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Ammonium-Analyser AMX

- Very low detection limit
- Low maintenance
- No sample pre-treatment

Ammonium-Analyser AMX

In nature Ammonium is found only in trace quantities being produced by natural biological activities. Although Ammonium exhibits only low toxicity in general it poses a considerable threat to fishes. Therefore, monitoring the Ammonium concentration is *necessary* in cooling and waste waters in many industries and in waste water treatment plants.

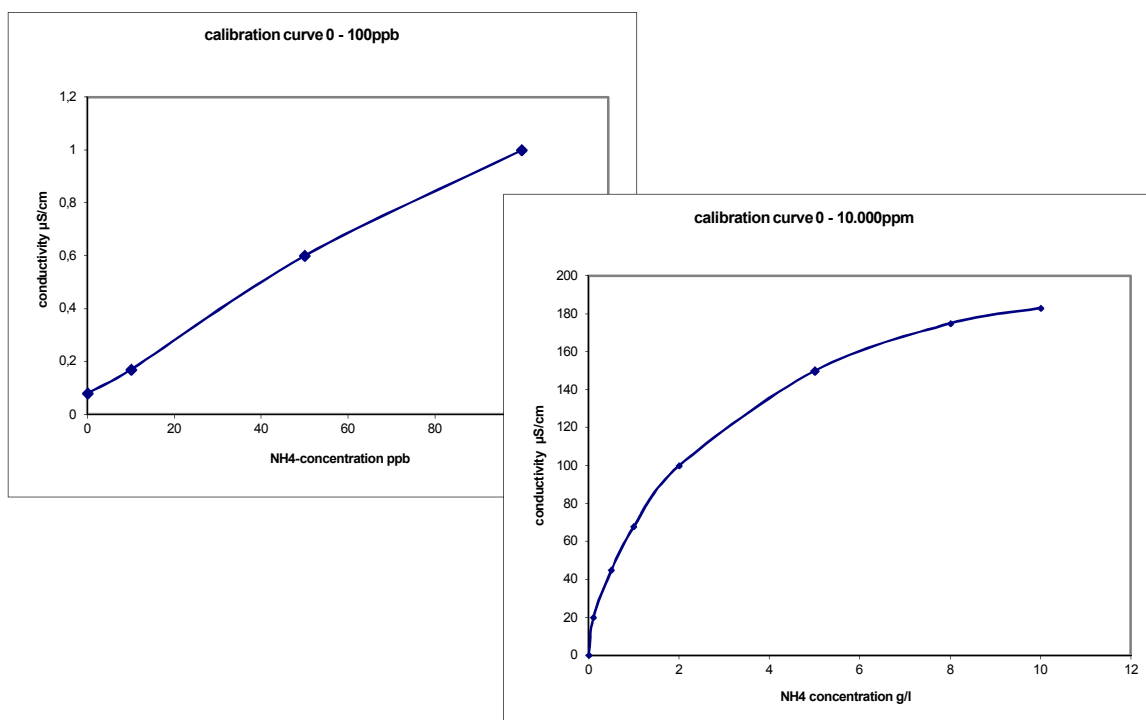


Operational Principle

The sample is fed into the stripper and sodium hydroxide is added to raise the pH to 14. The equilibrium of $\text{NH}_3 \rightleftharpoons \text{NH}_4^+$ is driven to the side of the neutral ammonia which is stripped off the sample. The stripped ammonia is trapped in a conductivity measuring cell filled with de-ionized water. The concentration of ammonia is calculated from the increase in conductivity after a pre-set time. The de-ionized water is regenerated before each measurement by an ion-exchanger.

Measuring very low and very high ammonia concentrations

Depending on the configuration and parameter settings the AMX is capable of measuring concentration as low as $10\mu\text{g/l}$ (ppb) or as high as several thousand ppm. The following curves illustrate the response at very low and very high concentrations.



High Reliability

By using only high quality components we are able to deliver a very robust instrument with an excellent reliability. Down time for maintenance is just a few hours per year only.

All parts are easily accessible and are replaced in a few minutes. The user himself can do all maintenance work. Down times of the instrument are minimized!

