



Picarro L1102-*i*

World's Highest Performance Water Isotope Analyzer

The Picarro L1102-*i* is the Water Isotope Analyzer of choice for measuring $\delta^{18}\text{O}$ and δD and total H_2O concentration from water samples in the liquid phase. Capable of field station or lab use, the L1102-*i* measures δD , $\delta^{18}\text{O}$ and H_2O concentration, with unprecedented performance and incredible ease-of-use. And, if you want to measure water vapor on the same instrument, the L1102-*i* can do that too.

Configured with a high precision, robust and reliable autosampler, this instrument is capable of making the repeated small volume injections required by these applications. This system has the flexibility to be configured and programmed, enabling rapid methods development.

Using Picarro's unique time-based Cavity Ring-Down Spectroscopy (CRDS) and with an effective pathlength of up to 20 km, the sensitivity and precision of this instrument is unmatched by traditional absorption and ICOS based systems. Further, our patented wavelength monitor makes certain that only Picarro can operate unimpeded by interfering species.

Picarro L1102-*i* Features

- Highest precision & accuracy
- Field and laboratory deployable
- Largest dynamic range with high linearity
- Installed and operational in minutes

In addition, Picarro analyzers use a small 35 cc volume cavity, ensuring better temperature stability, faster gas exchange, lower noise and higher sensitivity.

And, precise cavity temperature (better than 0.002 °C) and pressure control (better than 0.003% of an atmosphere) designed into the system ensure accurate measurements over very long periods of time. As a result, Picarro systems maintain high linearity, precision, and accuracy with minimal calibration, which means significant ease-of-use and cost of ownership benefits.

Further, Picarro's diagnostic software suite continuously measures and records 38 parameters and, if you are on the internet, our service organization can access all of them remotely, practically anytime. If you have a problem we'll get you up and running, fast.

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. Users can connect remotely and control the analyzer through a standard Remote Desktop connection or with similar remote login software.

| L1102- <i>i</i> Performance Specifications | | Precision, Guaranteed* | Precision, Typical† | High Throughput Typical†† | Memory, Typical – 1 st Injection | Drift, Guaranteed (peak to peak, 24 hrs) |
|--|---------------------------|------------------------|---------------------|---------------------------|---|--|
| Water (Liquid) Performance, Autosampler Inject | ($\delta^{18}\text{O}$) | < 0.1 ‰ | < 0.07 ‰ | < 0.15 ‰ | 98% | < \pm 0.3 ‰ |
| | (δD) | < 0.5 ‰ | < 0.2 ‰ | < 0.6 ‰ | 93.5% | < \pm 0.9 ‰ |
| Water (Liquid) Performance Manual Inject | ($\delta^{18}\text{O}$) | | < 0.1 ‰ | | 98% | < \pm 0.3 ‰ |
| | (δD) | | < 0.5 ‰ | | 93.5% | < \pm 0.9 ‰ |
| Water (Vapor) Performance | ($\delta^{18}\text{O}$) | | < 0.2 ‰ | | | < \pm 0.3 ‰ |
| | (δD) | | < 1.0 ‰ | | | < \pm 0.9 ‰ |

*Guaranteed – specifications are tested and documented in the factory against a specific test criterion. Results are provided as a Certificate of Compliance to the customer with the instrument

†Typical results represent data gathered from various applications and is dependent on method.

††Using High Throughput mode for liquid water samples

| System Specifications, L1102-i | |
|---|--|
| Measurement Technique | CRDS |
| Vapor Measurement Range | 6000 – 26000 ppmv H ₂ O concentration, non-condensing |
| Vapor Measurement Interval | < 30 seconds |
| Vapor Measurement Sample Temp. | 5 to 45 °C |
| Vapor Measurement Sample Flow Rate | ~30 sccm at 760 Torr, no filtration required |
| Vapor Measurement Sample Press. | 400 to 1000 Torr (53 to 133 kPa) |
| Vapor Measurement Sample Humidity | < 99% R.H. non-condensing @40°C, no drying required |
| Operating Temperature (liquid and vapor) | 10 to 35 °C (-10 to 50 °C storage) |
| Gas Requirement Liquid Measurements | Guaranteed specifications performed using dry nitrogen, better than 100 ppmv H ₂ O. Zero air and Drierite® compatible |
| Outputs | RS-232, Ethernet, USB, optional analog, 4-20mA/-10 – 10V |
| Fittings | ¼" Swagelok ® |
| Dimensions | 17 x 9.75 x 23 in (43 x 25 x 59 cm), not inc autosampler 32 x 26 x 28 in (81.3 x 66 x 71.1 cm) inc. autosampler |
| Weight | 58lbs (26.3kg), not inc autosampler < 80 lbs (36.3 kgs) inc. autosampler |
| Power Requirements | 90-120VAC, 50/60 Hz, 220 VAC, 50Hz, < 500W |