

# Formaldehyde (H<sub>2</sub>CO) Gas Concentration Analyzer

# PICARRO



- Continuous, real-time measurements in the field or lab
- Long-term stability with guaranteed drift specification
- Highest sensitivity, precision & accuracy available
- Simple installation and operation

Atmospheric scientists, researchers, and air quality specialists need ultra-precise and stable measurements of formaldehyde gas in ambient air. In many applications, ultra-high sensitivity is also required to assure the accuracy of their measurements and the safety of their environments. And aspects like ease-of-use, field deployment, and minimal maintenance of a precision instrument are highly desirable.

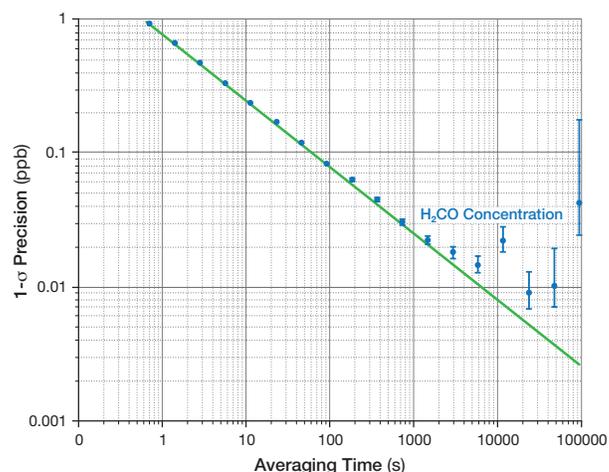
The G2307 formaldehyde gas concentration analyzer guarantees an impressive drift specification of  $\pm 1.5$  parts-per-billion (ppb) over 24 hours of continuous operation, the best in its class. Additionally, the Picarro device shatters previous measurement specifications with a new world-class low-detection limit of 300 parts-per-trillion (ppt).

With the latest advancements, measurement response time is no longer hindered by the propensity of H<sub>2</sub>CO molecules to adhere to pathway surfaces. The G2307 analyzer incorporates coated components in the critical gas pathway, resulting in a response time measurement of less than 1 minute for 90/10 Fall/Rise time challenge from 0-20 ppb and 20-0 ppb. This combination adds up to long-term stability, continuous, real-time measurement of formaldehyde gas requiring infrequent calibration and low maintenance. Patented Picarro cavity ring-down spectroscopy (CRDS) technology makes the G2307 analyzer ideal for atmospheric research and monitoring of formaldehyde from automobile and aircraft exhaust, photochemical smog, and incinerator emissions. In these applications, trends are moving toward higher sensitivity measurements which are unattainable by traditional technologies, such as Fourier-Transform Infrared Spectroscopy (FTIR). The analyzer can also be used to measure sensitive trace and

ambient formaldehyde for indoor air quality. Indoor sources of formaldehyde in residential and industrial structures include out-gassing from foam installation and from particleboard and plywood used in building and furniture construction.

In addition, the G2307 analyzer measures H<sub>2</sub>O and CH<sub>4</sub> concentrations and can report H<sub>2</sub>CO in dry-basis mole fractions. The analyzer features a small footprint and is relatively lightweight for easy transport from site to site, whether a laboratory or in the field. The analyzer can be unpacked, installed, and placed in operation within minutes. And the analyzer can operate unattended and without calibration for months.

## Allan Deviation Plot



G2307 Performance Specifications	H <sub>2</sub> CO	CH <sub>4</sub>	H <sub>2</sub> O
Lower Detection Limit (3σ, 300 sec)	0.3 ppb	6 ppb	-
Zero Drift (24 hrs) (peak-to-peak, 50-minute average)	1.5 ppb	-	-
Precision (1σ, 2 sec)	1.2 ppb + 0.1% of reading	20 ppb + 0.2% of reading	10 ppm + 0.1% of reading
Precision (1σ, 10 sec)	0.6 ppb + 0.05% of reading	10 ppb + 0.1% of reading	-
Precision (1σ, 300 sec)	0.1 ppb + 0.02% of reading	2 ppb + 0.05% of reading	-
Measurement Interval	<2 sec	-	-
Accuracy	±10%	±2%	±5%
Response Time (0-20 ppb)	Fall time 90–10% : <1 min Rise time 10–90% : <1 min	-	-
Measurement Range	0-30 ppm	0-20 ppm	0-3%

G2307 System Specifications	
Measurement Technique	Cavity Ring-Down Spectroscopy (CRDS)
Sample Temperature	-10 to 45°C
Sample Flow Rate	~400 sccm at 760 Torr, no filtration required
Sample Pressure	300 to 1000 Torr (40 to 133 kPa)
Sample Humidity	<99% R.H. non-condensing @40°C, no drying required
Ambient Temperature Range	10 to 35°C (operating); -10 to 50°C (storage)
Ambient Humidity	<99% R.H. non-condensing
Accessories	Pump (external, included), keyboard (included), mouse (included), LCD monitor (optional)
Outputs	RS-232, Ethernet, USB, analog (optional) 0–10 V
Fittings	¼" Swagelok® PFA fittings
Dimensions	Analyzer: 17" w x 7" h x 17.5" d (43.2 x 17.9 x 44.6 cm), Small External Pump: 7.5" w x 4" h x 11" d (19 x 10.2 x 28 cm)
Installation	Benchtop or 19" rack mount chassis
Weight	59.3 lbs (26.9 kg), including pumps
Power Requirements	100–240 VAC, 47–63 Hz (auto-sensing), <260 W start-up (total): 110 W (analyzer), 80 W (pump) at steady state
Applications Considerations	Interference can occur for concentrations of organics well above normal ambient levels, including, but not limited to, ethane, acetylene, ammonia, and other nitrogen and sulfur containing compounds. Users should verify with prepared lab samples. Please contact Picarro to discuss the experimental conditions.