

PART 1 GENERAL

1.1 Section includes

- A. Dissolved Oxygen for monitoring in the range of 0 to 2000 ppb for nuclear applications

1.2 Measurement Procedures

- A. The method of measurement will be Luminescent measurement technology.
 - 1. The sensor is coated with a luminescent material.
 - 2. An Active fluorescent spot is excited with blue light and a red luminescent light is detected from the spot.
 - 3. Increased oxygen in the sample decreases the time taken for the spot's fluorescence to decay and this correlates directly to the oxygen concentration in the sample.

1.3 Alternates

- A. Other methods of Dissolved Oxygen measurement are not acceptable.

1.4 System Description

- A. Performance Requirements
 - 1. Measurement range: 0 to 2000 ppb (indicative trend up to 5000 ppb)
 - 2. Accuracy : ± 0.8 ppb or 2% whichever is greater
 - 3. Limit of detection: 0.6 ppb minimum
 - 4. Resolution: 0.1 ppb
 - 5. Repeatability: ± 0.4 ppb or 1% whichever is greater
 - 6. Response time < 10 s (gas phase) ; < 30s (in water)

1.5 Environmental Requirements

- A. Operational Criteria
 - 1. Sample pressure: 1 to 20 bar abs (14.5 to 290 psia)
 - 2. Sample temperature: -5 to 50 degrees C
 - 3. Storage temperature: -5 to 100 degrees C
 - 4. Operating humidity: 5 to 95 percent non-condensing

1.6 Warranty

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

PART 2 PRODUCTS

2.1 Manufacturer

- A. Hach Company, Loveland, CO
 - 1. Model K1200 Luminescent Dissolved Oxygen sensor
 - 2. Model 510 controller

2.2 Manufactured Unit

- A. The sensor shall continuously measure the concentration of oxygen (O₂) in de-aerated water
- B. The measurement technology shall be luminescent measurement technology.
- C. The measuring range shall be from 0 to 2000 ppb O₂, with indicative trend up to 5000 ppb)
- D. The minimum detection limit shall be 0.6 ppb O₂.
- E. The accuracy shall be ±0.8 ppb or 2% of the measured value, whichever is greater.
- F. The response time (90%) shall be less than 10 seconds for gas phase and less than 30 seconds for water process.
- G. The calibration method for the sensor shall be gas phase calibration.
- H. The calibration frequency should be of 12 months or better with a measurement interval of 2 seconds
- I. The sensor shall be model Orbisphere K1200 Luminescent Dissolved Oxygen Sensor manufactured by Hach Company

Accessories

2.3

- A. Sensor Cable 5 m (16.4 Ft)

PART 3 EXECUTION

3.1 Preparation

- A. Wall mount or Panel mount
- B. Clearances: none required.
- C. Storage temperature: -5 to 100 degrees C

3.2 Installation

- A. Contractor will install the K1200/510 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.
 - 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

END OF SECTION