

Highest precision CO, CO₂, and H₂O directly



Only LGR

CO/CO₂ Analyzer (CO, CO₂, H₂O)

Features and Benefits

- Simultaneous measurements of CO, CO₂ and H₂O
- Sub-ppb CO precision in less than 1 second (better precision with increased averaging)
- Sub-ppm CO₂ 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 values on dry mol basis accurately in real time (without post processing)
- Installed in minutes
- High-resolution absorption spectra always viewable
- Linear over extremely wide ranges
- Developed for applications requiring highest accuracy (Enhanced Performance model)

LGR's CO/CO₂ Analyzer (carbon monoxide and carbon dioxide) reports CO and CO₂ at ambient levels with extremely high precision (CO: better than 0.5 ppb in 10 seconds; CO₂: better than 0.1 ppm in 10 seconds). In addition, the CO/CO₂ Analyzer also measures water vapor (H₂O) to allow for reporting of the CO and CO₂ on a dry mole basis without the need for sample drying or any post correction procedure. The Analyzer is extraordinarily simple to use, may be set up in minutes and does not require cryogenics or water cooling.

LGR's CO/CO₂ Analyzer is designed for the most 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. LGR's CO/CO₂ 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 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.

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.

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Performance Specifications

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

CO: 0.1 ppb / 0.03 ppb
CO₂: 0.2 ppm / 0.08 ppm
H₂O: 3 ppm / 1 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) (1 σ , 15 min average, at STP, over 24 hrs):

CO: 0.5 ppb
CO₂: 0.1 ppm
H₂O: 10 ppm or 1% reading, whichever greater

Measurement Range (meets all specs):

CO: 2 – 40000 ppb
CO₂: 2 – 10000 ppm
H₂O: 100 ppm to 100% RH (non condensing)

Operational Range:

CO: 0 – 40 ppm
CO₂: 0 – 10000 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" x 32" x 8.75" (Standard Model)
17" x 34" x 17.5" (Enhanced Performance Model)

Weight:

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



Ordering Information

Part Number 907-0029 (Standard Model)

Part Number 913-0029 (Enhanced Performance Model)

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)

