

APA 6000™ Low Range Ammonia Analyzer

High sensitivity, low maintenance ammonia monitoring

Hach's APA 6000 Low Range Ammonia Analyzer is an excellent choice for superior accuracy, fast response and long-term economy. Using the modified Phenate colorimetric method, the APA 6000 assesses free ammonia with lab accuracy – every five minutes, 24 hours a day.

Applications

In any power plant – where pH levels must be meticulously controlled – the APA 6000 Low Range Ammonia Analyzer is ideal for monitoring ammonia levels in boiler water. With an operating range of 0.02 to 2.00 mg/L as N, it is also well suited for monitoring ammonia in drinking water influent.

Automatic 2-stream analysis, grab-sample convenience

The Hach APA 6000 Low Range Ammonia Analyzer can optionally monitor up to two separate sample streams with an additional sample sequencing kit.

The analyzer also allows you to take periodic grab samples. An easily accessible port allows you to introduce grab samples with a minimum of effort. Using the same port, you can verify the accuracy of the APA 6000 with a known standard.

Hach's new Quality Control Kit can make the verification process even easier. The kit, which includes a carboy and all necessary tubing and fittings, provides a continuous supply of standard for verification.

The instrument manual also provides bench method procedures for grab-sample correlation using APA reagents.

Principle of operation

The APA 6000 Low Range Ammonia Analyzer utilizes the patented CSIA (Carrierless Sequential Injection Analysis) for fluid handling. This approach allows fast analysis with low consumption of both reagents and sample. By using the sample as the dispersion carrier, the instrument makes a separate carrier liquid unnecessary – and cuts the required sample volume to about 1% of that required by other analyzers.

The instrument consists of six primary components – an autoburet, multi-position valve, mixing chamber, colorimetric detector, AquaTrend® Interface, and external case.

The autoburet first aspirates a water sample into the instrument. The reagents are then aspirated and added to the sample. The sample (or alternatively, a grab sample or standard) is pre-mixed with the reagents in the mixing chamber. The sample-reagent mixture is dispensed into the reaction coil and then to the colorimetric detector, where color intensity is measured. The concentration of ammonia (displayed as N or as NH_3) is shown on the LCD readout on the front of the case. The cycle is repeated every five minutes.

Simple menus (in English, French, German or Spanish) guide the user through each step of operation. An easy-to-use instruction manual is also included for installation, operation, calibration and troubleshooting.



The Hach APA 6000 Low Range Ammonia Analyzer

- Affordable and accurate ammonia analysis using colorimetric method
- Available in ultra-low range: 0.02 to 2.00 mg/L as N
- Flexible outputs and alarms
- Network ready using the LonWorks® protocol



Separate, spill-containing compartments on each side of the instrument contain all chemical reagents and standards. This allows you to change solutions without opening the enclosure and influencing the internal temperature of the instrument.

The internal instrument temperature is pre-set at the factory. The design of the analyzer door and instrument panel provides a small insulated space ensuring precise temperature control for accurate analysis.

Within the enclosure, a module panel separates sensitive electrical components from wetted parts. All openings to the enclosure are gasketed to protect against leakage.

Method of analysis

A modified Phenate method is used to colorimetrically determine free ammonia values. The addition of an excess of hypochlorite at the proper pH derives free ammonia values.

The method uses small amounts of sample (typically 30–40 L/month) and reagent (typically < 1L/month per reagent), measuring samples every 5 minutes. All values can be expressed as either mg/L, µg/L, ppm or ppb. The APA 6000 also allows menu-selectable conversion for displaying units in terms of either N or NH₃.

Rugged, spill-proof enclosure

The APA 6000 is enclosed in a NEMA 4X(indoor)/IP66-rated plastic enclosure that protects components from contact with chemicals and maintains a constant temperature of 50 °C for the modified Phenate method. Reagents are housed in a separate, spill-proof compartment that also provides UV protection.

Genuine Hach reagents, guaranteed accuracy

Hach's rigorous quality control program ensures that both reagents and standards used with the APA 6000 Low Range Ammonia Analyzer meet our standards for purity and stability, so they will deliver dependable results with every test.

The system is designed for both accuracy and economy. The analyzer consumes less than 1L of each reagent per month. Reagents are easily replenished without interrupting sample flow.

Automatic, reliable operation

Operating unattended for up to 30 days, the instrument auto-calibrates, auto-cleans and self-primers. A menu-driven interface allows you to set the frequency of these functions.

Calibration

Calibration cycles can be programmed for automatic or on-demand use. Automatic calibration takes less than 45 minutes. A calibration history can easily be displayed on the analyzer's LCD display.

