

# New Enhanced Performance series delivers ultra-high stability and highest performance

LGR delivers



## N<sub>2</sub>O/CO Analyzer (N<sub>2</sub>O/CO-23d)

### Features and Benefits

- Developed for applications requiring highest accuracy (Enhanced Performance model)
- Real-time simultaneous N<sub>2</sub>O, CO and H<sub>2</sub>O measurements
- Sub-ppb precision (N<sub>2</sub>O, CO) in less than 1 second
- Measurement rates up to 10 Hz (external pump required)
- Reports N<sub>2</sub>O and CO on a dry and wet mole fraction basis
- No cryogenics or water cooling
- Operational in minutes without training
- High-resolution absorption spectra are viewable for instrument diagnostics

Los Gatos Research (LGR) announces an improved version of our N<sub>2</sub>O/CO Analyzer. LGR's newest version is capable of measuring ambient levels of both N<sub>2</sub>O and CO (with precision better than 0.1 ppb in 1 second) in real time (data rates up to 20 Hz). In addition, the model N<sub>2</sub>O/CO-23d reports water vapor (H<sub>2</sub>O) mole fraction simultaneously and reports dry N<sub>2</sub>O and CO mole fractions without the need for sample drying. The Analyzer is easy to use, can be set up in minutes and does not require any 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 *guaranteed* measurements at mole fractions more than 20 times ambient levels.

The N<sub>2</sub>O/CO Analyzer is designed for many demanding applications including trace gas monitoring, eddy-correlation flux measurements, chamber flux measurements, and engine exhaust measurements. The Analyzer is particularly well suited for measurements in the field and has been successfully deployed on-board NASA DC-8

aircraft for measurements in the upper troposphere / lower stratosphere. The N<sub>2</sub>O/CO Analyzer is essentially unaffected by other atmospheric gases or changes in pressure.

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, 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, or provide for remote access and control of the Analyzer via the Internet.

# N<sub>2</sub>O/CO Analyzer

## Performance Specifications

### Precision (1 $\sigma$ , 1 second / 3 minutes):

N<sub>2</sub>O: 0.1 ppb / 0.050 ppb

CO: 0.1 ppb / 0.050 ppb

H<sub>2</sub>O: 50 ppm / 10 ppm

### Measurement Rates:

All parameters measured simultaneously  
at user-selectable rates up to 10 Hz  
(optional pump required for flow rates >1Hz)

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

CO: 0.1 ppb

N<sub>2</sub>O: 0.1 ppb

H<sub>2</sub>O: 50 ppm or 1% reading, whichever greater

### Linear Dynamic Range:

N<sub>2</sub>O: 1 – 4000 ppb

CO: 1 – 4000 ppb

### Dynamic Range:

N<sub>2</sub>O: 0 – 10 ppm

CO: 0 – 10 ppm

### Temperature/Humidity:

Sample Temperature: -30 – 50 °C

Operating Temperature:

10 – 35 °C (Standard Model)

0 – 45 °C (Enhanced Performance Model)

Ambient Humidity: non-condensing (0-100% 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

180 watts (Standard model; steady state)

300 watts (Enhanced Performance model; steady state)

### Dimensions (rackmount compatible):

19"(W)×31.5"(D)×8.75"(H) (Standard Model)

19"(W)×31.5"(D)×19.25"(H) (Enhanced Performance)

### Weight:

36 kg (Standard Model)

68 kg (Enhanced Performance Model)



## Ordering Information

Part Number 907-0015 (Standard Model)

Part Number 907-0014 (Standard Model; Fast Flow capability)

Part Number 913-0015 (Enhanced Performance Model)

Part Number 913-0014 (Enhanced Performance Model;  
with Fast Flow capability)

## Accessories (optional)

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