

APA 6000™ Low-Range Hardness Analyzer

Hardness

Features and Benefits

Accurate and Continuous Monitoring of Soluble Hardness

Hach's patented* APA 6000™ Low-Range Hardness Analyzer accurately and continuously measures up to two sample streams for low levels (50 µg/L to 10 mg/L) of soluble hardness. Using a precise colorimetric method, the instrument performs an analysis every four minutes. It delivers continuous, accurate, and dependable performance with minimal cost for operation and maintenance.

* U.S. Patent 5849592

Optimize Softener Performance

The APA 6000 Low-Range Hardness Analyzer is designed specifically for reliable and continuous analysis at low concentrations. Use it to establish an automatic system for monitoring softener performance in industrial, ultrapure, and water treatment processes.

Industrial and Ultrapure Water Applications

The APA 6000 Hardness Analyzer can be used to monitor both influent and effluent in industrial applications and water treatment processes including demineralizer effluent, boiler feed-water, boiler water, and process water. It is also appropriate for monitoring hardness in ultrapure processes used by pharmaceutical, electronic chip, and cosmetics manufacturers.

Easy to Use

The interface of the APA 6000 Hardness Analyzer is menu-driven with on-screen prompting, self-test diagnostics, security provisions, and flexible data logging options. Simple menus (available in English, French, German or Spanish) guide the user through each step of operation.

Automatic 2-Stream Analysis

Two separate sample streams can be monitored with the APA 6000 Hardness Analyzer when used with additional sample sequencing kits.



The Hach APA 6000 Low-Range Hardness Analyzer uses USEPA-approved calmagite chemistry to accurately and continuously measure up to two sample streams. It can operate unattended for one month and requires little maintenance. Use it to make water-softening systems more efficient and less costly.

DW

WW

PW

IW

Operation

Fluid Handling

The Hach APA 6000 Low-Range Hardness Analyzer uses patented Carrierless Sequential Injection Analysis (CSIA) for fluid handling. Analysis is fast and consumption of both reagents and sample is low. By using the sample as the dispersion carrier, a separate carrier liquid is unnecessary. The required sample volume is about 1% of that required by other analyzers.

Components

The APA 6000 Hardness Analyzer is made up of six primary components: autoburette, multi-position valve, mixing chamber, colorimetric detector, AquaTrend® Interface, and the external case.

Measurement Procedure

In a typical measurement cycle, the autoburette dispenses accurate volumes of sample, standard, and reagent through the multi-position valve into the mixing chamber. From the mixing chamber, sample and reagent are dispensed to the colorimetric detector, which produces a precise reading of the sample's hardness concentration.

Maintenance

Separate, spill-containing compartments on each side of the instrument contain all chemical reagents and standards. Solutions can be changed without opening the enclosure and influencing the internal temperature of the instrument.

DW = drinking water WW = wastewater municipal PW = pure water / power
IW = industrial water E = environmental C = collections FB = food and beverage



Be Right™

Specifications*

Range

50 µg/L to 10.0 mg/L soluble hardness (calcium and magnesium ions) as CaCO₃

Accuracy

Better than ±5% of reading or ±50 µg/L, whichever is greater

Repeatability

Better than ±3% of reading or ±30 µg/L, whichever is greater

Cycle Time

Less than 4 minutes

Calibration Cycle (typical)

Normal 35 minutes

Sample Temperature Range

5 to 50°C (41 to 122°F)

Sample Flow

100 to 1000 mL/min. maximum at basic water conditioning filter; 6 mL/min. maximum, filtered to 22 µm or less at sample inlet block

Inlet Pressure

2.5 to 100 psig at basic water conditioning filter; 0.5 to 30 psig at sample inlet block

Volume: 100 mL minimum; filtered to 22 µm or better

Sample Filter Inlet

1/4" NPT male or female

Drain Fitting

1/2" NPT barbed hose fitting

Outputs

Two 4-20 mA outputs suitable for recorders. Output span programmable over any portion of the 0 to 10 mg/L range (130 Vac isolation from earth ground).

