

Water Technologies & Solutions

# Sievers\* M9 TOC Analyzers

m-power your team to be compliant and efficient



ready for the resource revolution



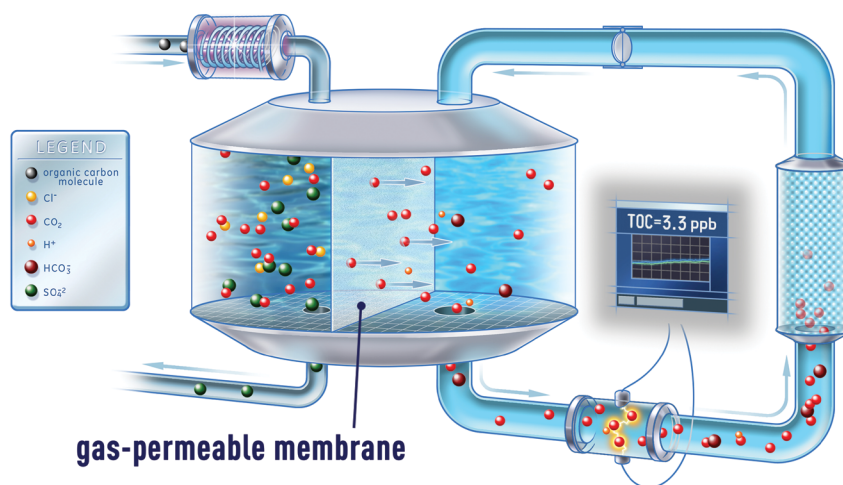
# dependability and flexibility: Sievers' legacy

As the world's leading manufacturer of Total Organic Carbon (TOC) Analyzers, we continuously strive to exceed expectations by providing superior technology, design, quality and service. Our Analytical Instruments team has acquired more than 30 patents for technical innovations—including the Sievers Membrane Conductometric Method and the Integrated On-Line Sampling System (iOS).

Unlike other instruments that use non-dispersive infrared (NDIR) detection, Sievers TOC Analyzers are equipped with the Sievers Membrane Conductometric Detection method. Exhibiting a dynamic range of six orders of magnitude, our technology prevents significant drift over

time, resulting in unmatched stability in our instruments. Less frequent calibration, combined with uncompromising analytical performance, makes our analyzer the workhorse you can depend on.

Our proprietary Integrated On-Line Sampling (iOS) System enables easy introduction of external standards and samples. This unique feature allows you to directly introduce calibration, validation, and system suitability standards without removing the instrument from the continuous sample source or changing the sample inlet configuration. The iOS system also accommodates grab samples for spot checking TOC from other locations in a water system.



gas-permeable membrane selectively passes only the CO<sub>2</sub> produced from oxidized organics, preventing acids, bases, and halogenated compounds from interfering with the measurement.

Visit our library at [www.sieversinstruments.com](http://www.sieversinstruments.com) to see an animated demonstration of this technology

# maximize productivity with the M9

Sievers TOC Analyzers have always been quick to set up and easy to use. The M9 is fast, smart, versatile and instinctively simple. Designed to not only be fast, but also simple to operate and maintain, the M9 allows you to maximize productivity.

## fast, smart, and versatile to optimize your sample processing time

- Twice as fast as Sievers' last generation TOC, with two-minute TOC analysis.
- Meets diverse application needs and regulatory requirements in pharmaceutical, microelectronics, power, manufacturing, and environmental industries.
- Improved dashboard-style, touch-screen interface simplifies operation and data review.
- At-a-glance consumables status.
- Streamlined, faster system protocols.
- Informative error and alert messages to simplify troubleshooting.
- Secure database structure improves data search, query capability, data security, and integrity

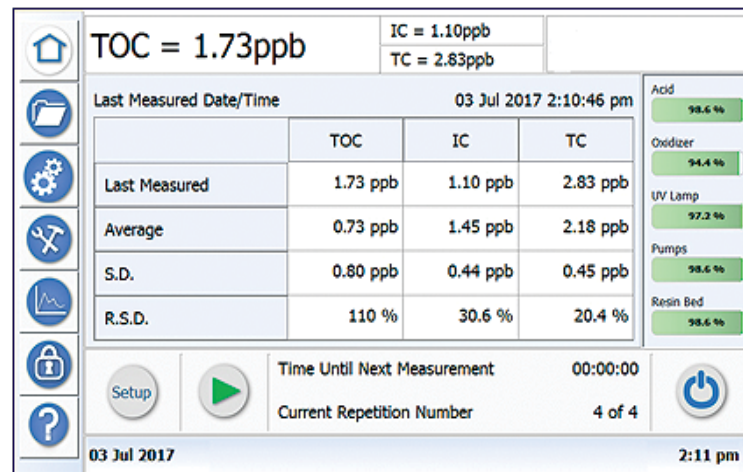
## instinctively simple to boost throughput

- Operations including calibration, verification, and validation are faster and automated.
- Autoreagent feature automatically selects optimal reagent flow rates.
- Sample methods can be saved and applied to daily samples.

