



### Features

- Nitrate ISE electrode
- Cl<sup>-</sup> and Temp. electrodes
- Nitrate, Ammonium Option
- Rugged PVC design
- Integral Spray Head Cleaner
- Calibration stored in Sensor

### Benefits

- Fast and Accurate Nitrate Measurement NO<sub>3</sub><sup>-</sup> or NO<sub>3</sub>--N
- Fully compensated for Cl<sup>-</sup> interferences & Temperature
- Follow nitrification progress
- Removable electrode guard for easy maintenance
- Clean sensor in situ with pressurized water or air
- Digital Sensor for use with T80 Universal Transmitter



NO<sub>3</sub>- N HYDRA<sup>®</sup>-DS

## Description

The HYDRA<sup>®</sup> Nitrate Analyzer measures the concentration of dissolved nitrate as nitrogen (NO<sub>3</sub><sup>-</sup>-N) in water. The sensor uses two electrodes to determine the NO<sub>3</sub><sup>-</sup>-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 (NO<sub>3</sub><sup>-</sup>) to nitrogen gas (N<sub>2</sub>) by an anoxic reaction in the same treatment basin or in a separate anaerobic digester. The NO<sub>3</sub><sup>-</sup>-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 the T80 transmitter subtracts the appropriate amount of signal from the Nitrate Measurement.

An optional pH or NH<sub>4</sub><sup>+</sup> electrode is also available in the HYDRA<sup>®</sup>-NO<sub>3</sub> 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 Nitrate HYDRA<sup>®</sup>-DS sensor has a 1 1/4" NPT rear facing thread for attaching an extension/immersion tube for easy installation from catwalks or handrails. The Nitrate HYDRA-DS sensor is submersible with an IP68 degree of ingress protection. A removable electrode guard facilitates easy electrode replacement when necessary. The Nitrate HYDRA-DS sensor is a digital sensor that allows any size length of cable.

The Nitrate HYDRA<sup>®</sup>-DS Analyzer displays the required measurements on the Home Screen. Provides (2) 4-20 mA outputs and three 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.

## Specifications

### Sensor

#### Sensor

A Three Electrode system with spray cleaner, Nitrate ISE ( $\text{NO}_3^-$ -N) is the primary measurement. The Chloride ISE is used to compensate the  $\text{NO}_3^-$  signal. An optional pH or  $\text{NH}_4$  electrode is available for additional measurements. The Sensor is waterproof with an ingress rating of IP 68.

#### Measurement Range

$\text{NO}_3^-$ -N: 0.1 to 14,000 ppm  
 $\text{NH}_4^+$ -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

### T80 Analyzer

#### Measurements

Nitrate: 0.1 to 14,000 ppm as  $\text{NO}_3^-$ -N  
 Chloride: 2.0 to 35,000 ppm  
 Ammonium: 0.01 to 14,000 ppm as  $\text{NH}_4^+$ -N  
 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

#### Enclosure

NEMA 4X, LxWxD: 5.7" x 5.7" x 3.5"

#### Outputs

(2) 4-20 mA  
 Configured: 0.1 to 50 mg/l  $\text{NO}_3^-$ -N  
 0 - 14 pH

#### Input Power

110/220 VAC @ 50/60 Hz

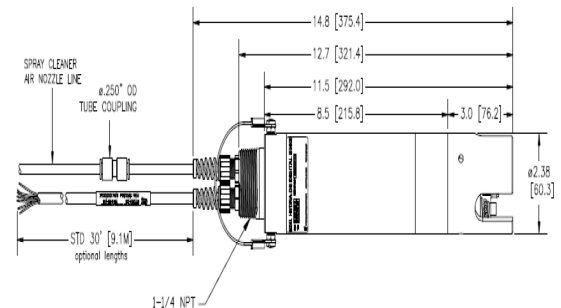
#### Alarm Relay Ratings

(2) SPDT 230 VAC/5A  
 Relay(1) Spray Cleaner, Relay(2) Alarm

Part No.	Model and Product Description
1290130-3	HYDRA® $\text{NO}_3$ -N Sensor, complete, $\text{NO}_3$ , Cl <sup>-</sup> , pH, Temp, Spray Cleaner head and 30 ft. cable
1290130-4	HYDRA® $\text{NO}_3$ -N Sensor, complete, $\text{NO}_3$ , Cl <sup>-</sup> , Temp, Spray Cleaner head and 30 ft. cable (No pH Electrode)
T80-11-212-01	T80 Transmitter $\text{NO}_3$ -N Analyzer, Cl <sup>-</sup> , pH, (2) 4-20 mA output, 0.1 - 50 ppm $\text{NO}_3$ -N and (3) 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
2010465	Nitrate Calibration solution, $\text{NO}_3$ -N 10 ppm
2010452	Nitrate Calibration solution, $\text{NO}_3$ -N 100 ppm
2010460	Chloride Calibration solution, 10 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



Ammonium Hydra-DS Dimensions

Specifications subject to change without notice.

### Represented by:

### Electro-Chemical Devices

1500 North Kellogg Dr.  
 Anaheim, California, USA 92807

Phone: +1-714-695-0051  
 +1-800-729-1333  
 Fax: +1-714-695-0057  
 email: sales@ecdi.com  
 web: www.ecdi.com

