

GE
Water & Process Technologies
Analytical Instruments

The Sievers 900 Series TOC Analyzers



Delivering Next-Generation Ease of Use, Productivity, and Reliability

The Sievers* 900 Series TOC Analyzers represent the next generation of the best-selling Sievers Model 800. Based on Sievers patented, proven analytical technology, the three-model 900 Series incorporates design improvements that draw upon a decade of leadership in TOC analysis and enhancements most requested by customers. The 900 Series Analyzers offer unsurpassed ease of use, analytical performance, versatility, and reliability, and are designed to meet diverse application needs and regulatory requirements.

The versatile 900 Series is available in three models—the 900 Laboratory, the 900 On-Line, and the 900 Portable TOC Analyzer—to best support the intended application and operating location. All models come in compact, ergonomic cases. An optional accessory, the 900 Autosampler, partners with the 900 Laboratory or 900 Portable Analyzer for increased productivity even in the most demanding laboratory applications.

Features and Benefits

Unmatched Ease of Use

The 900 Series Analyzers incorporate state-of-the-art Sievers technology and are remarkably simple to install, operate, and maintain. Retaining many of the popular ease-of-use features of their Model 800 predecessor, the 900 Series takes this to a new level with an enhanced user interface, convenient automation, data transfer features, and more.

- **Fast Installation and Operation**

Pre-calibrated at the factory, the Sievers 900 Series Analyzers are designed to go from the box to providing TOC results in less than an



hour. No special tools or training are required to set up, operate, or maintain the instruments.

- **Minimal Maintenance**

The 900 Series Analyzers require minimal hands-on labor to maintain. Annual scheduled maintenance typically takes a few hours to complete, freeing operator time for other tasks. The new modular design makes routine maintenance and consumables replacement more efficient than with any other TOC analyzer.

- **Competitive Cost of Ownership**

The 900 Series is self-contained, requiring no external reagents or gas supplies. The Analyzers utilize convenient, pre-packaged Sievers reagent cartridges housed within the instruments for three to six months of uninterrupted analysis.

- **Intuitive Interface**

A large, color, touch-screen display facilitates fast and easy instrument parameter entry. Trend data is conveniently displayed to review real-time or historical measurement results,

graphically and numerically. Menu-driven protocols facilitate calibration and verifications.

- **Extended Calibration Stability**

The 900 Series uses the patented Sievers Membrane Conductometric TOC Detection technique featuring conductivity sensors that are not susceptible to drift or fluctuation, resulting in superior calibration stability. Recommended recalibration is just once annually. In contrast, TOC analyzers that use NDIR detection often require weekly or even daily calibration.

- **Easy Data Transfer**

A convenient USB flash memory drive enables instrument data downloads without interrupting TOC analysis. Standard serial and parallel port connectivity also allow data transfer. Exported data files can be opened directly in Microsoft Excel® without the need to convert data with proprietary software.

Exceptional Performance Across a Wide Analytical Range

The 900 Series' accuracy and precision extends across a wide dynamic range of 0.03 parts per billion (ppb) to 50 parts per million (ppm).¹ From ultrapure water to drinking water and industrial process waters, the Analyzers offer unsurpassed analytical performance.

High Productivity

The 900 Series includes new automation and productivity features designed to minimize hands-on operator involvement with the instrument.

- The Autoreagent function enables unattended sample runs with unknown concentrations by automatically calculating and implementing

optimum reagent flow rates. No user intervention or data interpretation is required.

- With an analysis time of four minutes, the Sievers 900 Series TOC Analyzers process samples 30 percent faster than their Model 800 predecessor. With the optional *Turbo* mode, designed for microelectronics reclaim applications, results are reported every four seconds.
- The optional 900 Autosampler offers up to a 152-percent capacity increase over its Model 800 predecessor for maximum throughput and longer unattended analysis.

Reliability

GE Analytical Instruments' team of scientists and engineers designed the 900 Series using advanced materials and modular components for extended operating life and easier maintenance in the field. The result is enhanced reliability for maximum uptime.

Point-of-Use Flexibility for Application-Specific Needs

GE Analytical Instruments benchmarked industry-specific applications to drive the 900 Series design and functionality, resulting in the most versatile TOC analyzers available. Select from the 900 Series Laboratory, On-Line, or Portable models to meet specific application requirements in the pharmaceutical, microelectronics, municipal water, power, and other industries.

Regulatory Compliance Support

The 900 Series makes regulatory compliance easier than ever, with its proven Sievers Membrane Conductometric TOC Detection Technology and software and firmware that facilitate regulatory compliance requirements, such as:



The Autoreagent feature, which optimizes reagent flow rates across the entire operating range, significantly aids cleaning validation. For automated laboratory applications, the Analyzer can be coupled with the high-capacity 900 Autosampler, which provides automated validation protocols to streamline the validation process.

- **Pharmaceutical** – USP <643> and EP 2.2.44 monographs, and 21 CFR Part 11
- **Municipal Water** – USEPA Disinfectants and Disinfection Byproducts Rule (D/DBP Rule), Standard Methods 5310 C, and the proposed EPA 415.3
- **Power** – ASTM D 5904-96; 5997-96; 6317-98

Industry Applications

Pharmaceutical

The 900 Series was designed to ensure compliance support within the FDA-regulated environment. All 900 Series Analyzers are engineered to measure TOC as prescribed by USP <643> and EP 2.2.44 monographs for Purified Water and Water for Injection, while the optional DataGuard* software and firmware feature facilitates 21 CFR Part 11 compliance.

Microelectronics

The 900 Series helps companies manage any stage of the water purification system to ensure maximum uptime. The optional *Turbo* mode, with a four-second analysis time and an extended operating range of 0.20 ppb to 10 ppm,¹ was specifically designed for reclaim applications.

