

### Sievers\* M500 Total Organic Carbon Analyzer

Accuracy. Efficiency. Integrity.



WATER TECHNOLOGIES

### Advancing the Sievers Legacy

The Sievers M500 Online Total Organic Carbon (TOC) Analyzer revolutionizes online detection of organics by bringing new performance, design, and data management features to the industry-leading Sievers TOC platform.

### **Advancing the Sievers Legacy**

The Sievers reagentless Membrane Conductometric TOC Detection Method delivers unmatched reliability, robustness, and accuracy for pharmaceutical Purified Water (PW) and Water for Injection (WFI) applications.

Sievers products have been leaders in TOC analytical instrumentation since the introduction of membrane conductometric technology to the market more than 25 years ago.

### **Superior Performance and Features**

The Sievers M500 is our third generation online TOC analyzer designed for accuracy, efficiency, and integrity.

Building upon the proven results of the 500 RL, the M500 improves our industry-leading performance and adds a suite of cutting-edge features:

- Super iOS 4-port sampler automates grab samples to increase efficiency.
- Reducing analysis time by 50% facilitates utilization of real-time data, early detection, and process control.
- 10-inch touchscreen enables faster and easier setup and operation.
- Standardized and customized protocols improve productivity.
- Enhanced data features improve data integrity.



# **Designed for:** Data Integrity

### Sievers M500: Designed for Today's Data

The Sievers M500 leverages comprehensive industry-leading TOC data management tools to ensure data is secure.

The Sievers M500 supports compliance to 21 CFR Part 11 and adherence to US FDA and other Pharmacopoeia Data Integrity guidelines using new digital features:

#### **Data Transfer**

- Remote access
- Ethernet and WiFi
- Advanced communications using 4-20 mA, Modbus, Profinet, and binary

#### **Data Security**

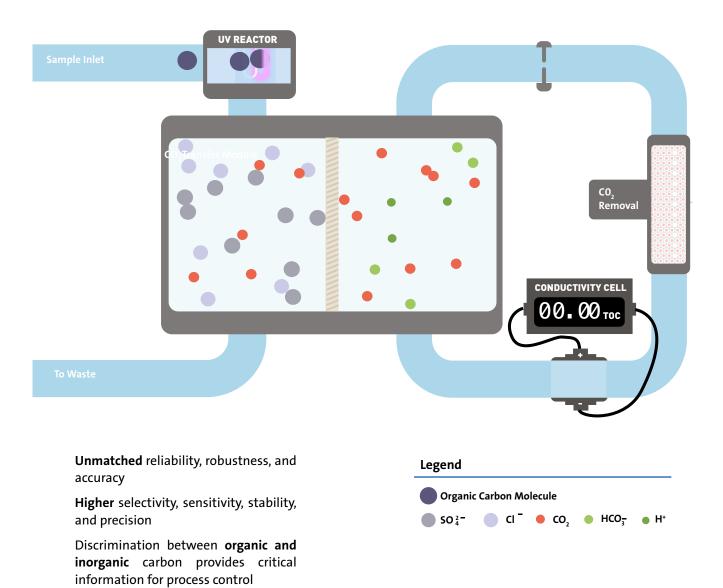
- Password protection
- Data encryption
- Customizable access, roles, and permissions

#### Web-Based Data Management

- Closed system architecture
- Customizable data transfer and export

# Sievers Membrane Conductometric TOC Detection Technology

Proprietary gas-permeable membrane selectively passes only the CO, produced from oxidized organics



### Sievers M500



### Accuracy

- Range: 0.03 ppb 2.5 ppm
- Limit of Detection: 0.03 ppb
- Limit of Quantification: 0.1 ppb
- Higher selectivity prevents
   interference from other
   compounds
- Measurements compliant to USP, EP, JP, IP, ChP, KP and all other harmonized compendia

### Efficiency

- 50% reduction in analysis time
- Simultaneous TOC & conductivity measurement
- Super iOS 4-port sampler
- Automated system suitability, calibration, & validation
- Adaptive auto-zero

### Integrity

- Designed for 21 CFR Part 11
- Remote access
- Advanced communications with Ethernet & WiFi
- Improved data transfer, data security, and data management



# **Key Features**

### **Compliant ○**−

- US Pharmacopeia (USP)
- European Pharmacopoeia (EP)
- Japanese Pharmacopoeia (JP)
- Indian Pharmacopoeia (IP)
- Chinese Pharmacopoeia (ChP)
- Korean Pharmacopoeia (KP)
- All other harmonized compendia for TOC and conductivity analysis

### Super iOS o-

- 4-port sampler
- Automated calibration and protocols
- 2x faster results
- 50% faster validation protocols
- Reduced human error and labor costs

#### 10-inch touchscreen

- Intuitive interface
- At-a-glance viewing
- Faster and easier setup & operation
- Chemical resistant



### Data Integrity <sup>o</sup>

- Supports 21 CFR Part 11 & Data Integrity regulations and guidance
- Lean compendia water analysis
- Simultaneous TOC & conductivity measurement

