

Ammonium Hydra®-DS

The Ammonium HYDRA®-DS Sensor is designed for continuous monitoring of dissolved ammonium as nitrogen ($\text{NH}_4^+\text{-N}$) in water applications. Utilizing a multi-electrode design, the sensor provides reliable measurement while accounting for process conditions that influence ammonium behavior. Built for environmental and wastewater applications, the HYDRA®-DS delivers stable performance in a wide range of water types, including surface water and treatment processes.

Its rugged, submersible construction and integrated cleaning functionality support long-term operation with minimal maintenance. The HYDRA®-DS integrates seamlessly with ECD Transmitters for dependable ammonium monitoring in demanding environments.



Features & Benefits

» Ammonium ISE Electrode

- Fast and Accurate Ammonium Measurement NH_4^+ or $\text{NH}_4^+\text{-N}$

» K^+ , pH and Temperature Electrodes

- Fully Compensated for pH, K^+ Interferences & Temperature

» Rugged PVC Design

- Removable Electrode Guard for Easy Maintenance

» Integral Spray Head Cleaner

- Clean Sensor in Situ with Pressurized Water or Air

» Calibration Stored in Digital Sensor

- Digital Sensor for use with T80 Universal Transmitter

Consult our Technical Support staff for additional configuration options at +1-714-695-0051 or email: sales@ecd.com

Description

The **Ammonium HYDRA® -DS Analyzer** measures the concentration of dissolved ammonium as nitrogen ($\text{NH}_4^+\text{-N}$) in water.

The sensor uses three electrodes to determine the $\text{NH}_4^+\text{-N}$ concentration, an Ammonium Ion Electrode, a Potassium Electrode and a pH Electrode.

It is designed for use in all kinds of water. Typically applications include monitoring:

- **Enviromental Waters**
- **Lakes**
- **Streams and Wells**
- **Wastewater Treatment in aeration basins and effluents**

The **Ammonium Ion Electrode** provides the primary measurement. Any Potasium 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 T80 Transmitter subtracts the appropriate amount of signal from the Ammonium Measurement.

The **Ammonium Ion Electrode** only measures the ammonium ion (NH_4^+), not ammonia (NH_3). Ammonium ion and Ammonia coexist in a pH dependent ratio in solution. The more acidic pH values favor the NH_4^+ and the more basic values favor dissolved ammonia gas, NH_3 .

The **pH Electrode** measures the pH and the T80 Universal Transmitter calculates the total $\text{NH}_4^+\text{-N}$ concentration based on the pH vs NH_4^+ 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_4^+ and K^+ , tend to be less well behaved.

For the best results, calibrate the sensors near the process temperature.

The **Ammonium HYDRA® -DS Analyzer** is configured to periodically actuate a cleaning cycle using the integral spray cleaner in the sensor.

This minimizes the formation of 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® -DS Analyzer** 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-DS is a digital sensor that allows any size length of cable.



Consult our Technical Support staff for additional configuration options at +1-714-695-0051 or email: sales@ecdi.com

