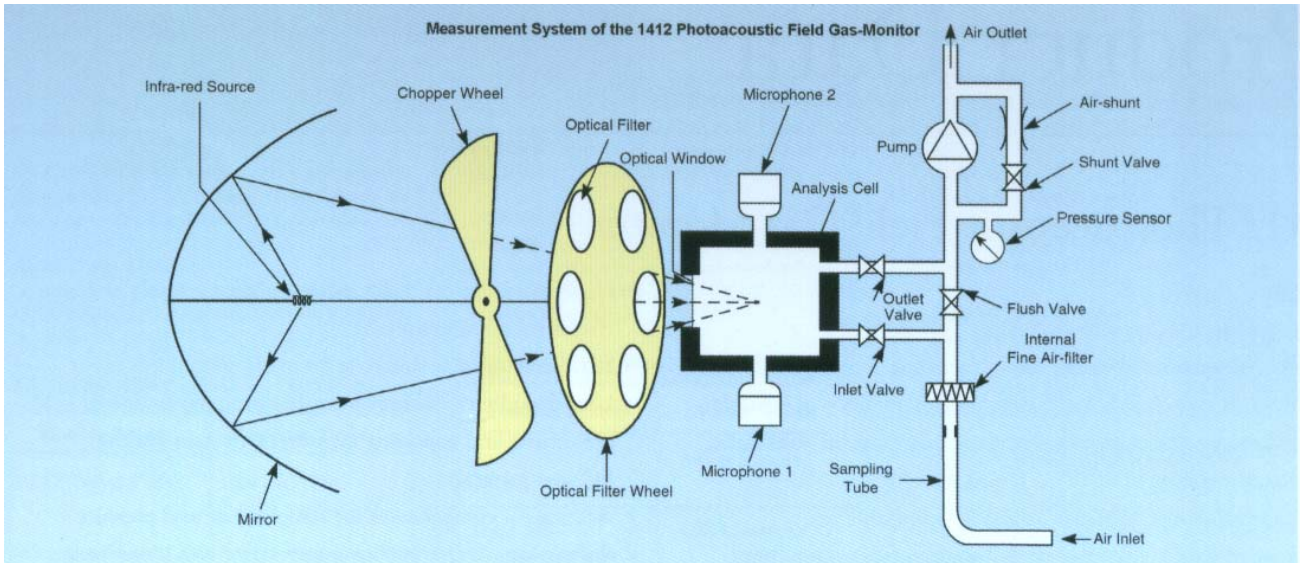
INFLUENCE OF PRESSURE: 0.01% of measured value

POWER CONSUMPTION: Approximately 120 VA

DIMENSIONS AND WEIGHT:

1314	1412
H: 6.9”, W: 19”, D: 14.8”	H: 6.9”, W: 15.6, D: 11.8”
Weight: 30.8 pounds	Weight: 19.8 pounds

Specifications subject to change without notice.



Measurement Cycle

1. The pump draws air from the sampling point through the air-filter to flush out the "old" air in the measurement system and replace it with a "new" air sample. The pressure sensor is used to check that the pump sequence is elapsed successfully and to measure the actual air-pressure.

2. The "new" air sample is hermetically sealed in the analysis cell by closing the inlet and outlet valves.

3. Light from an infra-red light source is reflected off a mirror, passed through a mechanical chopper, which pulsates it, and then through one of the optical filters in the filter wheel.

4. The gas being monitored, causing the temperature of the gas to increase selectively absorbs the light transmitted by the optical filter. Because the light pulsating, the gas temperature increases and decreases, causing an equivalent increase and decrease in the pressure of the gas (an acoustic signal) in the closed cell.

5. Two microphones mounted in the cell wall measure this acoustic signal, which is directly proportional to the concentration of the monitored gas present in the cell.

6. The filter wheel turns so that light is transmitted through the next optical filter, and the new signal is measured. The number of times this is repeated is dependent upon the number of gases being measured.

7. The response time is down to approx. 13 sec. for one gas or water vapour, or approx. 40 sec. if 5 gases and water vapour are measured.

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