

# 5000TOCi with ISM



## THORNTON

Leading Pure Water Analytics

### 5000TOCi Sensor

Fast, continuous measurement

Reliable operation

Reagent and chemical free

USP <643>, <645>, Ch P,

EP 2.2.44, and JP compliant

Compact sensor design

ISM diagnostics



**Fast, Continuous and Reliable**  
Total Organic Carbon Measurement

**METTLER TOLEDO**

# 5000TOCi

## Total Organic Carbon Sensor

**The 5000TOCi Total Organic Carbon Sensor with ISM from METTLER TOLEDO Thornton delivers the power of an analyzer with the convenience of a sensor. Offering the fastest response to TOC changes available, the 5000TOCi is an ideal instrument for TOC measurement in all pure water applications where rapid detection of changes in TOC is critical.**

### Power of an Analyzer

**Complete process control** and precise data trending with real-time continuous TOC measurement and the fastest response available.

**Improve measurement reliability** of your continuous, real-time TOC analysis by eliminating sensitivity to pressure changes with an automated flow control system.

**Simplify record keeping** for the release of water through simplified data collection with innovative Peak and Average TOC measurements by analyzing up to 24 hours of readings with only two measurements.

**Perform trouble-free maintenance** with consistent results through a semi-automated Calibration and System Suitability Testing process.

**Conduct fast and easy service planning** through convenient diagnostics and sensor status information using iMonitor to quickly determine routine maintenance requirements and sensor health.

### Convenience of a Sensor

**Maximize uptime** with a robust, reliable design virtually free from moving parts.

**Reduce complexity** of your pure water instrumentation by integrating TOC measurement into a comprehensive UPW monitoring system with multi-parameter capability.

**Lower costs** with the ability to monitor up to four TOC sensors on a single M800 transmitter.

### Strength in Operation

**Pure and Ultrapure water** production requires monitoring of organic contamination throughout the treatment process. The 5000TOCi Sensor provides continuous, fast, and reliable monitoring of TOC levels from post RO waters to point-of-use. With continuous on-line measurements, the 5000TOCi Sensor ensures TOC excursions will not be missed.





#### **Pharmaceutical-grade waters**

must meet strict water quality requirements for Purified Water (PW), Water for Injection (WFI) and Highly Purified Water (HPW). TOC instruments used must also undergo periodic testing to verify the ability to accurately measure TOC.

The 5000TOCi Sensor provides the performance needed to meet all regulatory requirements, including USP <645> for conductivity, while offering added benefits such as continuous on-line measurement in a low-maintenance, industrial package.

**Power generation** makeup water treatment – from reverse osmosis to demineralizers, the 5000TOCi Sensor provides fast reliable monitoring of TOC contamination in the water system. Organic contamination can be detected before it enters the steam cycle where its breakdown to organic acids can accelerate corrosion.

**Recycle and reclaim** applications take advantage of the fast analysis time. The 5000TOCi Sensor provides continuous monitoring, not lengthy batch cycles. This enables rapid response to TOC excursions caused by process variability, allowing for a higher percentage of recycle and reclaiming to reduce water usage and costs.

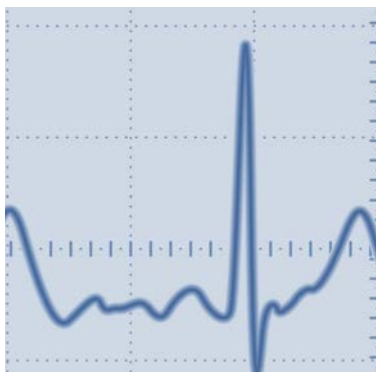


## 5000TOCi

### Fast, Continuous, Reliable Measurement

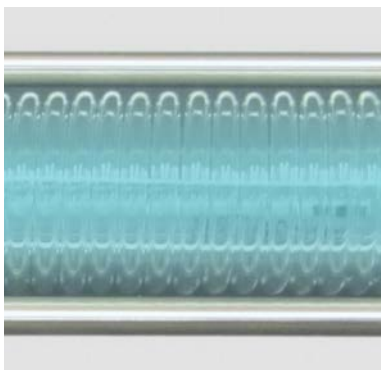
#### Fast

Equipped with a spiral quartz tube design, the 5000TOCi maximizes sample exposure to the 185 nanometer UV light to provide rapid sample oxidation. This configuration minimizes measurement response time and delivers measurement performance ideal for process control.



