

PART 1 GENERAL

1.1 Section includes

- A. Sensor that continuously measures pH in aqueous solutions.
- 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.

1.2 Measurement Procedures

- 1. The method of measuring pH will be with a probe or sensor that uses differential electrode measurement technique using three electrodes.
  - a. Two electrodes compare the process value to a stable internal reference standard buffer solution.
  - b. The internal electrode is non-flowing, foul-resistant characteristics.

1.3 Alternates

- A. Other methods of pH measurement including combination probes will not be accepted.
- B. Probes or sensors that do not communicate with the Hach SC platform controller will not be accepted.

1.4 System Description

- A. Performance Requirements
  - 1. Measurement range: 0 to 14 pH
  - 2. Sensitivity: 0.01 pH
  - 3. Stability: 0.03 pH per 24 hours, non-cumulative

1.5 Certifications

- A. General Purpose CSA/CSA<sub>NRTL</sub> and FM (UL Pending) when used with an approved controller.
- B. Class 1, Div 2 Groups A thru D CSA/CSA<sub>NTRL</sub> and FM (UL Pending) when used with an approved controller.

1.6 Environmental Requirements

- A. Operating Criteria
  - 1. Temperature range: 23 to 158 °F (-5 to 70 °C)
  - 2. Sample flow rate: 3 meters (10 feet) per second, maximum
  - 3. Pressure: 100 pounds per square inch at 158 °F (6.9 bar at 70 °C)
  - 4. Transmission distance: 1000 meters (3240 feet), maximum

1.7 Warranty

- A. The product includes a 30-month pro-rated warranty from the date of shipment.
  - 1. 0 to 12 months: 100% free from manufacturer defects
  - 2. 0 to 18 months: replaced at 1/3 current list price for any reason
  - 3. 19 to 30 months: replaced at 2/3 current list price for any reason

1.8 Maintenance Service

- A. Scheduled maintenance:
  - 1. Condition/site dependent includes:
    - a. Occasional wipe of electrode with mild soap solution

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- b. Soak sensor for 2 to 3 minutes
  - c. Use small bristle brush to scrub measuring end of sensor
2. Twice yearly: replace salt bridge and pH buffer

## PART 2 PRODUCTS

### 2.1 Manufacturer

- A. Hach Company, Loveland, CO
  - 1. Hach model pHD-SC pH Sensor

### 2.2 Manufactured Unit

- A. The Hach pHD-SC pH Sensor consists of:
  - 1. Encapsulated sensor with digital signal processor, pre-amplifier, reference electrode, measuring electrode, ground electrode, and replaceable salt bridge.
  - 2. Integral 10-meter cable
  - 3. Wetted material [select one]:
    - a. PEEK®
    - b. Ryton®.

### 2.3 Equipment

- A. The Hach pHD-SC sensor works with Hach SC platform controllers only. B. The probe has a built in Pt 1000 RTD temperature compensator.
- C. Mounting styles are as follows:
  - 1. 1-inch NPT threads on both ends to mount into:
    - a. Standard 1-inch pipe tee
    - b. GLI adapter pipe for union mount with standard 1.5-inch tee
    - c. End of pipe for immersion into vessel
  - 2. For PEEK® housing only [select one]:
    - a. Insertion body style: 1-inch NPT threads only on the cable end to mount into a GLI ball valve hardware assembly so that the sensor can be inserted into or retracted from the process without stop to the process flow.
    - b. Sanitary body style: 2-inch flange to mount into GLI 2-inch sanitary tee with special cap and EDPM compound gasket.

### 2.4 Components

- A. Standard equipment:
  - 1. Probe
  - 2. Salt bridge
  - 3. 10-meter integral cable
  - 4. Manual
- B. Dimensions
  - 1. Length: 10.75 in. (28.8 cm)
  - 2. Diameter 1.25 in. (3.1 cm)
- C. Weight: 11 oz. (0.316 kg)

### 2.5 Accessories

- A. Air blast cleaning system
- B. Junction box for extension cables. Must be used for lengths greater than 100 meters.
- C. Extension cables
- D. ModBUS® RS-232 or RS-485 digital output card
- E. Mounting hardware
- F. pH buffer solutions

### PART 3 EXECUTION

#### 3.1 Preparation

- A. The sensor must be mounted to a Hach mounting assembly directly in the solution to be measured.
- B. Mount sensor vertically with electrode pointing down. A minimum of 15 degrees above horizontal is allowed.

#### 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