PICARRO

The World's Leading Instruments for Carbon and Water Cycle Measurements

# PICARRO G5102-*i* $N_2O$ Concentration and Isotopes Analyzer

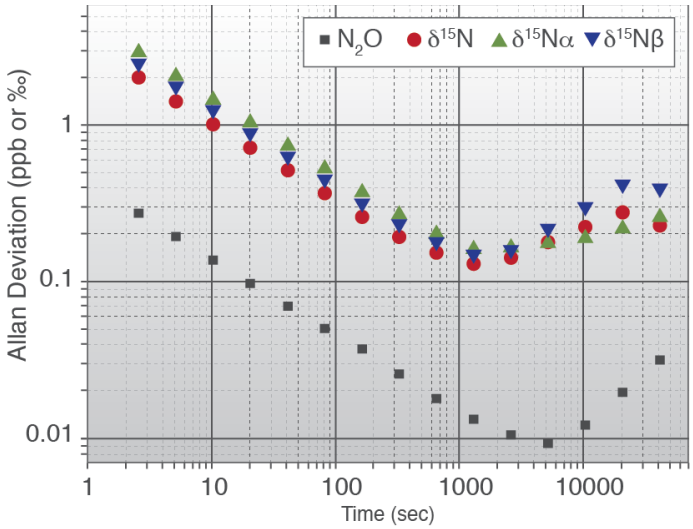
## Continuous, Precise, Stable


- High-precision at atmospheric concentrations
- $\delta^{15}N$ including site-specific isotopomers
- Upgrade path to include $\delta^{18}O$ (option UH5131-i#)
- Field Station* and laboratory deployable

**Technology Advantage:** Operating in the Mid-IR spectrum, Picarro's unique cavity ring-down spectroscopy (CRDS) technology provides unsurpassed performance by leveraging the sensitivity of time-based measurement with the precision produced by an optical path length over 8 km.

**Practical Design:** Picarro's small, 48 cc measurement cell ensures better stability, lower noise, and improved capability to handle small samples. It also enables the most compact design of any $N_2O$ isotope analyzer.

**Precise Control:** In order to produce highly linear and low drift measurements over months of operation, pressure and temperature are controlled to better than ±0.005 ºC and ±0.0002 atm. In conjunction, our patented wavelength monitor ensures absolute spectral position is accurately maintained. Cooling is cryogen-free.




**Easy Configuration:** Choose to automatically send data at regular intervals via Ethernet or optional modem, or stream data in real-time. Users can easily connect and control the analyzer using the provided or other remote login software. It can also interface with the Small Sample Isotope Module (SSIM) and the Picarro 16-port distribution Valve.

| Performance Specifications** | | | | |
|---|---|---|---|---|
| **Target Species** | **Precision 1-σ** 10min avg | **Precision 1-σ** 300sec avg | **Concentration Range** (ppb $N_2O$ in Air) | **Max Drift** over 24hrs, peak to peak, 1hr average |
| **$N_2O$ (concentration)** | Typical: < 0.04 ppb<br>Guaranteed: < 0.05ppb | Typical: < 0.07ppb<br>Guaranteed:< 0.1ppb | 300 - 1500 | < 0.1 ppb Typical |
| **$\delta^{15}N$, $\delta^{15}N^{\alpha}$, $\delta^{15}N^{\beta}$** | Typical: 0.3 ‰<br>Guaranteed: < 0.5 ‰ | Typical: 0.7 ‰<br>Guaranteed: <1‰ | 300 - 1500 | < 2 ‰ Typical |

***Typical performance based on the certificate of compliance and performance of a cohort of 5 analyzers*

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| System Specifications | |
|---|---|
| **Measurement Technique** | Time-based, CRDS |
| **Measurement Interval** | < 10 sec |
| **Response time**<br>*(10%-90%)* | < 30 sec @ 30 sccm |
| **Temperature sensitivity**<br>*as a function of ambient temperature at 330 ppm* | $N_2O$ concentration : < 0.005 ppb/C (typical 0.001 ppb/C)<br>$N_2O$ isotopes : < 2‰ over 20C range |
| **Outputs** | RS-232, Ethernet, USB |
| **Fittings** | ¼" Swagelok® |
| **Dimension (two box system)** | 17" w x 20" d x 12" h<br>(43 x 51 x 32 cm) |
| **Weight** | 87 lbs (< 40 kg) |
| **Power Consumption** | 300W at power up and 210W at steady state |

| Operating Conditions | |
|---|---|
| **Sample Temperature** | -10 to 45 °C |
| **Sample Flow Rate** | < 50 sccm at 760 Torr, no filtration required |
| **Sample Pressure** | 300 to 1000 Torr (40 to 133 kPa) |
| **Sample Humidity** | 0-2 % v $H_2O$ (18°C dew point)<br>non-condensing |
| **Temperature** | 15 to 35 °C (operating)<br>-10 to 50 °C (storage) |
| **Humidity (ambient)** | < 99% R.H. non-condensing |
| **System Transportation in moving vehicles** | Failure to transport in the Picarro shipping crate will void warranty |

***Field Station Deployability:**
The G5102-i system is the most conducive laser-based isotopic analyzer on the market today for field station use by virtu of its light weight, small footprint and low power consumption.

**#**Use option UH5131-i to upgrade to G5131-i ($\delta^{15}N$ + $\delta^{18}O$) within 1year of purchase of the G5102-i

**Please check with Picarro for DC power source set up and for chamber measurement recommendations.**