Alarms

Two SPDT relays with contacts rated for 5A resistive load at 230 Vac. Additional relays available with optional Signal Output Modules.

Network Connectivity

AquaTrend™ network, using the Lonworks® protocol

Data Communication Distance

Maximum node-to-node distance:
400 m (1312 ft.)

Maximum total wire length:
500 m (1640 ft.)

Certification

NRTL certified to UL and CSA standards and CE approved

Power Requirements

95 to 240 Vac, 50/60 Hz

Enclosure

NEMA-4X(indoor)/IEC 529 (IP66) with provision for air purge. Reagent enclosure is drip-proof.

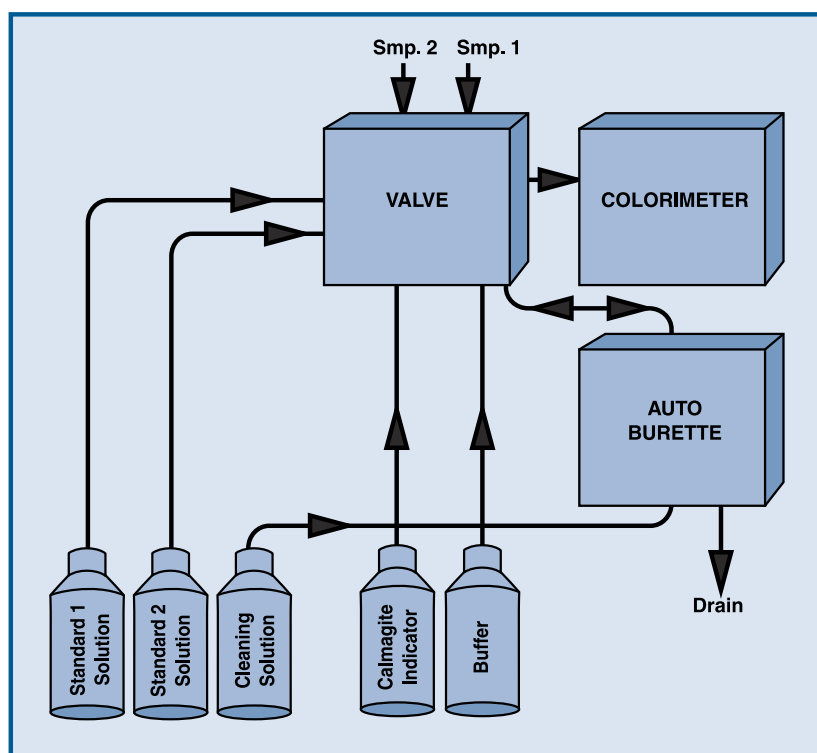
Dimensions

522 x 627 x 526 mm (21 x 25 x 21in.)

Weight

56 lbs (25.5 kg)

*Specifications subject to change without notice.



The multi-position valve directs the flow of samples, reagents, and standards through the instrument for hardness analysis every four minutes.

