



Simplicity



Reliability



Performance



**Lumin**

Automated VOC Sample Prep System

The Lumin Purge and Trap Concentrator (PTC) is a sample preparation instrument used to remove Volatile Organic Compounds (VOCs) out of aqueous and solid sample types using Helium or Nitrogen. The VOCs are deposited onto a sorbent trap which is then heated to release the VOCs into a Gas Chromatograph (GC) system. This technique is standard for many EPA Methodologies as well as analytical options where concentration of VOCs is required. Teledyne Tekmar has been the leader in this technology since its first PTC was released in the 1980s. Tekmar has continued to improve on this technique through eight generations of systems including the Lumin PTC to meet the ever increasing analytical challenges faced by laboratories.



## How It Works

Purge and Trap extracts VOCs from the sample matrix using a controlled flow and deposits the VOCs onto a sorbent trap, which is then heated and back flushed to a GC or GC/MS system. While this theory is simple, many factors affect the performance of the system. The Lumin PTC employs the latest technology in all of its components including a patented electronic Mass Flow Controller (MFC), improved moisture control and a redesigned, intuitive software control that monitors the entire system performance.

## Applications and Industries

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

- Environmental
- Food and Beverage
- Forensics and Toxicology
- Pharmaceutical
- Petrochemical

## Methods

There are a wide array of methods the Lumin PTC can accommodate, including but not limited to, the following:

USEPA 502.1, 502.2, 524.2, 524.3, 524.4, 503.1, 601, 602, 603, 624, 8010, 8015, 8020, 8021, 8030, 8240, 8260, ASTM and Standard Methods, Massachusetts VPH and GRO Methods



## Features

The Lumin was designed from the ground up to provide the highest levels of productivity in the laboratory.

Some of the Lumin's time saving features include:

**Reduced trap cooling times** - The Lumin uses a trap cooling fan that, in conjunction with dedicated ducting, reduces trap cooling times by 22% or more over previous models. This is made possible by pulling air from outside the Lumin, rather than from within the unit. Shorter cool down time means more samples per day.

**Simplified access to the trap box** - Full access to the analytical trap is now as simple as opening a door. This time saving feature makes trap changes easier and reduces downtime during this routine maintenance task. Additionally, the consolidated solenoid valve manifold can also be found behind this door, simplifying less-routine tasks, such as benchmark testing, and checking fittings for leak elimination.

**Improved moisture management** - The Moisture Control System (MCS) greatly reduces the amount of water vapor transferred to the GCMS system. Not only will less water vapor improve MS sensitivity and data reproducibility, but a drier analysis also improves GC column life expectancy, and reduces the frequency of MS maintenance.

**Lumin TekLink™ Software** - The look and feel of the TekLink™ software is designed to be simpler and more intuitive than previous versions, while retaining all of your favorite features, such as editing methods on the fly, automated leak check and benchmark features. It is also touch screen compatible, taking advantage of all of the features of current computer systems. Finally, the Lumin communicates with the controlling PC via USB connection, eliminating the need for an RS232 port or a USB to RS232 converter.

## Options

- **Guardian Foam Sensor** - The Guardian uses a photo sensor mounted on the outside of the sparger. When foaming occurs, the foam blocks the sensor, prompting the Lumin to shut off the purge flow and drain the sample.
- **Guardian and Eliminator** - When foam is sensed, the unit shuts off the purge gas. The purge clock is stopped and the foam transfer valve is activated to add antifoam agent for a specified period of time. The Eliminator system comes complete with an internal pressure regulator thus eliminating the need for a separate external regulator.
- **Autosampler** - A range of solid and liquid autosamplers are compatible with the Lumin PTC as well as liquid vial autosamplers directly purchased from Tekmar. Increase your throughput by coupling with Tekmar's AQUATEk 100 autosampler. Utilizing an autosampler reduces hands-on labor and improves data quality.

