SP 510™ HARDNESS MONITOR



Applications

- Drinking Water
- Wastewater
- Power
- Industrial Water

Maximize your softener cycle time and minimize your regeneration cost.

The Hach Hach SP 510 Hardness Monitor is reliable, accurate, and virtually maintenance free. It can operate unattended for two months and still promptly and immediately signal hardness breakthrough to activate regeneration. Use it to make water softening systems more efficient and less costly.

Continuous Hardness Detection

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 $\rm mg/L$ of $\rm CaCO_3$) 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.

Low Maintenance Requirements

The SP 510 samples water every two minutes, operating automatically for up to 60 days. It is virtually maintenance-free, requiring only about 15 minutes every two months to replenish and standardize the reagents. Replace tubing in the pump system every six months.

Convenient, Trouble-Free Operation

The SP 510 monitor makes your water softening system more efficient and less costly. It eliminates the guesswork so your softener is regenerated only when needed. Regeneration based on calculation or set times can be replaced with continuous monitoring and automatic control, lowering reagent consumption.

Rugged, Lightweight and Self-Contained

The SP 510 case is made of ABS plastic which is lightweight, corrosion-resistant, and shatterproof. This sealed case is IP62-rated and has a hinged door for easy access to internal components.



Specifications*

| Range | Hardness levels: 0.3, 1, 2, 5, 10, 20, 50, 100 ppm (expressed as mg/L | Reagent Use | 500 mL each indicator and buffer every 2 months |
|---------------------------------------|---|---------------|---|
| Accuracy | CaCO ₃) ±25% of set point value | Output | 1 SPDT relay for external annunciator or automatic water softener |
| Repeatability | ±10% of set point value in 0.3 to 2 mg/L ranges | | shutoff/regeneration cycle (rated 5 amp resistive at 115 Vac) |
| | ±4% of set point value in 5 to 100 mg/L ranges | Alarm Delay | 2 consecutive cycles above set point activate alarm |
| Operating Humidity | 5 to 95%, noncondensing | | 1 cycle below set point cancels alarm |
| Range | 0 to 0070, 11011001100110111g | Alarm Type | LED indicators, HARD or SOFT |
| Storage Temperature | -40 to 60°C (-40 to 140°F) | Enclosure | ABS plastic, IP62 enclosure rating, |
| Sample Inlet Pressure to Instrument | 1 to 5 psig, 1.5 psig is optimum | | wall-mountable (brackets included), large plastic windows to view alarm and reagents levels |
| Analysis Method | Colorimetric | Power | Selectable between 115 Vac at 60 Hz |
| Light Source | LED with peak wavelength of 610 nm | | and 220 Vac at 50 Hz |
| Cycle Time | 1.9 minutes (60 Hz) or 2.3 minutes (50 Hz), selectable | Service | Standardize and replenish reagents every 2 months using EDTA or |
| Sample Flow Rate | 50 to 500 mL/min (1.8 to 18.0 oz/min) flow rate required | | high-level sample |
| | | | Replace pump tubes every 6 months |
| Sample Conditioning Inlet Pressure | 1.5 to 75 psig | Certification | NRTL certified to UL and CSA standards, and CE approved |
| Operating Temperature | 5 to 40°C (32 to 104°F) | Dimensions | Approximately 41.9 x 31.8 x 17.8 cm (16.5 x 12.5 x 7 in.) |
| Inlet Fitting | 1/4-in. OD tube quick-disconnect fitting | Weight | 11.3 kg (25 lb.) |
| Outlet Fitting | 1/2-in. ID flexible hose | | *Cubiast to obango without notice |

*Subject to change without notice

Principle of Operation

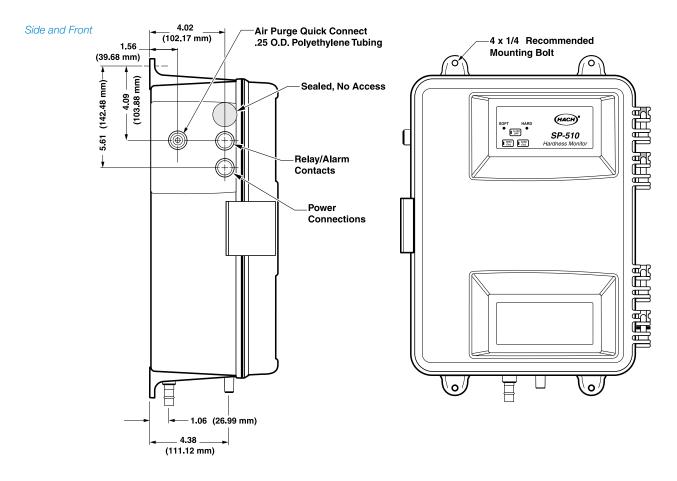
The Hach SP 510 Hardness Monitor consists of five main components—a linear peristaltic pump, an electronic control panel, a colorimeter with a solid-state mixing system, a two month supply of Hach reagents, and a corrosion-resistant case.