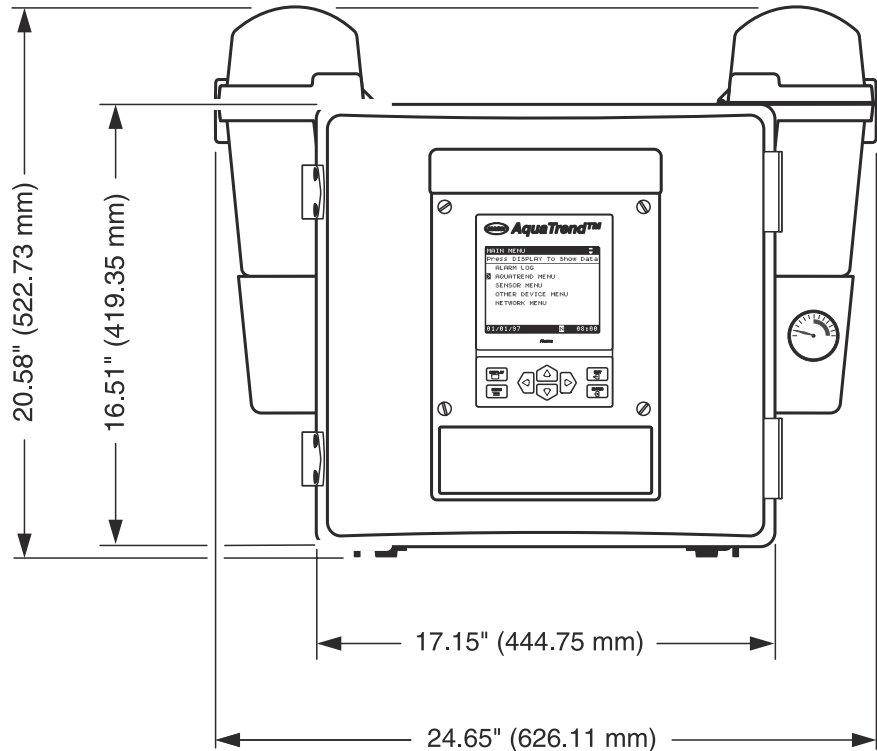
Engineering Specifications

1. The hardness analyzer shall be a continuous-reading analyzer that utilizes calmagite and Mg-EDTA for colorimetric measurement of hardness at a wavelength of 520 nm.
2. The measurement range shall be 50 to 10,000 $\mu\text{g/L}$ (parts per billion) total soluble hardness as CaCO_3 .
3. The analyzer accuracy shall be $\pm 5\%$ of reading or $\pm 50 \mu\text{g/L}$, whichever is greater; precision shall be $\pm 3\%$ of reading or $\pm 30 \mu\text{g/L}$, whichever is greater.
4. The analyzer shall display data in a numeric or graphical format.
5. The analyzer shall be capable of automatic calibration, cleaning and self-priming.
6. The analyzer shall provide for continuous purge for sample to drain to assure fresh sample to the analyzer and reduce analysis lag time.
7. Two user-selectable recorder/controller outputs of 4-20 mA, with expansion capability up to 14, shall be provided.
8. Recorder output span shall be user-adjustable over the entire span of the analyzer.
9. User-defined alarms may be programmed for sample concentration alarms, analyzer system warning and analyzer system shutdown. Two unpowered SPDT relays, also with expansion capability up to 14, shall be provided for internal alarms.
10. Two relay contacts shall be rated for 5A resistive load at 230 Vac.
11. The analyzer components shall be housed in a NEMA-4X (indoor)/IEC 529 (IP66) plastic enclosure designed for bench, wall or panel mounting. Standards and reagents shall be isolated from analyzer electronics in separate plastic containers.
12. Power requirement shall be 95 to 240 Vac, 50/60 Hz. The analyzer shall be warranted for one full year against defects in materials and workmanship and shall include a 30-day supply of standards and reagents.
13. The analyzer shall be designed to meet UL 3101-1, CSA C22.2 No. 1010.1 and EN61010-1 (IEC 1010-1) safety standards. The analyzer shall also comply with Class A limits for radio and noise emission as specified by the FCC and EN55011 (CISPR11).
14. The analyzer shall be Hach model APA 6000 Low-Range Hardness Analyzer.