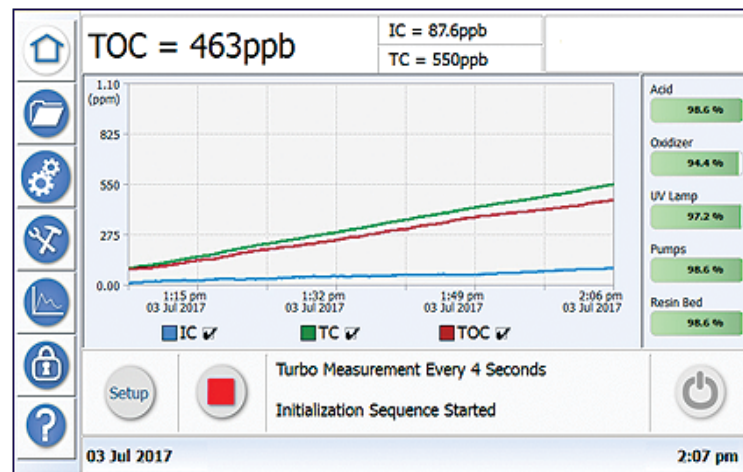
## quick to set up, easy to use and maintain

- Pre-calibrated at the factory—install and prepare for analysis in less than one hour.
- No special training required to set up, operate, or maintain the instrument.
- Minimal maintenance—typically just a few hours per year.
- Modular design facilitates quick consumables replacement.
- On-Line and Portable models have dust and water resistant enclosures.
- Internal reagent packs—no external chemicals or gas supplies required.
- Easy data communications—export or collect data via USB, 4-20mA, or Modbus TCP/IP outputs.

## M9 Laboratory Analyzer interface



## M9 On-Line Analyzer interface



# M9... the next generation of Sievers TOC Analyzers



## M9 Laboratory superior productivity:

- Measure discrete grab samples via sample vials and sipper tubes or connect to the Sievers Autosampler to automate high-volume sample analysis.
- Well suited to analyze a variety of sample matrices and concentrations.
- Offers a small profile to efficiently use valuable bench space.
- Optional Stage 1 conductivity capability for simultaneous testing of TOC and conductivity.
- Optional Turbo mode for rapid analysis, even in the lab.



## M9 On-Line uninterrupted analysis:

- Continuous monitoring with the ability to easily introduce discrete grab samples and standards.
- Wall-mounted with an IP-45 rated enclosure to withstand demanding process water environments.
- Broad, linear TOC range allows excellent low-level sensitivity for ultrapure water analysis and high-level capability for cleaning validation or other challenging water samples.
- Optional Turbo mode for microelectronics (reclaim applications) and pharma (cleaning validation.)



## M9 Portable genuine versatility:

- Lightweight, IP-21 rated, compact design can be hand-carried for TOC analysis anywhere.
- Measures discrete grab samples, automated analysis with the optional Sievers Autosampler, or On-Line mode.
- Designed for at-line cleaning validation applications.
- Optional Stage 1 conductivity measurements for grab, Autosampler, or On-Line mode.
- Optional Turbo mode for microelectronics (reclaim applications) and pharma (cleaning validation.)

M9 TOC Analyzers meet the needs of these industries:

- pharmaceutical applications: PW, WFI, Cleaning Validation
- microelectronics applications: UPW Loop, UPW Make-up, Diagnostics, Reclaim

The M9 TOC Analyzers are engineered to meet stringent regulatory requirements:

- US Pharmacopeia (USP) <643> and <645>
- European Pharmacopeia (EP) 2.2.44 Total Organic Carbon
- Indian Pharmacopeia (IP) 2.4.30
- Chinese Pharmacopeia (CP) Appendix VIII R
- Japanese Pharmacopeia (JP16) 2.59 monographs for Purified Water and Water for Injection



# optional accessories and configurations

- The high-capacity Sievers Autosampler enables 24+ hours of unattended sample analysis (63 or 120 sample-position capacity).
- DataPro2 software integrates the Sievers Autosampler with the M9 analyzer, enabling time-saving features that maximize productivity and ensure easy TOC data management.
- DataGuard software provides full compliance support for 21 CFR Part 11 and Annex 11 requirements for electronic records in pharmaceutical applications.
- Sample conductivity: Measure and report sample conductivity in discrete grab samples.
- Inorganic Carbon Remover (ICR): Improves TOC accuracy for samples with high inorganic carbon (IC) levels.
- Turbo mode: Now available in on-line, grab, and autosampler modes. Provides industry leading four-second analysis time to quickly analyze samples or identify transient TOC excursions.

