

PART 1 GENERAL

1.1 Section includes

- A. Analyzer for monitoring of phosphate in water.
- B. Includes the capability to remotely monitor sensors on any browser-enabled device and present diagnostics on the overall health of the measurements (on Predictive Diagnostics-enabled sensors), as well as upcoming and required maintenance - reducing user risk and downtime. It includes the capability to connect to a laboratory spectrophotometer to correct process measurements based on lab samples, without having to remove the process sensor from the water.

1.2 Measurement Procedures

- A. The method of measuring ammonia will be by vanadomolybdophosphoric acid colorimetric method as found in *Standard Methods*.
- B. At the beginning of each measurement cycle the analyzer measures the sample for purposes of compensating for background color of the sample.

1.3 Alternates

- A. Other instruments that do not use the vanadomolybdophosphoric acid colorimetric method are not acceptable and that do not compensate for background sample color are not acceptable
- B. Other instruments that do not have predictive diagnostic capabilities are unacceptable

1.4 System Description

- A. Performance Requirements
 - 1. Measurement range (depending on model):
 - a. 0.05 to 15 mg/L, or
 - b. 1 to 50 mg/L
 - 2. Lower detection limit (depending on model):
 - a. 0.05 mg/L, or
 - b. 1 mg/L
 - 3. Accuracy (depending on model):
 - a. 2% \pm 0.05 mg/L, or
 - b. 2% \pm 1 mg/L
 - 4. Reproducibility (depending on model):
 - a. 2% \pm 0.05 mg/L, or
 - b. 2% \pm 1 mg/L
 - 5. Response time: Less than 5 minutes (T90), including sample preparation
 - 6. Measurement interval: 5 to 120 minutes, adjustable
 - 7. When connected to a multi-parameter digital control the overall status of the instrument performance is displayed as a percentage value via a measurement indicator
 - 8. When connected to a multi-parameter digital control the overall time remaining until maintenance tasks are due is displayed in days

1.5 Certifications

- A. none

1.6 Environmental Requirements

A. Operational Criteria

1. Sample temperature: 4 to 40 °C (39 to 104 °F)
2. Sample pH: 5 to 9 pH
3. Operating temperature: -20 to 45 °C (-4 to 114 °F)
4. Operating humidity: 95% relative humidity, non condensing

1.7 Warranty

- A. The products include a one-year warranty from date of shipment.

1.8 Maintenance Service

A. Unscheduled maintenance

1. Replace chemicals as required

PART 2 PRODUCTS

2.1 Manufacturer

A. Hach Company, Loveland, CO

1. Model PHOSPHAX sc Phosphate Analyzer

2.2 Manufactured Unit

A. The PHOSPHAX sc Phosphate Analyzer consists of:

1. Housing: ASA UV-resistant, IP55-rated, lockable
2. Gas sensitive electrode
3. Colorimeter

2.3 Equipment

- A. The analyzer calibrates and cleans itself automatically.
- B. The required power supply is 230 Vac/50Hz or optional 115 Vac/50-60Hz connected to a Hach model sc1000 multi-parameter universal controller.
- C. Data transmission is made with a data cable with the controller.
- D. Outputs include relay, current outputs, and bus interface via the controller.

2.4 Components

- A. Standard equipment:
 - 1. Analyzer
 - 2. Manual
 - 3. Reagents
- B. Dimensions: 21.3 x 28.3 x 15.4 inches (540 x 720 x 390 mm)
- C. Weight: 77 pounds (35 kg)

2.5 Accessories

- A. Hach Filterprobe sc
- B. Hach sc1000 multi-parameter universal controller
- C. Mounting kits (rail or stand)

PART 3 EXECUTION

3.1 Preparation

- A. Wall-mount indoors or outdoors. Rail- and stand-mounting options available.

3.2 Installation

- A. Contractor will install the sensor 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

- C. 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.
- D. 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.
- E. 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.
- F. Use of manufacturer's service parts and reagents is required. Third-party parts and reagents are not approved for use.

Date
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MEASUREMENT AND CONTROL INSTRUMENTATION
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