Multi-function displays, data outputs and network integration

The AquaTrend Controller built into the APA 6000 Low Range Ammonia Analyzer displays all menu choices and measurement data for up to two sample streams.



The system can also log data and display trends numerically or graphically, and store data up to 30 days.

The APA 6000 Analyzer includes two 4–20 mA outputs and two alarm relay outputs. The operator can program the outputs anywhere within the overall analyzer range.

With optional Signal Output and Power Supply Modules, this can be expanded to 14 4–20 mA outputs and 14 alarm relay outputs. The system can be configured for up to four PID control loops to monitor and control critical processes.

Flexible datalogging capabilities allow you to graph, trend and display measurement data for the last hour, last day, or last 30 days.

An optional RS-232 interface and SIO module can provide expanded datalogging and links to PCs. Using the LonWorks® protocol, the APA 6000 can easily be linked via Hach's AquaTrend Network to other Hach instruments. Using Hach's MOD I/O interface and fast set-up software, the network can also be linked to a PLC or SCADA system with a direct, all-digital connection.

The AquaTrend Interface automatically monitors key instrument and network functions. Supervisors can easily control access to network programming functions with a four-digit password.

APA 6000 Low Range Ammonia Analyzer Specifications*

Range

0.02 to 2.0 mg/L as N

Accuracy

± 5% of reading or ± 0.02 ppm as N, whichever is greater

Repeatability

± 3% of reading or ± 0.01 ppm as N, whichever is greater

Analysis method

Colorimetric, modified Phenate

Speciation

Free ammonia (NH₃) as N; Also menu-selectable to display as NH₃

Cycle time

5.0 minutes per analysis for 1 sample stream (up to 2 streams measured with optional sequencing kit)

Sample flow

100 to 2000 mL/min.

Sample temperature

5 to 50 °C, 95% RH non-condensing

Inlet pressure

0.5 to 30 psig at sample inlet block

Reagent use

1 liter per month per reagent

Calibration cycle

User-selectable, from twice per day to weekly; approx. 45 min. per cycle

Grab sample

Temperature: 5 to 50 °C

Alarms

Two SPDT alarm relays included; total of up to 14 programmable alarm relays (with optional Signal Output Modules)

Outputs

Two 4–20 mA outputs included; total of up to 14 programmable 4–20 mA outputs (with optional Signal Output Modules) with up to four PID control loops

Network connectivity

AquaTrend network, using the LonWorks® protocol

Display

Displays data in numeric and graphical format

Compliance

UL, CSA and EIC safety standards, FCC and certification, European RFI standards, European EMI standards

Power requirements

95–240 VAC, 50/60 Hz

Enclosure

NEMA 4X(indoor) and IEC 529(IP66), ABS plastic, with provision for air purge; panel-, benchtop- or wall-mountable (brackets included)

Physical dimensions

21 in. tall, 25 in. wide, 21 in. deep (522 x 627 x 527 mm)

Weight

56 lbs. (25.5 kg)

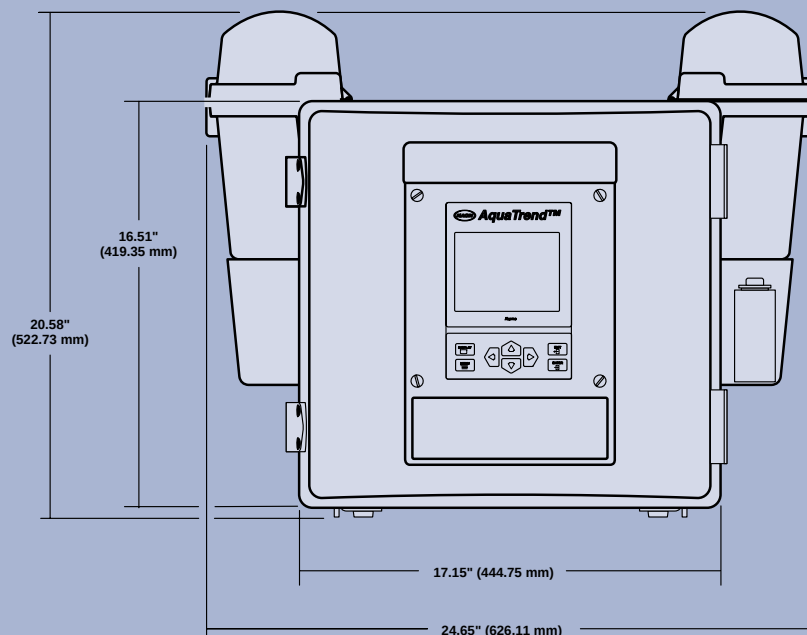
* Subject to change without notice.

