



MIRA *Pico* VOC

Real-Time Formaldehyde Analyzer

Monitor formaldehyde levels in real-time with 1 ppb sensitivity and accuracy in a compact and portable laser-based gas analyzer.

Introducing the new MIRA *Pico* VOC, the portable high accuracy formaldehyde monitoring system from Aeris Technologies, Inc. The *Ultra* VOC is based on Aeris' revolutionary, miniature laser-based sensor engine, which achieves sub-ppb sensitivity and accuracy in seconds. The MIRA *Ultra* VOC is World's smallest, uniquely portable, battery powered formaldehyde-monitoring tool.

The *Pico* VOC provides precise and accurate formaldehyde concentrations via laser absorption spectroscopy in the middle infrared region, achieving unparalleled specificity and sensitivity at the 1ppb level in seconds. The distinct, middle infrared "fingerprint" of formaldehyde enables the rapid and quantitative detection of levels indoors, outdoors, or in test chambers, drastically reducing labor time and consumables associated with other methods. The ability to monitor this important carcinogen in real-time enables a wide range of new monitoring applications previously impractical due to traditional size, weight, cost, and accuracy constraints.



Key Features

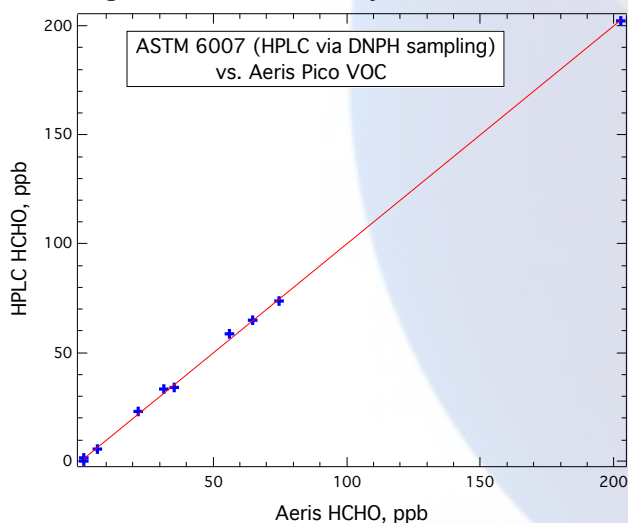
- Real-time 1ppb sensitivity and accuracy
- Autonomous, built-in calibration
- Fast 1Hz response time, out-of-the-box operation
- High accuracy GPS option for outdoor measurements
- Wifi, RS-232, and optional analog out
- Lowest, 15W power consumption
- Maintenance-free sensor core
- DNPH/HPLC level accuracy and precision without associated time and consumables
- Built-in 6hr battery, built-in sampling pump
- Compact, portable instrument suitable for fixed, mobile, and drone applications

Real-Time HCHO Analysis for VOC Emissions

The MIRA *Pico* VOC is suitable for quantifying emissions from common sources including engineered wood products. Comparisons with ASTM methods quantify system accuracy and linearity from ppb to ppm levels. In addition to HCHO, *Pico* VOC systems also determine water vapor concentration and report HCHO dry-mole fractions. When used with an emissions chamber, the *Pico* VOC can determine outgassing rates accurately in minutes instead of hours, while eliminating wet chemistry steps associated with other methods. Total cost of ownership is greatly reduced with the *Pico* VOC, reducing technician time as well as consumables. The MIRA *Pico* VOC truly represents a game-changing proposition for high accuracy HCHO monitoring applications.

About Aeris Technologies, Inc.

Aeris Technologies, Inc. provides a range of ultrasensitive gas analyzers for trace gas monitoring applications of many species. Aeris is redefining the *state-of-the-art* in laser-based gas analysis systems, reaching unparalleled size, weight, power, and cost milestones.



Formaldehyde emission data comparison for several engineered wood product samples measured using ASTM 6007 (with DNPH/HPLC) vs. the Aeris Pico VOC. The HPLC measurement was performed using traditional sampling and elution/separation analysis. The Aeris Pico VOC system data was obtained by merely sampling the chamber outflow, with no sample processing required.

