

OA-ICOS™ GLA331-CCIA2 analyzers

CO₂ isotopic analyzers - EP Rackmount



Highly sensitive, accurate and fast analyzer for reliable measurement of $\delta^{13}\text{C}$, $\delta^{18}\text{O}$, CO_2 and H_2O .

Measurement made easy

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OA-ICOS™ GLA331-
CCIA2 EP rackmount

Features and benefits

- Simultaneous measurements of $\delta^{13}\text{C}$:, $\delta^{18}\text{O}$:, CO_2 and H_2O
- Unprecedented stability, precision and low drift
- Measurement rates selectable up to 1 Hz
- Installed and operational in minutes
- Insensitive to hydrocarbons or H_2S
- Extremely high dynamic range allows measurements of elevated CO_2
- 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 H_2S , NH_3 , as well as methane and other hydrocarbons.

... Overview

ABB's Enhanced Performance (EP) series incorporates proprietary internal thermal control for ultra-stable

Specification (air background)

Precision (1 σ , 1 second / 10 seconds / 100 seconds):
 $\delta^{13}\text{C}$: 3‰ / 1‰ / 0.3‰

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

MIU-16	Multiport Inlet Unit Automated control of up to 16 inlet ports
MIU-8	Multiport Inlet Unit Automated control of up to 8 inlet ports
ACC-DP3H	3-head Diaphragm External Pump Provides flow-through response (1/e) time of 1.2 seconds
ACC-GPB-CCIA	Gas Pretreatment Box Nafion and Drierite, (2x) 1/4" + (2x) 3/8" Tube
OPT-DATALOG	Digital Data Logging Capability Multi-channel data logging option records and synchronizes serial (RS-232) outputs from multiple ABB analyzers and other devices (GPS, anemometers)

$\delta^{18}\text{O}$: 16‰ / 5‰ / 2‰

$^{12}\text{CO}_2$: 0.8 ppm / 0.3 ppm / 0.1 ppm

Maximum Drift

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

$\delta^{13}\text{C}$: < 0.5‰

Measurement Range (meets all specs):

CO_2 : 380 – 25000 ppm

H_2O : 4000 – 60000 ppm

Operational Range:

CO_2 : 0 – 50000 ppm

H_2O : 0 – 70000 ppm (non-condensing)

Measurement Rates:

User-selectable rates up to 1 Hz

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") x 48cm (19") x 61cm (24")

Weight:

40 kg (88 lbs)