

## Photoacoustic Infrared Spectroscopy (PAS) Analyzers

GAS PHASE ANALYZERS



### SPECIFIC FEATURES:

- Measures up to five gases plus water vapor
- Selectively measures a wide range of gases/vapors
- Linear response over a wide dynamic range
- Stable and Reliable: ensuring a maximum of only two calibrations a year
- User-friendly: easy calibration, configuration, and viewing/analyzing of data via PC
- Accurate: compensates for temperature and pressure fluctuations, water vapor interference, and interference from other known gases
- Extremely low-volume flushing possible
- Operates immediately: virtually no warm-up time necessary
- Remote control capability via TCP/IP network interface protocol
- Expandable up to 16 locations with the 700MPS Multipoint Sampler & Datalogger Software
- Rack mount

### MAIN APPLICATIONS:

- > Leak Testing of Insulated Switchgear for SF6 Emissions
- > Automotive Evaporative (SHED) Permeation Testing for VOC Emissions
- > VOC ambient monitoring of organic solvents
- > Complex air-exchange ventilation performance studies
- > Measurement of Anesthetic Agent Gases in Operating Rooms for Personnel Safety
- > Agriculture emissions from soil, manure, livestock
- > Greenhouse Gas Emissions
- > Ethylene Oxide Monitoring within a Medical Device Sterilization Facility for Personnel Safety
- > Formaldehyde Detection for Personnel Safety Purposes
- > Detection of harmful gases in battery manufacturing processes for personnel safety
- > Air Conditioner refrigerant emissions - R134a and HFO-1234yf
- > Photocatalytic material testing
- > Detection of airborne pollutants that absorb in mid-IR spectrum with ppb detection limit capability.



## PAS Sense 1314i Photoacoustic Analyzer

PAS Sense 1314i Photoacoustic Gas Monitor from CAI ENVEA Group is a highly accurate, reliable, and stable quantitative gas monitoring system. Its measurement system, based on the photoacoustic infrared detection method, is capable of measuring almost any gas that absorbs infrared light.

Gas selectivity is achieved through the use of optical filters. By installing up to five filters, the 1314i can measure the concentration of up to five component gases and water vapor in any air sample. The detection limit is gas-dependent, but is typically in the ppb region. Accuracy of these measurements is ensured by the 1314i's ability to compensate for temperature and pressure fluctuations, water vapor interference, and interference from other gases known to be present. Reliability of measurement results can be ensured by regular self tests. This measurement system requires no consumables and very little regular maintenance. For most applications, recalibration is only necessary one to two times a year.

### MEASURED GASES

Capable of detecting from 1 to 5 gas parameters, including H<sub>2</sub>O, that absorb in the mid-IR Spectrum. For example;

EtO / SF6 & CO<sub>2</sub> / NH<sub>3</sub>, Ethanol, N<sub>2</sub>O, CO<sub>2</sub>, CO & H<sub>2</sub>O

### MEASURING RANGES

Detection Limit	Gas dependent, but typically in the ppb region. Using the Gas Detection Limits chart, the detection limit for a selected sample integration time (S.I.T.) can be calculated.
Dynamic Range	Typically 4 orders of magnitude (i.e. 10,000 times the detection limit at 5 S.I.T.). Using two span concentrations it can be expanded to 5 orders of magnitude.

### TECHNICAL SPECIFICATIONS

Zero Drift	Typically ± Detection limit per 3 months
Influence of temperature	+/- 10% of detection limit/°C
Influence of pressure	+/-0.5% of detection limit/mbar
Repeatability	1% of measured value
Range Drift	+/- 2.5% of measured value per 3 months
Influence of temperature	+/- 0.3% of measured value/°C -0.01% of measured value/mbar
Influence of pressure	60%. (Concentration of 100x detection limit used in determining these specs.) Measured at 1013 mbar, and RH: 60% Measured at 20 °C and RH: 60% Detection limit is @5 s S.I.T.
Interference	Automatically compensates for temp and pressure fluctuations in its analysis cell and can compensate for water vapor in the air sample. If an optical filter is installed to measure a known interferent, the 1312i can cross compensate for the interferent.
Acoustic Sensitivity	Not influenced by external sound
Vibration Sensitivity	Strong vibrations at 20 Hz can affect the detection limit
Internal Data Storage Capacity	Total space available in Display Memory to store data is 131072 measurement cycles. If a measurement cycle takes 15 sec, then display Memory space will be sufficient for a 22-day monitoring task.
Dimensions: (HxWxD)	6.9 x 19 x 14.8 in. (175 x 483 x 375 mm)
Weight:	30.8 lbs (14 kg)
Communication:	Monitor uses 3 interfaces: USB, Ethernet, and RS232, for data exchange and remote control of the 1512. Software communicates using USB, Ethernet, and RS232.



**CAI ENVEA Group**  
 1312 West Grove Avenue,  
 Orange, CA 92865 US  
 ☎ 714-974-5560  
 ✉ SO.CAI@envea.global

Visit us on:  
[www.envea.global/cai](http://www.envea.global/cai)