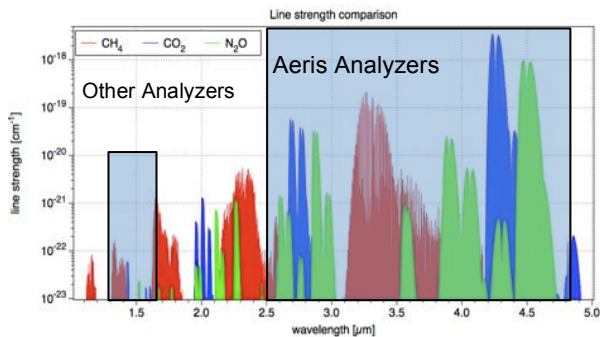
MIRA Pico VOC Formaldehyde Analyzer

System Specifications

Metric	Specification
Measurement method	Middle-Infrared Laser Absorption Spectroscopy
Sensitivity (σ)	1ppb/s
Accuracy	1ppb with built-in calibration
Temperature Range	10-40°C, 10 to 95% RH (non-condensing)
Concentration Range	<1 ppb to 500 ppm
Size (Nominal)	11.5"W x 8"D x 3.75"H
Weight	2.75 kg (6lbs)
Power Consumption	15W
Voltage, current	110-220V: 0.25A, 12V: 1.5A
Interface/Outputs	WiFi, USB, RS232
Memory	32GB, expandable
Data Update Rate	1 or 2 Hz

Core Technologies

MIRA series analyzers combine Aeris' unique multipass absorption cell technology, custom electronics, and solid-state MIR lasers to achieve sub-ppb sensitivity and ppb level accuracy in an extremely robust and compact package. The MIRA Platform operates in the mid-IR, where hydrocarbon absorption is typically thousands of times stronger than competing approaches in the near-IR.



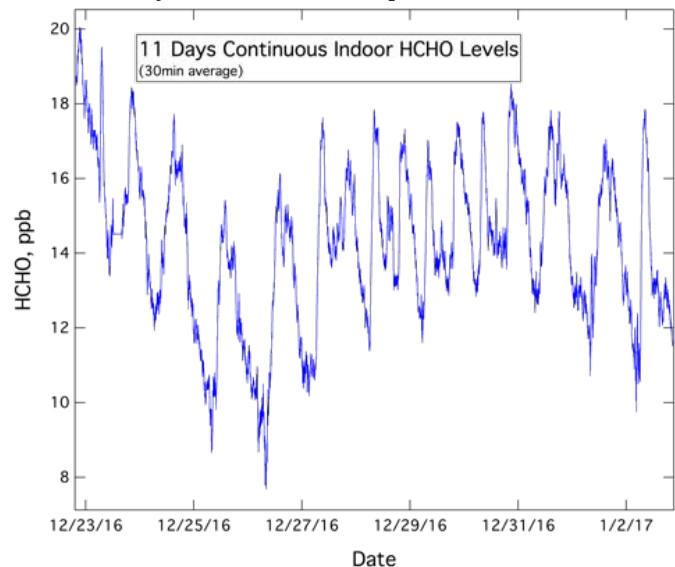
The Patented sensor engine used in the *Pico Mobile LDS* uniquely achieves a long absorption path length in an extremely small volume, providing ultra-high sensitivity and rapid response time with reduced pumping requirements. No sample collection and processing steps are required with the Pico VOC.



MIRA laser-based sensor engine, comprising a fixed, hermetic optical bench, integrated laser and detector subassemblies, and ultra-compact, 60cc, 13m path length optical multipass cell.

Unmatched, Portable, Real-Time Quantification of Indoor or Outdoor Formaldehyde Levels

MIRA Pico VOC gas analyzers achieve a 1ppb absolute accuracy level in seconds using a unique internal calibration feature. Competing high accuracy formaldehyde analyzers suffer from known interferences or require periodic normalization due to fluctuations in laser power, whereas MIRA analyzers are based on simple direct absorption spectroscopy in the middle infrared, enabling spectral interferences to be removed using standard chemometric analyses. The multi-feature HCHO MIR fingerprint is distinct, and instrument linearity is unmatched while the approach is essentially immune to laser power fluctuations.



Extended, autonomous monitoring of indoor formaldehyde levels using the Pico VOC. Built-in, periodic calibration is performed autonomously at user-defined intervals. Here, the HCHO levels correlate well with indoor temperature as this affects the outgassing rate of the sources, which include wood-based furniture. Sub-ppb precision is obtained by signal averaging over a period of minutes.