

AUTOMATED • COMPLIANT • RELIABLE



# AQUATek LVA

Liquid Vial Autosampler

The AQUATek LVA is a Purge and Trap (P&T) Autosampler that automates the sample preparation steps for the analysis of liquid samples via purge and trap. The system is capable of preparing samples such as drinking water and wastewater. With intuitive self-diagnostics and user-friendly software, the AQUATek LVA is the simplest, yet most robust autosampler on the market today. An optional on-board pH module allows for preservation confirmation without ever opening the vial.



## How It Works

The AQUATek LVA is a full automation solution for routine analysis of waters by purge and trap concentration. It utilizes a fixed volume loop that is filled with liquid sample, internal and/or surrogate standards are added, and then the sample is transferred to the Lumin or Stratum PTC. Upon completion of the purge step by the concentrator, the AQUATek LVA then initiates a clean up cycle where the sample loop and concentrator sparger are cleaned with 90° C water via the two-stage water heater.

The AQUATek LVA offers all the capabilities you need for compliance with USEPA Methods for the analysis of aqueous volatile organic samples, including a true closed-system technique for sample handling and vial cooling. The closed-system sampling technique and vial chiller ensure the integrity of the sample during the sample preparation process, greatly minimizing volatile organics loss as well as reducing labor cost.

## Applications and Industries

VOC sampling and analysis are used in a wide range of applications in the following industries:

- Environmental
- Food and Beverage
- Pharmaceutical
- Flavor and Fragrance
- Petrochemical

## Methods

USEPA 5030 in conjunction with 502.1, 502.2, 524.2, 524.3, 524.4, 503.1, 601, 602, 603, 624, 8010, 8015, 8020, 8021, 8030, 8240, and 8260

ASTM and Standard Methods

Massachusetts VPH and GRO Methods





### Sample Loop

The AQUATEk LVA is equipped with a fixed volume PEEK™ sample loop with volume choices of 5, 10, 20 and 25 mL. The sample loop is filled with a liquid sample from the sample vial via a pressurization step. The loop is connected to two 3-port solenoid valves. These valves allow for the sample volume to be swept to the concentrator for analysis and allow for clean up of the loop between samples via hot water rinsing and an inert gas sweep.

### 84-Position Sample Tray

The 84-position sample tray loads quickly and is fully insulated, ensuring that chilled samples remain cool.

### Vial Chiller Tray

The vial chiller allows for sample cooling. The chiller requires the use of an external recirculating cooling bath (optional accessory) for operation.

## Additional Features

**Valve Manifold** - A precision-machined manifold reduces plumbing connections by 60% over previous designs and results in improved system reliability.

**Hot Water Rinsing** – The entire liquid pathway can be rinsed using the high temperature Deionized (DI) water cleaning technique, which uses two internal reservoirs to heat blank water to 90 °C for rinsing.

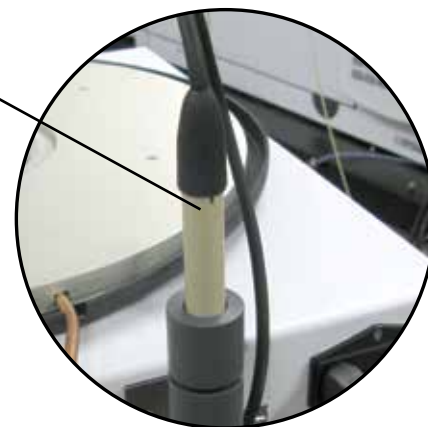


### XYZ Automation

The quick, whisper-quiet arm has undergone years of refinement and testing to eliminate the issues typically associated with older XYZ autosampler platforms.

### pH Probe

The pH probe option allows users to measure and record pH values for all samples in a schedule.



### Stackable Configuration

Stackable configuration minimizes the instrument footprint and saves lab bench space.

### Internal Standards

Internal standards/surrogates are stored in two 15 mL amber glass vessels to prevent transmission of UV radiation. Vessels are sealed with a PEEK™ cap to prevent adsorption and contamination of the standard solution. Each standard vessel can deliver volumes of 1, 2, 5, 10, or 20  $\mu$ L to each sample. Each standard injection valve can be used independently or in combination.



**Barcode** – The AQUATEk LVA has the ability to connect to a standard barcode reader in order to scan vial barcodes and automatically have the vial ID number added into the TekLink™ schedule.

**Blanking Water Reservoir** – Reservoir included with system provides clean-up water and auto-blanking, which frees up vial space in the sample tray for increased throughput.

# Lumin TekLink™

## The AQUATek LVA interfaces with the Lumin TekLink™ software.

Lumin TekLink™, the latest generation of the TekLink™ family, is fully touch screen compatible, and offers a simpler, cleaner, more intuitive layout, as compared to previous versions. Lumin TekLink™ is capable of performing useful diagnostics such as leak and benchmark tests for validation. All instrument parameters, method scheduling, and editing can be programmed. Lumin TekLink™ provides pre-developed methods, allowing startup with little or no modifications.



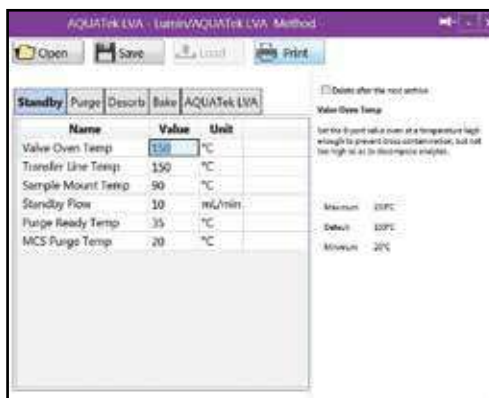
**Main Screen** - The Main screen has a clean layout presenting four main options: Methods, Schedules, Tools and Help. The Instrument Status screen is free floating, and can be pinned to stay open when the rest of Lumin Teklink™ is minimized, allowing you to see what you need, while leaving room for other programs, such as the GC/MS software.



