

Highest precision CO measurements at high rates



Carbon Monoxide Analyzer (CO, H₂O)

Features and Benefits

- Real-time continuous measurements of CO and H₂O
- 0.1-ppb CO precision in less than 1 second (better precision with increased averaging)
- Measurement rates to 10 Hz (with fast external pump)
- H₂O measured simultaneously and used to report CO on dry mole basis accurately in real time (without post processing)
- Cryogen-free operation
- Installed in minutes
- High-resolution absorption spectra always viewable
- Linear over wide range of CO
- Developed for applications requiring highest accuracy (Enhanced Performance model)

LGR's CO Analyzer (carbon monoxide) reports accurate CO measurements at ambient levels with a precision better than 0.1 ppb in 1 second. In addition, the CO Analyzer measures water vapor (H₂O) in ambient air to allow for reporting of CO on a dry mole basis without the need for sample drying or post correction or compensation procedure. The Analyzer is simple to use, may be set up in minutes and does not require cryogenics or water cooling.

LGR's CO Analyzer is designed for many demanding applications including trace gas monitoring, eddy-correlation flux measurements, chamber flux measurements, and combustion diagnostics. 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 and lower stratosphere. The CO Analyzer is essentially unaffected by other atmospheric gases or changes in atmospheric pressure.

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 CO Analyzer uses LGR's patented Off-axis ICOS technology, a fourth-generation cavity enhanced absorption technique. Off-axis ICOS has many advantages over conventional 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.

LGR Analyzers have an internal computer (Linux OS) that can store data practically indefinitely on an internal 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. Also, 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.

CO Analyzer (CO, H₂O)

Performance Specifications

Precision (1 σ , 1 second / 100 seconds):

CO: 0.05 ppb / 0.010 ppb
H₂O: 50 ppm / 10 ppm

Measurement Rates:

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

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

CO: 0.1 ppb
H₂O: 50 ppm or 1% reading, whichever greater

Measurement Range (meets all specs):

CO: 1 – 4000 ppb
H₂O: 4000 ppm to 100% RH (non condensing)

Operational Range:

CO: 0 – 10 ppm
H₂O: 0 to 100% RH (non condensing)

Temperature/Humidity:

Sample Temperature: 0 – 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:

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 907-0024 (Standard Model; Fast Flow capability)

Part Number 907-0025 (Standard Model)

Part Number 913-0024 (Enhanced Performance Model;
Fast Flow capability)

Part Number 913-0025 (Enhanced Performance)

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

907-0005-9002: Dynamic Dilution System –
Extends upper measurement range by 100x

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