### Advanced communications $\diamond$

• Ethernet, WiFi, 4-20 mA, Modbus, Profinet, Profibus, and Serial connectivity

Sievers M500

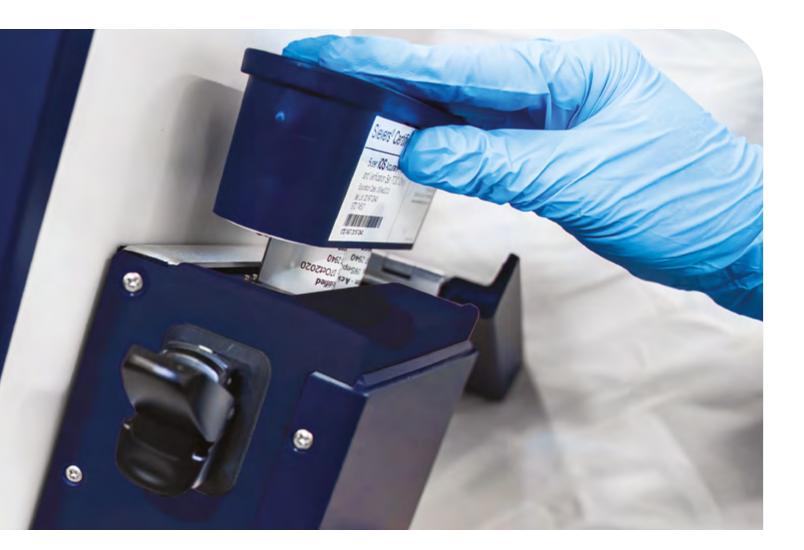
For more information, visit watertechnologies.com/sievers



### Full Lifecycle Support and Services

Veolia provides a complete lifecycle solution for Sievers products. We offer a suite of tools and services to optimize your instrument from installation and validation, to operation and maintenance.

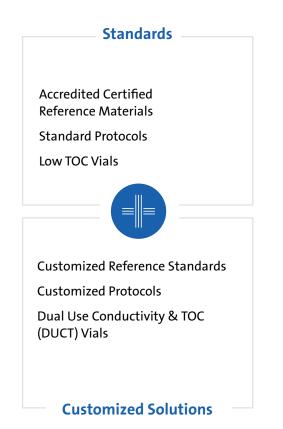
Trust Sievers validation services and Preventive Maintenance Agreements to provide peace of mind by ensuring optimal performance and providing the documentation required to support compliance, quality, and regulatory needs. Our support team provides remote and onsite support for Sievers instruments. We are uniquely positioned to offer Failure Analysis Reports (FARs) to help close Out-of-Specification investigations faster and more efficiently.



Installation	Validation	Operation	Support
<ul> <li>Field Service Engineers (FSE)</li> <li>Onsite installation</li> <li>Training</li> <li>Documentation</li> <li>Software</li> </ul>	<ul> <li>Field Service Engineers (FSE)</li> <li>Validation Packages</li> <li>Onsite validation services</li> </ul>	<ul> <li>Certified reference materials</li> <li>Vials and consumables</li> <li>Customized reference standards</li> <li>Preventive Maintenance Agreements (PMA)</li> </ul>	<ul> <li>Technical support</li> <li>Diagnostics</li> <li>Onsite repairs</li> <li>Failure Analysis Reports (FAR)</li> <li>Warranty</li> <li>Upgrades</li> </ul>



### Ask about Sievers Certified Plus full coverage service and repair





### Certified Reference Materials and Customized Solutions

In addition to providing a wide range of accredited certified reference materials, Veolia provides custom reference standards for your unique applications.

The Sievers M500 includes an expanded portfolio of instrument protocols as well as options to customize protocols for your application.

