

# Sievers\*

## 900 On-Line TOC Analyzer

### Overview

The Sievers\* 900 On-Line Total Organic Carbon (TOC) Analyzer is designed for continuous monitoring of waters from ultrapure to potable. It offers superior versatility, as well as accuracy and precision across a dynamic operating range of 0.03 parts per billion (ppb) to 50 parts per million (ppm) TOC. The wall-mounted Analyzer comes in a dust-resistant and spray-proof, IP-45 rated enclosure to withstand demanding process water environments. In addition to the continuous TOC analysis mode, discrete grab samples, as well as standards, can be introduced using the patented Sievers Integrated On-Line Sampling System (IOS System\*).

The 900 On-Line Analyzer utilizes a modular design and advanced materials for maximum reliability and uptime. Engineered for ease of use and cost-effective operation, the 900 On-Line Analyzer needs no external reagents or gas supplies and typically requires a few hours of preventive maintenance per year. Twelve-month calibration stability frees operators for other tasks. A color touch-screen display provides an intuitive menu to quickly establish operating parameters and view historical or real-time data.

The 900 On-Line Analyzer combines UV/persulfate oxidation with the proven Sievers Membrane Conductometric Detection Technology to achieve the greatest sensitivity, the widest analytical range, and the most stable calibration of any TOC analyzer. In addition, the 900 On-Line Analyzer provides complete recovery of even the most difficult-to-oxidize organics.

The Analyzer complies with USEPA-approved Standards Methods 5310 C and the proposed USEPA 415.3 for regulatory monitoring. It also complies with ASTM-approved methodologies.



### Applications

#### Microelectronics

The 900 On-Line Analyzer can help manage any stage of the water purification system by measuring TOC, IC, and TC. It accurately measures system feed water, reverse osmosis (RO) product, and final product water. The optional *Turbo* mode's four-second analysis time is designed to serve reclaim applications.

#### Pharmaceutical

The 900 On-Line 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 menu-driven system suitability procedures and an on-board patented Integrated On-Line Sampling System (IOS System\*) for easy introduction of standards. The optional DataGuard\* firmware feature facilitates 21 CFR Part 11 compliance.

#### Municipal Water

The 900 On-Line Analyzer monitors raw and finished water TOC for plant optimization and compliance reporting. The Analyzer uses USEPA-approved methodology (SM 5310 C) demonstrated to recover even the most difficult-to-oxidize organic compounds.

#### Power

The Analyzer assists in corrosion control and water system optimization by measuring TOC, IC, and TC throughout the plant using an ASTM-approved method.



## Key Benefits

### Reliability

The 900 On-Line Analyzer delivers superior reliability. The instrument combines innovative design improvements with carefully selected materials and components to ensure maximum uptime.

### Enhanced Ease of Use

The 900 Series TOC Analyzers feature 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.

#### *Low Maintenance Requirements*

Users are prompted automatically to complete the less than two hours per year of preventive maintenance. The convenient modular design facilitates speedy consumables replacement and preventive maintenance.

#### *Self-Contained Enclosure*

No external reagents or gas supplies are required with the 900 On-Line Analyzer, saving valuable time and money. 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 rugged IP-45 rated enclosure is dust-resistant and spray-proof for demanding environments.

### Advanced Productivity and Efficiency

Automated operations, such as calibration, verification, and data analysis reports, combine with a four-minute analysis time for the most productive TOC analyzer available. Automatic reagent adjustment eliminates the time-consuming process of manually adjusting reagent flow rates, enabling analysis to run unattended without user intervention or data interpretation.



The Sievers 900 Series TOC Analyzers

### Extended Calibration Stability

The 900 On-Line Analyzer offers 12-month calibration stability, unlike competing analyzers that require weekly or even daily calibration. By following the on-screen prompts, users can select from a variety of single- and multi-point calibration procedures.

### Applications Versatility

The 900 On-Line Analyzer is the most versatile on-line TOC analyzer addressing the broadest range of process water qualities. With a detection limit of 0.03 ppb, the instrument performs even in the most demanding ultra-pure water applications. For higher TOC concentrations up to 50 ppm, precision and accuracy are unequalled throughout the single operating range.

### On-Line and Grab Sampling

The patented IOS System allows the 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 points in the water system.

### Expanded Data Access

In addition to standard analog and serial outputs, the Sievers 900 Series TOC Analyzers use a USB port that enables 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.

### Accessories and Options

#### 900 Inorganic Carbon Remover (ICR\*)

The enhanced 900 Inorganic Carbon Remover (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 and more compact, and designed for placement within the Analyzer's enclosure.



900 Inorganic Carbon Remover (ICR)

## 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.

## Specifications

### Operating Specifications<sup>1</sup>

Range	0.03 ppb to 50 ppm
Precision	< 1% RSD
Accuracy	± 2% or ± 0.5 ppb, whichever is greater
Sample Type	On-line continuous 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
Required Sample Line 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); alarm outputs (2); binary output (1); Serial (RS-232) output (1); USB port (1); parallel printer port (1)
Display	Quarter-VGA, color, touch-sensitive LCD
Power	Universal Power Supply: 100–240 ±10% VAC, 50 W, 50/60 Hz
Dimensions	H: 62.4 cm (24.6 in); W: 45.2 cm (17.8 in); D: 26.4 cm (10.4 in)
Weight	16.9 kg (37.2 lb)
Safety Certifications	UL/cUL, CE
Enclosure Rating	IP-45

### Consumables

UV Lamp	6 months
Acid Reagent	As needed, typically for 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.

<sup>1</sup> 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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