



LI-7825 CO₂ Isotope/NH₃ Trace Gas Analyzer

The LI-7825 CO₂ Isotope/NH₃ Trace Gas Analyzer measures the four most abundant CO₂ gas isotopologues in air and reports $\delta^{13}\text{C}$, $\delta^{17}\text{O}$, and $\delta^{18}\text{O}$ with high precision and accuracy. By measuring CO₂ isotopologues and calculating isotope ratios, researchers can:

- Identify the sources and sinks of atmospheric carbon
- Partition net ecosystem carbon exchange
- Gain insight into biological processes
- Evaluate carbon sequestration efforts

Measuring atmospheric CO₂ isotopologues

The LI-7825 meets or exceeds requirements for long-term atmospheric background measurements and offers a versatile platform for a range of applications for a better understanding of CO₂ emissions from anthropogenic and natural sources.

Measuring NH₃

The LI-7825 measures higher concentrations of NH₃, and is suitable for detecting ammonia in livestock barns, feedlots, barnyards, fertilizer applications, fence line monitoring, ammonia leaks, and other applications where NH₃ concentration is elevated above natural abundance.

Applications

- Atmospheric monitoring
- Urban emissions monitoring
- Mobile emissions monitoring
- Large area emissions monitoring
- Sensor networks
- Mud gas logging

LI-7825 10-Day Precision with Allan Deviation Plots

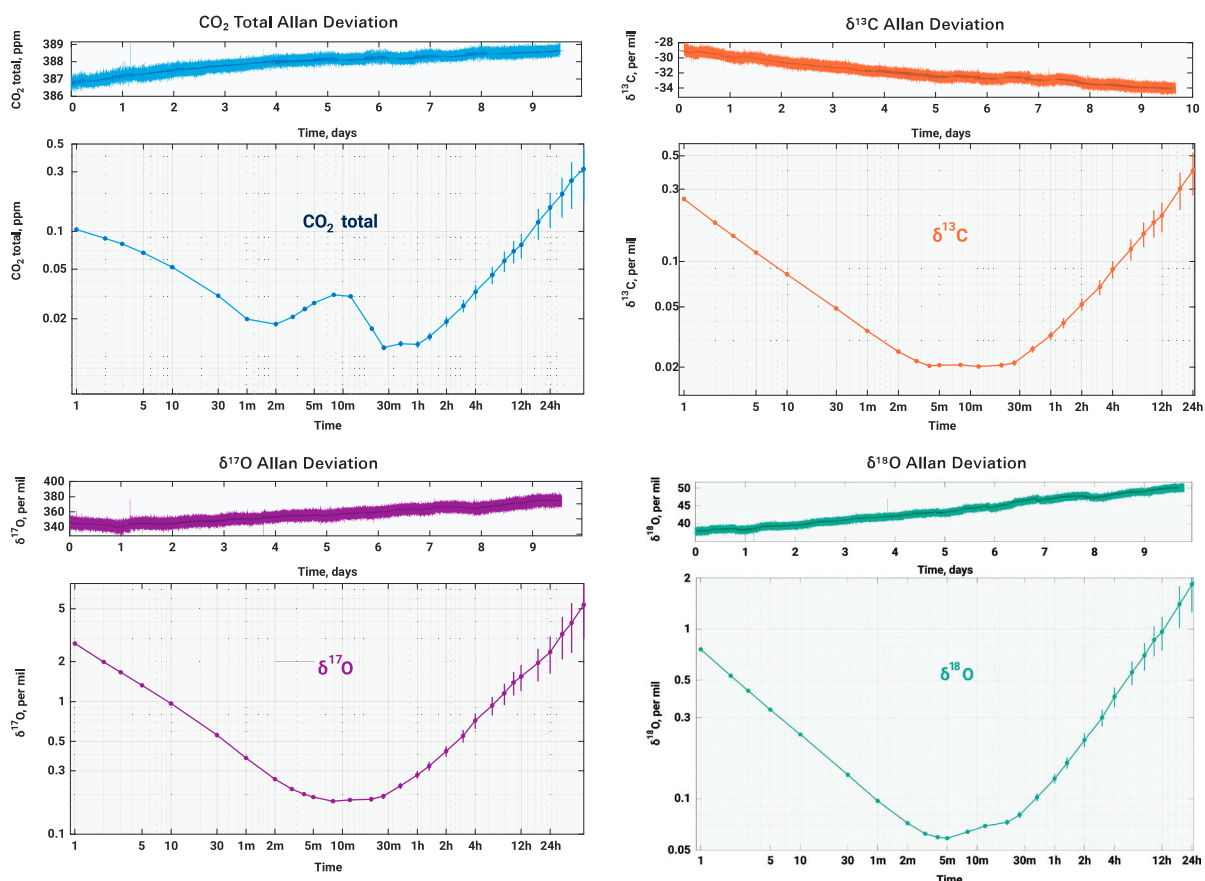


Figure 7. Ten-day CO₂ isotope stability data from an LI-7825 CO₂ Isotope/NH₃ Trace Gas Analyzer. Data for the Allan Deviation plots were collected over a 10-day period, where, prior to the measurement of test gas, the LI-7825 was powered on to sample ambient air for 24 hours. For the study, it was connected to a 400 ppm CO₂ tank with stainless steel tubing.

Specifications

CO₂ Measurements

Response Time (T₁₀-T₉₀): ≤ 2 seconds from 0-400 ppm

Range: 50 to 2,000 ppm

Precision (1σ):

0.05 ppm at 400 ppm with 5-minute averaging

Maximum Drift: < 0.5 ppm per 24-hour period

δ¹³C Measurements

Precision (1σ):

<0.5 ‰ at 400 ppm CO₂ with 1 second averaging

0.04 ‰ at 400 ppm CO₂ with 5-minute averaging

Maximum Drift: <1 ‰ per 24-hr period

δ¹⁸O Measurements

Precision (1σ):

0.1 ‰ at 400 ppm CO₂ with 5-minute averaging

Maximum Drift: <4 ‰ per 24-hr period

δ¹⁷O Measurements

Precision (1σ):

0.4 ‰ at 400 ppm CO₂ with 5-minute averaging

Maximum Drift: <12 ‰ per 24-hr period

NH₃ Measurements

Range: 0-30,000 ppb

Precision (1σ):

2 ppb at 300 ppb with 1 second averaging

Response Time (T₁₀-T₉₀): ~5 minutes. *

H₂O Measurements

Range: 0 to 60,000 ppm

Precision (1σ):

45 ppm at 10,000 ppm with 1 second averaging

20 ppm at 10,000 ppm with 5 second averaging

*NH₃ measurement response time is dependent upon gas composition and inlet pneumatic configuration including tubing/fitting materials, flow rates, and upstream volumes.

Specifications subject to change without notice