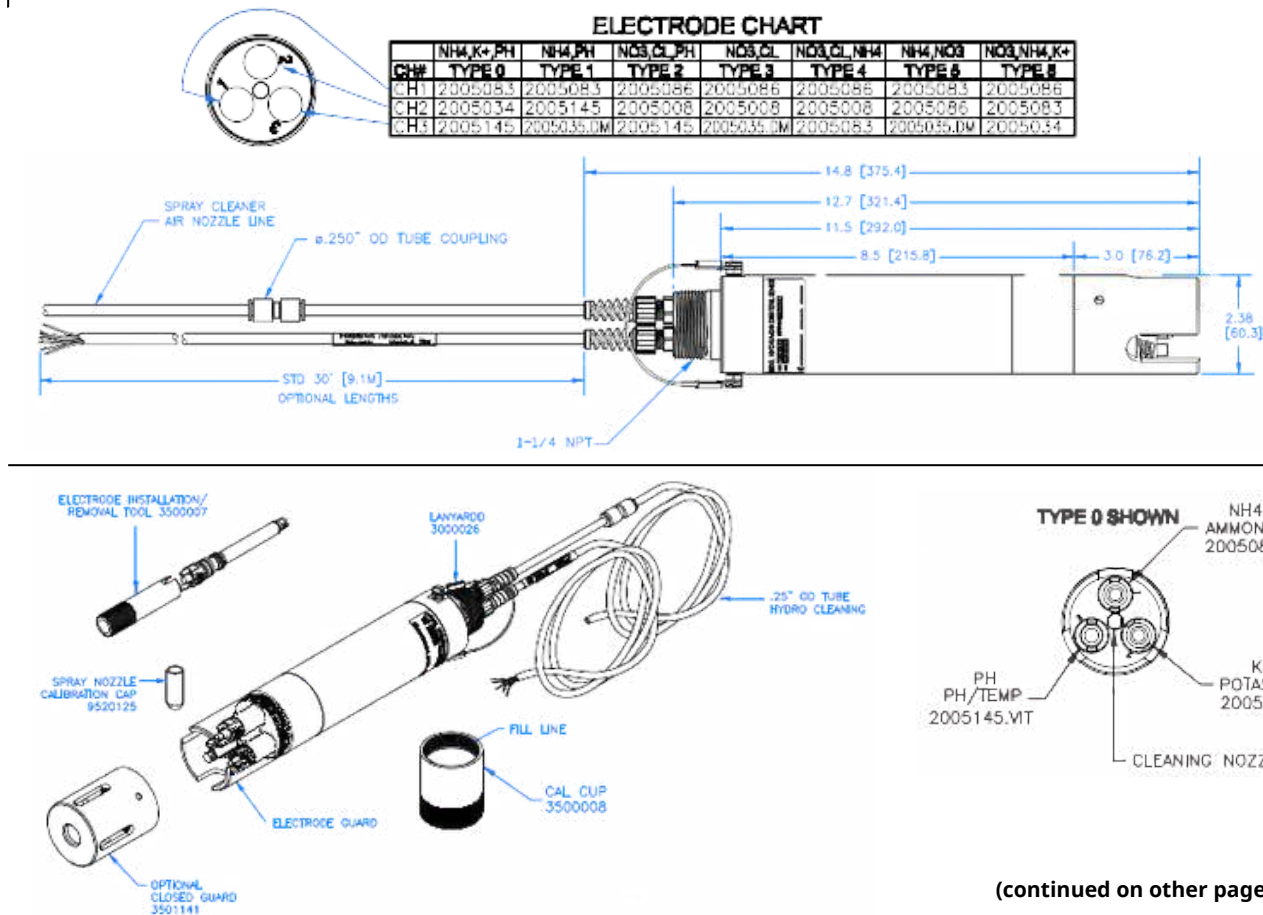
Specifications

Sensor

Sensor	- Three Electrode System with spray cleaner. - Ammonium ISE (NH_4^+-N) is the primary measurement. - The Potassium ISE and pH glass electrode are used to compensate the NH_4^+ signal. - The sensor is waterproof with an ingress rating of IP68.
Measurement Range	NH_4^+ -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 - PVDF - Viton 316 SS - PES - PTFE - Glass
Accuracy	± 2% of reading (dependent on calibration)
Response Time	T90 in 1 minute
Electrode Life	ISE's: 4 - 6 months (typical) pH Electrode: 6 - 12 months (typical)
Dimension	*specifications subject to change without notice.

T80 Transmitter

Measurements	Ammonium: 0.01 to 14,000 ppm as NH_4^+ -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: 0.01 to 1,000 ppm
Display	2.5" x 1.75" Backlit LCD
Enclosure	NEMA 4X L x W x D: 5.7" x 5.7" x 3.5"
Outputs	(2) 4-20 mA (Modbus) Configured: 0.01 to 50 mg/l NH_4^+ -N 0 - 100 mg/l K^+ *Optional HART Configuration
Input Power	110/220 VAC @ 50/60 Hz
Alarm Relay Ratings	(3) SPDT 230 VAC/5A Relay (1) Spray Cleaner



(continued on other page)

Order Information

HYDRA-DS	-	A	B	C	D	E	F	Sample Order
		0	0	7	00	03	0	HYDRA-DS-00-7000-030

- | | |
|----------|--|
| A | (NH ₄ -N) Ammonium – NH ₄ , K ⁺ , pH Electrodes |
| B | (T80) Model T80 Transmitter |
| C | (PVC) PVC |
| D | Default |
| E | 30 Ft. Cable (Standard) |
| F | Default |

A. Sensor Type

Part No.

