



Automated



Compliant



Reliable



# AQUATek 100

Waters-Only Autosampler

The AQUATek 100 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 100 is one of the simplest yet most robust vial robotic autosampler on the market today. An optional on-board pH module allows for preservation conformation without ever opening the vial.



## How It Works

The AQUATek 100 utilizes a fixed volume sample loop that is filled during the vial pressurization step. Internal Standard/ Surrogate is added and the sample is transferred to the concentrator for analysis. The AQUATek 100 then initiates a clean-up cycle to prepare the system for the next sample to be processed.

The AQUATek 100 interfaces directly to the Stratum Purge & Trap Concentrator (PTC) or Velocity XPT Concentrator and allows for complete automation of sample preparation for liquid samples including vial movement, sample volume measurement, standard/ surrogate addition, sample transfer, and clean up between samples.

The AQUATek 100 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 & vial chiller ensure the integrity of the sample during the sample preparation process, greatly minimizing volatile organics loss and 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, 503.1, 601, 602, 603, 624, 8010, 8015, 8020, 8021, 8030, 8240, and 8260

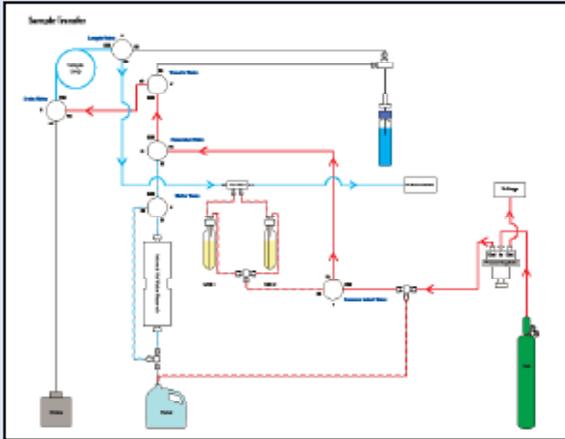


## Options

**pH Probe** - Enables the system to measure and record pH values for all samples in a schedule.

**Recirculating Cooling Bath** - Continuously recirculates cold liquid throughout the chiller tray in order to keep samples cold as required by most EPA Methodologies.

## Sample Transfer Mode



The Sample Transfer flow diagram showing the sample and internal standards/surrogates being delivered to the concentrator for analyte concentration (blue line).

## Intuitive Schedule Screen



The AQUATEk 100 saves time by automatically recording, in real time, various logs such as pH measurement, pressure logs and sample status.

## Robotic Arm

The 2-stage sample needle is positioned by the motion of a two axis robotic arm assembly. This robotic arm moves in & out to position the needle over the sample vials and rinse station, it also moves the needle up & down to allow the needle to puncture the vials. The robotic arm utilizes proven reliable technology where the needle is moved to the vials and the vials remain in the carousel thus eliminating errors associated with XYZ handling.

## 100-Position Carousel

The carousel drive is an electronically controlled mechanism that positions sample vials for sampling. The carousel tray is removable from the drive assembly for easy vial loading.



## Additional Features

**OptiRinse (patented)** - The entire liquid pathway can be rinsed using the high temperature OptiRinse (patented) cleaning technique which uses two internal reservoirs to heat blank water to 90 °C for rinsing.



### Sample Needle

A 2-stage sample needle is used to displace sample from the vial to the sample loop.



### pH Probe

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



### Sample Loop

The AQUATEk 100 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 liquid sample from the sample vial via a pressurization step. The loop is connected to two 3-port solenoid valves that allow for the sample volume to be swept to the concentrator for analysis and to allow for cleanup of the loop between samples via hot water rinsing and an inert gas sweep.

### 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.

### 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.

### Plumbing Access Compartment (PAC)

Slide out compartment allows for easy access to the sample loop and associated plumbing as well as system hardware.

