

## PART 1 GENERAL

### 1.1 Section includes

- A. Nitrate sensor for continuously monitoring nitrate in water.

### 1.2 Measurement Procedures

- A. The method of measuring nitrate will be ultraviolet (UV) light absorption at 210 nm.
  - 1. A reference beam at 350 nm will provide a reference standard to correct for interference by turbidity and organic matter.

### 1.3 Alternates

- A. Other methods of nitrate measurement, such as colorimetric, amperometric, potentiometric, and iodometric with electrodes, or those that require reagents are not acceptable.

### 1.4 System Description

- A. Performance Requirements
  - 1. Measurement range (depending on model): 0.1 to 100 mg/L for nitrate (NO<sub>x</sub>-N)
  - 2. Accuracy (depending on model):  $\pm 5$  percent of mean  $\pm 1.0$  or better
  - 3. Resolution (depending on model): 0.1 or 0.5 mg/L
  - 4. Detection limit (depending on model): 0.1 to 100 mg/L

### 1.5 Certifications

- A. Not applicable

### 1.6 Environmental Requirements

- A. Operational Criteria
  - 1. Operating temperature: 0 to 40 degrees C (36 to 104 degrees F)
  - 2. Operating pressure: 0.5 bar (7.2 psi) maximum

### 1.7 Warranty

- A. The product includes a one-year warranty from the date of shipment.

### 1.8 Maintenance Service

- A. Scheduled maintenance:
  - 1. Check condition of wiper blades: monthly
  - 2. Change wiper blades: after approximately 20,000 cycles
  - 3. Replace sensor seals: yearly
- B. Unscheduled maintenance
  - 1. Replace UV lamp

## PART 2 PRODUCTS

### 2.1 Manufacturer

- A. Hach Company, Loveland, CO
  - 1. NITRAX™ UV Nitrate Sensor [select one] Model NITRAX plus sc, Model NITRAX eco sc, or Model NITRAX clear sc

### 2.2 Manufactured Unit

- A. The NITRAX UV Nitrate Sensor consists of an immersible stainless steel probe with 10-meter cable.

### 2.3 Equipment

- A. The sensor is equipped with a self-cleaning wiper system to prevent erroneous values and maintenance problems caused by surface films or particles.
- B. The sensor uses no reagents.
- C. The sensor compensates for interference from turbidity and organic contamination of up to 150 mg/L.
- D. The sensor has the following characteristics:
  - 1. Enclosed in corrosion-resistant, V4A stainless steel.
  - 2. Uses 2-beam ultraviolet absorption technology with 2-mm path length.
  - 3. The measurement beam has a wavelength of 210 nm and is absorbed by nitrate and nitrite.
  - 4. The reference beam has a wavelength of 350 nm and is used to compensate for turbidity in the measured medium.
- E. The measurement interval is user-selectable from one to 30 minutes. Up to 12 signals can be averaged.

### 2.4 Components

- A. Standard equipment:
  - 1. Probe
  - 2. Cable
  - 3. Manual
- B. Dimensions
  - 1. Model NITRAX plus sc:
    - a. Length: 13.1 inches (33.3 cm)
    - b. Diameter: 2.8 inches (7.0 cm)
  - 2. Model NITRAX eco sc:
    - a. Length: 12.9 inches (32.7 cm)
    - b. Diameter: 2.8 inches (7.0 cm)
  - 3. Model NITRAX clear sc:
    - a. Length: 12.7 inches (32.3 cm)
    - b. Diameter: 3.0 inches (7.5 cm)
- C. Weight: approximately 8.2 pounds (3.7 kg)

2.5 Accessories

- A. Bypass panel (flow-through sample cell) for use when direct immersion is sample is impractical
- B. Replacement wipers
- C. Fixed point installation kit
- D. Calibration kit
- E. Cable extensions

PART 3 EXECUTION

3.1 Preparation

- A. The optional fixed point installation kit recommended for mounting the probe.
- B. The probe can be mounted to a bypass panel when direct immersion in a sample stream is impractical.

3.2 Installation

- A. Contractor will install the analyzer in strict accordance with the manufacturer's instructions and recommendation.
- B. Manufacturer's representative will include a half-day of start-up service by a factory-trained technician, if requested.
  - 1. Contractor will schedule a date and time for start-up.
  - 2. Contractor will require the following people to be present during the start-up procedure.
    - a. General contractor
    - b. Electrical contractor
    - c. Hach Company factory trained representative
    - d. Owner's personnel
    - e. Engineer

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