

PLEASE NOTE: The following specification contains areas, highlighted in yellow and with the [] symbol. In these areas, the engineer has to make a selection, add specific, project related information and has to delete what is not applicable for the specific project.

PART 1 GENERAL

- 1.1 Section includes:
- A. Instrument for continuous, online monitoring of Total Organic Carbon, Total Inorganic Carbon, Biological Oxygen Demand and/ or Chemical Oxygen Demand via correlation in water.
 - B. The analyzer has internal sensors and utilizes self-diagnostics to monitor analyzer status and produces alerts when maintenance or service are required.
- 1.2 Measurement Procedures
- The method of measuring Total Organic Carbon will be by Two Stage Advanced Oxidation which utilizes the Hydroxyl radical and a manganese catalyst.
- 1.3 Alternates
- A. Other instruments that do not use the Two Stage Advanced Oxidation which utilizes the Hydroxyl radical and a manganese catalyst are not acceptable
 - B. Other instruments that do not have predictive diagnostic capabilities and don't generate alerts when maintenance or service are required are unacceptable.
- 1.4 System Description
- A. Performance Requirements
 - 1) Measurement ranges:
 - a) 0 – 250mgC/l,
 - b) 0 – 250mgC/l and 0 – 1000mgC/l,
 - 2) Detection Limit: 0.9mgC/l
 - 3) Repeatability:
 - a) $\pm 3\%$ of reading or $\pm 0.45\text{mgC/l}$ whichever is greater in 0 – 250mgC/l range,
 - b) $\pm 4\%$ of reading or $\pm 2\text{mgC/l}$ whichever is greater in 0 – 1000mgC/l range,
 - 4) Cycle time: from 6.5 min, depending on range and application
 - 5) Sample Flow: minimum 100ml per analysis
 - 6) Sample Pressure: Ambient
 - 7) Sample Temperature: 2 to 60 °C (36 to 140 °F)
- 1.5 Certifications
- A. CE Compliant
 - B. KC (Korea Certification)
 - C. ACMA (Australia & New Zealand EMC Compliance)
 - D. China RoHS
- 1.6 Environmental Requirements
- A. Operational Criteria
 - 1. Operating Temperature: 0 to 45 °C (32 to 113 °F)
 - 2. Relative Humidity: 5 to 85 %, non-condensing
- 1.7 Maintenance Service
- A. Unscheduled Maintenance

1. Replace chemicals as required

1.8 Warranty

- A. Warranted for one year from date of shipment against manufacturer defects.

PART 2 PRODUCTS

2.1 Manufacturer

- A. Hach Ireland Ltd
- B. Model Hach BioTector B3500e Online TOC Analyzer

2.2 Analyzer

- A. The online TOC analyzer consists of:
 1. Housing: Glass Reinforced Polyester
 2. Sampling system
 3. Oxygen concentrator
 4. Ozone generator
 5. Oxidation reactor
 6. Non-dispersive Infrared (NDIR) analyzer

2.3 Equipment

- A. Online TOC analyzer
 1. To measure TOC of the sample it utilizes hydroxyl radicals as the oxidizing agent.
 2. The TOC analyzer automatically compensates for temperature and pressure utilizing an embedded temperature and pressure sensors.
 3. Includes capability to actively monitor internal components and present diagnostics on the overall health of the TOC analyzer and time to next required preventive maintenance.
 4. Includes capability to actively monitor reagents usage, displays current reagent volumes and present approximate time to the next reagents replacement.
 5. Data transmission is made with a SD card.

2.4 Components

- A. Standard equipment:
 1. Analyzer
 2. Mounting brackets
 3. User Manual
 4. Reagent dip tubes
- B. Dimensions: Refer to TOC analyzer drawings
- C. Weight: typically, 101 lbs (46 kg)

2.5 Instrument Options,

Must be selected at time of order. Choose one

- Single channel Online Total Organic Carbon Analyzer, 0 - 250 mg/L C,
- Single channel Online Total Organic Carbon Analyzer, 0 - 250 mg/L C and 0 – 1000mg/L C,
- Single channel Online Total Organic Carbon Analyzer, IP54 Purge Ready, 0 - 250 mg/L C,
- Single channel Online Total Organic Carbon Analyzer, IP54 Purge Ready, 0 - 250 mg/L C and 0 – 1000mg/L C,

2.6 Instrument Accessories

Select as many as required

- Remote activation of Manual/Calibration port
- Sample Sensor to detect presence of the sample and evaluate the quantity of air bubbles in the sample
- BioTector compressor
- Filter pack for removal of water, dirt, and oil from compressed air (if using instrument air supply)

Choose one or none

- Profibus
- Modbus RTU
- Modbus TCP/IP

Choose one or none

- BioTector Sample Overflow Chamber
- BioTector Flow Through Sampling Chamber with Sand Trap
- BioTector Sampling Chamber with Sand Trap

PART 3 EXECUTION

3.1 Preparation

1. Mounting
 - a. As shown on the drawings
2. Inlet and outlet connection sizes
 - a. As shown on the drawings

3.2 Installation

- A. Install TOC analyzer following transmittal drawings and instrument user manual.

3.3 Manufacturer's Service and Start-Up

- A. Contractor will include the manufacturer's services to perform start-up on instrument to include basic operational training and certification of performance of the instrument.
- B. Contractor will include a manufacturer's Service Agreement that covers all the manufacturer's recommended preventative maintenance, regularly scheduled calibration and any necessary repairs beginning from the time of equipment startup through to end user acceptance / plant turnover and the first 12 months of end-user operation post turnover.
- C. Items A and B are to be performed by manufacturer's factory-trained service personnel. Field service and factory repair by personnel not employed by the manufacturer is not allowed.
- D. Use of manufacturer's service parts and reagents is required. Third-party parts and reagents are not approved for use.

END OF SECTION