

## BioTector® Series 4 Plus On-Line Organic Analyser

TOC, TC, VOC, TIC (COD, BOD)

### PRODUCT OVERVIEW

- Self Cleaning Technology
- Uptime > 99%
- Results < 6 minutes
- Multi-range
- Single and Multi-Stream Option
- Nitrate & Phosphate Modules Available

### GENERAL INFORMATION

The **BioTector® Series 4 Plus** has been designed to analyse the most difficult samples. It makes extensive use of Hastelloy and Fluorocarbon materials to handle even the most demanding application. The **BioTector® Series 4 Plus** will provide off-the-shelf reliable and trouble-free service, regardless of the application or range.

### FEATURES

- Automatic Range Selection (ARS) Valve which selects the correct range anywhere between 0-5mg/l and 0-25,000mg/l with no requirement for mechanical changes, recalibration or dilution.
- Full Exceedance Recording from the lowest range to as high as 25,000mg/l.
- Maintenance Free Hastelloy Reaction Vessel with PFA Fittings.
- Self-Draining PFA Cooler.
- High Stability CO<sub>2</sub> Analyser with Hastelloy Wetted Parts.

*The BioTector® Series 4 Plus On-Line Organic Analyser retains all of the benefits of the original BioTector®*

- Patented 2 Stage Advanced Oxidation Process.
- High Availability - Greater than 99% Uptime.
- 100% Representative Sample - no filtering necessary.
- Lowest cost of ownership in the industry.
- The **BioTector® Series 4 Plus On-Line Organic Analyser** does not allow TIC carry over into the TOC measurement.
- Dual compartment FRP Enclosure, which separates the electronics from the 'wet' or analysis components.

### FUNCTIONS

A sample from the stream is pumped into the **BioTector's** reaction chamber. A patented Two-Stage Advanced Oxidation process oxidises the organic material in the sample. The carbon dioxide formed in the oxidation process is then sparged and monitored by the patented IR-detector.



*"The Oxidation Process that totally Self-Cleans"*

*The measurement process can be described in four stages:*

- 1. SAMPLING:** A representative unfiltered sample from the stream to be measured is pumped into the analyser. The sample injection valve automatically selects the appropriate sample volume for the optimum measuring range.
- 2. TIC DETECTION:** Acid is added to lower the pH so that inorganic carbon may be sparged off as CO<sub>2</sub>. As the **BioTector® Series 4 Plus On-Line Organic Analyser** actually measures the level of TIC in the sample, it will not allow TIC to carry over into the TOC measurements.
- 3. OXIDATION:** The ozone generator is switched on to generate ozone used in the reaction. Sodium hydroxide is added to raise the pH of the sample to the point where the production of hydroxyl radicals is optimised. Under these conditions, total and effective oxidation takes place.
- 4. TOC CALCULATION:** To remove the CO<sub>2</sub> from the oxidised sample, the pH of the sample is lowered again. The CO<sub>2</sub> is sparged and measured by the IR-detector. The result is calculated and presented on screen. All data is stored in the system's archive. Data output is available on 4-20mA or other common industrial interfaces.

### MAINTENANCE

Normal service frequency is 6 months. Separate service kits are available for the 6-month and 12-month service.

For technical information, please check overleaf >>>

# TECHNICAL SPECIFICATIONS



## GENERAL TECHNICAL DATA

<b>Enclosure:</b>	Fibreglass Reinforced Polyester
<b>Dimensions (HxWxD):</b>	1250 x 750 x 320mm
<b>Weight:</b>	90 kg
<b>Power Consumption:</b>	300 W
<b>Mains Connection:</b>	230V or 115V AC

## FEATURES IN DETAIL

<b>Display:</b>	High Contrast 40 Character x 16 Line Backlit LCD with CFL Backlight
<b>Data Storage:</b>	Previous 5000 Reaction Data Previous 50 Fault Signals
<b>Operation:</b>	Microcontroller with Membrane Keyboard
<b>Language Options:</b>	English German French Norwegian Swedish Dutch <i>Other languages on request</i>

## INPUT & OUTPUT SIGNALS

<b>Standard Output:</b>	4 - 20mA for TOC
<b>Digital Output:</b>	2 Potential Free Alarm Contacts, Programmable 1 Potential Free Fault Contact, Programmable
<b>Serial Port:</b>	RS232 Output for Printer or Data Logger

### OPTIONAL FEATURES

<b>Output:</b>	TIC, TC, VOC, BOD, COD
<b>Remote Pause Signal:</b>	Input for Remote Pause
<b>Industrial Interface:</b>	Modbus, Profibus, Ethernet
<b>Valves:</b>	Automatic Calibration and Sample Line Cleaning
<b>Multi-stream:</b>	Up to 6 Streams with Independent 4-20mA Signals
<b>Manual Sample:</b>	Up to 8 Manual Sample Input Points
<b>EExp:</b>	Certified and Available on Request

## CONSUMABLES

<b>Acid &amp; Base:</b>	Replacement Frequency - Application Dependant (Typically 4 - 8 weeks)
<b>Oxygen:</b>	Option of Integrated Oxygen Generator available
<b>Service:</b>	6 Monthly Intervals

## ANALYSIS PARAMETERS

<b>Monitoring:</b>	Patented Two-Stage Advanced Oxidation Process using Hydroxyl Radicals	
<b>Measured Components:</b>	<b>Standard Mode</b>	<b>VOC Mode</b>
	TOC (NPOC)	VOC / POC
	TIC	TOC / NPOC
	TC	TIC
		TC
	<b>After Correlation Tests:</b>	
	COD	
	BOD	
<b>Monitoring Frequency:</b>	Batch Samples Minimum < 6 minutes	
<b>Monitoring Range:</b>	Standard:	0-10mg/l to 0-10,000mg/l
	High Range:	0-10mg/l to 0-25,000mg/l
	Low Range:	0-5mg/l to 0-1,000mg/l
<b>Exceedence Tracking:</b>	Records Full Tracking to Maximum Range	
<b>Repeatability:</b>	± 3% of reading or ± 0.5mg/l	
<b>Sample Volume:</b>	0.1 - 8.0ml	
<b>Particle Size:</b>	Up to 2 mm Ø, soft particulates	
<b>Filtration Requirements:</b>	Not required	
<b>Signal Drift:</b>	< 5% per year	
<b>Ambient Temperature:</b>	5 - 40°C	
<b>Humidity:</b>	5 - 85%, non-condensing	
<b>Chloride Interference:</b>	None	

## APPLICATIONS

- Waste Minimisation from Process Plants
- Control of Industrial Waste Treatment Plants
- Cooling Water Monitoring
- Monitoring of Final Effluent
- Municipal Waste Treatment - Influent & Effluent
- River Water Monitoring

The BioTector® Series 4 Plus On-Line Organic Analyser comes with up to 12 months warranty against manufacturing errors.



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