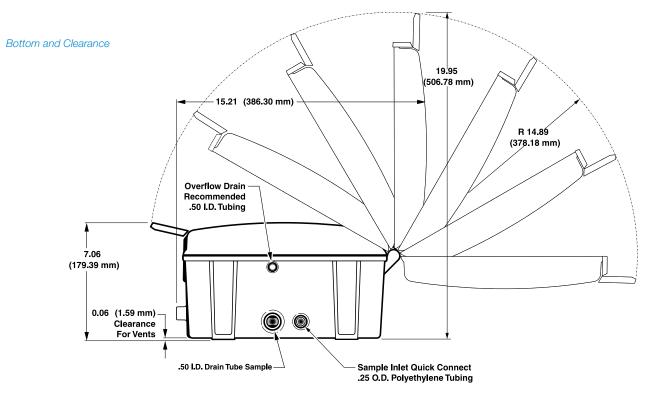
- A linear peristaltic pump/valve module is the heart of the SP 510 monitor. This module precisely controls flow of the incoming sample, meters reagents and sample, and injects t hem into the sample cell.
- Following injection, a magnetic stirrer mixes the sample and reagents in the cell, causing color development to take place.
- Light transmittance through the sample is then measured photometrically.
- A new sample is introduced and an analysis performed every two minutes. A hard water condition is indicated by the "HARD" LED display. Two consecutive "HARD" readings are required (over a span of approximately four minutes) before the alarm circuit is activated—eliminating alarms caused by momentary fluctuations. One "SOFT" indication is required before an alarm is canceled.
- A SPDT relay in the instrument can be configured to trigger remote alarms or drive regeneration controls.

SP 510™ Hardness Monitor

Dimensions

The Hach SP 510 Hardness Monitor is designed to be wall-mounted with four 1/4-inch screws. Adequate clearance must be leftat the sides and bottom of the case for plumbing and electrical connections. The sample inlet connection is 1/4-inch quick-disconnect fitting and the drain connection is 1/2-inch flexible hose. Electrical connections are made inside the instrument case. Holes for two 1/2-inch conduit fittings are provided.





Ordering Information

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.

NOTE: When choosing the appropriate model/trip point, the alarm trip point selected should be 40 to 50% higher than the normal effluent hardness. Call Hach Company for assistance in ordering the SP 510 Hardness Monitor that is appropriate for the application

Instrument

| 5410003 | SP 510 Hardness Monitor with 0.3 mg/L Trip Point |
|---------|--|
| 5410001 | SP 510 Hardness Monitor with 1 mg/L Trip Point |
| 5410002 | SP 510 Hardness Monitor with 2 mg/L Trip Point |
| 5410005 | SP 510 Hardness Monitor with 5 mg/L Trip Point |
| 5410010 | SP 510 Hardness Monitor with 10 mg/L Trip Point |
| 5410020 | SP 510 Hardness Monitor with 20 mg/L Trip Point |
| 5410050 | SP 510 Hardness Monitor with 50 mg/L Trip Point |
| 5410099 | SP 510 Hardness Monitor with 100 mg/L Trip Point |

Accessories

| 4630600 | Power Cord, 115 Vac |
|---------|---------------------|
| 4630800 | Power Cord, 220 Vac |

Buffer and Indicator Reagents

Buffer and Indicator are sold separately. All orders are for 2-month supply.

| <u>Buffer</u> | <u>Indicator</u> | <u>Range</u> |
|---------------|------------------|--------------|
| 2768549 | 2794649 | 0.3 mg/L |
| 2768549 | 2769049 | 1 mg/L |
| 2768549 | 2769149 | 2 mg/L |
| 2768549 | 2769249 | 5 mg/L |
| 2768649 | 2769249 | 10 mg/L |
| 2768749 | 2769249 | 20 mg/L |
| 2768849 | 2769249 | 50 mg/L |
| 2768949 | 2769249 | 100 mg/L |

Replacement Parts

5411900 Pump Motor Assembly

5516200 Colorimeter Flow Cell Assembly

6869800 Stir Bar

HACH COMPANY World Headquarters: Loveland, Colorado USA

orders@hach.com **United States:** 800-227-4224 tel 970-669-2932 fax 970-669-3050 tel 970-461-3939 fax **Outside United States:** int@hach.com

hach.com



