# Technical Specifications for the Sodium Ion-Selective Electrode
## ELIT 8230

### Introduction
The Sodium Ion-Selective Electrode has a solid-state PVC polymer matrix membrane. The electrode is designed for the detection of sodium ions **($Na^+$)** in aqueous solutions and is suitable for use in both field and laboratory applications.
The Sodium Ion is a monovalent cation.
One mole of ( $Na^+$ ) has a mass of 22.99 grams; 1000 ppm is 0.0435 M
Dissolve 2.542g anhydrous sodium chloride (NaCl) in 1 litre water.

### Physical Specifications

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|---|---|
| Length of body excl gold contact | 130 mm |
| Length of body incl. gold contact | 140 mm |
| Diameter of body | 8 mm |
| DC resistance at 25° C | < 2.5 MOhm |
| Minimum feasible sample volume | 5 ml |

### Chemical / Operational Specifications

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|---|---|
| Preconditioning / Standard solution | Normally 1000 ppm $Na^+$ as NaCl |
| *(But see General Operating Instructions)* | |
| Preconditioning time | at least 5 minutes |
| Optimal pH range | pH 3 to pH 10 |
| Temperature range | 0 to 50° C |
| Recommended ISAB | NO BUFFER SUITABLE |
| *(Use Standard Addition Method for samples with high ionic strength)* | |
| Recommended reference electrode | Single Junction AgCl (**ELIT 001)** |
| Electrode slope at 25° C | 54 ±5 mV/ decade |
| Concentration range | 0.05 to 2,300 ppm (2x10-6 to 0.1 Molar) |
| Response time | < 10 seconds |
| *(Defined as time to complete 90% of the change in potential after immersion in the new solution.)* | |
| Potential drift (*in 1000 ppm*) | < 3 mV/ day (8 hours) |
| *(Measured at constant temperature and with ISE and Reference Electrode continually immersed)* | |

### Interference:
Virtually all cations interfere with the sodium electrode to some extent! Thus it is best used for measuring pure Na solutions or solutions where Na is far more concentrated than other components. This factor also means that it is difficult to choose a satisfactory ISAB for this electrode.
Known Selectivity Coefficients are: K+ ~ 0.6, NH4+ ~ 0.2, Ca++ ~ 0.02, Mg++ ~ 0.03.
Where the SC is the approximate apparent increase in the measured concentration caused by 1 unit of the interferent. Thus the likely effect of any interfering ion (% increase) can be calculated as follows:

((expected concentration) x (SC) / (expected Na concentration)) x 100.

**For more information, see: www.nico2000.net.**