- 0** (NH₄-N) **Ammonium** – NH₄-N, K⁺, pH Electrodes
- 1 (NH₄-NOK) **Ammonium** – NH₄, pH Electrodes (No K⁺ Electrode)
- 2 (NO₃-N) **Nitrate** – NO₃, CL, pH Electrodes
- 3 (NO₃-N, No pH) **Nitrate** – NO₃, CL Electrodes (No pH Electrode)
- 4 (NO₃-N, NH₄-N) **Nitrate / Ammonium** – NO₃, CL, NH₄ Electrodes
- 8 (NO₃-N, NH₄-N) **Nitrate / Ammonium / Potassium** – NO₃, NH₄, K⁺ Electrodes
- 9 **Ammonium or Nitrate** – No Electrodes

B. For Use With

Part No.

- 0** (T80) Model T80 Universal Transmitter
- 1 (LQ800) Model LQ800 Controller

C. Housing Material

Part No.

- 70** (PVC) PVC

D. Default Part No.

Part No.

- 00** N/A

E. Cable Length

Part No.

- 03** 30 ft. Cable (Standard)
- 04 40 ft. Cable
- 05 50 ft. Cable
- 0A 100 ft. Cable
- 0X Other Lengths, Please Consult Factory or Sales Representative

F. Default Part No.

Part No.

- 0** N/A

(continued on other page) 

 **World Headquarters:** 1500 North Kellogg Dr. | Anaheim, California, USA 92807

 **Phone:** 714-695-0051

 **Fax:** 714-695-0057

 **Email:** sales@ecdi.com

 **www.ecdi.com**

©Electro-Chemical Devices, 2025. All rights reserved.

Equipment and Specifications may be updated periodically to enhance performance and reliability.



Order Information

	A	B	C	D	E	F	Sample Order
HYDRA-DS	- 0	0	- 7	00	- 30	0	HYDRA-DS-00-7000-030

(A)	(NH ₄ -N) Ammonium – NH ₄ , K ⁺ , pH Electrodes
(B)	(T80) Model T80 Transmitter
(C)	(PVC) PVC
(D)	Default
(E)	30 Ft. Cable (Standard)
(F)	Default

Hydra-DS Transmitters/Controllers

Part No.

T80	See T80 Spec Sheet (T80-11-XXX-XX)
T80	See LQ800 Spec Sheet (LQ800-80-288-01)

Hydra-DS (NH₄-N & NO₃-N) Accessories

Mounting

Part No.

1000254-X	Immersion Assembly, 1½" Slip x 45°, 1¼" NPT Sensor Connection and 1½" Slip x Cable Feed Through Elbow Cap, X = Length in ft.
1000254-99	Immersion Assembly, 1½" Slip x 45°, 1¼" NPT Sensor Connection and 1½" Slip x Cable Feed Through Elbow Cap, Fittings Only, User Supplied Pipe (1½" Pipe)
1000255-1	2" Handrail Swivel Mounting Bracket
1000260-1	GFR Polyester Sun Shield with Pole Mounting (2" Hardware)
1000260-7	Stainless Steel Sun Shield with Pole/Rail Mounting
1000178-1	Junction Box Hydra Controller (NO ₃ -CL-pH)
1000178-2	Junction Box Hydra Controller (NH ₄ -K ⁺ -pH)
1000178-3	Junction Box Hydra Controller (NO ₃ -CL-NH ₄)
3600143	Fitting 2½" MNPT PVC
1000465-1	Flow Cell PVC 1" Slip Entries
1000465-2	Flow Cell PVC ¾" Slip Entries
1000465-3	Flow Cell PVC ¼" Tube Fittings

