

## ELIT brand Electro-Analytical Chemistry Products

Last Update 01-10-/2017

For more details and prices, please visit our comprehensive website: <http://www.nico2000.net/>

### ELIT 8mm, All-solid-state, Ion-Selective Electrodes Measure the Concentration of Ions in Aqueous Solutions

- Robust, durable PVC construction.
- Suitable for laboratory or field use.
- No filling solutions.
- Long shelf and analytical life.
- Proven stability, reliability and fast response.
- Used with the ELIT Electrode Head System & 8mm Reference Electrodes for maximum versatility and economy.

A practical and cost effective way to combine Ion-Selective and Reference Electrodes. The picture shows a dual Electrode Head, fitted with one ISE and one RE. Two additional ISEs are shown to demonstrate the ease with which the electrodes can be changed; the gold plated plugs and sockets make it very easy to pull out the old and plug in the new.



| Specifications for all ELIT Ion-Selective Electrodes |            |                               |               |           |            |  | Reference Electrode             |            | ISAB   |         |
|--|------------|-------------------------------|---------------|-----------|------------|--|---------------------------------|------------|--|---------|
| ELIT Electrode                                       | Order Code | Detected Ion                  | ppm Range     | PH Range  | Temp Range | Significant Interferences  | Type                            | Order Code | Formula  | Add     |
| AMMONIUM   | ELIT 8051  | NH <sub>4</sub> <sup>+</sup>  | 0.9 - 1,800   | 0 - 8.5   | 0 - 50     | K <sup>+</sup>   | D.J. 0.1M CH <sub>3</sub> COOLi | ELIT 003   | 1M MgSO <sub>4</sub>                               | 10% v/v |
| BROMIDE  | ELIT 8271  | Br <sup>-</sup>               | 0.4 - 8,000   | 1 - 12    | 0 - 80     | CN <sup>-</sup> , I <sup>-</sup> , S <sup>-2</sup> , Cl <sup>-</sup>   | D.J. 0.1M CH <sub>3</sub> COOLi | ELIT 003   | 5M NaNO <sub>3</sub>                               | 2% v/v  |
| CADMIUM  | ELIT 8241  | Cd <sup>+2</sup>              | 0.1 - 11,200  | 3 - 7     | 0 - 80     | Ag <sup>+</sup> , Cu <sup>+2</sup> , Fe <sup>+2</sup> , Fe <sup>+3</sup> , Hg <sup>+2</sup> , Pb <sup>+2</sup>   | D.J. 0.1M CH <sub>3</sub> COOLi | ELIT 003   | 5M NaNO <sub>3</sub>                               | 2% v/v  |
| CALCIUM  | ELIT 8041  | Ca <sup>+2</sup>              | 0.02 - 4,010  | 3.5 - 11  | 0 - 50     | Al <sup>+3</sup> , Ba <sup>+2</sup> , Fe <sup>+2</sup> , Cu <sup>+2</sup> , Sr <sup>+2</sup>   | S.J. AgCl                       | ELIT 001   | 4M KCl   | 2% v/v  |
| CHLORIDE   | ELIT 8261  | Cl <sup>-</sup>               | 1 - 35,000    | 1 - 12    | 0 - 80     | Br <sup>-</sup> , CN <sup>-</sup> , I <sup>-</sup> , S <sup>-2</sup>   | D.J. 0.1M CH <sub>3</sub> COOLi | ELIT 003   | 5M NaNO <sub>3</sub>                               | 2% v/v  |
| CUPRIC   | ELIT 8227  | Cu <sup>+2</sup>              | 0.5 - 6,400   | 2 - 7     | 0 - 80     | Ag <sup>+</sup> , Br <sup>-</sup> , Cd <sup>+2</sup> , Cl <sup>-</sup> , Fe <sup>+2</sup> , Hg <sup>+2</sup> , S <sup>-2</sup>   | D.J. 0.1M CH <sub>3</sub> COOLi | ELIT 003   | 5M NaNO <sub>3</sub>                               | 2% v/v  |