# Specifications

Linear Range0.03 to 2.500 ppb as TOCAccuracy4 5% of measurement; ± 0.03 ppbPrecision1 % of measurement; ± 0.03 ppbAnalysis ModesOnline, Online Averaged, Online Timed, GrabAnalysis Time <sup>1,7</sup> 3 minutes for continuous online measurementsOzone Compatibility50 ppb 0.3 continuous; 200 ppb 0.3 for 2 hours dailySample Temperature10.25 mL/minExternal Flow Rate (nominal)0.25 mL/minSample PressureUp to 100 psigInterferencesInsensitive to organic heteroatomsCalibration StabilityTypically stable for 12 monthsDisplay Readout3 significant digitsCONDUCTIVITYExternal Flow RateRange0.01 to 800 µS/cm or 1%, whichever is largerPrecision0.050 µS/Cm or 1%, whichever is largerPrecision0.050 µS/Cm or 1%, whichever is largerPrecision0.005 µS/Cm or 1%, whichever is largerPrecision10-240 VAC, 704, S0/GP laStatument It temperature9.000 (mg.843 ft)Output SSone (mg.843 ft)Output SSone (mg.843 ft)<	TOTAL ORGANIC CARBON		
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FusesNo user-replaceable fusesNormal Operating EnvironmentIntended for indoor use onlyAmbient Temperature5-40°C (41-104°F)Maximum Relative HumidityUp to 95%, noncondensingMaximum Altitude3,000 m (9,843 ft)InputsTwo isolated binary inputsOutputsSerial (RS-232), one USB, three 4-20 mA, four alarms, one EthernetInstallation/Overvoltage CategoryIl (protects against transients present in Category II power)Safety CertificationsCE, ETL listed. Conforms to UL Std. 61010-1. Certified to CSA 22.2 No. 61010-1.Pollution Degree2 (normally only non-conductive pollution)DisplayBacklit 10.1 in, 1280 x 800, touchscreen displaySizeH: 43.4 cm (17.1 in) W: 55.9 cm (22.0 in) D: 28.7 cm (11.3 in)WeightI6.3 kg (36 lb)IP RatingIP S5Output Brifi <sup>a</sup> 802.11ac/a/b/g/n Dual band 2.4/5 GHz	INSTRUMENT		
Normal Operating EnvironmentIntended for indoor use onlyAmbient Temperature5-40°C (41-104°F)Maximum Relative HumidityUp to 95%, noncondensingMaximum Altitude3,000 m (9,843 ft)InputsTwo isolated binary inputsOutputsSerial (R5-232), one USB, three 4-20 mA, four alarms, one EthernetInstallation/Overvoltage CategoryII (protects against transients present in Category II power)Safety CertificationsCE, ETL listed. Conforms to UL Std. 61010-1. Certified to CSA 22.2 No. 61010-1.Pollution Degree2 (normally only non-conductive pollution)DisplayBacklit 10.1 in, 1280 x 800, touchscreen displaySizeH: 43.4 cm (17.1 in) W: 55.9 cm (22.0 in) D: 28.7 cm (11.3 in)WeightIp 55IP RatingIP 55Und Wi-Fi <sup>3</sup> 80.211ac/a/bg/n Dual band 2.4/5 CHz	Power Requirements	100–240 VAC, 70 W, 50/60 Hz	
Ambient Temperature5-40°C (41-104°F)Maximum Relative HumidityUp to 95%, noncondensingMaximum Altitude3,000 m (9,843 ft)InputsTwo isolated binary inputsOutputsSerial (R5-232), one USB, three 4-20 mA, four alarms, one EthernetInstallation/Overvoltage CategoryII (protects against transients present in Category II power)Safety CertificationsCE, ETL listed. Conforms to UL Std. 61010-1. Certified to CSA 22.2 No. 61010-1.Pollution Degree2 (normally only non-conductive pollution)DisplayBacklit 10.1 in, 1280 x 800, touchscreen displaySizeH: 43.4 cm (17.1 in) W: 55.9 cm (22.0 in) D: 28.7 cm (11.3 in)Weight16.3 kg (36 lb)IP RatingIP 55Optional Wi-Fi <sup>3</sup> 802.11ac/a/b/g/n Dual band 2.4/5 GHz	Fuses	No user-replaceable fuses	
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Pollution Degree2 (normally only non-conductive pollution)DisplayBacklit 10.1 in, 1280 x 800, touchscreen displaySizeH: 43.4 cm (17.1 in) W: 55.9 cm (22.0 in) D: 28.7 cm (11.3 in)Weight16.3 kg (36 lb)IP RatingIP 55Optional Wi-Fi³802.11ac/a/b/g/n Dual band 2.4/5 GHz	Installation/Overvoltage Category	II (protects against transients present in Category II power)	
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Size       H: 43.4 cm (17.1 in) W: 55.9 cm (22.0 in) D: 28.7 cm (11.3 in)         Weight       16.3 kg (36 lb)         IP Rating       IP 55         Optional Wi-Fi <sup>3</sup> 802.11ac/a/b/g/n Dual band 2.4/5 GHz	Pollution Degree	2 (normally only non-conductive pollution)	
Weight16.3 kg (36 lb)IP RatingIP 55Optional Wi-Fi³802.11ac/a/b/g/n Dual band 2.4/5 GHz	Display	Backlit 10.1 in, 1280 x 800, touchscreen display	
IP Rating     IP 55       Optional Wi-Fi <sup>3</sup> 802.11ac/a/b/g/n Dual band 2.4/5 GHz	Size	H: 43.4 cm (17.1 in) W: 55.9 cm (22.0 in) D: 28.7 cm (11.3 in)	
Optional Wi-Fi <sup>3</sup> 802.11ac/a/b/g/n Dual band 2.4/5 GHz	Weight	16.3 kg (36 lb)	
	IP Rating	IP 55	
Industrial Communications Protocols Modbus TCP/IP & Profinet (Included), Profibus (Optional)	Optional Wi-Fi <sup>3</sup>	802.11ac/a/b/g/n Dual band 2.4/5 GHz	
	Industrial Communications Protocols	Modbus TCP/IP & Profinet (Included), Profibus (Optional)	

<sup>1</sup>Time to first measurement is 10 minutes.

<sup>2</sup> Base model analysis time is six minutes for continuous online measurement.

<sup>3</sup> Not available in all countries

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