



Applications

- Influent of industrial and municipal wastewater treatment plants
- Process water in oil refineries, food industry, pulp and paper
- Process breakthrough and spills
- Surface water
- Effluent of seawater desalination plants

**BIOTECTOR B7000:
Online analyser for TOC / TN / TP**

Superior reliability with low maintenance

Does your TOC analysis system require process downtime or frequent manual recalibration and cleaning? B7000 online analysers are built to overcome these problems. The unique Two-Stage Advanced Oxidation (TSAO) technology and oversized tubing drastically reduce signal drift and need of filtration. B7000 requires only biannual maintenance with no calibration between services.

Outstanding durability

Robust construction with high quality materials ensures this product is suitable for the most challenging industrial applications. Where other technologies fail, the B7000's design allows it to handle fats, greases and oils as well as particulate loads.

Flexible field of application

Depending on the type of application, the instrument can be customised to operate across a very wide measuring range. The B7000 analyser also has multistreaming capabilities with up to 6 process streams possible. Additionally, it can be adapted for indoor or outdoor use.

High measurement accuracy

A large sample volume (up to 14 ml) and zero point calibration after each measuring procedure, ensure a high level of measuring accuracy. The B7000 can easily handle chlorides up to 30 % and calcium sludge up to 12 % by volume.

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Technical data

Standard Features	TOC	TN	TP
Measurement Terms	Total Organic Carbon including: - Non Purgeable Organic Carbon (NPOC) - Purgeable Organic Carbon (POC) B7000's TOC mode measures NPOC B7000's TC -TIC / VOC modes measure the sum of NPOC and POC	Total Bound Nitrogen measuring the sum of: - Bound (organic and inorganic) Nitrogen - Ammonium Nitrogen (NH ₄ -N) - Nitrate Nitrogen (NO ₃ -N) - Nitrite Nitrogen (NO ₂ -N)	Total Phosphorous measuring the sum of: - Orthophosphate (PO ₄ -P) - Bound (organic and inorganic) phosphorous compounds - Polyphosphates - Other reactive phosphate molecules (PO ₂ -P, PO ₃ -P, etc) - Other phosphorus compounds, e.g. phosphonates, phosphinates, etc.
Oxidation Method	Two-Stage Advanced Oxidation Process (TSAO) using hydroxyl radicals		
Measurement Method	Infrared measurement of CO ₂ after oxidation	Direct photometric measurement of nitrate after oxidation	Colorimetric measurement of phosphate after oxidation using standard vanadomolybdophosphoric acid method
Range Selection	Automatic or manual		
Automatic Range Selection	Up to 3 ranges configurable within each range band detailed below Ultra Low Range System is configurable as single TOC range only.		
Ultra Low Range System	0 to 500 µgC/l (ppb) up to 0 to 10000 µgC/l	-	-
Standard Range System	0 to 10 mgC/l (ppm) up to 0 to 20000 mgC/l	0 to 10 mgN/l up to 0 to 20000 mgN/l	0 to 10 mgP/l up to 0 to 20000 mgP/l
Ultra High Range System	0 to 10 mgC/l up to 0 to 100000 mg/l	0 to 10 mgN/l up to 0 to 100000 mgN/l	0 to 10 mgP/l up to 0 to 100000 mgP/l
Range Combination	Wide TOC , TN and TP range combinations are available		
Output	4 to 20 mA As individual signal up to maximum of 6 or as multiplex signal up to maximum of 35		
Digital Output	2 potential free contacts, programmable 1 potential free fault contact, programmable		
Serial Input Interface	RS232 output for printer or data logger		
Repeatability	Ultra Low Range System: ± 3 % of reading or 0.5 µg/l whichever is greater Standard Range and Ultra High Range System: ± 3 % of reading or 0.3 mg/l whichever is greater with automatic range selection (multi-range) feature		
Display	High-contrast 40-character x 16-line backlit LCD with CFL backlight		
Cycle time (typical)	TOC: 6.5 min	TOC TN: 7 min	TOC, TN, TP: 10 min
Sample Volume	Up to 14.0 ml		
Particle Size	Ultra Low Range System: up to 10 microns soft particulates Standard Range and Ultra High Range System: up to 2 mm soft particulates		
Filtration Requirements	Not required		

Subject to change without notice.