## ▶ optional accessories and configuration

	Laboratory	On-Line	Portable
Autosampler/DataPro2	X		X
DataGuard	X	X	X
Sample Conductivity	X		X
ICR	X	X	X
Turbo	X	X	X

## Sievers Certified Plus

Protect your TOC Analyzer investment with our Certified Plus genuine products and expert services. From on-site validation and start-up, preventative maintenance, and warranties to aftermarket consumables, such as reagent packs, standards and vials, Certified Plus ensures you have a reliable and accurate TOC measurement solution.

### TOC standards

Sievers Certified Plus reference materials represent a comprehensive offering of ready-to-use TOC standards for calibration, linearity, and

USP system suitability. Our large-scale production capabilities provide substantial cost advantages over in-house preparation. Our expertise in preparing and storing standards allows us to guarantee the accuracy and extended shelf life of Sievers Standards, even at low concentrations.

### comprehensive technical support


Our team provides ongoing phone and electronic technical support as well as on-site installation, maintenance, calibration, validation, and training services.

# specification summary

M9 and M9 <sup>e</sup> Laboratory Analyzer		M9 and M9 <sup>e</sup> On-Line Analyzer	M9 and M9 <sup>e</sup> Portable Analyzer
<b>Operating Specifications</b>			
Range	0.03 ppb to 50 ppm		
Precision	< 1% RSD		
Accuracy	± 2% or ± 0.5 ppb, whichever is greater		
Sample Type	Autosampler or discrete grab sample	On-line continuous or discrete grab sample	On-line continuous or Autosampler, or discrete grab sample
Display Readout	3 significant digits		
Calibration	Typically stable for 12 months (TOC and Optional Conductivity <sup>2</sup> )		
Analysis Time	2 minutes (4 seconds with the optional Turbo mode)		
Sample Temperature <sup>1</sup>	5-95 °C (41-203 °F)		
Ambient Temperature	5-40 °C (41-104 °F)		
Sample Pressure	n/a	100 psig	
On-Line Flow Rate	n/a	>50 mL/min (for on-line mode)	
Instrument Sample Flow Rate	0.5 mL/min		
<b>Analyzer Specifications</b>			
Outputs	USB device port (1), USB host ports (3), Modbus TCP/IP	4-20 mA outputs (3); alarm outputs (4); binary input (1); USB device port (1), USB host ports (2); Modbus TCP/IP	
Display	7" WVGA 800x480 pixel, Color LCD w/touch-screen		
Power	100 – 240 V~, 50 – 60 Hz, 100 VA		
Fuses	Replace with same type and size fuse: T 1.6 A 250 VAC Fuse (Slow Blow), size 5 x 20 mm appliance inle		
Dimensions	H: 42.2 cm (16.6 in.); W: 24.6 cm (9.7 in); D: 40.0 cm (15.8 in)	H: 54.9 cm (21.6 in); W: 45.0 cm (17.7 in); D: 26.5 cm (10.4 in)	H: 39.5 cm (15.4); W: 22.9 cm (9.0 in); D: 46.4 cm (18.3 in)
Weight	9.4 kg (20.6 lb)	15.8 kg (34.9 lb)	9.4 kg (20.8 lb)
Enclosure Rating	n/a	IP-45	IP-21
Safety Certifications	ETL, CE		
<b>Sample Conductivity<sup>2</sup> (Optional)</b>			
Raw Conductivity Range	0.01 to 2,000 µS/cm	n/a	0.01 to 2,000 µS/cm
Conductivity Accuracy	±0.005 µS/cm or ±1% whichever is greater	n/a	±0.005 µS/cm or ±1%, whichever is greater
Conductivity Precision	<0.25% RSD	n/a	<0.25% RSD
<b>Environment</b>			
Maximum Relative Humidity	0-95%, non-condensing		
Maximum Altitude	3,000 m (9,800 ft)		
Pollution Degree	2		

<sup>1</sup> If the sample temperature is above 60°C (140°F), the optional PVDF iOS is required.

<sup>2</sup> Sample conductivity is available in Autosampler or discrete grab sample mode only with Dual-Use Conductivity TOC vials.

 The UV lamp inside this product contains mercury and must be recycled or disposed of in accordance with local, state, and federal laws.

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