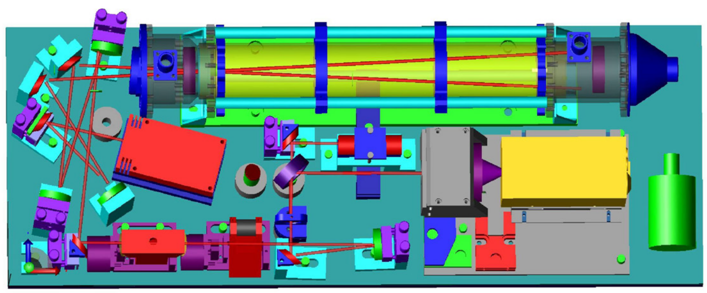
AERODYNE RESEARCH, Inc.

Single Laser Trace Gas Monitors: The Mini Monitor

Sensitive, rapid, highly specific and continuous measurements of atmospheric trace gases in ambient air.



APPLICATIONS

- Detection of a wide variety of atmospheric trace gases, such as: methane, nitrous oxide, nitric oxide, nitrogen dioxide, carbon monoxide, carbon dioxide, formalde hyde, formic acid, ethylene, acetylene, carbonyl sulfide, acrolein, ammonia and others.
- N_2O Monitors provide simultaneous monitoring of N_2O, water vapor and either CO, CO_2, or CH_4.
- Isotopic monitoring of CO_2, CH_4, and N_2O.
- Combustion monitoring and characterization.
- Isotopic monitoring for source/sink characterization.
- Eddy Covariance measurements for nitrous oxide and other trace gases.
- Fast response plume studies.
- Breath analysis.
- Air quality monitoring.
- Mobile measurements from ship, truck, and aircraft platforms.

ADVANTAGES

- Our smallest IR laser trace gas monitor with electronics and optics in a single compact unit.
- Absolute trace gas concentrations without calibration gases.
- Fast time response.
- Free from interferences by other atmospheric gases or water vapor.
- Turnkey and unattended operation.
- Ready to be deployed in field measurements and on moving platforms.
- Optical path length up to 76 meters.
- Data rates up to 1 to 10 Hz (depends on specific instrument and vacuum pump)

POPULAR INSTRUMENTS

HIGHER PRECISION AND ACCURACY IS OBTAINABLE WITH MID-INFRARED LASERS

OCS, CO_2, H_2O

NH_3

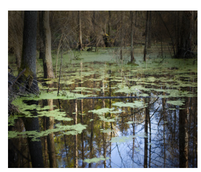
CO_2 Isotopes

N_2O, CO_2, CO, H_2O

HCHO

C_2H_6, CH_4

CO



CH_4, N_2O, H_2O

MECHNICAL SPECIFICATIONS FOR SINGLE LASER TRACE GAS INSTRUMENT:

Dimensions: 430 mm x 660 mm x 270 mm (W x D x H) (core instrument)
Weight: 35 kg (core instrument)
Electrical Power: 500 W, 120/240 V, 50/60 Hz (with Varian IDP-3 vacuum pump)

REFERENCES:

Nelson, D.D. et al., Optics Let. 31, 2012-2014, 2006.
McManus, J.B. et al., Applied Physics B, DOI: 10.1007/s00340-006-2407-7 (2006).
McManus, J.B., M.S. Zahniser, D.D. Nelson, L.R. Williams, and C.E. Kolb, Infrared laser spectrometer with balanced absorption for measurements of isotopic ratios of carbon gases,, Spectrochim. Acta A, 58, 2465-2479, (2002).
McManus, J.B., D.D. Nelson, J.H. Shorter, R. Jiménez, S. Herndon, S. Saleska, and M.S. Zahniser, A high precision pulsed QCL spectrometer for measurements of stable isotopes of carbon dioxide, J. Modern Optics, 52, 2309-2321 (2005).
Saleska, SR; J. Shorter, S. Herndon, R. Jimenéz, B. McManus, D. Nelson, M. Zahniser, What are the instrumentation requirements for measuring the isotopic composition of net ecosystem exchange of CO2 using eddy covariance methods? Isotopes in Environmental and Health Studies, 42 (1), 117 (2006).
Nelson, D.D., J. B. McManus, S. C. Herndon, M. S. Zahniser, B. Tuzson and L. Emmenegger, New Method for Isotopic Ratio Measurements of Atmospheric Carbon Dioxide Using a 4.3 μm Pulsed Quantum Cascade Laser, Appl. Phys. B 90, 301–309 (2008).
Tuzson, B , J. Mohn, M. J. Zeeman, R. A. Werner, W. Eugster, M. S. Zahniser, D. D. Nelson, J. B. McManus, L. Emmenegger, High precision and continuous field measurements of δ13C and δ18O in carbon dioxide with a cryogen-free QCLAS, Appl. Phys. B 92, 451-458 (2008).