

## PART 1 GENERAL

### 1.1 Section includes

- A. Turbidimeter for monitoring sample low-range (0.001 to 100 NTU) turbidity.

### 1.2 Measurement Procedures

- A. The method of measuring turbidity will nephelometric.
  - 1. Incandescent light will be directed into the sample stream in the turbidimeter body.
  - 2. The light scattered at 90 degrees will be sensed by a submerged photocell in the measuring chamber.
- B. The method will meet or exceed instrument design criteria set by USEPA method 180.1 and Standard Methods 2130B

### 1.3 Alternates

- A. Other methods of turbidity measurement, such as those that require a sample cell with glass window that can foul or fog or require air purge, desiccant, or cleaning, are not acceptable.

### 1.4 System Description

- A. Performance Requirements
  - 1. Measurement range: 0.001 to 100 Nephelometric Turbidity Units (NTU).
  - 2. Accuracy
    - a.  $\pm 2$  percent of reading or  $\pm 0.020$  NTU (whichever is greater) from 0 to 10 NTU
    - b.  $\pm 5$  percent of reading from 10 to 40 NTU
    - c.  $\pm 10$  percent of reading from 40 to 100 NTU
  - 3. Minimum detection limit: 0.001 NTU
  - 4. Resolution
    - a. 0.0001 NTU up to 9.9999 NTU
    - b. 0.001 NTU from 10.000 to 99.999 NTU
  - 5. Repeatability:  $\pm 1.0\%$  of reading or  $\pm 0.002$  NTU, whichever is greater

### 1.5 Certifications

- A. Not applicable

### 1.6 Environmental Requirements

- A. Operational Criteria
  - 1. Sample flow rate: 200 to 650 mL/minute
  - 2. Sample temperature: 0 to 50 degrees C
  - 3. Operating temperature: 0 to 40 degrees C
  - 4. Operating humidity: 5 to 95 percent non-condensing

### 1.7 Warranty

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

1.8 Maintenance Service

- A. Scheduled maintenance:
  - 1. Calibration: as experience dictates.
    - a. Use an optical based calibration/verification module.
    - b. OR, use formazin-based standards.
- B. Unscheduled maintenance
  - 1. Clean photocell window
  - 2. Clean instrument enclosure
  - 3. Clean bubble trap
  - 4. Lamp replacement

PART 2 PRODUCTS

2.1 Manufacturer

- A. Hach Company, Loveland, CO
  - 1. Model 1720E Turbidimeter

2.2 Manufactured Unit

- A. The 1720E Turbidimeter consists of an incandescent light source, photocell, and bubble trap.
- B. The 1720E is housed in a NEMA 4X/IP66 enclosure made of corrosion-resistant polystyrene.
- C. The optical components of the 1720E are mounted in a sealed, removable head assembly.

2.3 Equipment

- A. The 1720E operates using 100 to 230 volt selectable AC power.
- B. The 1720E operates continuously.
- C. The sample stream into the 1720E flows through an internal bubble trap.

2.4 Components

- A. Standard equipment:
  - 1. Turbidimeter sensor head
  - 2. Turbidimeter body
  - 3. Manual
- B. Dimensions:
  - 1. Width: 12.3 inches
  - 2. Height: 15.1 inches
  - 3. Depth: 9.4 inches
- C. Weight: 13.5 pounds
- D. Connectors
  - 1. Sample inlet fitting: 0.25-inch NPT female, 0.25-inch compression fitting
  - 2. Drain fitting: 0.5-inch NPT female, 0.5-inch hose barb

2.5 Accessories

- A. Calibration/verification module (Model ICE-PIC for 1720E)
- B. StablCal<sup>®</sup> verification standards

- C. Formazin calibration kit for user-prepared calibration
- D. Floor stand

### PART 3 EXECUTION

#### 3.1 Preparation

- A. Wall mount
- B. Clearances: none required.
- C. Storage temperature: -20 to 60 degrees C

#### 3.2 Installation

- A. Contractor will install the turbidimeter 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.
  - 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. Hach Company factory trained representative
    - c. Owner's personnel

#### 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