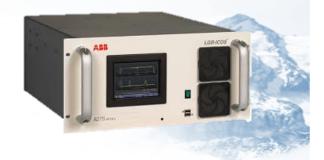




# Rackmount Greenhouse Gas Analyzer (CH<sub>4</sub>, CO<sub>2</sub>, H<sub>2</sub>O) LGR-ICOS™ GLA231 series

Highest accuracy, stability and reliability



# **Description**

LGR's Greenhouse Gas Analyzer is the world's most advanced instrument for simultaneous measurements of methane, carbon dioxide and water vapor. Quite simply, no other analyzer provides higher performance, ruggedness, reliability and ease of service.

The GGA is simple to use, low power and rugged which makes it ideal for field and air quality studies. The ability to measure all gases quickly makes the GGA an excellent choice for eddy covariance and chamber flux measurements. In addition, analysis of the measured absorption spectra allows the instrument to accurately correct for water vapor dilution and absorption line broadening effects and thus to report CH<sub>4</sub> and CO<sub>2</sub> on a dry mole fraction basis directly without drying or post processing. Furthermore, LGR's new "Extended Range" option provides accurate methane measurements at levels up to 10% (without dilution) without reducing precision and sensitivity at typical ambient levels - a unique capability to LGR.

LGR's "Enhanced Performance" series incorporates proprietary internal thermal control for ultra stable measurements with unsurpassed precision, accuracy and drift as validated at several leading labs and monitoring networks in Europe, Asia and the US. Moreover, only LGR's analyzers provide reliable guaranteed measurements at mole fractions more than 20 times ambient levels.

LGR's patented technology, a fourth-generation cavity enhanced absorption technique, has many advantages (simpler, easier to build, rugged) over older, conventional cavity ringdown spectroscopy (CRDS) techniques. As a result, LGR Analyzers provide higher performance at lower cost.

LGR Analyzers have an internal computer (Linux OS) that can store data practically indefinitely on a hard disk drive and send real time data to a data logger via the digital (RS232) or analog outputs. In addition, LGR analyzers may be controlled remotely via the Internet. This capability allows the user to operate the analyzer using a web browser anywhere Internet access is available. Furthermore, remote access allows full control of the instrument and provides the opportunity to obtain data and diagnose the instrument operation off site.

#### **Benefits**

- Developed for applications requiring highest accuracy (Enhanced Performance model)
- Gases measured simultaneously
- Absorption spectra always viewable
- CH<sub>4</sub> and CO<sub>2</sub> reported on dry mole basis directly
- Ideal for eddy covariance flux and chamber flux
- · Widest measurement range
- Extended Range option allows methane measurements at levels up to 10%
- Validated at leading labs and monitoring networks, LGR's GGA delivers unsurpassed performance and exceeds WMO requirements
- LGR analyzers provide highest reliability and can be fully serviced anywhere, anytime by anyone





# **Performance Specifications**

#### Precision (1s, 0.1 sec / 1 sec / 100 sec):

CH<sub>4</sub>: 3 ppb / 1 ppb / 0.3 ppb

 $CO_2$ : 0.5 ppm / 0.3 ppm / 0.05 ppm

 $H_2O$ : 50 ppm / 15 ppm / 5 ppm

### Maximum Drift (Exhanced Performance model) (1s, 15 min average, at STP, over 24 hrs):

CH<sub>4</sub>: 5 ppb CO<sub>2</sub>: 300 ppb

H<sub>2</sub>O: 100 ppm or 1% reading, whichever greater

#### **Measurement Rates:**

0.01 - 10 Hz (Standard)

0.01 – 1 Hz (Enhanced Performance, slow flow)

0.01 – 10 Hz (Enhanced Performance, fast flow) (external pump required for < 6-second flow response)

## Accuracy (over all rated conditions):

uncertainty < 1% w/o calibration (Standard)

uncertainty < 0.03% (Enhanced Performance model)

## Measurement Range (meets all specs):

CH<sub>4</sub>: 0.01 – 100 ppm CO<sub>2</sub>: 200 – 20000 ppm H<sub>2</sub>O: 7000 – 70000 ppm

## Operational Range (all models) (external calibration may be required):

 $CH_4: 0 - 1000 ppm$ 

 $CH_4: 0 - 10\%$  (with Extended Range option)

 $CO_2: 0 - 20\%$ 

 $H_2O: 0 - 70000 \text{ ppm } (0 - 98\% \text{ relative humidity})$ 

#### Sampling Conditions (all models):

Sample Temperature: -10 - 50 °C

Operating Temperature (standard model): 5 – 45 °C

Operating Temperature (EP model): 0 – 45 °C Ambient Humidity: 0 - 100% RH non-condensing

#### Outputs (all models):

Digital (RS232), analog (all 3 gases), Ethernet file transfer, USB

### **Power Requirements:**

115/230 VAC, 50/60 Hz

100 W (Standard models)

150 W (Enhanced Performance model, steady state)

# Dimensions and Weight:

Standard rackmount model: 8.75"×19"×24" 29 kg

Enhanced Performance rackmount model: 15.75"×19"×24" 40 kg

# **Accessories (optional)**

- MIU-16: Multiport Inlet Unit 16 inlet port multiplexer
- MIU-8: Multiport Inlet Unit 8 inlet port multiplexer
- OPT-DATALOG: Data Logging System multi-channel data logging sys-tem records and synchronizes serial (RS-232) outputs from multiple LGR analyzers and other devices (GPS, anemometers)