| CYANIDE  | ELIT 8291  | CN <sup>-</sup>               | 0.03 - 260    | 11 - 13   | 0 - 80     | Br <sup>-</sup> , Cl <sup>-</sup> , I <sup>-</sup> , S <sup>-2</sup>   | D.J. 0.1M CH <sub>3</sub> COOLi | ELIT 003   | 10M NaOH   | 2% v/v  |
| FLUORIDE   | ELIT 8221  | F <sup>-</sup>                | 0.02 - 1,900  | 4 - 8     | 0 - 80     | OH <sup>-</sup>  | S.J. AgCl                       | ELIT 001   | TISAB  | 1:1     |
| IODIDE   | ELIT 8281  | I <sup>-</sup>                | 0.06 - 12,700 | 2 - 12    | 0 - 80     | CN <sup>-</sup> , S <sup>-2</sup> , Ag <sup>+</sup> , S <sub>2</sub> O <sub>3</sub> <sup>-2</sup>  | D.J. 0.1M CH <sub>3</sub> COOLi | ELIT 003   | 5M NaNO <sub>3</sub>                               | 2% v/v  |
| LEAD   | ELIT 8231  | Pb <sup>+2</sup>              | 0.2 - 20,800  | 3 - 7     | 0 - 80     | Ag <sup>+</sup> , Cd <sup>+2</sup> , Cu <sup>+2</sup> , Fe <sup>+2</sup> , Fe <sup>+3</sup> , Hg <sup>+2</sup>   | D.J. 0.1M CH <sub>3</sub> COOLi | ELIT 003   | 5M NaNO <sub>3</sub>                               | 2% v/v  |
| MERCURY  | ELIT 8251  | Hg <sup>+2</sup>              | 0.2 - 20,000  | 0 - 2     | 0 - 80     | Ag <sup>+</sup> , S <sup>-2</sup>  | D.J. 0.1M CH <sub>3</sub> COOLi | ELIT 003   | 0.1M HNO <sub>3</sub>                              | 1:1     |
| NITRATE  | ELIT8 021  | NO <sub>3</sub> <sup>-</sup>  | 0.4 - 6,200   | 2 - 11    | 0 - 50     | BF <sub>4</sub> <sup>-</sup> , Cl <sup>-</sup> , ClO <sub>4</sub> <sup>-</sup> , CN <sup>-</sup> , I <sup>-</sup> , NO <sub>2</sub> <sup>-</sup> , HCO <sub>3</sub> <sup>-</sup> | D.J. 0.1M CH <sub>3</sub> COOLi | ELIT 003   | 2M (NH <sub>4</sub> ) <sub>2</sub> SO <sub>4</sub> | 2% v/v  |
| NITRITE  | ELIT 8071  | NO <sub>2</sub> <sup>-</sup>  | 0.5 - 460     | 4.5 - 8.0 | 0 - 50     | CN <sup>-</sup>  | S.J. AgCl                       | ELIT 001   | BS1 or BS2   | 1:1     |
| PERCHLORATE  | ELIT 8061  | ClO <sub>4</sub> <sup>-</sup> | 0.2 - 9,950   | 0 - 11    | 0 - 50     | Cl <sup>-</sup> , I <sup>-</sup> , NO <sub>3</sub> <sup>-</sup> , SCN <sup>-</sup>   | S.J. AgCl                       | ELIT 001   | 1M CH <sub>3</sub> COON <sub>a</sub>               | 2% v/v  |
| POTASSIUM  | ELIT 8031  | K <sup>+</sup>                | 0.4 - 3,900   | 1 - 9     | 0 - 50     | CS <sup>+</sup> , NH <sub>4</sub> <sup>+</sup>   | D.J. 0.1M CH <sub>3</sub> COOLi | ELIT 003   | 2.5M NaCl  | 2% v/v  |
| SILVER   | ELIT 8211  | Ag <sup>+</sup>               | 0.05 - 10,800 | 1 - 9     | 0 - 80     | Hg <sup>+2</sup> , S <sup>-2</sup>   | D.J. 0.1M CH <sub>3</sub> COOLi | ELIT 003   | 5M NaNO <sub>3</sub>                               | 2% v/v  |
| SODIUM   | ELIT 8230  | Na <sup>+</sup>               | 0.2 - 2,300   | 3 - 10    | 0 - 50     | Most cations   | S.J. AgCl                       | ELIT 001   | NONE   |         |
| SULPHIDE   | ELIT 8225  | S <sup>-2</sup>               | 0.003 - 3,200 | 13 - 14   | 0 - 80     | Ag <sup>+</sup> , Hg <sup>+2</sup>   | D.J. 0.1M CH <sub>3</sub> COOLi | ELIT 003   | 10M NaOH   | 2% v/v  |
| THIOCYANATE  | ELIT 8229  | SCN <sup>-</sup>              | 1 - 5,800     | 2 - 12    | 0 - 80     | Br <sup>-</sup> , Cl <sup>-</sup> , I <sup>-</sup> , Ag <sup>+</sup> , S <sup>-2</sup> , S <sub>2</sub> O <sub>3</sub> <sup>-2</sup>   | D.J. 0.1M CH <sub>3</sub> COOLi | ELIT 003   | 5M NaNO <sub>3</sub>                               | 2% v/v  |

