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



# LGR delivers.

## **Features and Benefits**

- Developed for applications requiring fast response and highest accuracy
- Real-time continuous and simultaneous N<sub>2</sub>O, CH<sub>4</sub> and H<sub>2</sub>O measurements
- Sub-ppb precision (N<sub>2</sub>O, CH<sub>4</sub>) in less than 1 second
- Measurement rates up to 10 Hz (external pump required)
- Reports N<sub>2</sub>O and CH<sub>4</sub> on a dry and wet mole fraction basis automatically
- No cryogens or water cooling
- Operational in minutes; no training
- Simple to service in the field
- High-resolution absorption spectra are viewable for instrument diagnostics

# $CH_4/N_2O$ Analyzer ( $CH_4$ , $N_2O$ , $H_2O$ )

Los Gatos Research (LGR) announces a new analyzer capable of reporting methane and nitrous oxide simultaneously and continuously. LGR's  $CH_4/N_2O$  Analyzer is capable of measuring ambient levels of both  $N_2O$  and  $CH_4$  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  $N_2O$  and  $CH_4$ 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 cryogens 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 CH<sub>4</sub>/N<sub>2</sub>O Analyzer is designed for many demanding applications including trace gas monitoring, eddy-correlation flux measurements, and chamber flux measurements. Based on the acclaimed  $N_2O/CO$  Analyzer, the  $CH_4/N_2O$  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 Analyzer uses LGR's patented Offaxis 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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# $CH_4/N_2O$ Analyzer ( $CH_4$ , $N_2O$ , $H_2O$ )

### **Performance Specifications**

Precision (1σ, 1 sec / 3 min) with TEC (Peltier)-cooled photodetector: N<sub>2</sub>O: 0.3 ppb / 0.2 ppb CH<sub>4</sub>: 3 ppb / 1.5 ppb

H<sub>2</sub>O: 150 ppm / 30 ppm

Measurement Rates: User-selectable data rate up to 10 Hz (optional pump required for flow rates >1Hz)

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

 $CH_4$ : 1 ppb  $N_2O$ : 0.1 ppb

 $H_2^{-}O$ : 50 ppm or 1% reading, whichever greater

**Dynamic Range:**  $N_2O: 0 - 10 \text{ ppm}$   $CH_4: 0 - 10 \text{ ppm}$ 

**Temperature/Humidity:** Sample Temperature: -30 – 50 °C Operating Temperature: 10 – 35 °C (Standard Model) 0 – 45 °C (Enhanced PerformanceModel) Ambient Humidity: non-condensing (0-100% RH)

#### Fittings:

Inlet: 3/8" Outlet (internal pump): ¼" Outlet (optional external vacuum pump): ½"

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

#### **Power Requirements:**

115/230 VAC, 50/60 Hz180 watts (Standard model; steady state)350 watts (Enhanced Performance model; steady state)

#### **Dimensions (rackmount compatible):** 19" × 32" × 8.75" (Standard Model)

17"× 34"× 17.5" (Enhanced Performance Model)

#### Weight:

36 kg (Standard Model) 68 kg (Enhanced Performance Model)

## **Ordering Information**

Part Number 907-1055 Standard Model; TEC-cooled photodetector

Part Number 907-1054 Standard Model; Fast Flow capable; TEC-cooled photodetector

Part Number 913-1055 Enhanced Performance Model; TEC-cooled photodetector

Part Number 913-1054 Enhanced Performance Model; Fast Flow capable; TEC-cooled photodetector

### Accessories

908-0003-9001: Multiport Inlet Unit – Automated control of up to 16 inlet ports

908-0003-9002: Multiport Inlet Unit – Automated control of up to 8 inlet ports

908-0008-9009: N920 Pump – Provides flow-through response (1/e) time of 1.2 seconds

908-0001-9011: N940 Pump – Provides flow-through response (1/e) time of 0.5 seconds

908-0001-9001: Dry Scroll Pump – Provides flow-through (1/e) time < 0.1 secs

907-0005-9002: Dynamic Dilution System – Extends upper measurement range by a factor of 100 through automated sample dilution

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)



Instrument complies with 21 CFR 1040.10 and 1040.11

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