

## CROSS SMART SENSOR

### Ammonium/Nitrate ISE Sensor

ELECTRO-CHEMICAL, DIGITAL TECHNOLOGY, OPTIMIZED MEASURES



#### FEATURES & BENEFITS

##### AM7 Ammonium Sensor:

- Ammonium ISE electrode,  $K^+$ , pH and Temperature electrodes.
- Fast and accurate Ammonium measurement  $NH_4^+$  or  $NH_4^+ - N$ ; Fully compensated for pH,  $K^+$  interferences & Temperature.

##### NO7 Nitrate Sensor:

- Nitrate ISE electrode,  $Cl^-$  and Temp. electrodes.
- Fast and accurate Nitrate measurement  $NO_3^-$  or  $NO_3^- - N$ ; Fully compensated for  $Cl^-$  interferences & Temperature (Optional pH electrode).

- The **AN7 Ammonium/Nitrate Sensor** is optional for both Ammonium & Nitrate measuring at same time.

- Rugged PVC design, Removable electrode guard for easy maintenance.

- Integral Spray Head Cleaner, Cleans the sensor in situ with pressurized water or air.

- Internal Signal Conditioning, RS485 Modbus Digital signals allow up to 300 meters long communication between the Sensor and the GDC

## DESCRIPTION

The **AM7 Ammonium Sensor** measures the concentration of dissolved ammonium nitrogen ( $\text{NH}_4\text{-N}$ ) in water. The sensor uses three electrodes to determine the  $\text{NH}_4^+$ -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 the digital processor in the sensor subtracts a certain amount of signal contributed by the Potassium ions from the overall Ammonium Measurement.

The Ammonium Ion Electrode only measures the ammonium ion ( $\text{NH}_4^+$ ) not ammonia ( $\text{NH}_3$ ), although Ammonium ion and ammonia coexist in a pH-dependent ratio in solution.

The more acidic pH values favor the  $\text{NH}_4^+$  and the more basic values favor dissolved ammonia gas,  $\text{NH}_3$ . The pH Electrode measures the pH and the digital processor in the sensor calculates the total  $\text{NH}_4^+$ -N concentration based on the pH vs.  $\text{NH}_4^+$  concentration 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,  $\text{NH}_4^+$  and  $\text{K}^+$ , tend to be less well behaved. For the best results, calibrate the sensors close to the process temperature.

The rugged AM7 Sensor has a 1-1/2" NPT rear facing threads for attaching an extension/immersion tube for easy installation from catwalks or handrails. The AM7 sensor is submersible with an IP68 degree of ingress protection. The AM7 sensor cannot support its weight by the attached cable

A removable electrode guard facilitates easy electrode replacement when necessary. The sensor features an internal digital signal conditioning unit that allows the sensor to be mounted up to 300 meters from the GDC.

The **NO7 Nitrate Sensor** measures the concentration of dissolved nitrate nitrogen ( $\text{NO}_3\text{-N}$ ) in water. The sensor uses two electrodes to determine the  $\text{NO}_3^-$ -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 ( $\text{NO}_3^-$ ) to nitrogen gas ( $\text{N}_2$ ) by an anoxic reaction in the same treatment basin or in a separate anaerobic digester. The  $\text{NO}_3^-$ -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 their similar size and charge to the nitrate ion, cause a positive interference in the measurement. The Chloride Ion Electrode measures the chloride ion present in the sample and digital processor in the sensor subtracts a certain amount of signal contributed by the chloride ions from the Nitrate Measurement.

An option pH electrode is also available in the NO7 sensor. Although it is not required for the measurement, it can provide valuable information about the process. Temperature is also 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, please calibrate the sensor close to the process temperature.

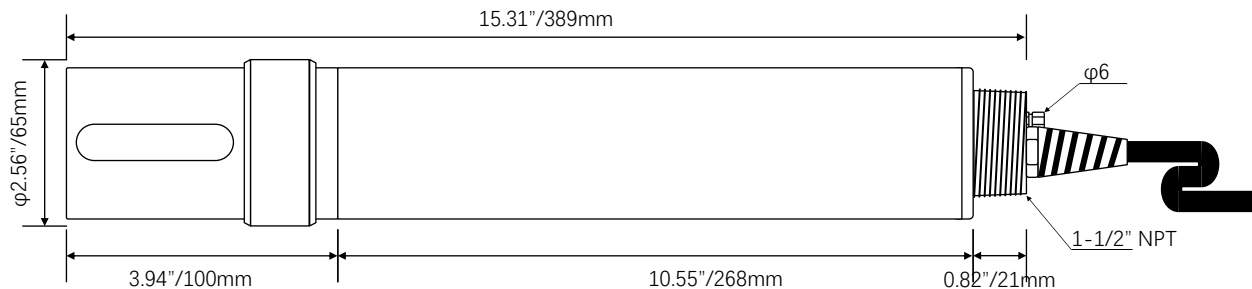
The rugged NO7 sensor has a 1-1/2" NPT rear facing thread for attaching an extension/immersion tube for easy installation from catwalks or handrails. The NO7 sensor is submersible with an IP68 degree of ingress protection.

A removable electrode guard facilitates easy electrode replacement when necessary. The sensor features an internal digital signal conditioning unit that allows the sensor to be mounted up to 300 meters from the GDC.

The **AN7 Ammonium/Nitrate Sensor** is optional for simultaneous Ammonium and Nitrate measurement needs.

SPECIFICATION	
Principle	Ion selective electrodes method
Measurement Range	Ammonium: 0.02 to 20.00 ppm, 100 / 500 / 1000 ppm Nitrate: 0.02 to 20.00 ppm, 100 / 500 / 1000 ppm pH: 0 to 14; Temp.: 0 to 100 °C (32 °F to 212 °F)
Accuracy	±3% of reading, depends on Calibration
Revolution	0.01 ppm
Repeatable	2%
Response Time	T90 < 1 minute
Flow Rate	Max. 3.0m/s
Automatic Compensation	Temp.: 0 to 100 °C Optional: pH, K <sup>+</sup> , Cl <sup>-</sup>
Max Pressure	0.5 bar
Operating Temp.	0 to 50 °C
Process Connection	1.5" NPT
Material	SS316, PVDF, PTFE, Glass
Digital Interface	RS485, Modbus RTU
Power Supply	24VDC by GDC, Max. 1W
Auto-Cleaning	3 to 5 bar air or water
IP Rate	IP68

## DESCRIPTION



## ORDER CODE

<b>AM7</b> Ammonium Analyzing Sensor	
<b>NO7</b> Nitrate Analyzing Sensor	
<b>AN7</b> Ammonium & Nitrate Analyzing Sensor	
- NO pH Compensation	-pH with pH Compensation
- NO Ion Compensation	
-K Potassium ion Compensation for Ammonia	
-Cl Chloride ion Compensation for Nitrate	
-C20 20' Cable	-C30 30' Cable
-C50 50' Cable	More length cable contact factory
<b>AM7 -pH - -C30</b>	



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