Hydrogen Chloride Analyzer (HCl, H₂O)

LGR's Hydrogen Chloride Analyzer (HCl Analyzer) continuously measures HCl in ambient air or in industrial process flows with extremely high precision and sensitivity. No longer do you have to spend a lot of money or wait a long time to measure hydrogen chloride gas with high sensitivity – LGR's Hydrogen Chloride Analyzer provides measurements every second with ppb-level precision.

In addition, the analyzer can report measurements quickly over a very wide range of HCl mole fractions.

LGR's HCl Analyzer is available in two packaging options to allow users to select the configuration most suitable for their needs. LGR's standard rackmount package fits in a 19" wide instrumentation rack and requires an external keyboard, mouse, and video monitor. For highest performance, the HCl Analyzer is now available in LGR's “Enhanced Performance” (or EP) package. The EP package incorporates proprietary internal thermal control for ultra-stable measurements with unsurpassed precision, accuracy and drift.

The HCl 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.

As with all LGR instruments, the HCl Analyzer includes an internal computer (Linux OS) that can store data practically indefinitely on its internal hard drive (for unattended long-term operation), and that can send real-time data to a data logger through its analog, digital (RS232) and Ethernet outputs.

Furthermore, the HCl Analyzer may be controlled remotely via the Internet. This capability allows the user to operate the analyzer using a web browser anywhere.

Features and Benefits

• Fastest response: 1-Hz continuous measurements allow observation of transient and time varying flows
• Measures a wide range of concentrations
• High-resolution absorption spectra always viewable
• Low power: ideal for field applications
• New Enhanced Performance model provides ultra-low drift and unsurpassed precision
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Performance Specifications

**Precision** (1σ, 1 sec / 10 sec / 100 sec):
- HCl: 0.4 ppb / 0.2 ppb / 0.1 ppb

**Maximum Drift** (Enhanced Performance model)
- HCl: 1 ppb

**Measurement Range**:
- HCl: 0 – 2000 ppb
- H₂O: 1000 – 50000 ppm

**Operational Range**
- HCl: 0 – 10 ppm
- H₂O: 0 – 50000 ppm

**Measurement Rates** (user selectable):
- 0.01 – 1 Hz
  - (external pump required for < 10 second flow response)

**Response Times** (10%-90%, 90%-10%):
- 60 seconds (continuous measurements reported at user-selected intervals up to one per second)

**Sampling Conditions**:
- Sample Temperature: 0 – 50 °C
- Operating Temperature: 0 – 45 °C
- Ambient Humidity: 0-100% RH non-condensing

**Outputs**:
- Digital (RS232), analog, Ethernet, USB

**Power Requirements**:
- 115/230 VAC, 50/60 Hz or 12 VDC
- Standard model: 100 watts
- Enhanced Performance model: 150 watts (steady state)

**Dimensions**:
- Standard model: 8.75” × 19” × 24”
- Enhanced Performance model: 15.75” × 19” × 24”

**Weight**:
- 29 kg (Standard model)
- 40 kg (Enhanced Performance model)

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**Ordering Information**

- HCL-927 (Rackmount, GLA231 Series)
- U-HCL-915 (EP Rackmount, GLA331 Series)

**Accessories**

- MIU-16: Multiport Inlet Unit – Automated control of up to 16 inlet ports
- MIU-8: Multiport Inlet Unit – Automated control of up to 8 inlet ports
- ACC-DP20: 3-head vacuum pump – Flow-through time = 1.2 seconds (note that the standard internal pump provides < 8 seconds 1/e flow response time)
- OPT-DATALOG: Data Logging System – multi-channel data logging system records and synchronizes serial (RS-232) outputs from multiple LGR analyzers and other devices (GPS, anemometers)

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**INVISIBLE LASER RADIATION**

**Avoid direct exposure to beam**

Never view through optical aperture

**Class IIb Laser**

20 mW Maximum Output

Instrument complies with 21 CFR 1040.10 and 1040.11