

PART 1 GENERAL

- 1.1 Section includes:
 - A. Hardness process monitor for continuous monitoring of Hardness in water.
- 1.2 Measurement Procedures
 - A. The hardness monitor shall continuously measure water softener levels to find hardness breakthroughs based on softener exhaustion. The monitor is used in commercial and industrial water applications. The monitor has an automatic control system that starts regeneration sequences with the alarm circuit. Hardness is determined using colorimetric method (610nm).
- 1.3 System Description
 - A. Performance Requirements
 1. Measurement Range
 - a. Hardness levels: 0.3, 1, 2, 5, 10, 20, 50, 100 ppm depending on chosen model(expressed as mg/L of CaCO₃)
 2. Accuracy
 - a. ±25% of set point value
 3. Repeatability
 - a. ±10% of set point value in 0.3 to 2 mg/L ranges
 - b. ±4% of set point value in 5 to 100 mg/L ranges
 4. Cycle time
 - a. 1.9 minutes (60 Hz) or 2.3 minutes (50 Hz), selectable
- 1.4 Certifications
 - A. EMC: CE compliant for conducted and radiated emissions CISPR 11 (Class A limits), EMC Immunity EN 61326-1 (Industrial limits), and EN 61010-1
 - B. Safety: General Purpose UL/CSA 61010-1 with cETLus safety mark; CSA C22.2 No 61010-1:2012
 - C. IP62
 - D. C-tick (EN 61326-1: 2006)
 - E. KC (EN 61326-1: 2006)
- 1.5 Environmental Requirements
 - A. Operational Criteria
 1. Storage Temperature: -40 to 60 °C (-40 to 140 °F)
 2. Operating Temperature: 5 to 40 °C (41 to 104 °F)
 3. Relative Humidity: 5 to 95 %, non-condensing
- 1.6 Warranty
 - A. Warranted from manufacturer defects for two years (Europe) or one year (all other geographies) from date of shipment.
- 1.7 Maintenance Service
 - A. Scheduled Maintenance
 1. Every 2 months :
 - a. Standardize and replenish reagents using EDTA or high-level sample
 2. Every 6 months :
 - a. Replace pump tubes
 - B. Every year :
 - a. Clean the colorimeter

- b. Replace the sample conditioning filter
- c. Replace the fuse

PART 2 PRODUCTS

2.1 Manufacturer

- A. Hach Company, Loveland, Colorado
 - 1. Hach SP510 Hardness Monitor

2.2 Manufactured Unit

- A. The SP 510 monitor detects hardness breakthrough when the capacity of a water softener is exhausted, immediately signaling the need for regeneration. Alarm points are 0.3, 1, 2, 5, 10, 20, 50, and 100 ppm (expressed as mg/L of CaCO₃) and are selected by choosing the appropriate model. Easy to read LED indicators show a simple "HARD" or "SOFT" sample status. You can also use SP 510's built-in alarm relay to actuate an external annunciator

2.3 Equipment

- A. Analyzer
 - 1. The analyzer must operate using 115/230 VAC, 70 VA, 50/60 Hz, 1.25 A Fuse
 - 2. The analyzer shall operate with an LED light source at a peak wavelength of 610nm.
 - 3. The analyzer must have one SPDT alarm relay for external annunciator or automatic water softener shutoff/regeneration cycle
 - a. 2 consecutive cycles above set point activate alarm
 - b. 1 cycle below set point cancels alarm

2.4 Components

- A. Standard Equipment
 - 1. The Hach SP 510 Hardness Monitor includes: installation kit, maintenance kit (stirring bar, strainer, spare tube assemblies, shut-off valve) and two-month supply of reagents
- B. Dimensions:
 - 1. 41.9 x 31.8 x 17.8 cm (16.5 x 12.5 x 7 in.)
- C. Weight:
 - 1. 11.3 kg (25 lb.)

2.5 Optional Accessories

- A. Power Cord, 115 Vac
- B. Power Cord, 220 Vac
- C. Reagents/Standards Replacement Kit
- D. Maintenance kit
- E. Seal, oil-tight

PART 3 EXECUTION

3.1 Preparation

- 1. Mounting
 - a. wall mount
- 2. Sample Inlet
 - a. 1/4-in. OD tube quick-disconnect fitting
- 3. Drain Outlet

- a. 1/2-in. ID flexible hose
- 4. Sample Flow
 - a. 50 to 500 mL/min, (1.8 to 18.0 oz/min) flow rate required
- 5. Sample Pressure
 - a. 2 to 75 psi (0.17 to 5.2 bar)
- 6. Sample Temperature
 - a. 5 to 40 °C (41 to 104 °F)

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