## The ELIT Electrode Head System

### Advantages of this 'electrode combination' over conventional combination electrodes:

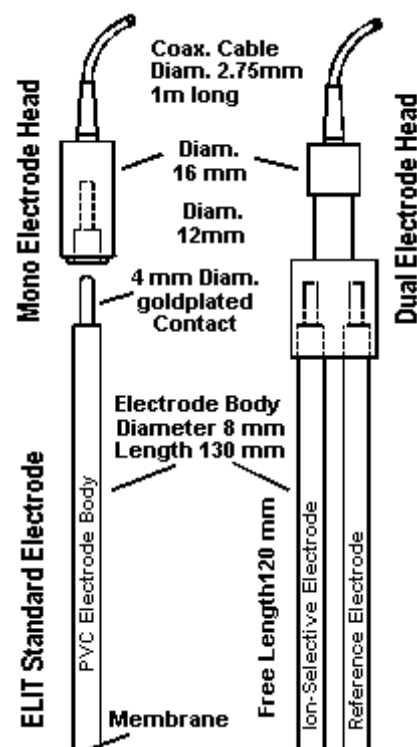
- Use of one reference electrode for several ion-selective electrodes.
- Replacement of a defective reference system without sacrificing the more expensive ISE.
- Expensive low-noise cable and connector are attached to the re-usable head and do not need to be replaced if the ISE becomes defective.
- ISE can be stored dry and the RE wet.
- Increased distance between the ISE and the reference system reduces electrical interference and increases the precision of measurement.

### Five configurations are available:

- **Mono head:** holds one ISE – for use with a conventional Reference Electrode.
- **Dual head:** – 'electrode combination' for one ISE and one ELIT plug-in RE.
- **Triple, Four, or Seven-socket head:** for one RE with 2 to 6 sensors - for **multi-component analysis**.

All heads are fitted with **standard BNC connectors** for use with most standard ISE/pH meters.

DIN, US or S7 connectors are available if required.



## ELIT Mini ISEs

Nico2000 Ltd can also supply Mini ISEs with a range of tube diameters and lengths for special applications. Not suitable for use with the ELIT electrode head system.

- Diameter range 6 to 12 mm.
- Length 20 to 130 mm.
- Fitted with a simple wire connector for maximum flexibility when connecting to other equipment.
- The attached wire can be from 2 to 5 cm in length and must be soldered to a screened cable for connecting to an ion meter or computer interface. Due to the high resistance of an ISE (>20 MOhm), the maximum length of this screened cable should not exceed 3 metres.
- Delivery 7 weeks from receipt of order.

