

MIRA STRATO CH₄/C₂H₆



UAV/DRONE

The **MIRA Strato CH₄/C₂H₆** from Aeris Technologies is a miniature, lightweight analyzer operating in the mid-infrared (mid-IR) spectrum, delivering unmatched simultaneous methane (CH₄) and ethane (C₂H₆) sensitivity at 2 ppb/s or lower. It distinguishes natural gas from interfering sources like vehicle exhaust and biogenic sources such as landfill and sewer gas with significantly greater discrimination accuracy than other laser-based analyzers, all in a compact, cost-effective design. Equipped with two swappable 90-minute battery packs and the ability to run on external DC power (e.g., from a drone) via a DC/DC converter, this high-sensitivity system integrates a cutting-edge laser absorption spectrometer with GPS, making it the world's most powerful and portable leak detection tool.

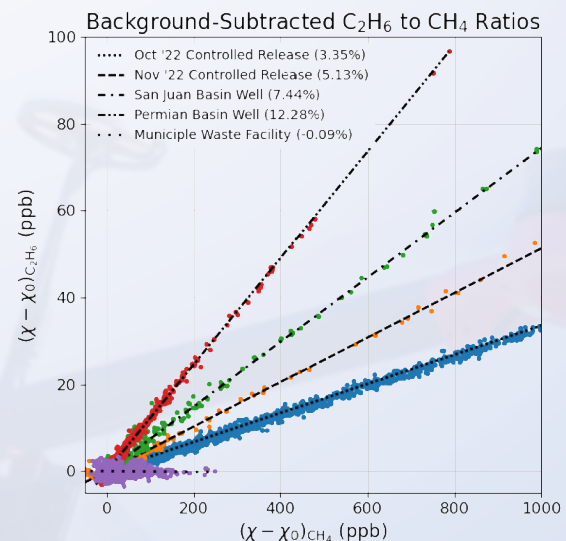


Leak plumes from a METEC storage tank are mapped in minutes using the MIRA Strato gas analyzer mounted on the underside of a DJI Matrice 600 drone. Red indicates highly correlated ethane and methane.

NATURAL GAS LEAK DETECTION SYSTEM WITH GPS

- Superior sensitivity: <900 ppt/s CH₄, <230 ppt/s C₂H₆
- Real-time analytics and statistics
- High-accuracy GPS, compact antenna
- Simultaneous anemometer logging
- Wi-Fi, RS232, data streaming capability
- Low power consumption, battery- or drone-powered
- Water vapor measured to report dry mole fractions
- Data compatible with multiple GIS software
- Maintenance-free sensor, user-serviceable filters

Unmatched sensitivity, accuracy, and speed with superior thermogenic vs biogenic discrimination



Ethane and methane enhancement ratios were measured across multiple independent field tests at various sites in October and November 2022. The methane-to-ethane ratios from these sources are strikingly clear and distinct, enabling easy differentiation of methane origins. For instance, natural gas sources like the controlled releases and active wells show higher ethane content, while biogenic sources, such as the waste facility, exhibit significantly lower ethane levels, allowing for straightforward identification and attribution of methane emissions. (Dooley et al. 2024)

INDUSTRY-LEADING SUB PPB ACCURACY AND SENSITIVITY

Metric	Specification
Measurement Method	Mid-Infrared Direct Laser Absorption Spectroscopy
Sensitivity (1 σ) at 1 Hz	CH ₄ : <2 ppb/s / C ₂ H ₆ : <500 ppt/s
Sensitivity (1 σ) at 5 Hz	CH ₄ : <900 ppt/s / C ₂ H ₆ : <230 ppt/s
Temperature / Humidity	10-40° C, 10 to 95% RH (non-condensing)
Measurement Range*	CH ₄ : 10 ppb to 6,000 ppm / C ₂ H ₆ : 1 ppb to 1,000 ppm
Flow Rate	0.3 to 0.8 L/min
Size	21.0 cm W (8.25") x 21.0 cm D (8.25") x 8.9 cm H (3.5")
Weight	2.01 kg (4.42 lbs.)
Power Consumption	19 W steady state, 23 W at startup
Voltage / Current	12-15 VDC 2 A, 100-240 VAC 0.23 A (50-60 Hz)
Interface / Outputs	Wi-Fi, USB-A, DB9 RS232 (optional Ethernet, analog out)
Memory	32 GB default, expandable
Data Update Rate	1 Hz (selectable options up to 5 Hz)

*Linear measurement range. Operational range configurable for specific applications.

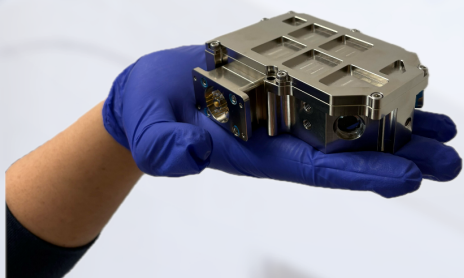
Included:	GPS
Rugged Shipping Case	Tablet
User-Friendly Software	12 V and 110/240 V Power Plug

Optional:	Advanced GPS Upgrade
Scrubber	Nafion Dryer
High Flow	Anemometer

MIRA Strato is a lightweight, high-sensitivity sensor crafted for the most demanding UAV and drone applications. Weighing just 4.42 lb (2.01 kg), it features built-in GPS and swappable battery packs, providing a compact and powerful solution without sacrificing performance. The Strato's ability to log data from third-party GPS devices and lightweight anemometers makes this analyzer an ideal tool for greenhouse gas monitoring in hard-to-reach areas.

Core Sensor Technology

MIRA series analyzers combine Aeris' patented multipass cell technology with mid-IR solid-state lasers and custom electronics to achieve superior sensitivity and accuracy in an extremely robust and compact platform. The proprietary sensor engine used in every MIRA analyzer uniquely achieves a long absorption path length in an extremely small volume resulting in a fast response time with reduced pumping and power requirements.

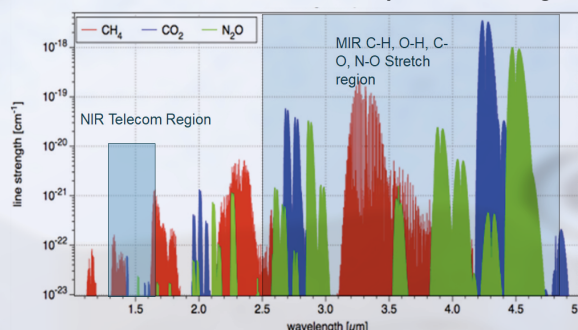


MIRA's compact optical core achieves a 13 meter path length in a 60 cc volume.

The Power of Mid-infrared

Spanning wavelengths from 2.5 to 5 micrometers (μm), the Aeris mid-IR technology achieves the same or superior short-term sensitivity as fragile NIR cavity-based techniques. The robust design of the mid-IR core is well suited for a wide range of applications including airborne analysis and environmental monitoring.

Mid-infrared vs near-infrared absorption line strength



Absorption spectrum of greenhouse gases across the IR. Absorption line strength is orders of magnitude stronger in the Mid-IR than NIR.



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

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