



SINGLET-OXYGEN ANALYZER

ABSOLUTE ACCURACY • SELF-CALIBRATING



The Quantitative Singlet-Oxygen Analyzer is designed to be readily interfaced into a variety of singlet-oxygen applications including optimization of singlet-oxygen generators, chemical oxygen-iodine laser studies, fundamental physical sciences, and plasma decontamination.

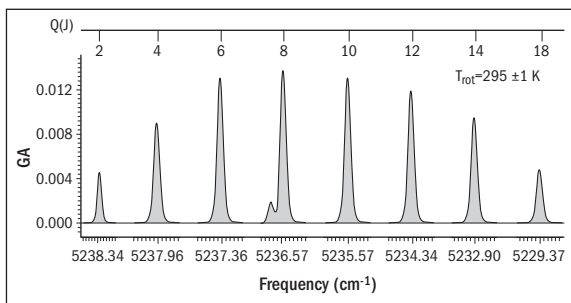
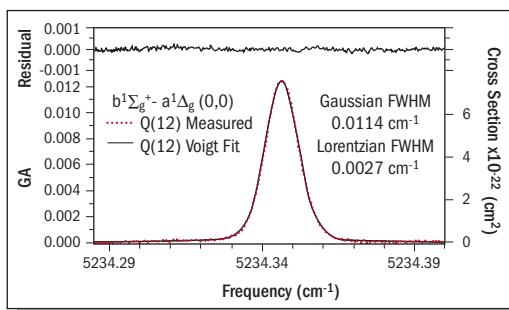
Because the Analyzer is not affected by most common background gases, it provides a direct measure of singlet-oxygen density, $[O_2(a^1\Delta_g)]$, in a wide variety of these background gases with high precision (better than 10^{14} molecules/cm³) and a rapid response rate (data rate up to 10 Hz).

As described in the Theory Section (on lgrinc.com), the measurement strategy is based on high-resolution direct-absorption spectroscopy. As a result, the instrument is self-calibrating and provides absolute, accurate measurements of singlet-oxygen density.

The instrument itself can be implemented for extractive sampling, or be customized by LGR to provide in-situ measurements of $O_2(a^1\Delta_g)$ under a variety of conditions (e.g. COIL test stands, plasma effluents). For more information about Custom Instruments and Contract R&D and for papers about Singlet- O_2 Analysis, go to www.lgrinc.com.

Absolute Accuracy

Off-Axis ICOS spectrum of 3×10^{15} molecules/cm³ singlet oxygen in an O_2/He plasma afterglow. Analysis of the measured spectrum yields the absolute density, translational temperature, and collisional broadening parameters.



Rotational Temperature

The analyzer can be customized to scan over several ro-vibrational transitions to yield an accurate singlet-oxygen rotational temperature.

Typical Operational Parameters

- Minimum Detectable Density**
2x10¹⁴ molecules/cm³
- Repeatability/Precision**
1x10¹⁴ molecules/cm³
- Absolute Accuracy**
Better than 5% of reading
Accuracy is limited by uncertainties in the absorption cross section.
- Data Rates**
0.01–10 Hz
- Zero And Span Drift**
None
- Calibration**
None
- Outputs**
Digital (RS232), Analog, Ethernet
- Data Storage**
Internal Hard Drive (20 gigabytes)
- Display**
12.1" Color TFT
- Sample Temperature**
0–50 °C
- Operating Temperature**
5–45 °C
- Ambient Humidity**
<98% RH Non-Condensing
- Sample Humidity**
<10%
- Warm-Up Time**
<60 seconds
- Inlet/Outlet Fittings**
3/8", 3/8" Swagelok®
(external pump)
- Power Requirements**
115/230 VAC; 50/60 Hz; 80 W
(excluding external pump)
- Dimensions**
10" Hx38" Wx14" D
- Weight**
Less than 48 pounds (22 kg)

Ordering Information

- Price:** \$79,950
- Benchtop Package**
Model Number: 908-0006



Please Specify When Ordering

- 110 VAC**
Add -0 to Model Number
- 220 VAC**
Add -1 to Model Number

Options

Custom integration options available

Included in Package

Includes an external pump for continuous flow measurements.

Field-deployed
in some of the
harshest envi-
ronments on
earth, LGR
Analyzers are
designed to
work as hard
as you do.



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