

# Aurora 1030C TOC Analyzer

## Combustion Total Organic Carbon Analyzer

### Methods

- ASTM D4839, D4779, D2579
- Standard Method 5310B
- ISO 8245
- USEPA 415.1, 415.3, 9060, (D/DBPR)
- DIN/ISO/CEN EN 1484
- EU PH 2.2.44
- USP 23 <643>

### Principal Applications

- Wastewater
- Seawater
- Industrial process water
- Drinking water
- Groundwater
- Cooling water



Monitoring and control of multiple Aurora instruments from a single PC

- Wide operational range, 2 ppb to 30,000 ppm
- TC/TIC/TOC/NPOC/standard measurements
- Additional analysis options for purgeable organic carbon (POC) and total nitrogen (TN<sub>b</sub>)
- Dual Pack (patent-pending) Advanced Combustion Technology (ACT II) that meets or exceeds requirements of USEPA, ASTM, and Standard Methods
- Reactor design (patent-pending) for enhanced performance, reduced maintenance, extends reactor and catalyst life
- Totally automated system for aqueous and particulated samples
- Integral Microsoft® Windows® CE-based interface and touchscreen controls
- Configurable for laboratory or process analysis
- Direct network connectivity for control, and monitoring
- Advanced security and auditing features for CFR Title 21 Part 11
- Expanded operation range and enhanced diagnostics with optional electronic flow control (patent pending)
- Choice of optional 88-position rotary autosampler with magnetic stirring or 96+ position XYZ autosampler (both feature random and priority sampling capability)



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## Operating Principles

ACT II combustion design allows dependable and accurate analysis of samples containing 2 ppb to 30,000 ppm with very low cost per sample. TOC is determined by subtracting TIC from TC (TOC by subtraction) or directly after sparging (NPOC). TIC concentration is determined by placing a specified sample in the TIC reaction vessel where a preprogrammed volume of acid is automatically added. By acidifying the sample to a pH of less than two, the carbonates and bicarbonates in the sample dissociate to carbon dioxide (CO<sub>2</sub>). The CO<sub>2</sub> produced is quantified by a nondispersive infrared detector (NDIR) and reported both in mass and concentration values. NPOC values are determined by injecting a TIC-free sample into the combustion chamber where the organics are converted to CO<sub>2</sub>, quantified by the NDIR, and reported in both mass of carbon and concentration of carbon. TC is determined by injecting the unsparged sample directly into the combustion chamber and measuring the resulting CO<sub>2</sub>. Optional POC and TN<sub>x</sub> analysis are directly supported.

## Specifications

Method compliance	USEPA, CEN, USP, EUP, ASTM, ISO, DIN, STD methods
Measurement range (ppm)	*2 ppb C–30,000 ppm C
Method TC	680 °C with platinum catalyst, 900 °C with alternate noncatalyst packing
Method TIC	Acidification and sparging
Method TOC	NPOC, combustion of TIC-free sample, TOC by subtraction (TC–TIC)
Furnace temperature	Adjustable, 680–950 °C in 1 °C increments
Measuring time	From three minutes
Oxidation technique	High temperature combustion, liquid samples
Options available	TN <sub>x</sub> , POC, EFC, A <sub>TOC</sub> Reporter data management/graphic software, Windows PC software
High salt tolerance	Up to 26%
Reproducibility	1.5% or 2 ppb, whichever is greater
Linearity	±1% FS or 2% relative, whichever is greater
Calibration stability	30-days+ verifiable with programmable auto-validation
Sample pathway	Color-coded Teflon® with automatic cleaning in all injection modes
Sample injection, sample handling	Injection: manual syringe, sipper, autosampler or at-line. Handling: automatic syringe
Sample injection volume	10 µL–1.5 mL
IC pretreatment	Available with autosampler
Certifications	CE, EMC, EN50082-1, and EN55011 Group 1 Class A
Operation mode	Standalone (Windows CE) or networked via PC software (Windows 2000 Pro or XP Pro)
Operating interface	Touchscreen LCD or Windows PC (optional)
PC control via network (optional)	Pentium® 4, 512MB RAM, 40GB (1GB HD for TOC), 1024 x 768, CD-ROM
Firmware upgrades	Web-based/PC card
Reagent purge	Yes
Reagents required	Hydrochloric acid, phosphoric acid, rinse/chase water
Automatic dilution and beginning point	Serial/autodilution 1:1,000, over range of calibration curve
Communications	Parallel and serial communications (RS-232-C), Ethernet
Optional communications	Auxiliary output for optional equipment, analog signal for discrete items
Analog outputs (optional)	Four, 4–20 mA/0–10 V, user-programmable
Input and output relays	Two user-programmable inputs, two user-programmable outputs
Relay output (optional)	Four user-programmable outputs
Ambient temperature range, humidity	10 °C–45 °C, <90% noncondensing
Printer (optional)	Serial from the analyzer and/or PC from reporter
Power supply	Variable voltage input 100–240 V, 50/60 Hz
Benchspace with autosampler, PC	Rotary <46 cm (18") XYZ <95 cm (38")
Gas type, grade, and consumption	Zero-grade air, 99.998% O <sub>2</sub> (345–415 kPA), 99.998% N <sub>2</sub> , <700 cc/minute
Dimensions	43 cm H x 46 cm W x 61 cm D (17" H x 18" W x 24" D)
Weight	17.2 kg (38 lbs), 36.3 kg (80 lbs) with autosampler option
Warranty	12 months parts and labor

\*The range and precision of analysis is effected by sample introduction, cleanliness of sample containers, reagent purity, gas purity, and operator skill. Operation of the equipment in other than the on-line mode will reduce the detection limit to 25 ppb.

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