



### Features

- Ammonium ISE electrode
- K+, pH and Temp. electrodes
- Rugged PVC design
- Integral Spray Head Cleaner
- Internal Signal Conditioning

### Benefits

- Fast and Accurate Ammonium Measurement NH<sub>4</sub><sup>+</sup> or NH<sub>4</sub><sup>+</sup>-N
- Fully compensated for pH, K<sup>+</sup> interferences & Temperature
- Removable electrode guard for easy maintenance
- Clean sensor in situ with pressurized water or air
- Amplified signals allow up to 200 meters between Sensor and Analyzer



HYDRA® NH4-N

## Description

The HYDRA® Ammonium Analyzer measures the concentration of dissolved ammonium as nitrogen (NH<sub>4</sub><sup>+</sup>-N) in water. The sensor uses three electrodes to determine the NH<sub>4</sub><sup>+</sup>-N concentration, an Ammonium Ion Electrode, a Potassium Ion Electrode and a pH Electrode. It is designed for use in all kinds of water. Typical applications include monitoring environmental waters, lakes, streams and wells as well as wastewater treatment in aeration basins and effluent.

The Ammonium Ion Electrode provides the primary measurement. Any potassium ion in the sample generates a positive interference in the measurement, due to its similar size and charge to the ammonium ion. A Potassium Ion Electrode measures the amount of potassium ion present in the sample and HYDRA C22 Analyzer subtracts the appropriate amount of signal from the Ammonium Measurement.

The Ammonium Ion Electrode only measures the ammonium ion (NH<sub>4</sub><sup>+</sup>) not ammonia (NH<sub>3</sub>). Ammonium ion and ammonia coexist in a pH dependent ratio in solution. The more acidic pH values favor the NH<sub>4</sub><sup>+</sup> and the more basic values favor dissolved ammonia gas, NH<sub>3</sub>. The pH Electrode measures the pH and the HYDRA® C22 Analyzer calculates the total NH<sub>4</sub><sup>+</sup>-N concentration based on the pH vs. NH<sub>4</sub><sup>+</sup> concentration profile stored in the instrument.

Temperature is measured and used to compensate each of the

three electrode measurements. While the pH Electrode's response is well defined with respect to temperature, the ion electrodes, NH<sub>4</sub><sup>+</sup> and K<sup>+</sup>, tend to be less well behaved. For the best results, calibrate the sensors near the process temperature.

The HYDRA® Ammonium Analyzer is configured to periodically actuate a cleaning cycle using the integral spray cleaner in the sensor. This minimizes the formation biofilms or other coatings on the electrodes which keeps maintenance to a minimum. The period and duration of the cleaning cycles are user configurable. During the cleaning cycle the 4-20 mA output is held at either the last value or a preset value.

The rugged HYDRA® Sensor has 1 ¼" NPT rear facing threads for attaching an extension/immersion tube for easy installation from catwalks or handrails. The HYDRA sensor is submersible with an IP68 degree of ingress protection. The HYDRA sensor can not be supported by the cable and the cable must not be immersed in the water.

A removable electrode guard facilitates easy electrode replacement when necessary. The HYDRA sensor features internal signal conditioning that allows the sensor to be mounted up to 200 meters from the analyzer.

The HYDRA® Analyzer is also available in a NO<sub>3</sub><sup>-</sup> Analyzer configuration.

## Specifications

### Sensor

#### Sensor

Three Electrode system with spray cleaner, Ammonium ISE (NH<sub>4</sub><sup>+</sup>- N) is the primary measurement. The Potassium ISE and pH glass electrodes are used to compensate the NH<sub>4</sub><sup>+</sup> signal. The Sensor is waterproof with an ingress rating of IP 68.