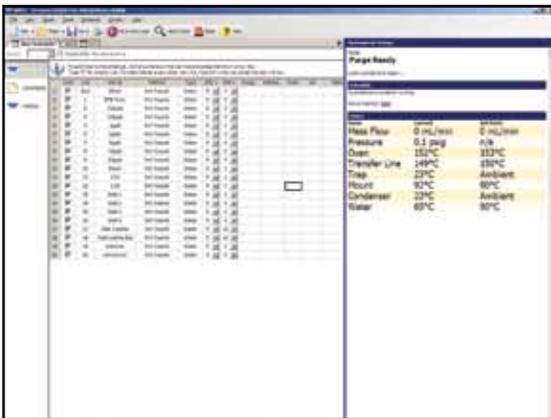


**Barcode** – The AQUATEk 100 has the ability to connect to a standard barcode reader in order to scan vial barcodes and automatically have the vial ID number added into the TekLink™ schedule.

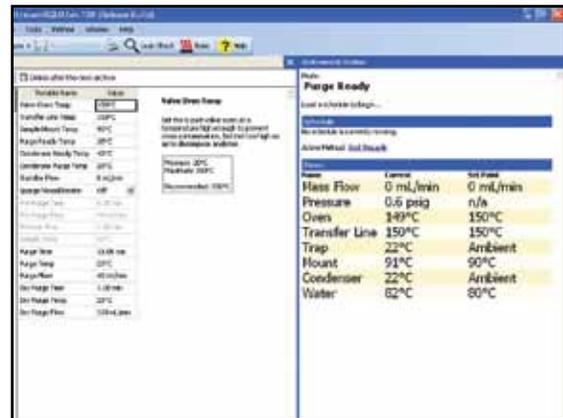
**Blanking Water Reservoir** – Reservoir included with system provides clean-up water and auto-blanking, which frees up vial space in carousel for increased throughput.

## Fully Optimized User Interface

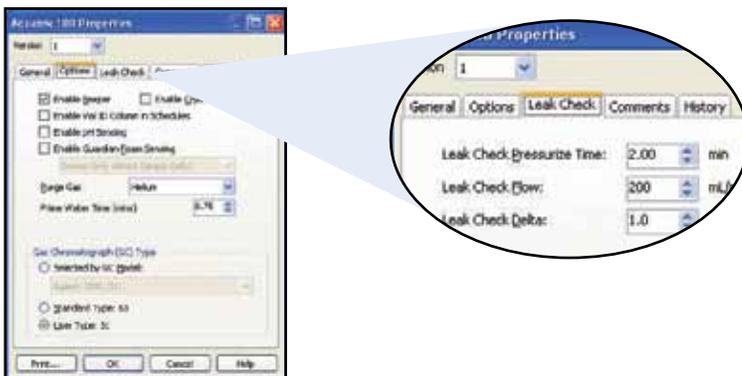
Tekmar's VOC TekLink™ 2G is the next generation in instrumentation software that allows the user to enter all analysis parameters and once activated, it will continuously monitor the system ensuring operating limits are not exceeded. VOC TekLink™ 2G software is capable of performing useful diagnostics such as leak and benchmark tests for instrument validation. All instrument parameters, method scheduling and editing can be programmed. VOC TekLink™ 2G provides pre-developed methods, allowing startup with little or no modifications and also contains an optional audit trail package.



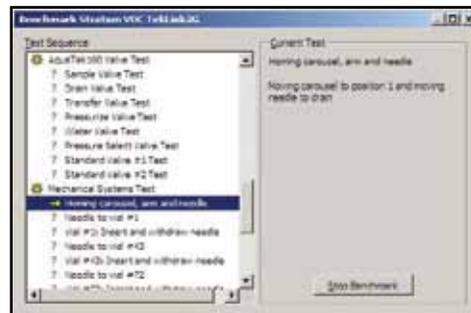
**Schedule Screen** - Users can define schedules that specify samples, methods, internal standard/surrogate additions, and blanking options.