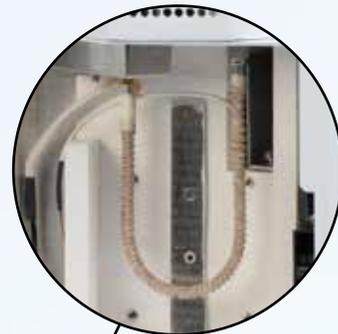
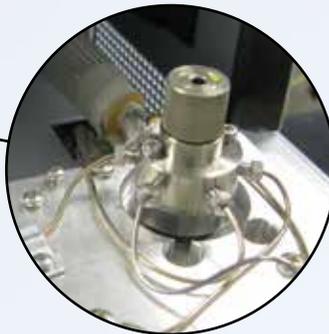
### Glassware

Glassware can be ordered in 5 and 25 mL with or without frit. (Comes standard with 5 mL frit.)



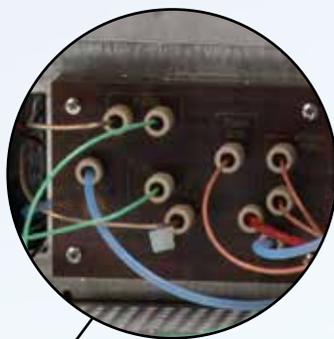
### Inert Heated Sample Path

When dealing with active, polar, and high boiling compounds, it is imperative to keep your sample contained in an inert sample pathway. The Lumin PTC utilizes Inertium® tubing and SilcoNert® 2000-treated fittings throughout the sample path. This ensures resistance to corrosion and prevents loss of compounds.



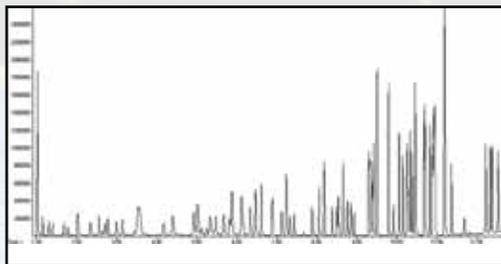
### Analytical Trap

The Lumin ships with a #9 proprietary U-shaped trap installed and a U-shaped Vocab 3000 trap. If purge gas pathway is not kept sufficiently hot throughout contamination and carryover can occur. The U-shaped trap allows all of the gas pathway plumbing to reside in the valve oven, and trap box, ensuring consistent heat throughout and reducing carryover.

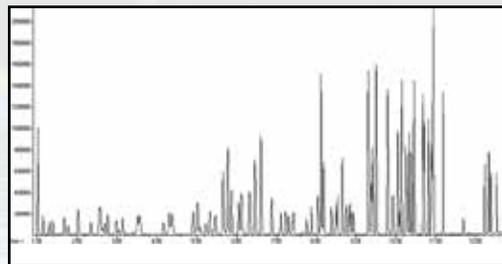


### Consolidated Solenoid Valve Manifold

The solenoid valve manifold has been consolidated and moved to the front of the Lumin for easy access, greatly simplifying routine maintenance and troubleshooting tasks.



Drinking Water Chromatogram showing 10 ng/mL of standard drinking water.



Wastewater Chromatogram showing 10 ng/mL of standard in reagent water.

## Additional Features

**Mass Flow Controller (MFC)** - The Lumin utilizes a patented digital MFC for independent programmable flow control allowing users to easily optimize performance based on needs for either water or soil.

**Water Management System** - Water management has been improved with the MCS fitting. With properly selected dry purge mode parameters, water transfer to the GC can be reduced by up to 60% over previous models.

# Lumin TekLink™

## Fully Optimized User Interface

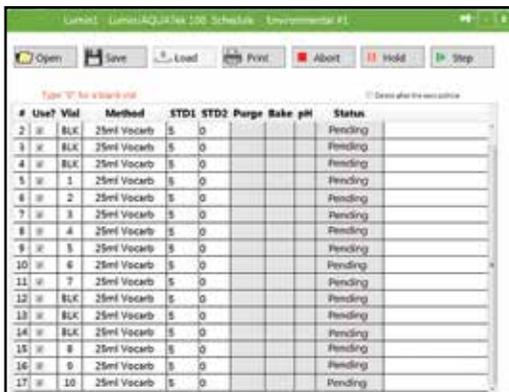
Lumin TekLink™, the latest generation of the TekLink™ family, is fully touch screen compatible, and offers a simpler, cleaner, more intuitive layout, as compared to previous versions. Lumin TekLink™ is capable of performing useful diagnostics such as leak and benchmark tests for validation. All instrument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



