

HYDRA[®] Nitrate Analyzer



ELECTRO-CHEMICAL DEVICES

Features

- Nitrate ISE electrode
- Cl⁻ and Temp. electrodes
- Nitrate, Ammonium Option
- Rugged PVC design
- Integral Spray Head Cleaner
- Internal Signal Conditioning

Benefits

- Fast and Accurate Nitrate Measurement NO₃⁻ or NO₃--N
- Fully compensated for Cl⁻ interferences & Temperature
- Follow nitrification progress
- 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[®] NO₃-N

Description

The HYDRA[®] Nitrate Analyzer measures the concentration of dissolved nitrate as nitrogen (NO₃⁻-N) in water. The sensor uses two electrodes to determine the NO₃⁻-N concentration, a Nitrate Ion Electrode and a Chloride Ion 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.

Nitrogen primarily enters a municipal wastewater treatment plant as ammonia/ammonium compounds. Nitrification oxidizes the toxic ammonium ion into much less toxic nitrate ion using an aerobic activated sludge process. De-nitrification reduces the nitrate ion (NO₃⁻) to nitrogen gas (N₂) by an anoxic reaction in the same treatment basin or in a separate anaerobic digester. The NO₃⁻-N measurement can optimize the methanol being fed to the digester, minimizing cost, and also provide a trend of the total nitrogen (TN) in the effluent.

The Nitrate Ion Electrode provides the primary measurement. A second electrode measures the Chloride ions in the sample. The chloride ion due to its similar size and charge to the nitrate ion, causes a positive interference in the measurement. The Chloride Ion Electrode measures the amount of chloride ion present in the sample and HYDRA[®] C22 Analyzer subtracts the appropriate amount of signal from the Nitrate Measurement.

An optional pH or NH₄⁺ electrode is also available in the HYDRA[®]-

NO₃ sensor. While not required for the measurement an optional pH or ammonium electrode can provide valuable information about the process. Temperature is measured and used to compensate each of the measurements. Ion electrodes tend to be less well behaved than pH electrodes so for the best results, calibrate the sensor near the process temperature.

The rugged HYDRA[®]-NO₃ sensor has a 1 ¼" NPT rear facing thread for attaching an extension/immersion tube for easy installation from catwalks or handrails. The HYDRA-NO₃ sensor is submersible with an IP68 degree of ingress protection. A removable electrode guard facilitates easy electrode replacement when necessary. The HYDRA-NO₃ sensor features internal signal conditioning that allows the sensor to be mounted up to 200 meters from the analyzer.

The HYDRA[®] Nitrate Analyzer displays all measurements on the Home Screen. Provides (2) 4-20 mA outputs and two Alarm Relays. It is configured to periodically actuate a cleaning cycle using the integral spray cleaner in the sensor. This minimizes the formation of biofilms and other coatings on the electrodes, keeping maintenance to a minimum. The period and duration of the cleaning cycle is user configurable. The 4-20 mA output is held at either the last value or a preset value during the cleaning.

The HYDRA[®] Analyzer is also available in an Ammonium, NH₄⁺-N, Analyzer configuration.

HYDRA® Nitrate Analyzer

Specifications

Sensor

Sensor

A Three Electrode system with spray cleaner, Nitrate ISE (NO_3^- -N) is the primary measurement. The Chloride ISE is used to compensate the NO_3^- signal. An optional pH electrode is available for pH measurement. The Sensor is waterproof with an ingress rating of IP 68.

Measurement Range

NO_3^- -N: 0.1 to 14,000 ppm

Operating Temperature

0° 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

Nitrate: 0.1 to 14,000 ppm as NO_3^- -N

Chloride: 2.0 to 35,000 ppm

pH: 0 to 14 pH

Temperature: 0° to 100° C (32° F to 212° F)

Compensation

Chloride: 0.1 to 1000 ppm

pH: No pH compensation

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: Ch1- 0.1 to 20 mg/l NO_3^- -N

Ch2- 0° to 100° C or 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.

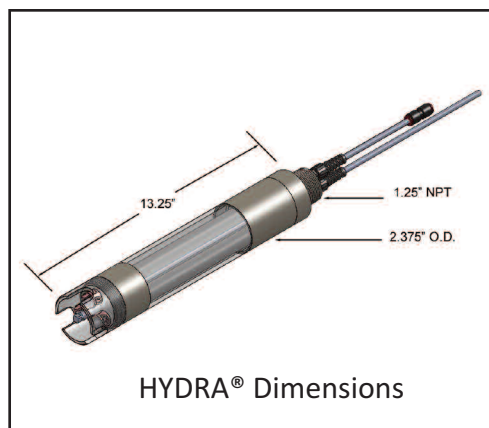
Relay(1) Spray Cleaner, Relay(2) Alarm

Optionally up to (8) Relays*

| Part No. | Model and Product Description |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| 1290030-3 | HYDRA® NO_3^- -N Sensor, complete, NO_3^- , Cl ⁻ , pH, Temp, Spray Cleaner head and 30 ft. cable |
| 1290030-4 | HYDRA® NO_3^- -N Sensor, complete, NO_3^- , Cl ⁻ , Temp, Spray Cleaner head and 30 ft. cable (No pH Electrode) |
| 1290030-5 | HYDRA® NO_3^- -N Sensor, complete, NO_3^- , Cl ⁻ , NH4 ⁺ , Temp, Spray Cleaner head and 30 ft. cable |
| 16LA2221.L100 | HYDRA® C22 NO_3^- -N Analyzer, Cl ⁻ , pH, (2) 4-20 mA output, 0.1 - 20 ppm NO_3^- -N and (2) relays* |
| 16L02221.L000 | HYDRA® C22 NO_3^- -N Analyzer, Cl ⁻ , (2) 4-20 mA output, 0.1 - 20 ppm NO_3^- -N and (2) relays* (No pH Channel) |
| 16LB2221.LT00 | HYDRA® C22 NO_3^- -N Analyzer, Cl ⁻ , NH4 ⁺ , (2) 4-20 mA output, 0.1 - 20 ppm NO_3^- -N and (2) relays* |

| Part No. | Spare Parts and Accessories Description |
|-------------|----------------------------------------------------------|
| 2005086.VIT | Nitrate Electrode Cartridge (recommended spare) |
| 2005008.VIT | Chloride Electrode Cartridge (recommended spare) |
| 2005145.VIT | pH Electrode Cartridge (recommended spare) |
| 3300854-1 | Replacement Spray Nozzle |
| 3501078-1 | PVC Front Sensor Guard |
| 2010451 | Nitrate Calibration solution, NO_3^- -N 1 ppm |
| 2010452 | Nitrate Calibration solution, NO_3^- -N 100 ppm |
| 2010453 | Chloride Calibration solution, 1 ppm |
| 2010454 | Chloride 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 other configurations



Specifications subject to change without notice.

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