#### Reliable

Utilizing high performance, Thornton conductivity sensors constructed from titanium, and containing virtually no moving parts, the 5000TOCi offers a robust construction to maximize up-time and assure reliable measurement performance.



#### Continuous

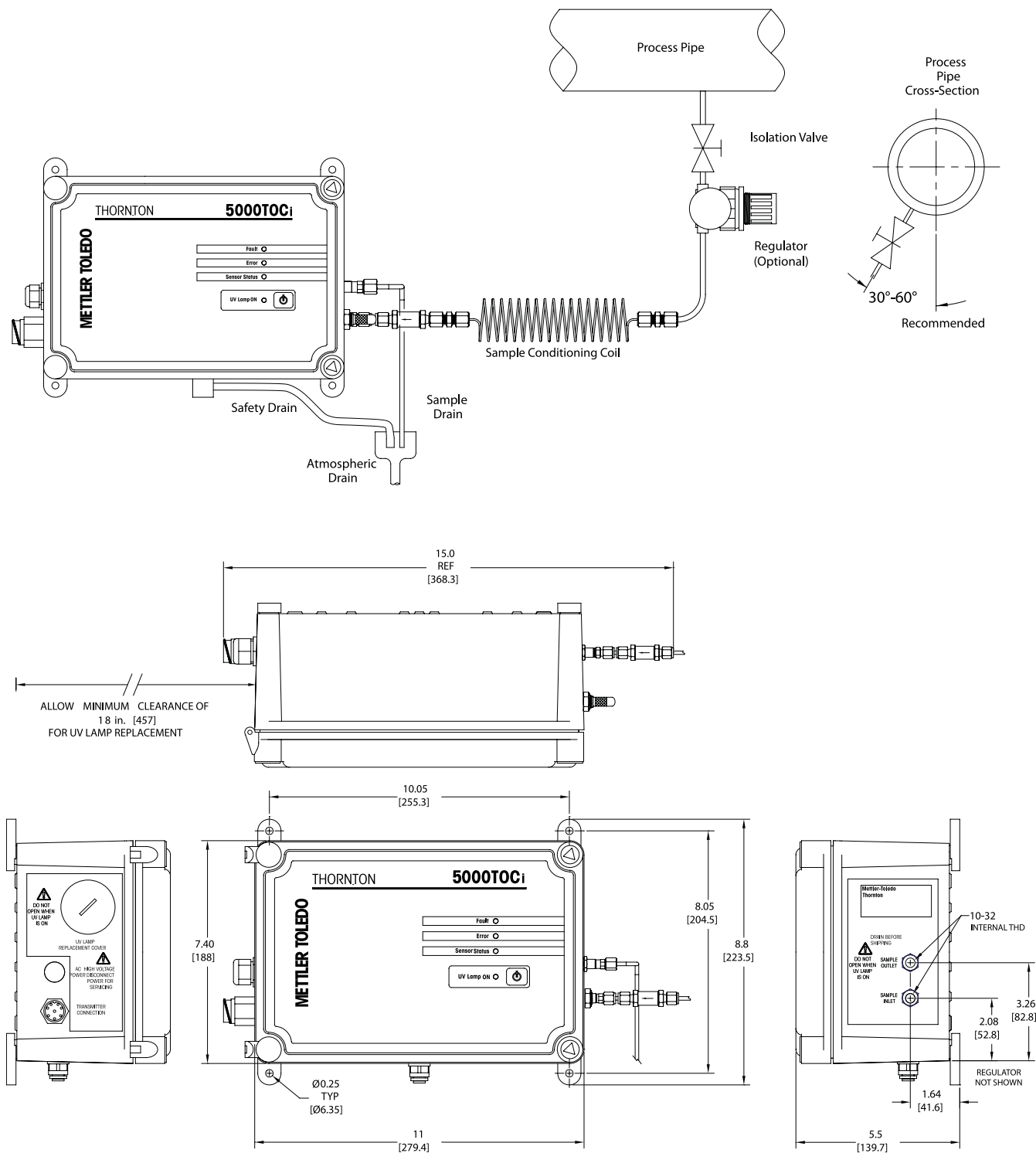
The 5000TOCi ensures detection of even the shortest water system changes through the use of continuous flow-through analysis. This design results in an ideal process control instrument which delivers a continuous, real-time measurement, enabling detection of all TOC changes regardless of duration.





