



# MS3500 Ammonia Monitor System for Waste Water

## Product Description

The **MS3500** is an Ammonia Monitor designed to measure **Ammonia in treated and untreated Waste Water**. It provides on-line, real time monitoring for process control, environmental protection and the protection of plant in water treatment facilities.

The use of a non-contact measurement system virtually eliminates fouling, corrosion of probes and sensitivity to water conditions. The MS3500 **provides** low cost of ownership through **high reliability together with long servicing and validation periods**.

The MS3500 combines innovative sensor and instrumentation engineering with proven sampling techniques to provide a reliable and efficient system for measuring Ammonia in the harshest conditions.

Supplied in a robust enclosure the MS3500 can be deployed on site with minimum preparation and no need for a protection from the environment.



## Applications

- Raw Waste Water Flows
- Waste Water Treatment Process Control
- Treated Waste Water Discharge monitoring
- Sludge de-watering Ammonia measurement

## Benefits

- Energy reduction through accurate process control
- Reduced use of chemicals
- Low maintenance costs
- High reliability

## BACKGROUND

The Multisensor Systems MS3500-01 is a non-contact system for measuring Ammonia levels in the most arduous of conditions at the head of a waste water treatment facility. Its intended applications are to provide data for process control, with resultant reductions in energy and chemicals needed for treatment, to allow monitoring of the re-circulation of high Ammonia loads and in process monitoring.

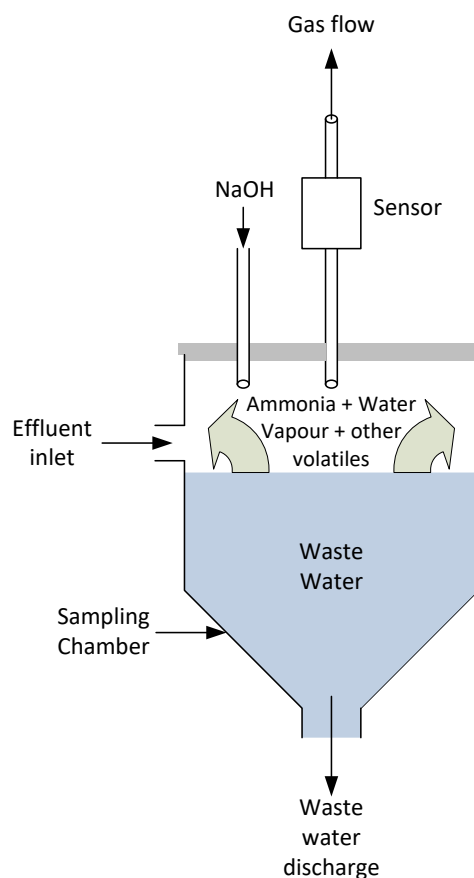
The system comprises a sampling chamber filled by a vacuum pump, a sensor head, pneumatics and an instrument which provides the user interfaces, communications and control functionality.

The system is enclosed in a temperature controlled enclosure which can be positioned outside without further components or cost.

### PRINCIPLE OF OPERATION

The principle of operation is the measurement of headspace gases from a sample tank containing the waste water to be measured.

The MS3500 works by passing water through a sample tank as shown below. Sodium Hydroxide (NaOH) is added to increase the pH of the waste water, converting  $\text{NH}_4^+$  to Ammonia. Through the use of Henry's Law the concentration of gases in the headspace is proportional to the concentration of the substance in the water. The Ammonia and other volatiles in the waste water will pass into the headspace above the waste water where it will be trapped. This will continue until equilibrium is reached.



