Some More Hints .
Ensure that the temperature of all standards and samples are the same to reduce errors.

Using a magnetic stirrer for laboratory analysis is recommended but not essential. It is however important to have the stirrer set on a low constant speed which must be reproducible for all measurements.

Prior to sample measurement ensure that the electrode is thoroughly rinsed with deionised water. It is worth performing this rinse twice given the possibility of carryover being greatest in high concentration solutions.

Prepare standards by serial dilution.

Make sure your electrode is conditioned by leaving the tip in the lowest concentration standard for 1 hour prior to analysis.

Methods of Analysis.
Direct Potentiometry is described above. This method is simplified by using a direct reading ion meter. There are several other methods, which are useful.
Known Addition: An incremental technique where the potential of the sample solution is measured followed by addition of a small volume of a higher concentration standard solution.
Sample Addition: An incremental technique where the potential of a dilute standard solution is measured followed by the addition of a small volume of more concentrated sample. .
End Point Titration: ISE's are ideal end point indicators and will produce a significant potential change at the equivalence point. The Ion in question must be contained in the titrand or the titrant and must therefore be in excess or absence at the end point.

3302 - Ammonia ISE

Overall length	155 mm
Body Diameter	12 mm
Cap Diameter	16mm
Connector	BNC
Cable length	1000 mm
Resistance at 25°C	< 200 Meg Ohm
Concentration Range	0.02 to 17,000 ppm
Slope	52 to 59 mV/decade
Potential Drift	2 mV per day
Operating pH range	11 to 13
Temperature range	5 to 50°C
Endpoint time	Typically 10 to 30 seconds
Interferences: Ions with coefficients above 0.001.	Calcium Sodium Potassium

The Old Silo Store, St. Radigund's
Abbey, Dover, Kent CT15 7DL
Phone: +44 (0) 1304 829960
E-mail: info@edt.co.uk

EDT directION
ELECTROCHEMISTRY PRODUCTS

Excellence & Innovation
in Electrochemistry

Instruction Manual

3302 Ammonia ISE

The EDT direction Ammonia combination ISE is a traditional pH glass sensor with a refillable membrane cap.

This electrode does not have the solid state advantage of the Ammonium ISE 3051 but is able to detect dissolved Ammonia down to around 50ppb.

For successful operation NaOH ISAB should be added to the samples and standards to ensure all the Ammonium is converted to NH3.

The analysis is best done in 100ml conical flasks to reduce the loss of NH3 gas.In principle the Ammonia penetrates the membrane and causes a change in the pH of the internal solution locally at the interface. This pH change is directly proportional to NH3 concentration.

Installation

Remove the membrane module and fill with Filling solution. Tap the side of the cap to remove air bubbles. Screw the module onto the body. Do not over-tighten.

Ammonia in all samples and standards is released by adding 10M NaOH. This acts as an ISAB as well as a pH controller.

No temperature correction is necessary however standards and samples should be measured at the same temperature.

Begin calibration from the lowest concentration standard to avoid cross contamination. Calibration should cover the anticipated range of the samples.

Rinse tip with deionised water between measurements.

Do not reuse standards or samples.

Storage and Maintenance

After use rinse with deionised water Remove the membrane cap and rinse out with deionised water. Store the membrane dry loosely attached to the electrode body.

Tips For Successful Analysis.

EDT directION ISE's can be used with any pH/mV meter or Ion meter. If the meter does not have a BNC socket and you have a BNC electrode please contact your EDT directION distributor who will arrange to have the correct plug fitted. Adapters are also available if the same electrode has to be used on more than one meter.

Meters with a 0.1 mV resolution are recommended whilst dedicated Ion meters will provide direct concentration readouts saving time and effort in constructing calibration curves and performing calculations. Your EDT directION distributor can advise on the most suitable meter.

Magnetic stirrer/stirrer bars are recommended for mixing standards and samples but measurements should be made in static solutions where possible.

Semi-logarithmic (4-cycle) graph paper is required for preparing calibration curves when you are using a mV meter.

Required Solutions.

Distilled or deionised water will be required to prepare Standards, ISABs and to rinse the electrode between measurements.

1000 ppm Stock Standard solution. Used for preparation of Standards. (Prepared by customer)

ISAB. Used to adjust the Ionic strength of all standards and samples. Typical addition is 2ml of ISAB to 50ml of all standards and samples.

Operation

1. Connect the electrode to the meter being used for analysis.
2. Prepare a series (at least 2) of standards that bracket the expected sample concentration. This is best done by serial dilution of the stock solution. Ideally standards should be a decade in concentration apart e.g. 1, 10, and 100 ppm.
3. Dispense 50 ml of each standard into 100ml volumetric Flasks. (100ml Beakers will suffice if not)
4. Add 5ml of 10 M NaoH to standards and samples. Stopper the flasks prior to measurement to prevent loss of Ammonia. NaOH is corrosive and should be handled with care.
5. Rinse the electrode with deionised water and blot dry with a lint free cloth and place in the lowest standard. When the reading is stable record the mV value. Ion meters will set the calibration automatically.
6. Repeat for subsequent standards going from lowest to highest concentration.
7. Plot a calibration curve on semi log paper using mV values on the linear Axis and concentration on the log scale. Ion meters will set the curve automatically. Rinse the electrode in deionised water and blot dry.
8. Place the electrode in the sample and record the stable mV value or read the conc. Display
9. Using the calibration curve determine the unknown sample concentration.