

CO₂, CH₄ and H₂O Gas Concentration Analyzer

PICARRO



- Parts-per-billion sensitivity, precision and accuracy
- Field and laboratory deployable
- Lowest drift of any continuous greenhouse gas measurement instrument
- Rugged and insensitive to change in ambient temperature
- Meets the WMO Data Quality Objectives and the ICOS for CO₂ and CH₄

The **Picarro G2301 greenhouse gas concentration analyzer** enables simultaneous measurements of CO₂, CH₄ with part-per-billion (ppb) sensitivity and negligible drift over months of operation. The G2301 also features Picarro's unique algorithms to correct for the dilution effect of H₂O vapor and to report dry gas mole fractions of CO₂ and CH₄.

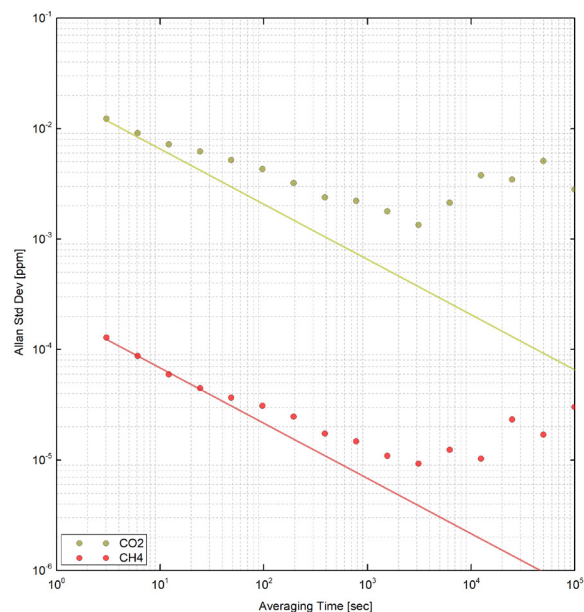
The G2301 is compliant with performance requirements established by The World Meteorological Organization (WMO), and other international networks, such as the Integrated Carbon Observation System (ICOS) for atmospheric monitoring stations.

The unique combination of continuous 3-species measurement, high precision, field deployability, and long-term reliability makes the G2301 the instrument of choice for greenhouse gas measurements.

Patented Picarro cavity ring-down spectroscopy (CRDS) technology enables an effective measurement path length of up to 20 kilometers in a compact cavity, which results in exceptional precision and sensitivity

in a small-footprint analyzer. A meticulously designed small optical cavity incorporates precise temperature and pressure control. As a result, the analyzer delivers a best-in-class combination of precision, accuracy, low drift, and ease-of-use.

Allan Deviation Plot



G2301 Guaranteed Performance Specifications in dry air		CO ₂	CH ₄	H ₂ O
Precision (1σ) Guaranteed over operating conditions specified below	5 sec	<70 ppb Typical = 15 ppb*	<0.5 ppb Typical = 0.14 ppb*	<80 ppm
	5 min	<25 ppb Typical = 5 ppb*	<0.22 ppb Typical = 0.04 ppb*	<30 ppm
Max Drift at STP **(peak-to-peak, 50-minute average) Reference gas not needed	over 24 hrs	120 ppb Typical = 17.0 ppb*	1 ppb Typical = 0.10 ppb*	<100 ppm ±5% of reading
	1 month	500 ppb	3 ppb	-
Automated Determination of Dry Mol Fraction		Included	Included	-
Operating Range		0–1000 ppm	0–20 ppm	0–7% v (39°C dew pt) non-condensing
Guaranteed Specifications Range		300–700 ppm	1–3 ppm	0–3% v (25°C dew pt) non-condensing
Measurement Interval (Data Rate)		<5 sec Typical = 2.8 sec*		
Rise/Fall Time (10–90%/90–10%)		<3 sec		

* Typical performance is defined as the median of testing results from 36 sequentially built G2301 analyzers. Results available upon request.

** Picarro calculates drift by subtracting the min from the max of 50 min averages taken over 30 hrs of testing.

G2301 System Specifications	
Measurement Technique	Cavity Ring-Down Spectroscopy (CRDS)
Measurement Cell Temperature Control	±0.005°C
Measurement Cell Pressure Control	±0.0002 atm
Sample Temperature	-10 to 45°C
Sample Pressure	300 to 1000 Torr (40 to 133 kPa)
Sample Flow Rate	<0.4 slm at 760 Torr, no filtration required
Sample Humidity	<99% R.H. non-condensing
Ambient Temperature Range	10 to 35°C (operating) -10 to 50°C (storage)
Ambient Humidity	<85% R.H. non-condensing
Accessories (Included)	Pump (external), vacuum line & fittings, keyboard, mouse, internal 240 GB hard drive
Outputs	RS-232, Ethernet, USB, analog (optional) 0–10 V
Fittings	¼" Swagelok ®
Dimensions	Analyzer: 17" w x 7" h x 17.5" d (43.2 x 17.8 x 44.5 cm), not including 0.5" feet External Pump: 7.5" w x 4" h x 11" d (19 x 10.2 x 28 cm)
Installation	Benchtop (standard) or 19" rack mount chassis (optional), LCD monitor (optional)
Weight	60.4 lbs (27.4 kg), includes external pump
Power Requirements	100–240 VAC; 47–63 Hz (auto-sensing); < 375 W at start-up (total). Steady-state operation: 120 W (analyzer), 150 W (pump).

PICARRO

© 2023 PICARRO, INC.
41-0044 Rev B
LIT CODE: V2.2-230306

3105 Patrick Henry Drive, Santa Clara, CA 95054 USA | +1 408-962-3900 | sales@picarro.com | picarro.com