Municipal Water and Analytical Labs

The 900 Series contributes to coagulant dosage optimization and compliance reporting through analysis of raw and finished water TOC using USEPA approved methodologies (Standards Method 5310 C and the proposed USEPA Method 415.3).

Power

Controlling the level of organics and carbonic acid in power waters is critical to minimizing corrosion in power plants. The unsurpassed analytical range of the 900 Series Analyzers makes it possible to use one type of analyzer throughout the plant for corrosion control. All Sievers 900 Series Analyzers utilize ASTM-approved methods.

Patented Innovations from GE Analytical Instruments for Superior Performance and Flexibility

Dedicated to continuous product innovation, GE Analytical Instruments invests heavily in research and development. The company holds more than 30 patents for technical innovations, including:

The Sievers Membrane Conductometric Detection Method for Unsurpassed TOC Measurement

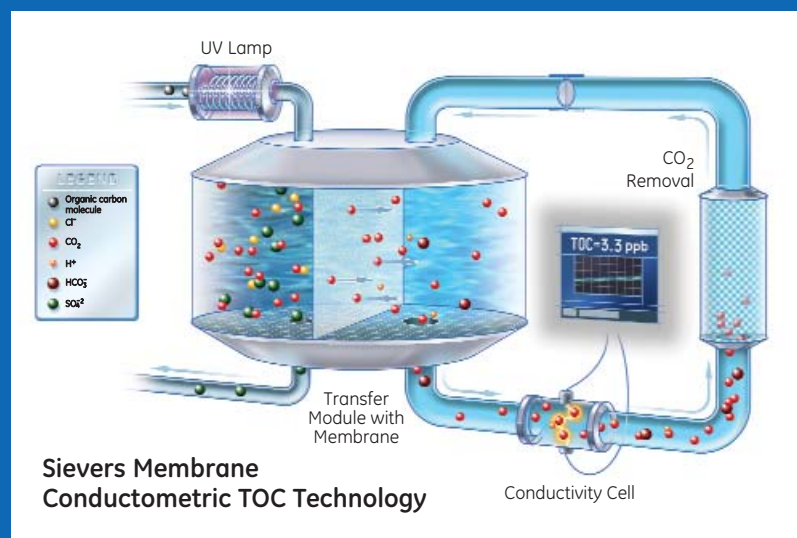
The Sievers Membrane Conductometric Detection method has proven to be an extremely reliable technique for measuring TOC. Unlike instruments using NDIR (non-dispersive infrared) detection, the conductometric detection method exhibits an extremely stable calibration and is not susceptible to significant drift over time. This allows for less frequent calibration with no compromise in analytical performance.

The stability and reliability of the conductometric measurement is further enhanced by the Sievers patented membrane technology which utilizes a gas-permeable membrane that selectively passes only the CO_2 produced from the oxidation of organics. By preventing compounds such as acids, bases, and halogenated compounds from interfering with the measurement of CO_2 from oxidation, the Membrane Conductometric Method delivers unmatched sensitivity, selectivity, stability, accuracy, and precision.

(To see an animated demonstration of this technology, visit the *Products-TOC* section at www.geinstruments.com.)

Patented Integrated On-Line Sampling System Provides High Sampling Flexibility

The proprietary Integrated On-Line Sampling System (IOS System*) enables easy introduction of external standards and samples, and is available on the 900 On-Line and 900 Portable Analyzers. This unique feature allows users to introduce calibration, validation, and system suitability standards directly without removing the instrument from the continuous sample source or changing the sample inlet configuration. The IOS System also accommodates grab samples for spot checks of TOC samples from other locations in a water system.



Accessories and Options

900 Autosampler with Sievers DataPro 900* and DataGuard Software

The 900 Autosampler can be used with the 900 Laboratory or 900 Portable Analyzer for automated laboratory applications. The 900 Autosampler features a random access capability with high sample capacity (up to 63 positions for 40-mL vials and up to 120 for 17-mL vials). The DataPro 900 software integrates the 900 Autosampler with the 900 Series Analyzers for added productivity, while the optional DataGuard provides full compliance support for 21 CFR Part 11 requirements for electronic records in pharmaceutical applications.

900 Inorganic Carbon Remover (ICR)

The optional 900 ICR, integrated inside the 900 On-Line Analyzer or attached to the side of the 900 Portable, reduces inorganic carbon levels in sample streams with high IC/TOC ratios to produce more accurate results.

900 Turbo Analyzers

The 900 On-Line and 900 Portable Analyzers are available in *Turbo* mode, particularly suited for a wide

range of reclaim water applications where quick process control feedback is required. The new 900 Series *Turbo* Analyzers feature an expanded range of 0.20–10,000 ppb.¹ TOC, IC, and TC updates are created every four seconds.

Sievers Certified Reference Materials

Sievers Certified Reference Materials represent a comprehensive offering of ready-to-use TOC and conductivity standards for calibration, linearity, and USP system suitability applications. The large-scale production capabilities of GE Analytical Instruments provide substantial cost advantages compared to in-house standards preparation. Based upon GE Analytical Instruments' expertise in preparing and storing standards, both the accuracy and extended shelf life of Sievers Standards are guaranteed, even at low concentrations.

Comprehensive Technical Support

GE Analytical Instruments provides ongoing phone and electronic technical support, as well as on-site installation, maintenance, calibration, and training services that together assure optimal performance from your instrument. For more information, please visit www.geinstruments.com.



900 Autosampler



900 ICR



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¹ Stated analytical performance is achievable under controlled laboratory conditions that minimize operator and standards errors.

For more information, visit www.geinstruments.com. Find a sales partner near you through the "Contact Us" Section.