

Highest accuracy, stability and reliability



Enhanced Performance model delivers unsurpassed performance
LGR technology provides highest reliability and ruggedness

Greenhouse Gas Analyzer (CH₄, CO₂, H₂O)

Features and Benefits

- Developed for applications requiring highest accuracy (Enhanced Performance model)
- Gases measured simultaneously
- Absorption spectra always viewable
- CH₄ and CO₂ 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

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 CH₄ and CO₂ 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.

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Performance Specifications

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

CH₄: 3 ppb / 1 ppb / 0.3 ppb
CO₂: 0.5 ppm / 0.3 ppm / 0.05 ppm
H₂O: 50 ppm / 15 ppm / 5 ppm

Maximum Drift (Enhanced Performance model)

(1s, 15 min average, at STP, over 24 hrs):

CH₄: 5 ppb
CO₂: 300 ppb
H₂O: 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):

CH₄: 0.01 – 100 ppm
CO₂: 200 – 20000 ppm
H₂O: 7000 – 70000 ppm

Operational Range (all models)

(external calibration may be required):

CH₄: 0 – 1000 ppm
CH₄: 0 – 10% (with Extended Range option)
CO₂: 0 – 20%
H₂O: 0 – 70000 ppm (0 – 98% 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:

Standard rackmount model: 8.75"×19"×24"
Enhanced Performance rackmount model: 15.75"×19"×24"

Weight:

29 kg (Standard model)
40 kg (Enhanced Performance model)

Ordering Information

Standard model: 907-0010

Enhanced Performance model: 911-0010

Accessories

908-0003-9001: Multiport Inlet Unit – 16 inlet port multiplexer

908-0003-9002: Multiport Inlet Unit – 8 inlet port multiplexer

908-0008-9009: N920 Pump –
provides flow-through (1/e) time = 1.2 secs

908-0001-9011: N940 Pump –
provides flow-through (1/e) time = 0.7 secs

908-0001-9001: Dry Scroll Pump –
provides flow-through (1/e) time = 0.07 secs

904-0002: Data Logging System – multi-channel data logging system records and synchronizes serial (RS-232) outputs from multiple LGR analyzers and other devices (GPS, anemometers)

Options

Extended Range – increases CH₄ upper limit to at least 10%

Fast Flow - provides ability to achieve up to 10-Hz flow response with optional external vacuum pump