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Standard Features	TOC	TN	TP
Sample Inlet Temperature	2 to 60 °C (36 to 140 °F)		
Sample Inlet Pressure	Typically ambient For applications with high sample pressure, sampling systems are available		
Sample Flow Rate	Minimum 100 ml per sample		
Humidity	5 to 85 % non-condensing		
Ambient Temperature	5 to 40 °C (41 to 104 °F) Air conditioning option is available		
Chloride Tolerance	up to 30 % all ranges	up to 30 % (range dependent)	up to 30 % (range dependent)
Exceedance Tracking	Full exceedance tracking to maximum range		
Enclosure	Fibre glass reinforced polyester		
Signal Drift	< 5 % per year		
SD Flash Card	Allows easy data transfer and configuration updates		
Operation	Microcontroller with membrane keyboard		
Languages	English, French, German Other language options are available on request		
Data Storage	Previous 9999 reaction data Previous 99 fault events		
Weight	90 - 120 kg		
Dimensions (H x W x D)	1250 x 750 x 320 mm	1250 x 750 x 320 mm	1500 (up to 1750) x 750 x 320 mm
Power Consumption	300 W		
Power Requirements	230 V / 50 Hz or 115 V / 60 Hz other power options are available on request		
Service Interval	6 month intervals		

Optional Features	TOC	TN	TP
Parameter	TIC, TC, VOC, BOD, COD	N _{total}	P _{total} P _{total} (as the sum of Reactive and Organic Phosphorus)
Multi-Stream	up to 6 streams	up to 6 streams	up to 3 streams
EExp / Hazardous Location	TÜV Certificate: ATEX Ex II 3G Ex pz T4 ETL Certificate: Z-Purge, Class 1 Div 2, Groups A, B, C, D, T3, T4, T6		
Remote Control	Input for remote start / standby Input for remote stream and range selection Input for remote manual sample analysis		
Valves	Automatic calibration and manual sample		
Digital Communication	Modbus, PROFIBUS, Ethernet Modbus is a registered trademark of Gould Inc.		

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Principle of operation

The B7000's unique TSAO method achieves total and complete oxidation of the sample, including organic carbon to CO₂, nitrogen compounds to nitrate and phosphorous compounds to phosphate.

TOC measurement: A representative unfiltered sample from the stream to be measured is pumped into the analyser. Acid is added to lower the pH so that inorganic carbon is sparged off as CO₂ and measured as Total Inorganic Carbon (TIC). TSAO utilises hydroxyl radicals generated by ozone and sodium hydroxide. To remove CO₂ from the oxidized sample, the pH of the sample is lowered again. The CO₂ is sparged and measured by the specially developed non-dispersive infrared (NDIR) CO₂ analyser. The result is displayed as Total Organic Carbon (TOC).

TN measurement: When TOC analysis is complete, the oxidized sample fluid is transferred into the measuring cell. Here the photometer analyses the wavelengths applicable to nitrates. The result is displayed as Total Nitrogen (TN).

TP measurement: The oxidized sample fluid is placed into the TP boiler where it undergoes an acid boiling at 100°C for typically 10 minutes, breaking down the polyphosphate bonds into orthophosphates. The sample is reacted with TP reagent and transferred into the measuring cell. Here the photometer analyses the wavelengths applicable to phosphates. The result is displayed as Total Phosphorus (TP).

Order information

HACH LANGE offers the complete TOC measuring solutions - from sample preparation to outlet.

The B7000 system is available with a variety of options:

- Air conditioning
- Heating, interior and exterior lighting
- Alarm functionality
- Vacuum sampler / Venturi driven vacuum sampler
- Oxygen concentrator / with compressor
- Outdoor version

In order to ensure uninterrupted operation of the B7000 analyser, HACH LANGE offers:

- Consumables: TOC reagent, TN cleaning solution, TP reagent
- Spare & wearing parts

Please contact your HACH LANGE representative, to configure a B7000 analyser for your application.

Optimal control and monitoring of your processes



Cuvette tests

Photometric tests for easy validation of TOC, TN, TP analyser results.

For more information please visit our website!

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