OA-ICOS™ GLA331-CCIA2 analyzers
CO₂ isotopic analyzers - EP Rackmount

Highly sensitive, accurate and fast analyzer for reliable measurement of δ¹³C, δ¹⁸O, CO₂ and H₂O.

Measurement made easy

Features and benefits

- Simultaneous measurements of δ¹³C, δ¹⁸O, CO₂ and H₂O
- Unprecedented stability, precision and low drift
- Measurement rates selectable up to 1 Hz
- Installed and operational in minutes
- Insensitive to hydrocarbons or H₂S
- Extremely high dynamic range allows measurements of elevated CO₂
- Unsurpassed reliability
- Real-time diagnostics

Overview

The ABB LGR-ICOS gas analyzers build on the heritage and extensive track record of Los Gatos Research analyzers, using patented Off-Axis Integrated Cavity Output Spectroscopy (OA-ICOS) technology, the latest evolution in tunable diode laser absorption spectroscopy (TDLAS).

Isotopic measurements of carbon dioxide allow determination of transport, uptake, residence time, sequestration, and depletion modes of carbon dioxide throughout the atmosphere and biosphere. Carbon dioxide is a particularly useful gas for this type of analysis because of its presence in the metabolic processes of living organisms as well as being a by-product of combustion processes.

When making isotopic carbon dioxide measurements, scientists require:
(1) accurate measurements over a wide range of mole fractions, (2) high precision, (3) ability to report reliable values even if mixing ratios are rapidly changing, (4) portability, (5) user-friendly interface, (6) low drift, (7) insensitivity to H₂S, NH₃, as well as methane and other hydrocarbons.
... Overview

ABB’s Enhanced Performance (EP) series incorporates proprietary internal thermal control for ultra-stable measurements with unsurpassed precision, accuracy and drift. Moreover, only ABB’s analyzers provide reliable guaranteed measurements at mole fractions more than 20 times ambient levels.

ABB’s patented OA-ICOS technology, a fourth-generation cavity enhanced absorption technique, has many advantages over conventional Cavity Ringdown Spectroscopy (CRDS) techniques such as being alignment insensitive, having a much shorter measurement time, not requiring tight control of cavity pressure and temperature, and not requiring expensive and power-consuming auxiliary elements.

The analyzer includes an internal computer that can store data practically indefinitely on its internal hard drive (for applications requiring unattended longer term operation), and send real-time data to a data logger through its analog and digital (RS232) outputs. Several optional features are available which improve the flow time response, allow multiple inlet sources, or provide for remote access and control of the analyzer via the Internet.

Accessories

<table>
<thead>
<tr>
<th>Accessory</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIU-16</td>
<td>Multiport Inlet Unit</td>
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<tr>
<td>MIU-8</td>
<td>Multiport Inlet Unit</td>
</tr>
<tr>
<td>ACC-DP3H</td>
<td>3-head Diaphragm External Pump</td>
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<tr>
<td>ACC-GPB-CCIA</td>
<td>Gas Pretreatment Box</td>
</tr>
<tr>
<td>OPT-DATALOG</td>
<td>Digital Data Logging Capability</td>
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</tbody>
</table>

Specification (air background)

**Precision (1σ, 1 second / 10 seconds / 100 seconds):**

<table>
<thead>
<tr>
<th>Component</th>
<th>1 second</th>
<th>10 seconds</th>
<th>100 seconds</th>
</tr>
</thead>
<tbody>
<tr>
<td>δ¹³C</td>
<td>3‰</td>
<td>1‰</td>
<td>0.3‰</td>
</tr>
<tr>
<td>δ¹⁸O</td>
<td>16‰</td>
<td>5‰</td>
<td>2‰</td>
</tr>
<tr>
<td>¹²CO₂</td>
<td>0.8 ppm</td>
<td>0.3 ppm</td>
<td>0.1 ppm</td>
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**Maximum Drift**

(press-to-peak, 1 hr average over 24 hours):

δ¹³C: < 5‰

(up to 10x improvement with periodic referencing)

**Measurement Range (meets all specs):**

<table>
<thead>
<tr>
<th>Component</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO₂</td>
<td>380 – 25000 ppm</td>
</tr>
<tr>
<td>H₂O</td>
<td>4000 – 60000 ppm</td>
</tr>
</tbody>
</table>

**Operational Range:**

<table>
<thead>
<tr>
<th>Component</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO₂</td>
<td>0 – 50000 ppm</td>
</tr>
<tr>
<td>H₂O</td>
<td>0 – 70000 ppm (non-condensing)</td>
</tr>
</tbody>
</table>

**Response time:**

<30 sec with standard internal pump

<8 sec with ACC-DP3H external pump

**Sampling Conditions:**

Sample Temperature: -20 – 50 °C
Operating Temperature: 5 – 45 °C
Ambient Humidity: non-condensing (0 – 100% RH)

**Outputs:**

Digital (RS-232), Ethernet, USB, VGA display, MIU

**Power Requirements:**

115/230 VAC, 50/60 Hz
150 W (steady state)
Max 270W with ACC-DP3H ext. pump

**Dimensions (H x W x D):**

40cm (15.75") × 48cm (19") × 61cm (24")

**Weight:**

40 kg (88 lbs)