

## MICROMAC TOC

### ON LINE ANALYZER FOR TOC MONITORING IN WATER



**MICROMAC TOC** analyzer has been designed for the automatic measurement of total organic carbon in water, on different types of matrix, using the EPA approved method based on UV persulfate oxidation and detection of generated carbon dioxide using a Non Dispersive Infrared Analyzer. This method also meets requirements of European ISO/CEN guidelines; the analyzer is conformed to EPA, DIN, CE, ASTM, NAMUR regulations.

#### ✓ ROBUST AND RELIABLE

Designed for industrial and environmental on-Line applications ensures the highest level of robustness in the electronics, mechanics and hydraulics components. Complete separation between electronics and hydraulics plus a simple and robust LFA \* hydraulics allows easy maintenance and long terms reliable operations.

\* LFA: Loop Flow Analysis (patent pending)

#### ✓ MAIN APPLICATIONS

Industrial wastewater; industrial effluents; laboratory measurement; effluent and influent monitoring; boiler feed water; condensate and cooling water; drinking water; surface water; sea water.

#### ✓ SELF CLEANING

An autoclean function is performed at the end of each analysis, to clean-up the hydraulic circuit.

#### ✓ BUILT-IN AIR GENERATOR

An internal air compressor produces the carrier gas for oxidation and detection stages. The air is purified with an internal soda lime filter. Using this equipment, there is no need of external air treatment system and compressor air as requested utility, like traditional analyzers.

#### ✓ DIGITAL FLOW-METER

The carrier gas flow is controlled by a digital flowmeter. The flow (cc/min) is displayed and controlled by the analyzers. In case of non correct values (leakage or blockage), the analyzer stops automatically and displays a fault alarm "gas reactor fail".

#### ✓ FEATURES AND BENEFITS

- ✚ Compact case, easy to be installed
- ✚ Fast response, high precision and repeatability.
- ✚ High stability NDIR detector.
- ✚ Batch analysis with programmable measuring frequency
- ✚ Long autonomy; low maintenance, low operating cost
- ✚ Low reagent consumption
- ✚ 12 Vcc power supply.

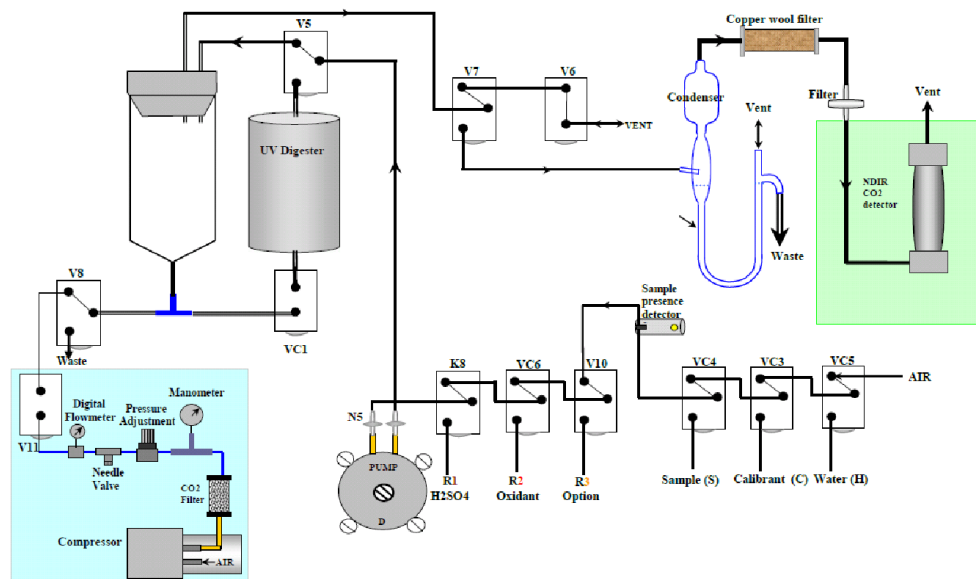


## TOC measuring principle and hydraulic diagram

The sample after proper is pumped inside the reactor; the addition of an acidic reagent converts the inorganic carbon to carbon dioxide, removed by a sparging step.

Sparged sample is then injected with a strong oxidant and submitted to UV radiation, to oxidize all organic forms of organic carbon into carbon dioxide, that is later removed from the liquid by an additional sparging step.

Carbon dioxide in gas phase passes through a phase separator, a glass condenser and an halogen filter and it is finally measured by a NDIR detector.



Halogen filter is used to prevent corrosion and condensation inside the stainless steel NDIR flow cell. Compressed air is scrubbed in a soda lime filter, to have a free carbon dioxide gas carrier available. Carrier flow is controlled by a pressure regulator; the flow regulator and the flow rate is measured and displayed by a digital flowmeter .

## Technical Specifications

**MEASURING PRINCIPLE:** Total Organic Carbon (TOC) measurement after TIC removal by acidification and sparging, sodium persulfate UV promoted oxidation, CO<sub>2</sub> detection by Non Dispersive Infrared Detector (NDIR)

**MEASUREMENT TYPE:** batch analysis, programmable frequency

**MEASURING TIME:** between 15 and 30 minutes (depending on the range)

**MEASURING RANGE:** from 0-5/10/20 mg/l C ; other ranges available on request

**REPEATABILITY:** better than 5% ; SD% of 7 replicates at 50% of the full scale

**ACCURACY:** better than 5% , average of 7 replicates at 20% of the full scale

**DETECTION LIMIT:** better than 0.05mg/L C on range 0-5ppm , calculated as for EPA p.136 appendix B

**OUTPUT SIGNAL:** 4-20 mA

**INPUT SIGNALS:** n. 1 Analysis, n. 1 calibration; digital contacts

**ALARMS:** n. 1 High Limit, n. 1 General, n. 1 Calibration; potential free contacts

**SAMPLE AND WASTE DELIVERY:** pressure free

**REAGENTS REPLACEMENT:** 3/4 weeks depending on the operating temperature

**SAMPLE TEMPERATURE:** 10 - 30 °C

**PROTECTION:** IP55

**HARDWARE:** PC104 industrial standard, Integrated keyboard and graphics display, RS232 option

**POWER SUPPLY:** 12 V DC external power supply from local power to 12 V DC included

**WEIGHT:** 33 Kg without reagents;

**DIMENSION:** 800 x 420 x 280 mm (H x W x D)

Subject to change without notice



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