

Sievers

900 Portable TOC Analyzer

Overview

The Sievers* 900 Portable TOC Analyzer is the most versatile of the three-model 900 Series, offering maximum flexibility for how and where it is used. The 900 Portable Analyzer's lightweight and compact design makes it a powerful troubleshooting tool that can be carried to any location in a water system. The Analyzer can be used for single grab samples or in a process stream for continuous on-line TOC measurement. It can also team up with the optional Sievers 900 Autosampler for higher volume laboratory applications.

The 900 Portable Analyzer is the first and only general purpose, full-range portable TOC instrument available. In recognition of its unique design, the 900 Portable won the Instrument Business Outlook (IBO) 2005 Gold Award for Best Portable Instrument Industrial Design.

The flexibility of the 900 Portable Analyzer extends to a variety of applications and feed water quality types. From ultrapure water to drinking water and industrial process waters, the Analyzer offers superior accuracy and precision across a single dynamic operating range of 0.03 parts per billion (ppb) to 50 parts per million (ppm). Incorporating new refinements to the UV/persulfate oxidation method with the patented Sievers Membrane Conductometric Detection Technology, the 900 Portable Analyzer's analytical performance is unmatched.

The 900 Portable Analyzer was engineered for ease of use and cost-effective operation, requiring no external reagents or gas supplies. The Analyzer typically needs a few hours of preventive maintenance per year. Weighing just 12.5 kg (27.5 lb), the 900 Portable Analyzer may easily be deployed wherever it is needed in the process environment.



A color touch-screen display provides an intuitive menu to quickly establish operating parameters, such as setup and automated calibration procedures, and to graph historical or real-time data. A variety of instrument I/O options, including a USB port, accommodate any data management requirement.

Applications

Microelectronics

The 900 Portable Analyzer measures TOC, IC, and TC to help manage any stage of the water purification system. The Analyzer accurately measures system feed water, reverse osmosis (RO) product, and final product water. With the optional *Turbo* mode's four-second analysis time, the 900 Portable Analyzer is the ideal troubleshooting tool for reclaim applications.

Municipal Water

The 900 Portable Analyzer monitors raw and finished water TOC for plant optimization and compliance reporting. The Analyzer uses USEPA-approved methodologies (Standard Methods 5310C and USEPA Method 415.3) demonstrated to recover even the most difficult-to-oxidize organic compounds. The 900 Portable Analyzer can be hand-carried to any location in the system for on-line measurement, used for grab sampling, or connected to the 900 Autosampler for lab use.



Power

The 900 Portable Analyzer assists in corrosion control and water system optimization by measuring TOC, IC, and TC throughout the plant using ASTM-approved methods. The Analyzer can be used as a diagnostic tool at any point in the water system, as well as for both grab and high-volume sample analysis with the 900 Autosampler.

Pharmaceutical

The 900 Portable Analyzer is designed to measure TOC as prescribed by USP and EP water monographs for Purified Water and Water for Injection. It is equipped with a menu-driven system suitability protocol. The 900 Portable Analyzer can be used for grab samples, continuous on-line measurement, or with the 900 Autosampler. With the optional DataGuard* feature, the 900 Portable Analyzer becomes a comprehensive tool supporting 21 CFR Part 11 compliance.

Key Benefits of the 900 Portable TOC Analyzer

Applications Versatility

The 900 Portable Analyzer offers incomparable versatility in both the range of applications it serves and the variety of sampling modes that it operates. Weighing only 12.5 kg (27.5 lb), the Analyzer is designed to be hand-carried to sample points of interest for on-line measurement. The 900 Portable Analyzer also doubles as a lab instrument for either discrete samples or for use with the 900 Autosampler. With a dynamic TOC operating range of 0.03 ppb to 50 ppm, the 900 Portable Analyzer is ready to go anywhere, anytime.



Enhanced Ease of Use

The 900 Portable Analyzer features unsurpassed ease of use in setup, operation, and maintenance.

Intuitive Menu-Driven, Touch-Screen Interface

A color touch-screen display makes it easy to set up instrument parameters. Trend data is displayed in tabular or graphical form for at-a-glance monitoring in real time or over user-defined time periods. The Analyzer's front panel display makes it easy to evaluate the remaining life of consumables.

Time-Saving Features

Automated operations, such as calibration, verification, and data analysis reports, combine with a four-minute analysis time for the most productive, easy-to-use TOC analyzer available. For diagnostic work, the Analyzer produces TOC data in minutes after connecting the sample line. For grab samples, the Integrated On-Line Sampling System (IOS System*) offers convenient introduction of samples as well as standards. The autoreagent adjustment feature automatically establishes optimal reagent flow rates for all samples.