5000TOCi Sensor Installation

The Thornton 5000TOCi Sensor minimizes installation and setup time. Two tubing connections are required, one for the sample inlet, and one for the oxidized sample outlet. An isolation valve is required at the sample point for shutoff (valve not supplied).



5000TOCi Sensor Dimension Diagram  
DIMENSIONS IN INCHES (mm)

# 5000TOCi

## Product Specifications

### TOC Sensor

Measurement Range	0.05 - 2000 ppbC ( $\mu\text{gC/L}$ )
Accuracy	$\pm 0.1$ ppb C for TOC < 2.0 ppb (for water quality > 15 m $\Omega$ -cm [ $.067 \mu\text{S/cm}$ ]) $\pm 0.2$ ppb C for TOC > 2.0 ppb and < 10.0 ppb (for water quality > 15 m $\Omega$ -cm) $\pm 5\%$ of measurement for TOC > 10.0 ppb (for water quality 0.5 to 18.2m $\Omega$ -cm)
Repeatability	$\pm 0.05$ ppb C < 5 ppb, $\pm 1.0\%$ > 5 ppb
Resolution	0.001 ppbC ( $\mu\text{gC/L}$ )
Analysis Time	Continuous
Initial Response Time	< 60 seconds
Update Rate	1 second
Limit of Detection	0.025 ppbC

### Conductivity Sensor

Conductivity Accuracy	$\pm 2\%$ , 0.02-20 $\mu\text{S/cm}$ $\pm 3\%$ , 20-100 $\mu\text{S/cm}$ ; 0.1 Constant Sensor*
Cell Constant Accuracy	$\pm 2\%$
Temperature Sensor	Pt1000 RTD, Class A
Temperature Accuracy	$\pm 0.25^\circ\text{C}$

### Sample Water Requirements

Temperature	0 to 100 $^\circ\text{C}$ **
Particle Size	<100 micron
Minimum Water Quality	> 0.5 m $\Omega$ -cm (< 2 $\mu\text{S/cm}$ ), pH < 7.5 ***
Flow Rate	> 20 mL/min
Pressure	4 to 200 psig (0.3 bar to 13.6 bar) at sample inlet connection ****



### General Specifications

Case Dimensions	11" [280mm] W x 7.4" [188mm] H x 5.25" [133mm] D
Weight	5.0 lb. (2.3 kg)
Enclosure Material	Polycarbonate plastic, flame retardant, UV and chemical resistant UL # E75645, Vol.1, Set 2, CSA #LR 49336
Enclosure Rating	NEMA 4X, IP65 Industrial environment
Ambient Temperature/ Humidity Rating	5 to 50°C / 5 to 80% Humidity, non-condensing
Power Requirements	100 - 130VAC or 200 - 240VAC, 50/60 Hz, 25W Maximum
Local Indicators	Four LED lights for Fault, Error, Sensor Status and UV Lamp ON
Ratings/Approvals	CE Compliant, UL and cUL (CSA Standards) listed, NEMA 4X, IP65 Conductivity and temperature sensors traceable to NIST, ASTM D1125 and D5391. Meets ASTM D5173 Standard Test Method for On-Line Monitoring of Carbon Compounds in Water by UV Light Oxidation

### Installation/Power/Enclosure

Inlet Connection	0.125" [3mm] O.D. (6' [2m] FDA compliant PTFE tubing supplied)
Outlet Connection	0.125" [6mm] O.D. Barb connection (5' [1.5m] flexible tubing provided)
Inlet Filter	316SS, inline 60 micron
Wetted Parts	316SS/Quartz/PEEK/Titanium/PTFE/Polyurethane (outlet tubing only)/EPDM
Wall Mount	Standard, mounting tabs provided
Pipe Mount	Optional, with pipe-mount bracket accessory (for nominal pipe sizes 1" [2.4 cm] to 4" [10 cm])
Maximum Sensor Distance	300ft [91m]

\* Readout in equivalent S/m ranges selectable at M800

\*\* Temperature above 70°C requires Sample Conditioning Coil (included)

\*\*\* For power plant cycle chemistry samples, pH may be adjusted by measurement after cation exchange.

