



Trace Elemental  
Instruments



**// XPert-TOC/TN<sub>b</sub>**

## //XPERT-TOC/TN<sub>b</sub> Elemental Combustion Analyzer

The XPERT-TOC/TN<sub>b</sub> analyzer represents the ultimate combination of robustness, accurate sample analysis and user convenience. A single injection provides Total Organic Carbon by High Temperature Catalytic Oxidation and Total-Bound Nitrogen results within minutes. Controlled by TEIS Analytical software™ and fully compliant with all relevant standards and norms.



- The XPERT is available as combined TOC/TN<sub>b</sub> analyzer or single parameter TOC or TN<sub>b</sub>

### The Combustion XPERTS

TE Instruments has a rich history in the development and production of countless elemental combustion solutions. Since 1993 our home base in Delft, the Netherlands, facilitates a strong network of well-integrated departments such as Application Development, R&D and in-house Glass Manufacturing and Production, allowing us to quickly respond to our customer needs. TE Instruments controls the entire production process of its analyzers, starting from the fundamental research up to the warehouse. We are fully dedicated to the development of elemental combustion solutions; this is and remains our core business.

Decades of experience have been deployed to create our next innovative solution: the XPERT-TOC/TN<sub>b</sub> analyzer. TE Instruments offers targeted solutions, along with the quality you expect and the attention you deserve. Run your TOC applications with ease and report accurate results. Discover the quality of the innovative XPERT analyzer.



## All-In-One Footprint

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TE Instruments designed the XPERT in a unique way by integrating the liquids auto sampler into the footprint of the analyzer. By default, the sampler is included with every XPERT. No need for purchasing additional sampling modules which could increase the footprint. Achieve ultimate sample control with this intelligent sampling system:

- Maximize your productivity with 65 sample positions
- Create a calibration line from of a single standard
- Integrated stirring device for each sample position
- Removable sample tray to prepare samples wherever you like

The XPERT enables its user to measure Total Organic Carbon (TOC) and Total Bound Nitrogen (TN<sub>b</sub>) concentrations simultaneously out of a single injection. Made possible by the implementation of a high quality NDIR detector and robust TN-CLD detector, that has proven to be extremely accurate in our XPLOER systems. When the XPERT is configured as a combined TOC/TN<sub>b</sub> analyzer, the TN detector is included in the exact same footprint. Once again, no separate detection module and no footprint expansion. The XPERT proves to be a true All-In-One Footprint solution, saving valuable bench space.



“The XPERT proves to be a true All-In-One Footprint solution.”

## Eliminates Carry-Over and Memory Effect

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The XPERT-TOC/TN<sub>b</sub> analyzer is characterized by its versatility. The unit enables operators to measure high and low sample concentrations in sequence, without range selection or hardware adjustments. In this context, the XPERT's way of sample introduction is a key element. The sample introduction design ensures a complete transfer of the sample into the furnace without getting in contact with any valve. Due to this unique introduction technique the complete sample will be transferred directly into the hot zone of the furnace, eliminating any memory effect.

- Valve-less sample introduction eliminates carry over, even of particle-containing samples
- Extended lifetime sample introduction port of up to 10.000 injections
- Switch from high ppm's to low ppb's in a single run



## Complete Sample Combustion

After sample introduction, the organic phase reaches the hot zone of the robust and long-lasting furnace, covered by a lifetime warranty. The furnace heats the ProCAT™ combustion tube towards 680 °C – 720 °C, ensuring the complete catalytic oxidation of all your samples into CO<sub>2</sub> and NO. The ProCAT™ combustion tube guarantees optimal temperature distribution and protects the catalyst at the same time. This results in an extended lifespan of the catalytic material and extremely accurate results. Decades of combustion experience were utilized to create this unique combustion tube.



- The ProCAT™ combustion tube guarantees a complete conversion towards CO<sub>2</sub> and NO
- The ProCAT™ combustion tube extends lifetime of the catalyst
- Robust furnace with lifetime warranty



## All-In-One Footprint

The XPERT-TOC/TN<sub>b</sub> analyzer features several smart solutions to execute TOC applications with ease. Embedded sensors continuously monitor parameters like pressure, flow and temperature. When a sensor is triggered, the system immediately responds by notifying its user.