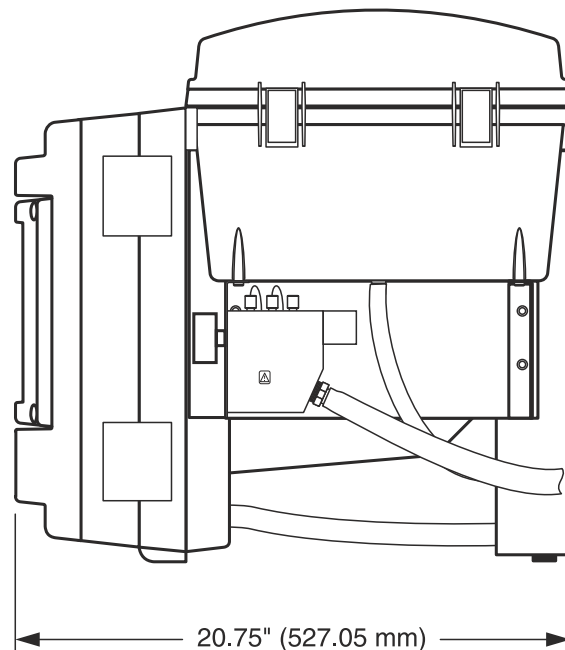
Dimensions

The APA 6000 Low-Range Hardness Analyzer should be installed as close as possible to the sampling point. The instrument will respond faster to changes in sample concentration.

FRONT VIEW



SIDE VIEW



Ordering Information

The APA 6000 Low-Range Hardness Analyzer is supplied with an Installation Kit, Maintenance Kit, Basic Sample Conditioning Kit, Manual, Quick Reference Card, and a 1-month supply of reagents.

51002-10 APA 6000 Low Range Hardness Analyzer with integral AquaTrend® Interface and Reagents, 50 to 10,000 µg/L

Reagents

- 26958-53** Reagent 1, Hardness Indicator Solution, 1 L
26957-53 Reagent 2, Hardness Buffer Solution, 1 L
26962-53 Standard 1, Hardness Standard Solution, 0 mg/L, 1 L
26963-53 Standard 2, Hardness Standard Solution, 5 mg/L, 1 L
28764-53 Cleaning Solution, APA 6000, 1 L
60019-00 Reagent set, Low Range Hardness
60020-00 Standards set, Low Range Hardness

Optional Accessories

- 46306-00** Power Cord, 120 Vac
46308-00 Power Cord, 240 Vac
51068-00 Automatic Air Backflush Kit (120 Vac)
51068-01 Automatic Air Backflush Kit (230 Vac)
52074-00 Serial I/O Module
51250-00 Signal Output Module
52400-00 Digital Display Module
51200-00 Remote AquaTrend
52010-00 PS1201 Power Supply
51339-00 APA 6000 Micor Filter System, 115 V
51339-02 APA 6000 Micro Filter System, 230 V

Cables

- 52157-XX** 22-gauge, 2-conductor cable, communication only, available in 50, 100, 250, 500, and 1000 foot increments only.
52158-XX 20-gauge, 4-conductor cable, available in 50, 100, 250, 500, and 1000 foot increments only.

At Hach, it's about learning from our customers and providing the right answers. It's more than ensuring the quality of water—it's about ensuring the quality of life. When it comes to the things that touch our lives... Keep it pure. Make it simple. Be right.

For current price information, technical support, and ordering assistance, contact the Hach office or distributor serving your area.

In the United States, contact:

HACH COMPANY World Headquarters
 P.O. Box 389
 Loveland, Colorado 80539-0389
 U.S.A.
 Telephone: 800-227-4224
 Fax: 970-669-2932
 E-mail: orders@hach.com
www.hach.com

U.S. exporters and customers in Canada, Latin America, sub-Saharan Africa, Asia, and Australia/New Zealand, contact:

HACH COMPANY World Headquarters
 P.O. Box 389
 Loveland, Colorado 80539-0389
 U.S.A.
 Telephone: 970-669-3050
 Fax: 970-461-3939
 E-mail: intl@hach.com
www.hach.com

In Europe, the Middle East, and Mediterranean Africa, contact:

HACH LANGE GmbH
 Willstätterstraße 11
 D-40549 Düsseldorf
 GERMANY
 Tel: +49 (0) 211 5288-0
 Fax: +49 (0) 211 5288-143
 E-mail: info@hach-lange.de
www.hach-lange.com

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Be Right™