

Picarro G1301-c Methane/Carbon Dioxide Analyzer

Contact:

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The Picarro CO₂/CH₄ Flight Analyzer is a real time, trace gas monitor capable of measuring these gases with parts-per-billion (ppbv) sensitivity onboard aircraft with varying cabin pressure and environmental conditions. The analyzer is based on Wavelength-Scanned Cavity Ring Down Spectroscopy (WS-CRDS), a time-based measurement utilizing a near-infrared laser to measure a spectral signature of the molecule. Gas is circulated in an optical measurement cavity with an effective path length of up to 20 kilometers. A patented, high-precision wavelength monitor makes certain that only the spectral feature of interest is being monitored, greatly reducing the analyzer's sensitivity to interfering gas species, and enabling ultra-trace gas concentration measurements even if there are other gases present. As a result, the analyzer maintains high linearity, precision, and accuracy over changing environmental conditions with minimal calibration required. Precise temperature and pressure control systems designed into the analyzer ensure accurate measurements over long periods of time. The analyzer is ruggedized for aircraft use. No consumables other than calibration gas are required. The analyzer requires an external pump (dimensions about 12x8x6inches, 27 pounds).

The gas concentration is displayed in real-time, and is continuously archived to the analyzer's internal hard drive. The analyzer can be configured to automatically send out measurement data at regular intervals via the Ethernet or optional modem and can output real-time data in digital format (via RS-232 interface) and via optional analog outputs. Users can connect remotely with the analyzer's internal Windows-based PC and control it through a standard Remote Desktop connection or with similar remote login software. Post-processing of data is necessary but field data typically is delivered real-time to the RAF data system and is typically accurate to better than 20%.

- 1) It has a response time of 1-5Hz (depending on inlet and installation) at a flow rate of about 1300 sccm.
- 2) It has a sample cell volume of 30 cc
- 3) It automatically re-starts after power interruptions requiring no user intervention

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System Specifications

Measurement Technique

WS-CRDS

Concentration Range

CO₂: 0-1000ppmv, CH₄: 0-10ppmv, (Precision/drift guaranteed for CO₂ 300-500ppbv; CH₄ 1-3ppbv)

Measurement Interval

5Hz (CO₂ & CH₄)

Sample Temperature

-10 to +45 °C.

Sample Flow Rate

< 0.4 slm at 760 Torr, no filtration required

Sample Pressure Range

220-1050 mbar

Sample Humidity

<99% R.H. non-condensing @40°C, no drying required

Temperature

10 to 40 °C (operating) -10 to 50 °C (storage)

Humidity (ambient)

<99% R.H. non-condensing

Accessories

Pump (external), keyboard, mouse, LCD monitor (optional)

Outputs

RS-232, Ethernet, USB, analog (optional) 4-20mA / -10 – 10V

Dimensions

17" x 9.75" x 23" (43 x 25 x 59 cm) including feet analyzer 12"x8"x6" ext. pump

Installation

Benchtop or 19" rack mount chassis

Weight

58 lbs (26.3kg) analyzer, 27 lbs (12.5 kg) ext. pump

Power Requirements

90-120VAC, 50/60 Hz, 220 VAC, 50Hz, < 300W (analyzer) 120VAC 50/60Hz, 3A (pump)

Dimensional Drawing