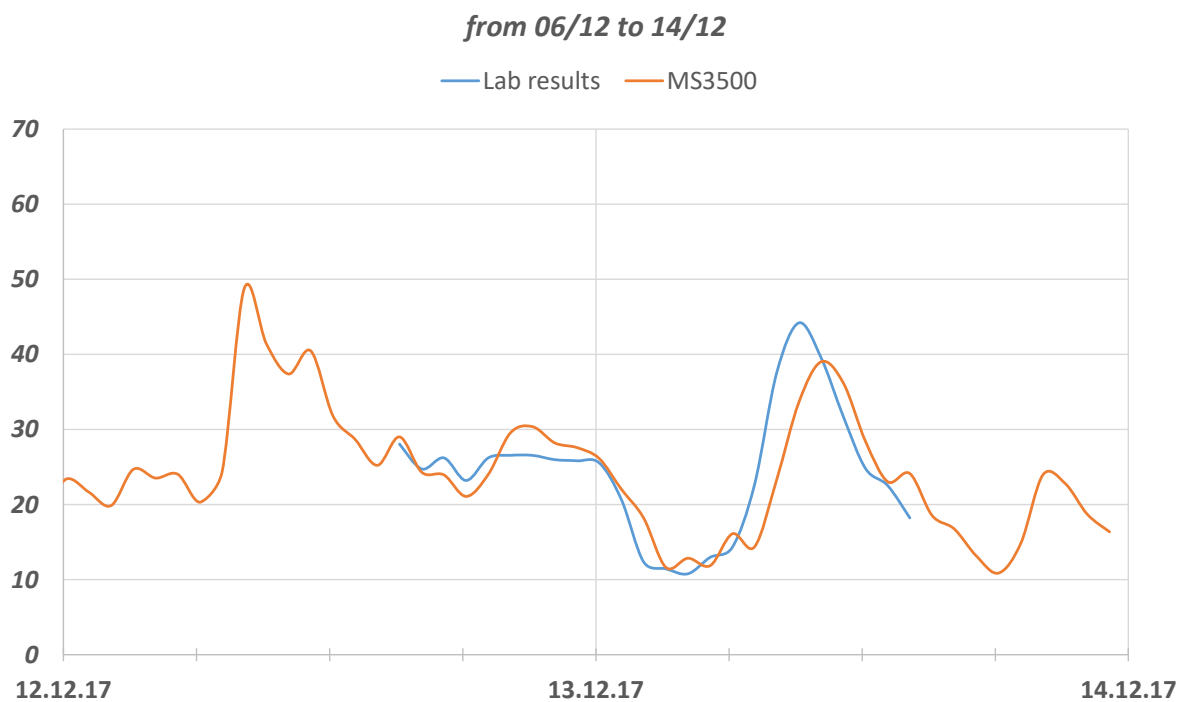
A sample of the headspace gases are then passed across sensors in the MS3500 sensor head which respond to the Ammonia in the headspace but reject other contaminants. This response is then analysed by the instrument and a concentration value is generated based upon the relationship between the concentration present in the headspace and that in the water.

## CALIBRATION

For the detailed calibration technique see MS3500 Operation and Maintenance Manual. The technique is to present standards of Ammonia in water to the instrument. Calibration is then done either automatically by the instrument or can be done manually.

Validation of systems in the field is achieved using the Multisensor Validation Kit which presents a standard concentration to the instrument.

## TYPICAL PERFORMANCE



Typical response compared to measurement from a certified laboratory.

## KEY PERFORMANCE PARAMETERS

Parameter	Operational Requirements		Notes
	Minimum	Maximum	
Power	90V AC	240V AC	50Hz or 60Hz
Power Consumption at 20C operating temp		70W	
Power Consumption at 5C operating temp		250W	Includes heater
Sample lift height		6m	
Working Temp: Ambient	-10C	50C	In still air
Working Temp: Water	1C	50C	
Sampling Period	30mins	60mins	User selectable. High concentrations may limit the minimum time period allowed
System Enclosure	Glass Reinforced Plastic		
NaOH Consumption	30l/year		60 minute sampling

Parameter	Performance Limits		Notes
	Minimum	Maximum	
Detection range	1ppm	200ppm	
Repeatability	-2%	+2%	
Analogue Output	4mA	20mA	Scalable to range required, max load 900R
Analogue Output Isolation	400V		Continuous. Opto-isolated.
Digital Interfaces	Profibus, Modbus		WiFi, 4G, Bluetooth also available
Relay Voltage		50V	2x, Alarm 1 and Alarm 2 Relays with NO and NC contacts
Relay Current		5A	
Weight	25kg		
Dimensions	750 x 750 x 350mm		Option: Mounted on frame

## Validation Period

6 Months - using Calibration Kit available from Multisensor Systems or Authorised Distributor

## Consumables

Every 6 Months:      Active Carbon Air Filter Contents  
                                  Dust Filter Element

Every 12 Months:    Sample Tank gasket