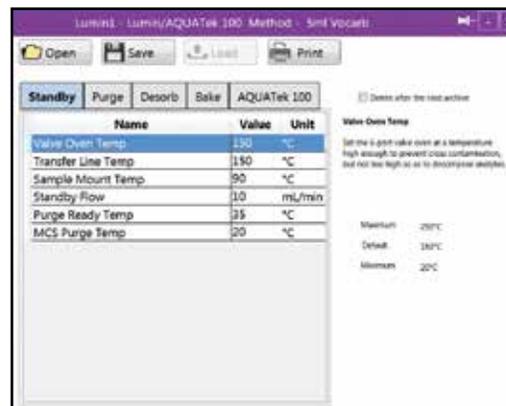
**Main Screen** - Main screen has clean layout presenting four main options: Methods, Schedules, Tools and Help. Instrument Status is free floating, and can be pinned to stay open when the rest of Lumin TekLink™ is minimized, allowing you to see what you need, while leaving room for other programs, such as the GCMS 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** - Have two schedule screens open side by side, due to the free floating capability. This makes schedule building and comparison easier than ever.

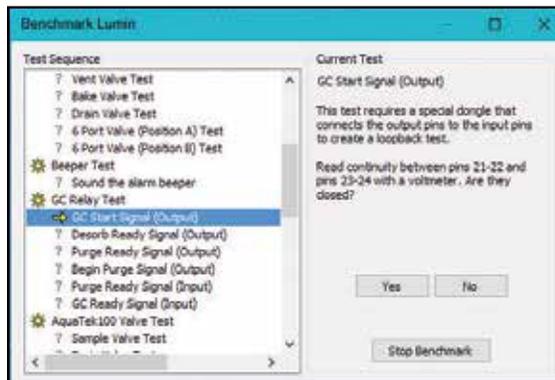


**Method Development Screen** - The Lumin TekLink™ software comes pre-installed with methods for most applications. You can select one of these methods or if your application calls for a unique requirement, a customized method can be created to meet your analytical requirements for sample processing.

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.



**Tools Screen** – The Tools screen has intuitive options and an easy to navigate design making it easier than ever to find the tools you’re looking for. All functions are organized into one of four main headings, and the most commonly used features, such as the prime features (AQUATEk 100 only), Bake, Leak Check and Desorb have their own commands. The remaining tools are organized into simple and logical subheadings.



**Benchmark Screen** - The Benchmark screen contains an interactive program that tests heaters, LEDs, and the continuity of inputs and outputs on the CPU board. The results of the Benchmark Test are saved in the System History Log under the name entered before starting the benchmark.

## Lumin Specifications

### Automation

Cycle Time:	Less than 15 minutes when using an 11 minute purge time. This time also includes desorb, bake, and cool down for the Lumin only and assumes ambient lab temperature. (20-22 °C).
Trap Heater:	Ambient to 350 °C cools from 250 °C to 40 °C in 70 seconds or less at ambient lab temperatures (20-22 °C).
6-port switching valve	Ambient to 250 °C
External Transfer Line	Ambient to 250 °C.
Sample Mount	Ambient to 90 °C.
Condenser	Ambient to 200 °C.
Sample Heater (optional)	Ambient to 90 °C.
Sample Pathway	All tubing has an Inertium® coating and related fittings are SilcoNert® 2000.
Gas Requirements	99.999% pure Helium or Nitrogen
Electronic Mass Flow Controller	Device is capable of controlling flow rates between 5 and 500 mL/min. Each mode is independently controlled. Device is also capable of recording pressures for sample logging and automatic leak checking.
Unit Dimensions	Height: 17.2 inches (43.7 cm) Width: 8.9 inches (22.6 cm) Depth 18.7 inches (47.5 cm)
Operating System	PC using Windows® 7 or greater
Software	Lumin TekLink™ interfaced via a USB connection.
Operating Conditions	The system is capable of operating in lab temperatures between 10-30 °C and humidity levels between 10-90%.
Corrosion	The front cover is corrosion resistant to waters within a pH range of 1-10.
Voltages	100/115VAC 50/60Hz 10 amps, 1150 watts 220/240VAC 50/60Hz, 5 amps, 1150 watts
Weight	27 lbs (16.8 kg)

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