



# ECtox Ammonia Gas Detection Device

Preliminary Technical Data

Long Lifetime

## » Product Overview

The Ammonia Gas Detection Device, in combination with the principle of coulometry, delivers a high-precision gas detection technology. The higher the ammonia concentration the faster the sensor will be drained. Therefore the sensor lifetime will deteriorate rapidly and more maintenance will be needed.

The ammonia concentration in the livestock industry has various negative effects on the animals and our environment. In a high ammonia concentrated environment the livestock has a higher risk of contracting a disease. The air inside is polluted and has a pungent smell.

ECtox's big advantage, while continuously monitoring with a high or low ammonia concentration, is its long lifetime. A pump easily transports the gas to the sensor without the need to calibrate. The sensor can be used for livestock farms, ammonia leakage detection and cooling storages. The output signal, RS485 (Modbus), will effortlessly connect with a gas detector, DCS, PLC or wireless systems.

## » Features

- ☞ Coulometric measuring system  
Works in continuous Ammonia Background concentration
- ☞ Combined with intelligent algorithms it has better adaptability to the environment, higher accuracy in detection and stable zero point
- ☞ With pump, no calibration with span gas needed
- ☞ New microcircuit design, strong anti-electromagnetic interference ability
- ☞ No temperature and humidity influence
- ☞ RS485 output, 5-12V DC power supply
- ☞ Stainless steel housing
- ☞ RoHS eco-friendly design
- ☞ Self-monitoring of the sensor function



## » Application

- ☞ Livestock farming
- ☞ Leakage detection
- ☞ High concentration monitoring
- ☞ In high temperature conditions
- ☞ Cooling storage



## » Principle

The Ectox device contains an ECSense solid electrolyte NH<sub>3</sub> gas sensor featuring long lifetime, robustness and selectivity. Based on a specific electrochemical reaction and in combination with a sample pump the device measures Ammonia concentration in a wide range.

The gas reaches the working electrode of the sensor by a certain pump volume, which is always constant. All NH<sub>3</sub> in the offered gas volume will be consumed by the sensor. It creates a signal peak, which is proportional to the Ammonia concentration in the measuring gas. No calibration is necessary due to the coulometric measuring principle.

## » Cross Sensitivity

Gas	Formula	Concentration (ppm)	Response(ppm)
Carbon dioxide	CO <sub>2</sub>	5	0
Carbon monoxide	CO	100	0
Chlorine	Cl <sub>2</sub>	1	0
Hydrogen	H <sub>2</sub>	100	0
Hydrogen sulfide	H <sub>2</sub> S	50	0
Arsine	AsH <sub>3</sub>	0.2	0
Hydrogen chloride	HCl	5	0
Nitrogen dioxide	NO <sub>2</sub>	10	0
Sulfur dioxide	SO <sub>2</sub>	2	0
Carbon dioxide	CO <sub>2</sub>	5000	0
Carbon monoxide	CO	1	0

Note: 1) The above interference factors may differ from sensor to sensor and service life, please refer to the actual test results.  
 2) This table is not complete for all gases, and the sensor may be sensitive to other gases.

## » Order Information

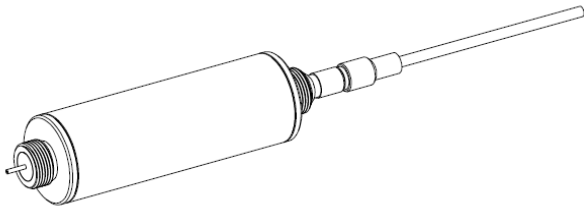
Product Name	Part Number	Range	Resolution
Ammonia Gas Detection Device	04-ECtox-NH <sub>3</sub> -50-01	0-50ppm	0.01ppm
Ammonia Gas Detection Device	04-ECtox-NH <sub>3</sub> -500-01	0-500ppm	0.1ppm
Cable	02-LEMO-HXT-1423-01		

