

PICARRO G2204

Methane / Hydrogen Sulfide Analyzer



- Superb sensitivity, precision & accuracy with virtually no drift
- Fast, continuous, real time measurements
- Installed and operational in minutes
- Rugged and insensitive to changes in ambient temperature

Advantage Note: The Picarro G2204 Methane / Hydrogen Sulfide (CH₄ / H₂S) analyzer is a breakthrough field deployable system that can be used to monitor air quality and stack emissions, and map emission plumes of methane and hydrogen sulfide. For the first time ever, scientists and non-scientists alike can perform detailed beyond-the-fenceline emissions mapping to spot plumes of methane and hydrogen sulfide from landfills, refineries, paper mills or industrial plants. For air quality and environmental experts, the Picarro system uses methane and hydrogen sulfide as a proxy for plumes of toxic volatile organic compounds such as benzene, xylene, and toluene, and acidic gases from power plants.

Picarro's unique CRDS analyzer is a time-based measurement system that uses a near-infrared laser to quantify spectral features of molecules in a sample gas passed through an optical measurement cavity. An effective path length of up to 20 kilometers inside the cavity results in exceptional instrument precision and sensitivity. Picarro analyzers use a small 35 cc volume cavity, ensuring better temperature stability, faster gas exchange, lower noise and higher sensitivity. Precise cavity temperature and pressure control is designed into the system to ensure accurate measurements over long periods of time. Picarro CRDS systems all include a patented, high-precision wavelength monitor that makes certain the analyzer only monitors spectral features of interest. This virtually eliminates spectral "noise" from interfering.

The system can be installed in minutes as a stationary monitor. Or when used in conjunction with a mobile weather station, a GPS system, an inverter, and the appropriate connections, the instrument can also be configured for operation in a vehicle. For mobile download of mapping data, a customer provided mobile broadband connection is required. The analyzer can be rack-mounted for stability in vehicles. The system is controlled using intuitive software tools included on the CPU of all Picarro analyzers.

Picarro's diagnostic software suite continuously measures and records 38 parameters for rigorous quality control and assurance of data integrity. If an analyzer is connected to the Internet, Picarro's service organization can access it remotely, practically anywhere to provide rapid support and problem resolution. Users can connect remotely and control the analyzer through a standard Remote Desktop connection or with similar remote login software. 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 and via optional analog outputs. The package does not provide plume mapping software or data reduction tools.

This product is not optimized for vehicular deployment where there is a requirement for pin-pointing precise methane source locations while driving. As a result, we do not support this product's use for natural gas leak detection or other real-time methane emissions applications while driving. The Picarro Surveyor™ system is the optimal product for such studies.

Methane (CH₄)		
Parameter	Specification (requires air-like matrix)	Comments
Precision (5.0 sec):	2 ppb	1-sigma
Max Drift (over 8 hours):	< 4 ppb	Peak-to-peak, 50-minute average
Measurement Range (precision at high conc. will be approx. 1% of reading)	0 - 3 ppm, specifications guaranteed; 0 - 20 ppm operating range	
Measurement Interval:	~ 5 seconds	
Rise/Fall time:	< 5.0 seconds	10-90 % / 90-10 %

Hydrogen Sulfide (H₂S)		
Parameter	Specification (requires air-like matrix)	Comments
LDL (5.0 min):	3 ppb	3-sigma
Zero Drift (over 8 hours):	< 20 ppb	Peak-to-peak, 50-minute average
Measurement Range (precision, 5 min, 1-sigma, is 1 ppb + 0.4%):	Operating range; 0 - 300 ppm Specifications tested and guaranteed; 0 - 20 ppm	
Measurement Interval:	~ 5 seconds	
Rise/Fall time:	< 5.0 seconds	10-90 % / 90-10 %

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 Flow Rate	< 0.4 slm at 760 Torr, no filtration required
Sample Pressure	300 to 1000 Torr (40 to 133 kPa)
Max. Rate of Change in Ambient Temp.	5 °C / hr
Sample Humidity	< 99 % R.H. non-condensing @ 40 °C, no drying required
Temperature	10 to 35 °C (operating) -10 to 50 °C (storage)
Humidity (ambient)	< 99 % R.H. non-condensing
Other Gases Measured	H ₂ O
Accessories	Pump (external, included), keyboard (included), mouse (included), LCD monitor (optional)
Outputs	RS-232, Ethernet, USB, analog (optional) 0 – 10 V
Fittings	¼" Swagelok® fittings
Dimensions	Dimensions 17" w x 7" h x 17.5" d (43.2 x 17.9 x 44.5 cm) including feet, not incl. small external pump module, 7.5" w x 4" h x 11" d (19 x 10.2 x 28 cm)
Installation	Benchtop or 19" rack mount chassis
Weight	60.4 lbs (27.4 kg) including pump
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	Requires an air-like matrix. Interference can occur for concentrations of H ₂ O, CO ₂ , and CH ₄ well above normal ambient levels, as well as for organics, including, but not limited to ethane, acetylene and also other nitrogen and sulfur containing compounds. Please contact us to discuss the experimental conditions.