MIRA *Strato N2O/CO2: UAV/Drone*

High Accuracy Analyzer w/GPS

Strato is the highest sensitivity gas analysis tool for UAV/Drone-based environmental monitoring.

Introducing the new MIRA *Strato N_2O/ CO_2*, a miniature, lightweight, high sensitivity/high accuracy greenhouse gas analyzer from Aeris Technologies, Inc. Strato series analyzers combine a breakthrough, real-time laser absorption spectrometer with built-in GPS capability to produce the World's most compact, sensitive and powerful greenhouse gas detecting tool.

The *Strato N_2O/CO_2* operates in the mid-IR, achieving unparalleled, simultaneous nitrous oxide and carbon dioxide sensitivity at a very low level, resp. <200ppt/s and <200ppb/s . The ability to simultaneously monitor N_2O and CO_2 in real-time with a portable analyzer enables a wide range of field applications that were previously impractical due to traditional size, weight, power, and cost constraints. Strato Series analyzers representing a paradigm shift in high sensitivity laser-based gas analysis systems.

The compact, lightweight MIRA Strato is easily adapted to many commercially available drones (DJI Matrice 600 shown), and can be mounted in any orientation. Communication is typically achieved via the RS-232 port, which can stream at data rates of up to 10Hz. The Strato is inherently immune to vibrations, and has proven robust in many drone studies to date.

Key Features include:

- *Superior sensitivity: <200ppt/s N_2O , <200ppb/s CO_2*
- *Real-time analytics, statistics*
- *Fast response time*
- *Hermetically sealed sensor core keeps optics clean*
- *1 or 2 Hz operation standard, up to 10Hz optional*
- *High accuracy GPS, compact antennae*
- *Wi-Fi, RS232, data streaming capability*
- *Low power consumption, battery or drone powered*
- *Robust platform: 100x less sensitive to contamination than "cavity-based" systems*
- *Water vapor measured to report dry mole fractions*
- *Data in .kml format for viewing in Google Earth™*

Unmatched Sensitivity, Accuracy, and Speed

With less than 2kg, the Strato N_2O/CO_2 is an unparalleled lightweight laser based gas analyzer. There are many commercially available drones that could carry this unit.

About Aeris Technologies, Inc.

Aeris Technologies, Inc. provides high accuracy, ultrasensitive gas analyzers for numerous fixed, mobile and handheld gas analysis applications. Aeris is redefining the *state-of-the-art* in laser-based N_2O and CO_2 detection solutions, reaching unparalleled performance, size, weight, power, and cost milestones.

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MIRA *Strato N2O/CO2 w/GPS*

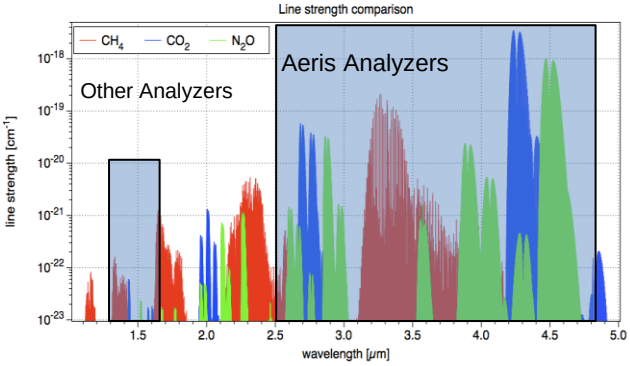
System Specifications

Metric	***Specification****
Measurement method	Mid-Infrared Laser Absorption Spectroscopy
Species, Sensitivity (σ)	N_2O: <200ppt/s, CO_2: <200ppb/s
Drift, typical	1-2% of reading typical, long-term
Temp/Humidity	5-40°C, 10 to 90% RH (non-condensing)
Concentration Range*	N_2O: 2 ppb to 500 ppm, CO_2: 10 ppm to 10%
Size	7.5"W x 7.5"D x 3.5"H
Weight	2 kg (4.4 lbs) w/ battery
Power Consumption	17W, 80-90 minute swappable battery
Voltage, current	12-15V DC: 2A, 110-220V AC: 0.5A
Interface/Outputs	Wi-Fi, RS-232, analog output (optional)
Memory	32GB default, scalable
Data Update Rate	up to 10Hz , 1-2Hz standard

**Optional ranges, etc. can be configured for specific applications*

Core Technologies

MIRA series analyzers combine Aeris' Patented multipass cell technology with MIR solid-state lasers and custom electronics to achieve superior sensitivity and accuracy in an extremely robust and compact platform. MIRA analyzers operate in the mid-IR, where N_2O and CO_2 absorption is thousands of times stronger than in the near-IR , resulting in significantly better sensitivity than competing systems.

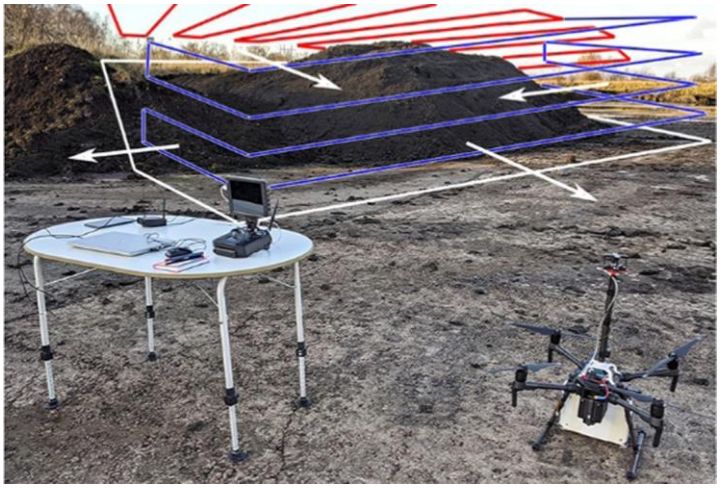


The Patented MIRA spectrometer engine achieves a 13m absorption path length in an extremely small volume (60cc), resulting in ultra-high sensitivity, rapid response time, and low power consumption.

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.

Lightweight, High Sensitivity Operation, Dual logging of GPS and Anemometer simultaneously

Strato systems achieve high sensitivity and quick detection of *N_2O and CO_2* sources for both gases simultaneously. Combined with datalogging of 3th party GPS and lightweight anemometers make this analyzer the perfect tool for greenhouse gas monitoring in difficult to access areas.



The MIRA Strato was mounted to a drone to take CH4 and C2H6 concentrations over a sludge pile from a wastewater treatment plant. The concentration data was used to calculate and map emissions from a source that is difficult to access with traditional methods. The paper is called "Sensative Drone Mapping of Methane Emissions without the Need for Supplementary Ground-Based Measurements" authored by Magnus Galfalk, Soren Nilsson Paledal, and David Bastviken.

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