\*\*\*\* Process pressure above 85 psig (5.9 bar) requires optional High Pressure Regulator p/n 58 091 552.

Specifications subject to change without notice.

## 5000TOCi Ordering Information

Description	Order No.
5000TOCi Sensor, 110VAC, 50/60 Hz	<b>58 036 031</b>
5000TOCi Sensor, 220VAC, 50/60 Hz	<b>58 036 032</b>
5000TOCi Sensor, Low ppb calibration, 110VAC, 50/60 Hz	<b>58 036 033</b>
5000TOCi Sensor, Low ppb calibration, 220VAC, 50/60 Hz	<b>58 036 034</b>
<b>Accessories</b>	
Kit, Calibration and System Suitability Test with UniCond® Sensor (SST and calibration standards sold separately)	<b>58 091 566</b>
Validation Support Package, 5000TOCi	<b>58 091 570</b>
Pump Module	<b>58 091 565</b>
Pipe Mounting Kit, 1-1/2" (3.8cm) pipe	<b>58 091 521</b>
Pipe Mounting Kit, 2" (5cm) pipe	<b>58 091 522</b>
Pipe Mounting Kit, 3" (7.6cm) pipe	<b>58 091 523</b>
Pipe Mounting Kit, 4" (10cm) pipe	<b>58 091 524</b>
Filter Assembly, High capacity	<b>58 091 550</b>
High pressure regulator	<b>58 091 552</b>
Stainless steel outlet tube	<b>58 091 553</b>
Patch Cord, 1 ft(0.3 m)	<b>58 080 270</b>
Patch Cord, 5 ft(1.5 m)	<b>58 080 271</b>
Patch Cord, 10 ft(3.0 m)	<b>58 080 272</b>
Patch Cord, 15 ft(4.5 m)	<b>58 080 273</b>
Patch Cord, 25 ft(7.6 m)	<b>58 080 274</b>
Patch Cord, 50 ft(15.2 m)	<b>58 080 275</b>
Patch Cord, 100 ft(30.5 m)	<b>58 080 276</b>
Patch Cord, 150 ft(45.7 m)	<b>58 080 277</b>
Patch Cord, 200 ft(61.0 m)	<b>58 080 278</b>
Patch Cord, 300 ft(91.4 m)	<b>58 080 279</b>
<b>Consumables and Spare Parts</b>	
Replacement UV Lamp (recommended every 4,500 hours of operation)	<b>58 079 513</b>
System Suitability Standards (For use with Cal/SST KIT P/N 58 091 559 and 58 091 566)	<b>58 091 526</b>
Calibration Standards (For use with Cal/SST KIT P/N 58 091 559 and 58 091 566)	<b>58 091 529</b>
Combined Calibration and SST Standards (For use with Cal/SST KIT P/N 58 091 559 and 58 091 566; contains 58 091 526 and 58 091 529)	<b>58 091 537</b>
Calibration Standards for Extended Range Calibration (For use with Cal/SST KIT P/N 58 091 559 and 58 091 566)	<b>58 091 568</b>
Combined Calibration and SST Solutions for Extended Range Calibration (For use with Cal/SST KIT P/N 58 091 559 and 58 091 566; contains 58 091 526 and 58 091 568)	<b>58 091 569</b>
Fuse, 1.25A, Sensor PCB (For use on both 110 VAC and 220 VAC Models)	<b>58 091 519</b>
Filter element, High Capacity (Pkg. 2)	<b>58 091 551</b>

[www.mt.com/thornton](http://www.mt.com/thornton)

Visit for more information

### Mettler-Toledo Thornton, Inc.

900 Middlesex Turnpike, Bldg. 8  
 Billerica, MA 01821 USA  
 Tel +1-781-301-8618  
 Fax. +1-781-301-8701  
 Toll Free +1-800-510-PURE(US & Canada Only)

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