- Real time flow monitoring - immediately detects a loss of flow and warns the operator
- Reagent level monitoring – never run out of reagents during a sample queue
- Auto detection sample tray – incorrect positioning of sample tray is indicated
- Auto recognition of incorporated devices

The instrument design offers easy access to all hardware components. The halogen scrubber, humidifier, filter and IC vessel can be removed and re-installed by a simple 'click-on, click-off' principle. No tools or clamps required. The ProCAT™ combustion tube can be exchanged within 1 minute for catalyst refill.



## TEIS Software

TE Instruments considers software as one of the most important features of an elemental analyzer. TEIS Analytical Software™ enables smooth instrument control and application handling. The intuitive user interface hardly needs any explanation. Modify sample lists, evaluate data and create calibration lines in a few clicks. Results can be displayed in customized reports or exported in a variety of data formats. Sensor readings and generated log files help the user to handle day to day operation in the most convenient and efficient way.

- **Auto-Cal function** - Calibration out of a single standard
- **Method Manager** - Use default methods or create perfect application settings
- **Visual Devices** - Status overview of every device
- **Sample Manager** - Drag & drop the columns you want to see
- **Task Manager** - Prepare sample queues easily
- **Database Manager** - Import and Export your data



## International Standards

The XPert-TOC/TN<sub>6</sub> is a fully automatic Total Organic Carbon and Total Bound Nitrogen analyzer following the high temperature with catalyst combustion test methods.

TOC	TN <sub>6</sub>
ASTM D7573	ASTM D8083
ISO/CEN EN 1484	ISO 11905-2
EPA 415.1	
EPA 9060	
ISO 8245	
ISO 20236	
SM 5310B	



ASTM INTERNATIONAL



## Performance

Model	XPERT-TOC	XPERT-TOC/TN <sub>b</sub>	XPERT-TN <sub>b</sub>
<b>Destruction</b>	680 °C catalytic combustion	720 °C catalytic combustion	
<b>Detection technique</b>	TOC: NDIR (non-dispersive infrared detection) TN: Chemiluminescence		
<b>Detection limit</b>	TC, TOC, NPOC: 50 µg/L TN: 20 µg/L		
<b>Measuring range</b>	TC, TIC, NPOC: 0 to 30,000 mg/L TN: 0 to 10,000 mg/L		
<b>Repeatability</b>	TC, TIC, NPOC: CV <1% at ≥5 mg/L TN: CV <1% at ≥5 mg/L		
<b>Catalyst</b>	Pt plated AlO <sub>3</sub>	n.a.	n.a.
<b>Particle Compatibility</b>	900 µm		
<b>Analysis time</b>	3 min.	4 min.	3 min.

## Sampling

Model	XPERT-TOC	XPERT-TOC/TN <sub>b</sub>	XPERT-TN <sub>b</sub>
<b>Sampler</b>	By default integrated, stirring device for each sample position		
<b>Type of injection</b>	Direct injection (into the furnace or IC-port)		
<b>Sample injection volume</b>	10 to 1000 µL (default: 100 µL)		
<b>IC removal</b>	Automatic by addition of acid by sampler and sparging		

## Specifications

Model	XPERT-TOC	XPERT-TOC/TN <sub>b</sub>	XPERT-TN <sub>b</sub>
<b>Dimensions (W x H x D)</b>	38 x 44 <sup>A</sup> x 70 (cm) 15.0 x 17.4 <sup>A</sup> x 27.6 (inch)		
<b>Weight</b>	Approx. 31 kg	Approx. 32 kg	Approx. 29 kg
<b>Gases</b>	Oxygen, 5.0 Synthetic air, 5.0		
<b>Gas consumption</b>	150 mL/min <sup>B</sup>	200 mL/min <sup>B</sup>	200 mL/min
<b>Power<sup>C</sup></b>	100 – 240 V AC, 50 – 60 Hz, 16 A with safety ground, one wall mount, 750 W		

<sup>A</sup> Maximum height with sampler arm fully extended

<sup>B</sup> When the samples are purged for NPOC an extra 300 mL/min is consumed during purging.

<sup>C</sup> Excluding PC, monitor and printer



\* Used images are examples of configurations which may deviate from ordered configurations.