Picarro G1103-e
Ammonia in Exhaust Analyzer

The Picarro G1103-*e* NH_3 Analyzer is a real time, trace gas monitor capable of measuring NH_3 with parts-per-billion (ppbv) sensitivity specifically for analyzing NH_3 in automobile exhaust gas. 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, 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 Picarro G1103-*e* ensure accurate measurements over long periods of time with minimal use of calibration gases. The analyzer is exceptionally rugged, essentially drift and maintenance free, and requires no consumables, thereby offering significant ease of use and cost of ownership benefits.

Easily transportable from site to site, the analyzer can be set up and running within minutes, and require no absolutely sample preparation or drying. The gas concentration is displayed in real-time with no post-processing required, and is continuously archived to the analyzer's internal hard drive. Designed to operate both in laboratories and in harsh environments, 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 or optional modem and can output real-time data in digital (via RS-232 interface) and optional analog data formats as well. 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. The analyzer can also use its modem or Ethernet connection to automatically synchronize with an atomic clock time service.

Picarro G1103-e Features

- Superb sensitivity, precision & accuracy with virtually no drift
- Fast, continuous, real time measurements without interference
- Large dynamic range with high linearity
- Field and laboratory deployable with no consumables
- Installed and operational in minutes
- Rugged and insensitive to changes in ambient temperature

Performance Specifications
(Guaranteed over operating conditions below)

Target Gas	Lower Detection Limit* (1 sec, 3σ)	Accuracy / Repeatability	Max Zero / Span Drift (over 24 hours / 1month)
NH3 (in exhaust)	10 ppbv	10 ppbv +5% reading / 10 ppbv +2% reading	< ±5 / ±10 $ppbv_{p-p}$ (50-minute average, +2% meas. for span drift)

System Specifications

Measurement Technique	WS-CRDS
Range	0 - 25 ppmv
Measurement Interval	1 second
Sample Temperature	-10 to < 80°C. (non-flamable, non-condensing, non-corrosive, oil-free)
Sample Flow Rate	~400 sccm, 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
Temperature (Operating)	10 to 35 °C
Temperature (Storage)	-10 to 50 °C
Humidity (ambient)	<99% R.H. non-condensing
Other Gases Measured	H_2O, CO_2
Accessories Included	Pump (internal), keyboard, mouse, LCD monitor (optional)
Outputs	RS-232, Ethernet, USB, analog (optional) 4-20mA / -10 – 10V
Fittings	¼" Swagelok ®
Dimensions	17" x 9.75" x 23" (43 x 25 x 59 cm)
Installation	Benchtop or 19" rack mount chassis
Weight	65 lbs (30kg)
Power Requirements	90-120VAC, 50/60 Hz, 220 VAC, 50Hz, < 350W

Background gases tolerated (partial list)

CO	< 5% vol
CO_2	< 15% vol
CH_4	< 1% vol
C_3H_8	< 5000 ppmv
NO	< 2000 ppmv
O_2	< 20% vol
SO_2	< 300 ppmv
H_2O	< 2% vol

 480 Oakmead Parkway, Sunnyvale, CA 94085 · T 408.962.3900 · E info@picarro.com · W www.picarro.com