



# EcoSense NH<sub>3</sub> Toxic Ammonia Gas Detection Device Long Lifetime

Technical Datasheet



# EcoSense NH3 Toxic Ammonia Gas Detection Device Datasheet

Safety | Environmental Protection | Health



## Product Overview

Ammonia concentration in farming has various negative effects on poultry and livestock, as well as on our own environment. In a high ammonia concentrated environment, poultry and livestock have a far higher risk of contracting bacterial diseases. The air surrounding farms, both inside and outside, can also become polluted with pungent smells.

The EcoSense NH3 Toxic is an Ammonia gas detection device. In combination with the principle of coulometry, the device delivers high-precision gas detection technology.

The main advantage of the EcoSense NH3 detection device is its long lifetime whilst continuously working with a high ammonia background concentration. A pump in the device transports the gas to the sensor without the need to calibrate.

The sensor can be used for poultry and 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.

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## Features

- Smart measuring system
- Works on background Ammonia concentration continually
- Combined with intelligent algorithms, it has better adaptability to the environment
- Higher accuracy in detection and stable zero point
- With pump, no calibration with NH<sub>3</sub> span gas needed
- New microcircuit design, strong anti-electromagnetic interference ability
- No temperature and humidity influence
- RS485 output, 5-12V DC power
- Stainless steel housing, water and dust proof, anti-corrosion
- The detection range is automatically adjusted to the concentration range of the measured gas, from ppb to higher ppm level
- Continuously monitors its own fault conditions, Sensor, Pump, Power etc.
- RoHS eco-friendly design
- Self-monitoring of the sensor function

## Application

- Poultry and Livestock farming
- Leakage detection
- High concentration monitoring
- High temperature conditions
- Process Ammonia monitoring
- Cooling storage



NH<sub>3</sub> Ammonia

# EcoSense NH3 Toxic

## Ammonia Gas Detection Device Preliminary Datasheet

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### Principle

The device contains our 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> gas 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.

Usually, the speed of diffusion and convection is slow or depends on the environment, whilst temperature and different concentrations influence the speed of molecular motion. The EcoSense device's sampling system is specifically designed for different densities and greater ease of sampling.

### 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

**Note:**

- 1 ) The above interference factors may differ from sensor to sensor and within 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 not listed.

### Order Information

Product Name	Part Number	Range	Resolution
Ammonia Gas Detection Device	NH <sub>3</sub> -500	0-500ppm	0.1ppm
Ammonia Gas Detection Device	HT-NH <sub>3</sub> -500	0-500ppm	0.1ppm
Cable	LEMO-HXT-1423	10m as standard. Other lengths by special request	
Fixed Assembly	Fix-C45	Optional accessory	

**Note:** HT version is suitable for higher temperature applications.

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## Specification

Principle	Coulometric Solid Polymer Electrochemical Detection Technology		
Detection of gas	Ammonia		
Detection Range	0-500ppm; Resolution: 0.1ppm	Lowest Detection Limit: 1ppm	
Full-scale accuracy error	±5% F.S		
Repeatability	≤2%		
Warm-up time	Run under power and measurement conditions for first 60 minutes to enable a stable signal. Exposure to harsh chemicals, high concentrations of alcohols, acetone or ethanol gas during storage may lead to extended warm-up times.		
Response time	Dependent on the selected measuring period, between 1 to 10min		
Sensor expected life time / Long-Term Drift	≥ 2 years / < 1% / month		
Output	RS485 (Modbus protocol), Baud rate: 9600 4Pin Lemo Cable with 10m (Other lengths by request)		
Calibration Gas	The gas distribution standard uses clean air as the background gas, with humidity 50% and normal temperature environment.		
Data commands	See protocol document for details		
Working Voltage	5-12V DC		
Maximum Current Consumption	1A		
Maximum Power Consumption	5W		
Working temperature	-20°C to +55°C		
Optimal working temperature	25°C		
Working humidity	15-95% RH. Non-condensing		
Optimum working humidity	50% RH.		
Working pressure	Atm ± 10% Keep Stable Pressure		
Size	159 x 43 (mm)		
Weight	Device: 450g, Lemo with 10m cable: 400g		
Temperature and humidity sensor data	Temperature Range: -40°C to +85°C	Relative error: ± 0.2 °C	
	Humidity measurement range: 10 - 95% RH. non-condensing	Relative error: ± 2%	
Warranty	12 months from the date of manufacture		