**Method Screen** - A brief description of the method variables as well as the maximum and minimum values that can be selected.



**Leak Check Screen** - The Leak Check Screen shows the amount of time that the system is pressurized to a predefined set point. It also sets the decay value to determine if there is a leak.



**Benchmark Screen** - The Benchmark Screen contains an interactive program that tests both the AQUATEk 100 & Concentrator components including the heaters, LEDs, valves and the continuity of inputs and outputs on the CPU board.



# AquaTek 100 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	100-positions for 40 mL VOA vials, single hole cap with Teflon®-faced silicone septum, per EPA specifications; 3 3/4" (9.5 cm) high without cap and septum; 1 1/16" OD; 24 mm ID cap for water sampling
Vial Transport Device	Carousel/Piercing Needle design using stepper motors and optical encoders for accurate positioning.

## General Specifications

Dimensions (H x W x D)	28.5" x 18" x 19" (72.39 cm x 45.72 cm x 48.26 cm)
Weight	Unit weight: 39 lbs (17.69 kg); Shipping weight: 100 lbs (45.36 kg)
Power Requirements	100-240VAC, 50/60 Hz, 2.5A, 300VA
Environmental Specifications	Operating Temperature: 10° to 30 °C; Storage Temperature: - 20° to 60 °C; Relative Humidity: 10% to 90%
Corrosion Resistance	The carousel tray is corrosion resistant to waters with a pH range of 1 to 10.
Certifications	CE, CETL, CSA, ETL

## Gas Handling

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

## Liquid Handling

Sample Liquid Handling	Sample loop dispenses fixed volumes of water determined by the installed sample loop. Sample loops are available in 5 mL, 10 mL, 20 mL, and 25 mL volumes.
Sample Precision	< 1% RSD (n=7 @ 5 mL delivery volume measured by weight)
Sample Path	PEEK™, EPDM and Ultem® for solenoid valve. 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 pathway can be rinsed using the high temperature OptiRinse (patented) cleaning technique which uses two internal reservoirs to heat blank water up to 90 °C for rinse. User defined rinses for the needle and glassware. Water Heater Patent US 6280688.

## Samples

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 EPA Methodologies (requires an external recirculating cooling bath).
Cooling Bath Connection	Inlet and outlet hose connections require 1/4" (0.64 cm) ID rubber tubing.

## Standard Injection

Standard Injection System	Two standard injection systems utilizing 2-way dosing valves mounted on a valve manifold.
Capacity	Up to 20 µL in 1, 2, 5, 10 & 20 µL increments.
Precision	< 10% RSD measured by GC/FID for Fluorobenzene and Bromofluorobenzene, (n=7). Based on 5 µL injection volume.
Accuracy	1 µL ± 0.1 µL.
Consumption	1 µL per 1 µL injection.
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.
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## System Control

Instrument Control	VOC TekLink™ 2G software in a Windows® XP or greater environment via RS-232 or USB to RS-232 converter (optional).
Language	VOC TekLink™ 2G can easily be translated into any language via file modification.
Method Storage	Infinite method storage including pre-programmed methods.
Method Scheduling	Water samples can be run from any position in the sample sequence. Up to two standards/ surrogates can be added to any user-specified position.
System History	The system records a complete history of all sample, schedule and method information.
Revision Control	The system records and saves changes to methods, schedules and configurations.

## 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 and for troubleshooting.
E-mail Alert	The system can be configured to send an E-mail to alert the user of schedule completion or stoppage.
Warranty	1 year from installation. 18 months from shipment. (excludes consumables)

## pH Probe Specifications

pH Range	0 to 14
Power Requirements	4.5 to 5.5 Vdc
Operating Temperature	0° to 70 °C
Accuracy:	±10% with two point calibrated range
Dimensions	Length: 7.48" (19 cm) Diameter: 0.63" (1.6 cm)