

PART 1 GENERAL

1.1 Section includes

- A. Sensor that continuously measures conductivity and/or resistivity in aqueous solutions.

1.2 Measurement Procedures

- A. The method of measurement will be contacting conductivity and resistivity with a probe or sensor.

1.3 Alternates

- A. Probes or sensors that do not communicate with the Hach model sc100 or sc1000 digital controller will not be accepted.

1.4 System Description

- A. Performance Requirements
 1. Measurement range: 0.057 to 200,000 $\mu\text{S}/\text{cm}$
 2. Accuracy: $\pm 0.01\%$ of reading, all ranges

1.5 Certifications

- A. General Purpose CSA/CSA_{NRTL} and FM (UL Pending) when part of an approved system.
- B. Class 1, Div 2 Groups A thru D CSA/CSA_{NRTL} and FM (UL Pending) when part of an approved system.

1.6 Environmental Requirements

- A. Operational Criteria
 1. Sample flow rate: 0 to 3 meters (0 to 10 feet) per second, maximum, fully immersed
 2. Operating temperature: dependant on probe selection
 3. Temperature and pressure limits, depending on materials. (Other mounting hardware or piping material may change the listed rating.):
 - a. Compression fitting sensor:
 - 1) With Kynar® (PVDF) compression fitting: 302°F at 25 psi (150°C at 1.7 bar) or 97° at 150 psi (36°C at 10.3 bar)
 - 2) With 316 stainless steel compression fitting: 302°F at 200 psi (150°C at 13.7 bar)
 - 3) With ball valve assembly: 257°F at 150 psi (125°C at 10.3 bar)
 - b. Non-metallic general purpose sensor: 302°F at 100 psi (150°C at 6.8 bar) or 68° at 200 psi (20°C at 13.7 bar)
 - c. Boiler/condensate sensor:
 - 1) No hardware: 212°F at 300 psi (100°C at 20.7 bar)
 - 2) With integral polypropylene j-box head: 198°F at 300 psi (92°C at 20.7 bar)
 - 3) With integral aluminum or 316 stainless steel j-box head: 392°F at 300 psi (200°C at 20.7 bar)
 - d. Sanitary (CIP) flange sensor:
 - 1) Sensor only: 302°F at 100 psi (150°C at 6.8 bar)
 - 2) With GLI sanitary mount hardware: 257°F at 150 psi (125°C at 10.3 bar)
 4. Insertion depth: 102 mm (4 inches)

1.7 Warranty

- A. The sensor is warranted for 1 year from date of purchase against material and workmanship.

1.8 Maintenance Service

- A. Scheduled maintenance:
 - 1. Clean to maintain measurement accuracy. Schedule (days, weeks, etc.) is affected by the characteristics of the process solution and should be determined by operating experience.

PART 2 PRODUCTS

2.1 Manufacturer

- A. Hach Company, Loveland, CO
 - 1. Hach 3400-SC Contacting Conductivity Sensor

2.2 Manufactured Unit

- A. The Hach 3400-SC Contacting Conductivity Sensor consists of:
 - 1. Conductivity probe with titanium or stainless steel electrodes
 - 2. Integral cable
 - 3. The sensor is individually factory-tested to determine its absolute four-digit cell constant and temperature constant for accuracy.
 - 4. Digital gateway device

2.3 Equipment

- A. The Hach 3400-SC sensor works with Hach models sc100 or sc1000 controllers only.
- B. The probe has a built in Pt 1000 RTD temperature compensator.
- C. Wetted materials as follows:
 - 1. Compression fitting sensor:
 - a. Electrodes: titanium or 316 stainless steel outer electrode for extended sensor body style used with ball valve assembly)
 - b. Insulator: PTFE Teflon®
 - c. O-ring seals: treated Viton®
 - 2. Non-metallic general purpose conductivity sensor:
 - a. Electrodes: graphite
 - b. Insulator: Ryton®
 - c. O-ring seals: Viton®
 - 3. Boiler/condensate sensor:
 - a. Electrodes: 316 stainless steel and titanium
 - b. Insulator: PEEK®
 - c. O-ring seals: fluoroelastomer
 - 4. Sanitary (CIP) flange sensor:
 - a. Electrodes: 316 stainless steel
 - b. Insulator: PTFE Teflon®
 - c. O-ring seals: Viton®

2.4 Components

- A. Standard equipment:
 - 1. Probe
 - 2. Integral cable
 - 3. Digital gateway
 - 4. Manual
- B. Dimensions: dependant on mounting configuration
- C. Weight: dependant on mounting configuration

2.5 Accessories

- A. Plug-in extension cables to extend the distance between the sensor and cable up to 1000 meters (3240 ft.).
- B. Junction box for extension cables (6-position terminal strip supplied in integrally mounted junction box of polypropylene, aluminum, or 316 stainless steel). Must be used for lengths greater than 100 meters.
- C. Extension cables
- D. Mounting hardware
- E. Compression fittings
- F. Low-volume flow chamber

PART 3 EXECUTION

3.1 Preparation

- A. The sensor must be mounted to a Hach mounting assembly directly in the solution to be measured.

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