



Fast Methane Analyzer (CH₄, H₂O)

Features and Benefits

- Measure methane at up to 20 Hz
- High resolution absorption spectra are viewable for diagnostics
- Requires only 80 watts (with standard internal pump)
- Measurements over extremely wide range (up to 10%)
- Eddy covariance flux measurements
- Chamber studies

LGR's Fast Methane Analyzer provides extremely precise measurements of methane (CH₄) and water vapor at up to 20 Hz. In addition to accurately monitoring typical ambient methane levels, the unprecedented response of LGR's FMA allows measurements at high mole fractions (to 1000ppm with extended range option) for applications including landfills, peatlands and chamber studies.

The FMA 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 FMA 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 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% mole fraction (without dilution) without reducing precision and sensitivity at typical ambient levels - a unique capability to LGR. For highest portability, please see LGR's new Ultraportable Methane Analyzer (separate datasheet).

LGR's new "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), analog or Ethernet 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 without being on site.

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Performance Specifications

Precision (1 σ , 1 sec / 100 sec):

CH₄: 3 ppb / 0.3 ppb
H₂O: 150 ppm / 50 ppm

Maximum Drift (Enhanced Performance model) (15 min average, at STP, over 24 hrs):

CH₄: 0.8 ppb
H₂O: 100 ppm or 1% reading, whichever greater

Measurement Rates:

0.01 - 20 Hz
(external pump required for flow response < 10 secs)

Accuracy (over entire temperature range):

uncertainty < 1% w/o calibration (Standard)
uncertainty < 0.03% (Enhanced Performance)

Measurement Range (100 seconds):

CH₄: 0.01 – 100 ppm
H₂O: 1000 – 70000 ppm

Operational Range:

CH₄: 0 – 1000 ppm
(for measurements > 1000 ppm, see Extended Range option in Greenhouse Gas Analyzer)
H₂O: 0 – 70000 ppm (0 – 100% relative humidity)

Sampling Conditions:

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

Outputs:

Digital (RS232), analog, Ethernet, USB

Power Requirements:

115/230 VAC, 50/60 Hz
80 watts (Standard)
150 watts (Enhanced Performance)

Dimensions:

Rackmount (Enhanced Performance): 15.75" x 19" x 24"

Weight:

40 kg (Enhanced Performance)

Ordering Information

F-CH4-911 (EP Rackmount, GLA331 Series)

Accessories

MIU8 / MIU-16: Multiport Inlet Unit –
Automated control of up to 16 inlet ports

ACC-DP20: 3-head vacuum pump –
Flow-through time (1/e): 1.2 seconds

ACC-DP40: 4-head vacuum pump –
Flow-through time (1/e): 0.7 seconds

ACC-DS10 / ACC-DS35: Dry Scroll Pumps –
Flow-through time (1/e): < 0.1 seconds

Options

Extended Range option – Increases upper limit to 5% methane (available in Greenhouse Gas Analyzer)



Instrument complies with 21 CFR 1040.10 and 1040.11

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