## » Specification

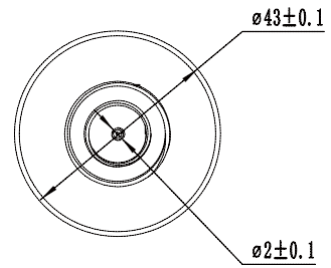
Principle	<b>Coulometric</b> Solid Polymer Electrochemical Detection Technology	
Detection of gas	Ammonia	
Detection Range	0-50ppm; Resolution: 0.01ppm	Lowest Detection Limit: 0.1ppm
Detection Range	0-500ppm; Resolution: 0.1ppm	Lowest Detection Limit: 1ppm
Full-scale accuracy error	± 5% F.S	
Repeatability	≤2%	
Settling time	Store under clean air power for the first 60 min Note: Exposure to harsh chemicals, high concentrations of alcohol, acetone, and ethanol gas during storage may lead to extended warm-up time	
Response time	Dependent on the selected measuring Period, <b>between 10 s and 15 min ??????</b>	
Calibration Gas	The gas distribution standard uses clean air for zero point adjustment, the humidity is 50%, and the normal temperature environment	
Sensor expected life time	2 years in air Note: Temperature (0-25) °C, humidity (30-50)% RH, the measured gas concentration is within the range, there is no gas environment that affects the warm-up time mentioned above	
Output	RS485 digital signal( Modbus protocol), Baud rate: 9600 Cable: 4 <b>Wire</b>	
Get data command	See ECtox protocol document for details	
Working Voltage	5 - 12V DC	
Maximum Current Consumption	1A	
Maximum Power Consumption	5W	
<b>Device</b> Working temperature	-20°C to + 50°C	
<b>Sample Gas</b> Temperature	-40°C to + 200°C	
<b>Device</b> Working humidity	(15-95) % RH. (non-condensing)	
<b>Sample Gas</b> working humidity	0% RH.to 99%RH.( non condensing)	
Working pressure	Atm ± 10% Keep Stable Pressure	
Indoor Use without Filter size	156 x 43 (mm)	
Outdoor Use <b>with</b> Filter size	NA (mm)	
Weight	450g	
Temperature and humidity sensor Data	Temperature Range: (-40 - 55) °C	Relative error: ± 0.2 °C
	Humidity measurement range: (10 - 95)% RH. non-condensing	Relative error: ± 2%
Warranty	12 months from the date of shipment	

» Structure Diagram (unit: mm)

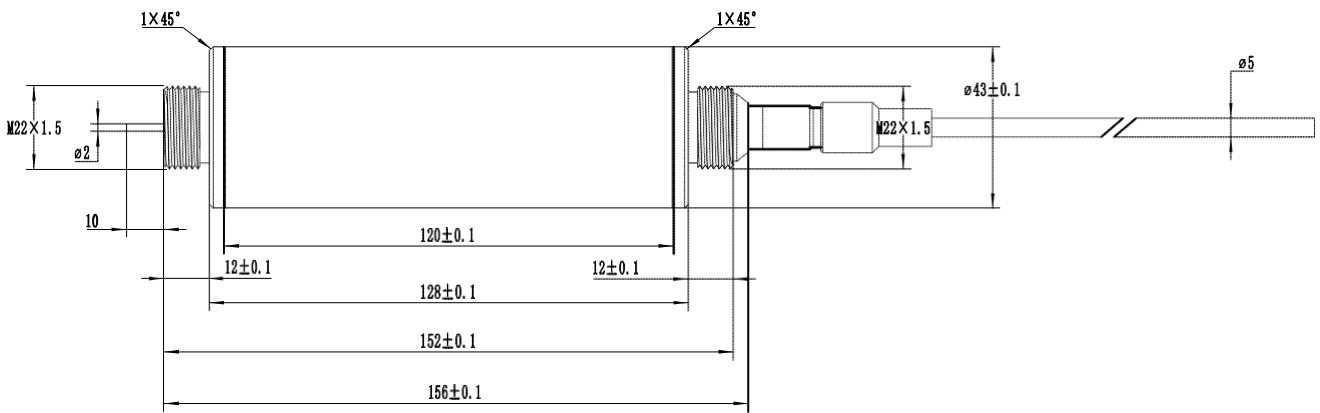
Ammonia Gas Detection Device Dimension diagram



Product Schematic



Front View



Side View

## » User Guide

### Disclaimer

EC Sense Performance data stated is based on test conditions with new sensors at 25°C, 55%rH and 1 atm, using EC-Sense calibration Systems and AQS Testing System. Cross sensitivity gases are not target gases. Relations and performance can change, also with ageing of the sensor. In the interest of continued product improvement, EC-Sense reserves the right to change design features and specifications without prior notification. We do not accept any legal responsibility for customer applications of our sensors. EC-Sense accepts no liability for any consequential losses, injury or damage resulting from the use of this document, the information contained within or from any omissions or errors here in. This document does not constitute an offer for sale and the data contained is for guidance only and may not be taken as warranty. Any use of the given data must be assessed and determined by the user there of to be in accordance with federal, state and local laws and regulations. All specifications outlined are subject to change without notice.

### Warning

The EC-Sense sensor is designed to be used under various environmental conditions. During storage, assembly and operation, due to the principle and characteristics of the liquid electrochemical sensor, in order to ensure normal use, users should strictly follow this article when using this module. General-purpose PCB circuit board application methods and illegal applications will not be covered by the warranty. Although our products have high reliability, we recommend checking the module's response to the target gas before use to ensure on-site use. At the end of the product's service life, please do not discard any electronics in household waste. Please dispose it in accordance with local government regulations on electronic waste recycling.