TELEDYNE TEKMAR
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AUTOMATED • COMPLIANT • RELIABLE

AQUATek LVA

Liquid Vial Autosampler

The AQUATek LVA 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

Including, but not limited to:

- 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
- CN MEE Methods HJ 639
- ASTM and Standard Methods
- Massachusetts VPH and GRO Methods

Features and Benefits

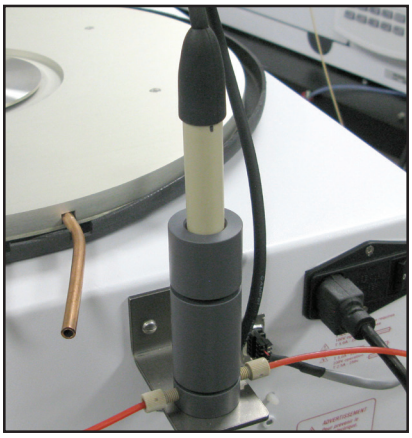
A. XYZ Automation
The quick, whisper-quiet arm has undergone years of refinement and testing to eliminate the issues typically associated with older XYZ autosampler platforms.

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

C. 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.

D. 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 µL to each sample. Each standard injection valve can be used independently or in combination.

Sample Loop
The AQUATek LVA uses a fixed volume PEEK™ sample loop, available in 5, 10, 20 and 25 mL sizes. The loop is connected to two 3-port solenoid valves, which control the loop fill, sweep and rinsing steps, as well as allow for the sample volume to be transferred to the concentrator for analysis.



pH Probe
The pH probe option allows users to measure and record pH values for all samples in a schedule. This is done via an in-line sample station that measures the outgoing sample after the purge step. This way, sample integrity is maintained from loop fill all the way through desorption, while still allowing for an accurate reading.

Stackable Configuration
Stackable configuration minimizes the instrument footprint and saves lab bench space. The AQUATek LVA includes cutouts for the feet of both the Lumin and the previous Stratum, ensuring a custom, secure fit for all compatible concentrators. The system also includes a clamping bar to prevent accidental tipping of the concentrator.

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.

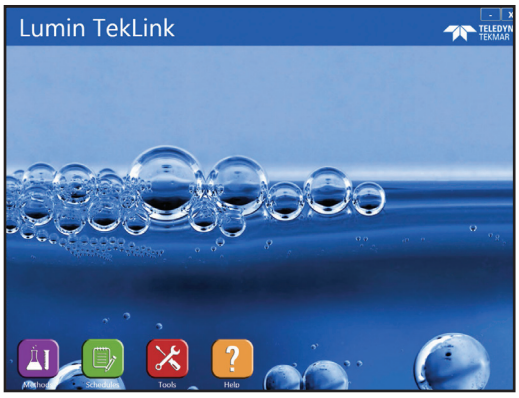
Barcode – The AQUATek LVA has the ability to connect to a standard barcode reader in order to scan vial barcodes and automatically have the vial ID number added into the TekLink™ schedule.

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.

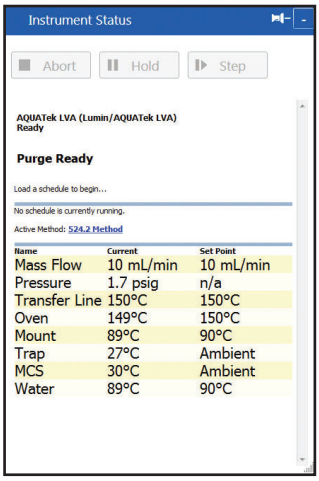
Lumin TekLink™

The AQUATek LVA interfaces with the Lumin TekLink™ software.

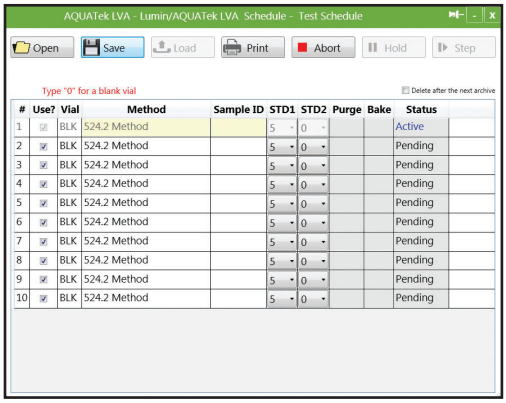
Lumin TekLink™, the latest generation of the TekLink™ family, is fully touch screen compatible, and offers a simpler, cleaner, more intuitive layout, as compared to previous versions. Lumin TekLink™ is capable of performing useful diagnostics such as leak and benchmark tests for validation. All instrument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



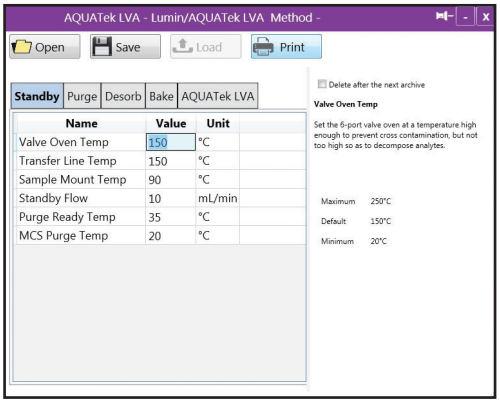
Main Screen - The Main screen has a clean layout presenting four main options: Methods, Schedules, Tools and Help. The Instrument Status screen is free floating, and can be pinned to stay open when the rest of Lumin Teklink™ is minimized, allowing you to see what you need, while leaving room for other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



Instrument Status Screen - The Instrument Status screen provides valuable information such as mode of 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 or less 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

Water Heater	Variable Heat Control from 40 °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, liquid delivery system, inputs and outputs
Diagnostics	The system offers independent control of all valves and liquid 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)

TELEDYNE TEKMAR
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www.teledynetekmar.com

4736 Socialville-Foster Rd. • Mason, OH 45040 USA
Phone: (513) 229-7000
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