#### Measurement Range

NH<sub>4</sub><sup>+</sup>- N: 0.1 to 14,000 ppm

#### Operating Temperature

0° C to 50° C (32° F to 122° F)

#### Min/Max Flow Rate

Minimum 0.1 m/s  
Maximum 3.0 m/s

#### Wetted Materials

PVC, PES, PVDF, PTFE, Viton, Glass, 316 SS

#### Accuracy

± 3% of reading, dependent on Calibration

#### Response Time

T90 1 minute

#### Electrode Life

ISEs: 4- 6 months, typical  
pH electrode: 6-12 months, typical

### C22 Analyzer

#### Measurements

Ammonium: 0.01 to 14,000 ppm as NH<sub>4</sub><sup>+</sup>- N  
Potassium: 0.01 to 40,000 ppm  
pH: 0 to 14 pH  
Temperature: 0° C to 100° C (32° F to 212° F)

#### Compensation

pH 4 - 10 pH  
Potassium: 0.1 to 1000 ppm

#### Display

2.5" X 1.75" backlit LCD, 4 lines of Text & Graphical

#### Enclosure

NEMA 4X, LxWxD: 5.7" x 5.7" x 7

#### Outputs

(2) 4-20 mA maximum load 800 ohms @ 24 VDC  
Configured: 0.1 to 20 mg/l NH<sub>4</sub><sup>+</sup>- N  
0 - 14 pH  
Optionally up to (4) 4-20 mA outputs\*

#### Input Power

110/220 VAC @ 50/60 Hz

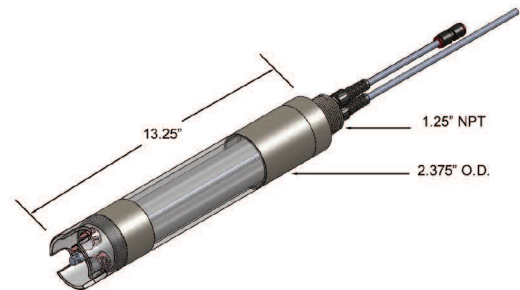
#### Alarm Relay Ratings

(2) SPDT 230 VAC/5A or 30 VDC/5A resistive max.  
Relay(1) Spray Cleaner, Relay(2) Alarm  
Optionally up to (8) Relays\*

Part No.	Model and Product Description
1290030-1	HYDRA® NH <sub>4</sub> -N Sensor, complete, NH <sub>4</sub> , K <sup>+</sup> , pH, Temp, Spray Cleaner head and 30 ft. cable
1290030-2	HYDRA® NH <sub>4</sub> -N Sensor, complete, NH <sub>4</sub> , pH, Temp, Spray Cleaner head and 30 ft. cable (No K+ Sensor)
16KA2221.K100	HYDRA® C22 NH <sub>4</sub> -N Analyzer, K <sup>+</sup> compensated, (2) 4-20 mA output, 0.1 - 20 ppm NH <sub>4</sub> -N and (2) relays*
16KA2221.J100	HYDRA® C22 NH <sub>4</sub> -N Analyzer, (2) 4-20 mA output, 0.1 - 20 ppm NH <sub>4</sub> -N and (2) relays* (No K <sup>+</sup> compensation)

Part No.	Spare Parts and Accessories Description
2005083.VIT	Ammonium Electrode Cartridge (recommended spare)
2005034.VIT	Potassium Electrode Cartridge (recommended spare)
2005145.VIT	pH Electrode Cartridge (recommended spare)
3300854-1	Replacement Spray Nozzle
3501050-1	PVC Front Sensor Guard
2010445-1	Ammonium Calibration solution, NH <sub>4</sub> -N 1 ppm
2010446-1	Ammonium Calibration solution, NH <sub>4</sub> -N 100 ppm
2010443-1	Potassium Calibration solution, 1 ppm
2010444-1	Potassium Calibration solution, 100 ppm
2010100	pH 4 Buffer Calibration solution
2010101	pH 7 Buffer Calibration solution
1000300-1	4-20 mA USB Data Logger

\* Consult Factory for Part# and pricing of optional configurations.



HYDRA® Dimensions

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