

Multi-species continuous emissions monitoring

Air quality monitoring made easy



Multi-gas Carbon Emissions Analyzer (CH₄, CO, CO₂, H₂O)

Features and Benefits

- Developed for applications requiring highest accuracy and wide dynamic range
- Gases reported on dry and wet mole basis directly
- Ideal for atmospheric, process and compliance monitoring
- Wide measurement ranges:
CH₄: ppb to 0.1%
CO: ppb to 1%
CO₂: ppb to 3%
- Rugged and simple to service
- Ultraportable package now available (15 kg, 70 watts)

LGR's Multi-gas Carbon Emissions Analyzer (CH₄, CO, CO₂, H₂O), or MCEA, is capable of simultaneous measurements of methane, carbon monoxide, carbon dioxide, water vapor. The MCEA is simple to use, sensitive, and rugged which makes it ideal for continuous emissions monitoring, industrial process control and compliance monitoring applications.

In addition, the CEA is now available in LGR's "ultraportable" package (U-MCEA) which is compact, crushproof and travels anywhere. Small enough to be carried on-board aircraft (TSA approved), the U-MCEA offers opportunities to measure target gases anywhere.

The MCEA ultrafast response provides users with real-time data and the opportunity for closed-loop feedback control for continuous online optimization of processes such as furnaces (steel, glass manufacturing), incinerators, chemical production plants, petrochemical refineries and other high temperature processes.

Like all LGR analyzers, MCEA measurements are based on high-resolution absorption spectra which allows the instrument to accurately correct for water vapor dilution and absorption

line broadening effects and thus to accurately report gas concentrations on a wet and dry mole fraction basis directly without drying or post processing. Furthermore, unlike conventional technologies (including photoacoustic, FTIR and NDIR techniques), LGR's high resolution laser-based method provides accurate "species specific" measurements without cross sensitivity.

LGR's patented technology, a fourth-generation cavity enhanced laser absorption technique, has many advantages (simpler, easier to build, rugged, sensitive) over older, conventional cavity ringdown spectroscopy and other absorption techniques. As a result, LGR Analyzers provide highest performance at low cost.

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

Multi-gas Carbon Emissions Analyzer (CH₄, CO, CO₂, H₂O)

Performance Specifications

Precision (1σ, 1 sec / 10 sec / 100 sec):

CH₄: 3 ppb / 1 ppb / 0.3 ppb
CO: 0.07 ppm / 0.025 ppm / 0.02 ppm
CO₂: 0.2 ppm / 0.07 ppm / 0.02 ppm
H₂O: 30 ppm / 9 ppm / 5 ppm

Maximum Drift (Enhanced Performance model)

(1σ, 15 min average over 24 hrs):

CH₄: 3 ppb
CO: 0.1 ppm
CO₂: 0.2 ppm

Measurement Rates:

0.01 – 1 Hz
(external pump required for < 6 second flow response)

Measurement Range (100 seconds):

CH₄: 0.3 ppb - 100 ppm
CO: 0.05 – 1000 ppm
CO₂: 0.1 – 3000 ppm
H₂O: 20 ppm – 98% RH

Operational Range (calibration may be required):

CH₄: 0 - 0.1%
CO: 0 - 1%
CO₂: 0 - 3%
H₂O: 0 - 100% relative humidity

Sampling Conditions (all models):

Operating Temperature (standard model): 5 – 45 °C
Operating Temperature (EP model): 0 – 45 °C
Ambient Humidity: 0 - 100% RH non-condensing

Outputs (all models):

Digital (RS232), analog, USB

Power Requirements:

115/230 VAC, 50/60 Hz
100 watts (Standard rackmount)
150 watts (Enhanced Performance model, steady state)
70 watts (Ultraportable) - may be operated on 10-30 VDC

Dimensions:

Standard (rackmount): 8.75" × 19" × 24"
Enhanced Performance (rackmount): 15.75" × 19" × 24"
Ultraportable: 18.5" × 14" × 7"

Weight:

29 kg (rackmount, Standard model)
40 kg (rackmount, Enhanced Performance model)
15 kg (Ultraportable)



Ordering Information

Standard model (rackmount): 909-0042

Enhanced Performance model (rackmount): 909-0043

Ultraportable model: 915-0059

Accessories

908-0003-9001: Multiport Inlet Unit – 16 port multiplexer

908-0003-9002: Multiport Inlet Unit – 8 port multiplexer

908-0008-9009: External N920 Pump – provides flow-through (1/e) time = 1.2 secs

908-0001-9011: External N940 Pump – provides flow-through (1/e) time = 0.7 secs

908-0001-9001: External Dry Scroll Pump – provides flow-through (1/e) time = 0.1 secs

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