APA 6000 Low Range Ammonia Analyzer Installation

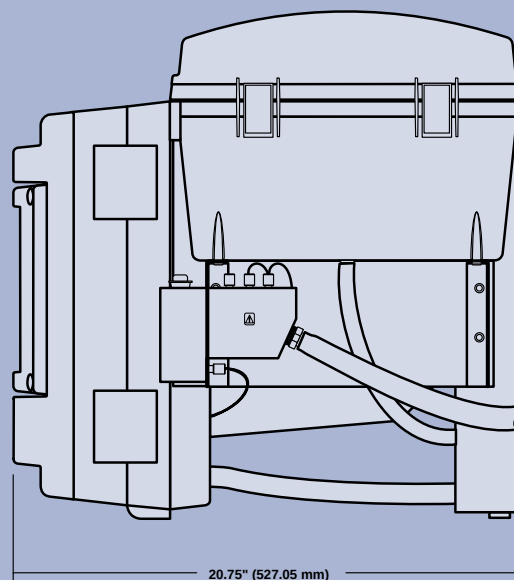
The APA 6000 Low Range Ammonia Analyzer should be installed as close as possible to the sampling point. Short distances between the analyzer and the sample stream are advantageous, since a closer installation enables the instrument to respond faster to changes in analyte concentration.

To control the Low Range Ammonia Analyzer from a remote location, connect an optional Remote AquaTrend Interface. The interface can be positioned as far away as 1,320 feet (400 m).

The analyzer can be bench-, wall- or panel-mounted in only a few minutes. All necessary mounting hardware is included.



FRONT VIEW



SIDE VIEW

How to Order

The APA Low Range Ammonia Analyzer is supplied with an Installation Kit, Maintenance Kit, Basic Sample Conditioning Kit, Manual and Quick Reference Card.

55017-10 APA 6000 Low Range Ammonia Analyzer with integral AquaTrend Interface and Reagents, 0.02 to 2.0 mg/L as N

Reagents

27763-53 Reagent 1, Indicator Solution, 1L
27764-53 Reagent 2, Buffer Solution, 1L
27765-53 Reagent 3, Hypochlorite Solution, 1L
27766-53 Standard 1, 0 mg/L NH₃, 1L
27767-53 Standard 2, 2.0 mg/L NH₃, 1L
26964-53 APA Acid Wash, 1L

Optional Accessories

46306-00 Power Cord, 120 VAC
46308-00 Power Cord, 240 VAC
62009-00 Sample Sequencing Kit (for optional 2-stream operation)
62032-00 Quality Control Kit includes carboy, tubing, and fittings
52074-00 Serial I/O Module
51250-00 Signal Output Module
51200-00 Remote AquaTrend
52010-00 PS1201 Power Supply

Cables

52157-00 22-gauge, 2-conductor cable, communication only, by the foot (also available in 100' to 1,000' lengths)
52158-00 20-gauge, 4-conductor cable, by the foot (also available in 100' to 1,000' lengths)

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

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Sample Specifications: Low Range Ammonia Analysis

The Low Range Ammonia Analyzer shall be a microprocessor-controlled process analyzer designed to use a modified Phenate method to colorimetrically monitor free ammonia at a wavelength of 650 nm. It must use the patented technique of CSIA. The measurement range shall be 0.02 – 2.00 mg/L (parts per million) as nitrogen. The analyzer accuracy shall be $\pm 5\%$ or ± 0.02 mg/L as N, whichever is greater. The analyzer shall display data in a numeric or graphical format. The low range ammonia analyzer shall be capable of automatic calibration, cleaning and self-priming. The analyzer shall also be capable of grab-sample analysis.

Two user-selectable recorder/controller outputs of 4–20 mA, with expansion capability up to 14, shall be provided. Recorder output span shall be user-adjustable over the entire span of the analyzer. Two unpowered SPDT relays, also with expansion capability up to 14, shall be provided for internal alarms. Two relay contacts shall be rated for 5A resistive load at 230 VAC. Alarms may be programmed for sample concentration alarms, analyzer system warning and analyzer system shutdown.

The analyzer components shall be housed in a NEMA-4X(indoor)/IP66 plastic enclosure designed for bench-, wall- or panel-mounting. 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.

The analyzer shall be designed to meet UL 3101-1, CSA C22.2 No. 1010.1 and EN610101-1 (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).