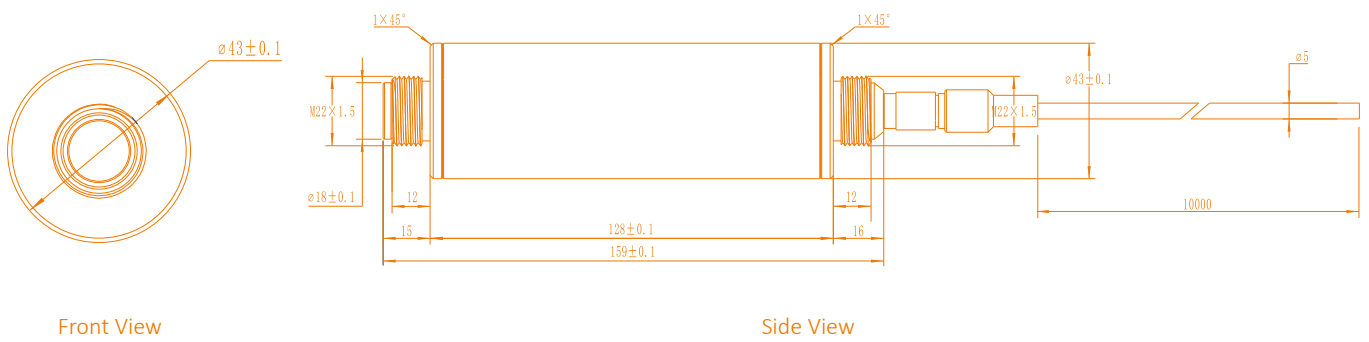
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## Structure Diagram (unit: mm)

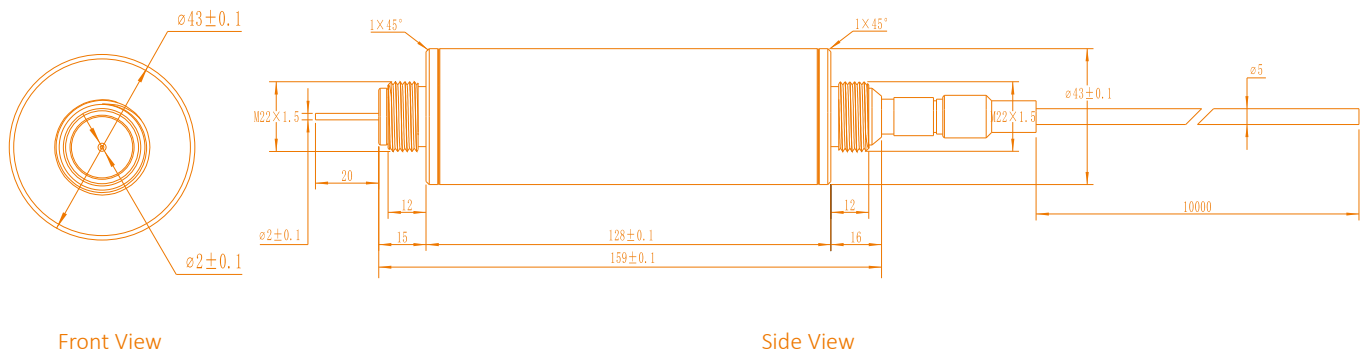
Ammonia Gas Detection Device Standard Version

NH<sub>3</sub>-500



Ammonia Gas Detection Device High Temperature Version

HT-NH<sub>3</sub>-500



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## Disclaimer

Performance data stated is based on test conditions with new sensors at 25°C, 55%rH and 1 atm, using manufacturer calibration systems and Testing System. Cross sensitivity gases are not target gases. Performance characteristics on this data sheet outline the performance of newly supplied sensors. Output signal can drift below the lower limit over time. Relationships and performance can change with ageing of the sensor.

Sensors are designed to operate in a wide range of harsh environments and conditions. However, it is important to avoid exposure to high concentrations of solvent during storage, fitting into instrumentation and operation. By the nature of the technology used, any sensor can potentially fail to meet specification without warning. Euro-Gas makes every effort to ensure reliability of all sensors but where life safety is a performance requirement of the product and, where practical, Euro-Gas recommends that all gas sensors and instruments using sensors are checked for response to gas before 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.

The data contained in this document is believed to be accurate and reliable. The data given is for guidance only. Euro-Gas Management Services Ltd accepts no liability for any consequential losses, injury or damage resulting from the use of this datasheet or the information contained in it. Customers should test the sensors under their own conditions to ensure that the sensors are suitable for their own requirements and in accordance with the plans and circumstances of the specific project and any standards/regulations pertaining to the country in which the sensors will be utilised.

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