Very robust method

Not only the technical construction of the **AMX** is very robust, but also the measuring procedure shows hardly any interference. Due to the measuring method the instrument shows almost no drift. Therefore, calibration has to be done in large intervals only. Since no reagents are required which show changes over time or can be prepared wrongly a second source of errors is eliminated.

No sample pre-treatment

In most cases no sample pre-treatment is necessary. Only in heavy polluted waste waters a filtration might be necessary.

Automatic self-cleaning

The **Ammonium-Analyser AMX** is fitted with an automatic cleaning system that cleans the stripper in user adjustable intervals.

Flexible modular Design

Thanks to the modular design the **Ammonium-Analyser AMX** can be configured to meet almost any requirement as unusual as it may be.

By utilising suitable components, it is possible to optimise the **AMX** for a **very short response time** ($T_{90} < 30$ sec) or for **very low detection limits** (< 10 ppb).

For higher temperatures an optional sample cooler is available.

Low cost of ownership

During operation the **Ammonium-Analyser AMX** only needs diluted sodium hydroxide to make the sample alkaline. Obviously the amount of NaOH consumed depends on the average pH of the sample and the measurement interval.

The ion exchangers in the ultra-pure water circuit have a life time of several months. The consumption of ion exchange resin is about 1 litre/year.

Maintenance

Although the stripper is cleaned automatically with diluted acid it might be necessary to clean it manually from time to time.

Approximately one a year the ion-exchanger has to be replaced. A replacement column comes with the instrument. The replacement is performed within minutes.

Outputs

Analog outputs

4 to 20 mA (0 to 20 mA) for concentration.

System fault relay

The **Ammonium-Analyser AMX** is equipped with a self-monitoring system that recognizes faults within the analyser and will trigger an alarm contact in case of any malfunction.

Maintenance signal

To maintain a reliable function, the levels of the sodium hydroxide solution, of the cleaning solution, the DI-water and the capacity of the ion exchanger is controlled. An alarm is triggered if one of these values is too low.

Options

Multiplexer for several sample lines

Dependent on the application it is possible to measure more than one sample stream with one instrument by using a multiplexer. Up to 8 streams can be monitored by one instrument.

Digital in- and outputs

In addition to the standard digital outputs for system fault and maintenance request in- and outputs can be installed for special demands like remote start/stop etc.

Sample pre-treatment

Although filtration is not necessary for most applications we provide a simple automatic filtration unit for applications clogging my cause trouble.

The implemented automatic back flush system keeps the filterelement clean and ensures almost maintenance free operation.

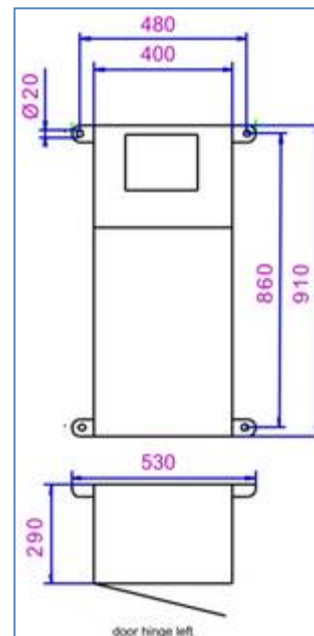
The back flushing is either controlled by the analyser or by seperated controller.

All wetted parts are made of PVC and stainless steel.



Specifications

Ranges:	< 10ppb to > 10.000ppm; depending on configuration
Measuring interval:	5 – 10 minutes (typical, dependent on application); special version with 30 seconds response time available
Detection limit:	<10ppb (dependent on configuration)
Sample temperature:	0 - 30°C
Power supply:	100 – 240VAC 50/60Hz, 50Watts
Output:	4-20mA (0-20mA) for concentration
Alarm contacts:	system fault, NC/NO maintenance request, NC/NO threshold, NC/NO (option)
Display:	4" Color touch panel
Housing:	Upper part for electronics: steel, powder coated Lower part for hydraulics: plastic
Weight:	ca. 30kg
Protection:	IP 54
Ambient conditions:	temperature: +5 - +40°C rel. humidity: <95% not condensing
Dimensions:	910 x 300 x 480 mm (HxDxW)



01.03.2016

Specification subject to change without notice