



Picarro G1301-m Features

- Flight ready, performance guaranteed for 1000 m/min altitude change
- Rugged and insensitive to changes in ambient pressure and temperature
- Rigorously vibration tested

Picarro G1301-m CO₂/CH₄/H₂O Flight Analyzer

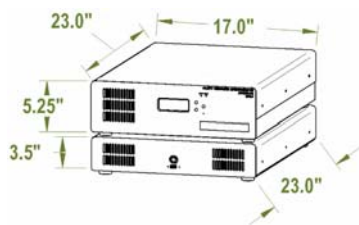
The Picarro G1301-m CO₂/CH₄/H₂O Analyzer is a real time, trace gas monitor capable of measuring these gases while on board aircraft changing altitude at up to 1000 meters per minute. The analyzer is based on Picarro's unique Wavelength-Scanned Cavity Ring Down Spectroscopy (WS-CRDS), a time-based measurement 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. The precise temperature and pressure control systems designed into the Picarro G1301-m ensure accurate measurements over long periods of time with minimal use of calibration gases. This system also features additional pressure monitoring capability that compensates for the widely changing pressure environment encountered when recording vertical profile and upper atmosphere data during aircraft flight. It is also extensively vibration tested to reflect the rigors of aircraft, ship or other mobile use. The analyzer can operate in two analysis modes with different measurement intervals as defined below

Designed to operate both in flight and in other mobile locations or laboratories, it can operate for many months without user interaction. The analyzer can be configured to automatically send out measurement data at regular intervals via the Ethernet and can output real-time data in digital format (via RS-232 interface) and via optional analog outputs. The analyzer can also automatically synchronize with an atomic clock time service. The software includes a valve sequencer which can manually or automatically control up to six external solenoid valves and a rotary valve.

Parameter	CO ₂ Specification	CH ₄ Specification	H ₂ O Specification
Precision (1-sigma over 30 secs, vibration @ 20 Hz, 1g):	< 200 ppbv	< 1.5 ppbv	< 100 ppmv
Drift at STP (Peak to peak of 300 second average):	< 200 ppbv over 30 hours	< 1.5 ppbv over 30 hours	< 100 ppmv ± 5% of reading
Drift with Changing Temp (30 second peak to peak over 3 hrs; 15°C/hr within range 10-35°C):	≤ 7.5 ppbv/°C	≤ 0.05 ppbv/°C	N/A
Drift with Changing Pressure (30 sec peak to peak over 3 hrs; <1.4 Torr/sec in range 250 – 760 Torr):	≤ 700 ppbv	≤ 7.5 ppbv	N/A
Operating Range	300 ppm to 700 ppm	300 ppb to 2,600 ppb	0 – 2.5%
Measurement Interval (Mode 1)	< 2.5 seconds	< 2.5 seconds	< 1 minute
Measurement Interval (Mode 2)	< 5 seconds	< 5 seconds	< 5 seconds
Rise/Fall time (10-90%/90-10%)	< 2.0 seconds	< 2.0 seconds	N/A

Parameter	Value
Inlet gas temperature	10°C to 35°C
Inlet gas pressure	250 – 1000 Torr
Inlet gas flow rate	0.35 to 0.45 L / min
Variation in Gas Flow	20% peak to peak (From 250 Torr to 1000 Torr)
Gas type	oil free ambient air, non-condensing

Dimensional Drawing



Parameter	Value
Ambient Temperature Range	+ 10 to + 35°C
Maximum Rate of Change in Ambient Temperature	15°C/hr
Relative humidity	0 % to 100%, non condensing
Power dissipation	< 370 Watts, steady state
Warm-up time from off	< 1 hour @ + 15°C
Maximum Aircraft Altitude	Altitude @ 250 Torr
Maximum Rate of Change in Altitude	1000 meters per minute