**Instrument Status Screen** - The Instrument Status screen provides valuable information such as mode operation and instrument conditions. During Leak Check, it displays the region of the system that is being checked and the time remaining of the leak check.



**Schedule Screen** - Schedule building is easier than ever thanks to excel-based features such as highlight, fill down and fill sequential commands. Schedules can be edited at any time, even while running. This allows for priority samples to be added in at any time. Schedule screen also includes useful fields such as sample ID, Internal standards addition, and vial position. Lastly, the schedule captures essential information such as purge and bake pressures, pH value (if equipped with pH meter and enabled in the configuration) and sample status.



**Method Development Screen** - The Lumin TekLink™ software comes pre-installed with methods for most applications. You can select one of these methods or if your application calls for a unique requirement, a customized method can be created to meet your analytical requirements for sample processing.

The Method Editor is broken into several tabs showing parameters that effect specific areas of a sample analysis: Purge, Desorb, and Bake. After creating customized methods, method schedules can be defined that specify samples, operating sequences, and the order in which they run.



# AQUATek LVA Specifications

## Automation

|              |   |
|--------------|---|
| Sample Types | Liquid samples, including drinking water and wastewater; Liquid samples containing up to 15 mm of sediment when measured from the bottom of an upright 40 mL vial |
| Sample Vials | 84-positions for 40 mL VOA vials, single hole cap with PTFE-faced silicone septum, per USEPA specifications   |
| Automation   | XYZ robotics with septum piercing needle  |

## General Specifications

|                              |   |
|------------------------------|---|
| Dimensions (H x W x D)       | 25.3" x 21.6" x 26.3" (64.2 cm x 54.8 cm x 66.8 cm)   |
| Weight                       | Unit weight: 70 lbs (31.75 kg)  |
| Power Requirements           | 100-240VAC +/- 10%, 50/60 Hz, 2.5A, 300W  |
| Environmental Specifications | Operating Temperature: 10° to 30 °C; Storage Temperature: - 20° to 60 °C; Relative Humidity: 10% to 90% ; the front cover and autosampler is corrosion resistant to waters with a pH range of 1 to 10 |

## Gas Handling

|                |   |
|----------------|---|
| Sample Pathway | 1/16" and 1/8" O.D. PEEK tubing; 1/8" PTFE Tubing   |
| Gas Supply     | Ultra-high Purity (99.999%) pure Helium or Nitrogen; Incoming Pressure: 60-100 psi, (100 psi max) |

## Liquid Handling

|                  |  |
|------------------|--|
| Sample Precision | < 1% RSD (n=7 @ 5 mL delivery volume measured by weight)   |
| Sample Pathway   | Glass, PEEK, EPDM and Ultem® for solenoid valve manifold. 1/16" (0.16 cm) OD PEEK tubing for liquid transfer   |
| Water Supply     | Requires use of a pressurized blank water reservoir (included)   |
| Cleaning         | The entire liquid sample pathway can be rinsed using the high-temperature DI water rinse cleaning technique; user defined rinse volume and number of rinses for the needle and glassware |
| Blanks           | Automatic blanks can be pulled from the blank water reservoir and spiked with standard/ surrogate allowing all autosampler positions to be used for samples                              |
| Vial Cooling     | Cools sample tray to 4 °C as defined by most USEPA Methodologies (requires an external recirculating cooling bath)   |

## Standard Injection

|                           |  |
|---------------------------|--|
| Standard Injection System | Two standard injection systems utilizing 2-way dosing valves mounted on the valve manifold   |
| Capacity                  | Up to 20 µL in 1, 2, 5, 10 and 20 µL increments at 1 µL per 1 µL injection   |
| Precision and Accuracy    | < 10% RSD measured by GC/MS for Fluorobenzene and Bromofluorobenzene, (n=7), based on 5 µL injection volume  |
| Standard Vessels          | Two 15 mL standard vessels, UV-protected for added standard stability; Standard vessels sealed under pressure for standard concentration integrity |

## Heater

|                  |  |
|------------------|--|
| Hot Water Heater | Variable Heat Control from 35 °C to 90 °C. |
|------------------|--|

## Service

|                       |  |
|-----------------------|--|
| Electronic Leak Check | Ability to leak check the sample pathway of the system via an automated system leak check process.   |
| Benchmark Test        | The system has a mode that will allow for full electromechanical testing including; valving, heater, vial handling systems, liquid delivery system, inputs and outputs |
| Diagnostics           | The system offers independent control of all valves and vial handling mechanisms for troubleshooting   |

# pH Probe Specifications

|                       |  |
|-----------------------|--|
| pH Range and Accuracy | 2 to 12; ±10% with two point calibrated range  |
| Power Requirements    | 5.0 VDC  |
| Operating Temperature | 10° to 40 °C                                   |
| Dimensions            | Length: 4.0" (102 mm); Diameter: 0.63" (16 mm) |

Windows® is a registered trademark of Microsoft, PEEK™ is a trademark of Victrex PLC. Covered by one or more of the following patents: 7,651,866; 6,280,688 and other patent pending.



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