Self-Contained Enclosure

The 900 Portable Analyzer requires no external reagents or gas supplies, saving valuable time. The Analyzer utilizes self-contained Sievers internal reagent packs that can be installed in minutes to achieve three to six months of uninterrupted service, depending on the application. The compact enclosure is dust- and spray-proof with "clam shell" panels for easy access to internal components.

Low Maintenance Requirements

Users are prompted automatically to complete annual maintenance, which is typically a few hours. The convenient modular design facilitates speedy consumables replacement and preventive maintenance.



The Sievers 900 Series TOC Analyzers

Extended Calibration Stability

The 900 Portable Analyzer offers 12-month calibration stability, unlike competing analyzers that require weekly or even daily calibration. Calibration can be conducted at a customer's site. By following the on-screen prompts, users can select from a variety of single- and multi-point calibration routines. To further simplify operation, calibration calculations are performed and constants updated automatically.

Reliability

The 900 Portable Analyzer delivers superior reliability. The Analyzer combines innovative design improvements with carefully selected materials and components to ensure maximum uptime, economically.

On-Line and Grab Sampling

GE Analytical Instruments' patented IOS System* enables easy introduction of external standards and samples. 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. It even accommodates grab samples for spot checks of TOC samples from other locations in the water system.

Expanded Data Access

The 900 Portable Analyzer has a USB port enabling data transfer from the Analyzer to a USB flash memory drive without interrupting analysis. Data files can be opened directly in Microsoft Excel® without the need to convert data with proprietary software. Standard serial and parallel ports are also provided.

Accessories and Options

900 Autosampler

For laboratory use, the 900 Autosampler provides random access capability with high sample capacity (up to 63 for 40-mL vials and up to 120 for 17-mL vials) for even the most demanding laboratory applications. The Sievers DataPro 900* software integrates the Autosampler with the 900 Portable Analyzer to offer a host of productivity-enhancing features.

DataGuard Software for 21 CFR Part 11 Compliance

For pharmaceutical applications, the optional DataGuard* firmware feature offers comprehensive tools for compliance with electronic records regulations. Application features include user login security with multiple access levels and audit trail functionality.

900 Inorganic Carbon Remover (ICR)

The ICR reduces inorganic carbon levels in sample streams with high IC/TOC ratios to produce more accurate TOC results. This next-generation version is quieter, more compact, and attaches to the side of the 900 Portable Analyzer.

Turbo Mode Option

The Turbo mode option is well suited to a wide range of reclaim water applications where quick process control feedback is required. The new 900 Turbo Analyzers feature an expanded range of 0.20–10,000 ppb. TOC, IC, and TC measurements are updated every four seconds, assuring that even short-lived excursions are captured.



900 Autosampler



900 Inorganic Carbon Remover (ICR)

Specifications

Operating Specifications¹

Range	0.03 ppb to 50 ppm
Precision	< 1% RSD
Accuracy	± 2% or ± 0.5 ppb, whichever is greater
Sample Type	On-line continuous, Autosampler, or discrete grab sample
Display Readout	3 significant digits
Calibration	Typically stable for 12 months
Analysis Time	4 minutes (4 seconds for the optional <i>Turbo</i> mode)
Sample Temperature	1–95° C (34–203° F) — withstands short-term steam exposure
Ambient Temperature	10–40° C (50–104° F)
Sample Pressure	Up to 250 psi
Sample Flow Rate	50–300 mL/min (for on-line mode)
Instrument Sample Flow Rate	0.5 mL/min

Analyzer Specifications

Outputs	4–20mA output (1); Serial (RS-232) port (2); USB port (1); parallel printer port (1)
Display	Quarter-VGA, color touch-screen display
Power	Universal Power Supply: 100–240 ±10% VAC, 100 W, 50/60 Hz
Dimensions	H: 35.6 cm (14.0 in); W: 22.3 cm (8.8 in); D: 46.5 cm (18.3 in)
Weight	12.5 kg (27.5 lb)
Safety Certifications	UL/cUL, CE

Consumables

UV Lamp	6 months
Acid Reagent	As needed, typically 6 months (285-mL)
Oxidizer Reagent	As needed, typically 3-month stability; available in 150- or 300-mL cartridge

* Trademark of General Electric Company; may be registered in one or more countries.

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

The Sievers 900 Series TOC Analyzers are protected by one or more of the following US and foreign patents: US 6271043; US 6228325; US 5976468; US 5902751; US 5837203; US 5820823; US 5798271; US 5750073; US 5443991; US 5132094; EP 0897530; FR 0897530; GB 0897530; DE 69702516.0-08; EP 0471067. Other patents pending.



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