

Simultaneous measurements of methane and nitrous oxide continuously and via syringe injection.

LGR delivers.



CH₄/N₂O Analyzer (CH₄, N₂O, H₂O)

Features and Benefits

- Developed for applications requiring fast response and highest accuracy
- Fast, continuous and simultaneous N₂O, CH₄ and H₂O measurements
- Sub-ppb precision (N₂O, CH₄) in less than 1 second
- Measurement rates up to 10 Hz (external pump required)
- Reports N₂O and CH₄ on a dry and wet mole fraction basis automatically
- No cryogenics or water cooling
- Operational in minutes; no training
- Simple to service in the field
- High-resolution absorption spectra are viewable for instrument diagnostics
- New ultraportable package allows measurements anywhere

Los Gatos Research (LGR) announces a new analyzer capable of reporting methane and nitrous oxide simultaneously and continuously. LGR's CH₄/N₂O Analyzer is capable of measuring ambient levels of both N₂O and CH₄ with high precision in real time with data rates up to 10 Hz. In addition, the analyzer reports water vapor mole fraction simultaneously and reports dry N₂O and CH₄ mole fractions without the need for sample drying. The Analyzer is easy to use, simple to service, may be set up in minutes and does not require cryogenics or water cooling.

LGR's new "Enhanced Performance" series incorporates proprietary internal thermal control for ultra-stable measurements with unsurpassed precision, accuracy and drift. Moreover, only LGR's analyzers provide reliable measurements at mole fractions more than 20 times ambient levels and offer the optional capability of syringe injection for cases when gas sample volume is limited.

The CH₄/N₂O Analyzer is designed for many demanding applications including trace gas monitoring, eddy-correlation flux measurements, and chamber flux measurements. Based on the acclaimed N₂O/CO Analyzer, the CH₄/N₂O Analyzer is particularly well suited for measurements in the field. The Analyzer is essentially unaffected by other atmospheric gases or changes in ambient pressure.

The CH₄/N₂O Analyzer is available in different packages to serve customers' requirements. For measurements with highest precision and stability, LGR's "Enhanced Performance" packaging incorporates proprietary internal thermal control for ultra-stable measurements with unsurpassed precision, accuracy, linearity, stability and drift. For field studies or other applications requiring portability (e.g., flux chambers), the CH₄/N₂O Analyzer is now available in LGR's acclaimed ultraportable package.

The Analyzer uses LGR's patented Off-axis ICOS technology, a fourth-generation cavity enhanced absorption technique. Off-axis ICOS has many advantages over conventional first-generation Cavity Ringdown Spectroscopy (CRDS) techniques such as being alignment insensitive, simple to service, having a much shorter measurement time, and not requiring expensive and power consuming auxiliary components.

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, and manual injection via syringe.

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Performance Specifications

Precision (1 σ , 0.1 sec / 1 sec / 100 sec)
with TEC (Peltier)-cooled photodetector:
N₂O: 0.6 ppb / 0.2 ppb / 0.05 ppb
CH₄: 3 ppb / 1 ppb / 0.25 ppb
H₂O: 500 ppm / 150 ppm / 30 ppm
(Precision 2 \times worse for Ultraportable Model)

(data rate less than 1 second requires fast flow option and is not available in Ultraportable model)

Measurement Rates:

User-selectable data rate up to 10 Hz
Optional pump and fast flow option required
for data rates less than 0.1 second (faster than 1 Hz)

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

CH₄: 5 ppb
N₂O: 2 ppb
H₂O: 50 ppm or 1% reading, whichever greater

Dynamic Range:

N₂O: 0 – 10 ppm
CH₄: 0 – 100 ppm

Temperature/Humidity:

Sample Temperature: -30 – 50 °C
Operating Temperature:
5 – 35 °C (Standard Model)
0 – 45 °C (Enhanced Performance Model)
Ambient Humidity: non-condensing (0-98% RH)

Fittings:

Inlet: 3/8"
Outlet (internal pump): 1/4"
Outlet (optional external vacuum pump): 1/2"

Outputs:

digital (RS-232), analog, Ethernet, USB

Power Requirements:

115/230 VAC, 50/60 Hz (all models)
10-30 VDC (Ultraportable model)
180 watts (Standard/Ultraportable models; steady state)
350 watts (Enhanced Performance model; steady state)

Dimensions (rackmount compatible):

19" \times 32" \times 8.75" (Standard Model)
17" \times 34" \times 17.5" (Enhanced Performance Model)
20" \times 24" \times 8" (Ultraportable)

Weight:

36 kg (Standard Model)
68 kg (Enhanced Performance Model)
23 kg (Ultraportable model)

Ordering Information

Part Number N2OM1-916: Standard model
Part Number N2OM1-913: Enhanced Performance model
Part Number N2OM1-919: Ultraportable model

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-DP20: N920 Pump –
Provides flow-through response (1/e) time of 1.2 seconds

ACC-DP40: N940 Pump –
Provides flow-through response (1/e) time of 0.5 seconds

ACC-DS35: Dry Scroll Pump –
Provides flow through (1/e) time < 0.1 secs

Datalog: Digital Data Logging capability allows simultaneous recording of serial (RS-232) data outputs from multiple ABB analyzers and from other instruments into a single data file on the analyzer.

Option

Fast flow

- allows up to 10-Hz flow response with optional external vacuum pump
- not available in Ultraportable model



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