Calibration

2010500-1	Calibration Solution Kit: 500 ml bottles of 10 ppm / 100 ppm Ammonium and Potassium Ion Solutions and pH 4.00 and pH 7.00 buffers
2010500-2	Calibration Solution Kit: 500 ml bottles of 10 ppm / 100 ppm Ammonium and pH 4.00 and pH 7.00 buffers (No Potassium)
2010449	Ammonium Calibration Solution: NH ₄ -N, 10 ppm (30-Day Shelf Life)
2010446	Ammonium Calibration Solution: NH ₄ -N, 100 ppm (30-Day Shelf Life)
2010441	Potassium Calibration Solution, 10 ppm
2010441	Potassium Calibration Solution, 100 ppm
2010100	pH Calibration Buffer, 4.00 pH
2010101	pH Calibration Buffer, 7.00 pH
2010103	pH Calibration Buffer, 10.0 pH
2010510-1	Calibration Kit: 500 ml bottles of 10 / 100 ppm NO ₃ -N, 100 / 1,000 ppm Cl and pH 4.00 / pH 7.00 buffers
2010510-2	Calibration Kit: 500 ml bottles of 10 / 100 ppm NO ₃ -N and 100 / 1,000 ppm Cl
2010510-3	Calibration Kit: 500 ml bottles of 10 / 100 ppm NO ₃ -N, NH ₄ -N and 100 / 1,000 ppm Cl
2010465	Nitrate Calibration Solution: NO ₃ -N, 10 ppm
2010452	Nitrate Calibration Solution: NO ₃ -N, 10 ppm
2010454	Chloride Calibration Solution: 100 ppm
2010160	Chloride Calibration Solution: 1,000 ppm
2010500-1	Calibration Kit: 500 ml bottles of 10 / 100 ppm NH ₄ -N, K ⁺ and pH 4.00 / pH 7.00 buffers
2010500-2	Calibration Kit: 500 ml bottles of 10 / 100 ppm NH ₄ -N and pH 4.00 / pH 7.00 buffers

Represented By:

(continued on other page)  **World Headquarters:** 1500 North Kellogg Dr. | Anaheim, California, USA 92807 **Phone:** 714-695-0051 **Fax:** 714-695-0057 **Email:** sales@ecd.com **www.ecdi.com**

©Electro-Chemical Devices, 2025. All rights reserved.

Equipment and Specifications may be updated periodically to enhance performance and reliability.



Order Information

	A	B	C	D	E	F	Sample Order
HYDRA-DS	- 0	0	- 7	00	- 30	0	HYDRA-DS-00-7000-030

- (A)** (NH₄-N) Ammonium - NH₄, K⁺, pH Electrodes
- (B)** (T80) Model T80 Transmitter
- (C)** (PVC) PVC
- (D)** Default
- (E)** 30 Ft. Cable (Standard)
- (F)** Default

Data Logger

Part No.

1000300-1 4 - 20 mA USB Data Logger
 9130007 Spare Battery for USB Data Logger **Dangerous Goods*

Hydra-DS, NH₄-N & NO₃-N Spare Parts

2005145.VIT pH Replacement Electrode Cartridge (Recommended Spare Part)
 2005034.VIT Potassium Electrode Cartridge (Recommended Spare Part)
 2005086.VIT Nitrate Electrode Cartridge (Recommended Spare Part)
 2005008.VIT Chloride Electrode Cartridge (Recommended Spare Part)
 2005083.VIT Ammonium Electrode Cartridge (Recommended Spare Part)
 2000250-1 Polish Kit: PION, Paper (for Chloride, Silver, Cyanide, Copper, Bromide, Sulfide, Cadmium and Lead)
 3300854-1 Replacement Spray Nozzle
 3501078-1 PVC Front Sensor Guard
 3500007 Electrode Insertion Tool
 3500008 Calibration Cup
 5000732-30 Tubing for Cleaner, ¼" Black PP Tubing, 30 ft.

Represented By:



World Headquarters: 1500 North Kellogg Dr. | Anaheim, California, USA 92807
Phone: 714-695-0051 **Fax:** 714-695-0057 **Email:** sales@ecdi.com
www.ecdi.com

©Electro-Chemical Devices, 2025. All rights reserved.
 Equipment and Specifications may be updated periodically to enhance performance and reliability.