## ELIT Reference Electrodes

- Robust design with 8mm diameter PVC bodies and gel electrolytes.
- For use with ELIT ISEs: as an electrode combination in an ELIT Electrode Head.
- Leak rates are very low. Electrolytes do not require replenishing.
- Maintenance-free sealed units with active (or shelf) life of several years (provided that the porous frit is kept moist in a solution with the same composition as the gel electrolyte when not in use).

Two types are available :

- Single Junction (AgCl/KCl electrolyte) suitable for Ba, Ca, F, NO<sub>2</sub>, Na, ClO<sub>4</sub>.
- Double Junction (Lithium acetate - CH<sub>3</sub>COOLi) - suitable for all ions.

## **ELIT pH Electrodes**

ELIT pH electrodes are basic combination electrodes with glass membranes and AgCl reference systems. They are fitted with cable and BNC connector for connection to any type of measuring system and do not require an ELIT electrode head connector or separate reference electrode.

pH measuring range: 0 - 14. Dimensions: 120mm long by 12mm diameter.

**ELIT P11** has a glass body, refillable liquid electrolyte and annular ceramic junction.  
Temp Range 0 - 80°C.

**ELIT P2011** has an epoxy body, refillable liquid electrolyte and porous teflon junction.  
Temp Range 0 - 60°C.

## **ELIT Redox (ORP) Electrodes**

Cost effective Combination Electrodes for measuring Oxidation\_Reduction Potential in Laboratory, Field- and Light Industrial Applications where the electrode is not submersed or under pressure.  
Temperature Range 0 to 80°C. Dimensions 12 x 120 mm. 1 m Cable and BNC Connector.  
Three types available:

**ORP-31C** - for General Applications. Platinum-Rod ORP Electrode with Gel-filled Plastic Body, Protective Skirt, Single Junction Ag/AgCl Gel Reference with Fiber/Pellon liquid junction.

**ORP-32C** - for More Demanding Applications. Has Platinum-Band (wrapped around a glass dome) with Gel-filled Plastic Body, Protective Skirt, Single Junction Ag/AgCl Gel Reference with Fiber/Pellon liquid junction.

**ORP-33C** - for High Precision Applications. Also Platinum-Band but with Re-fillable Glass Body, Single Junction Ag/AgCl Solution Reference with annular Ceramic liquid junction.

## **ELIT Dissolved Oxygen Sensors:**

Two types are available: one polarographic and one galvanic.

All have a standard 12mm body diameter.

The polarographic type has an operating current between 0 and 10 micro amps.

The output of the galvanic electrode at saturation is 33-40mV.

The residual output in zero oxygen solutions for both the electrodes is less than 1% of the output in saturated water.

One or two Automatic Temperature Control (ATC) sensors (Thermistor or Pt100/1000) may be fitted to customer's specific requirements.

Replacing the Teflon membrane is quick and easy. Simply unscrew the old assembly, load the new one with fill solution and screw on to the electrode.

The electrode is supplied with 2 membrane assemblies and a 50 ml bottle of filling solution.

A 50ml bottle of Zero Oxygen solution is available for calibration purposes.

## **ELIT Conductivity Cells**

Cost-effective Conductivity Cells for General Applications: Lab, Field and light Industrial use, where the cells are not submerged or under pressure.

Five versions are available:

Three have glass bodies with platinum black electrodes with cell constants (K) = 0.1, 1, 10

Two have plastic bodies with graphite electrodes (K=1, and 10)

For more details See : <http://www.nico2000.net/datasheets/electrodes.html#conduct>

## ELIT Ion/pH Analysers

The Latest Technology for Measuring Ion Concentrations, pH, Redox

These versatile and cost effective systems are based on a unique series of **Electrode-Computer Interfaces** which connect **electrochemical sensors** directly to **any lap-top or desk-top computer** with Windows operating system. This eliminates the need for a conventional pH/mV/ion meter and permits the use of more sophisticated and efficient procedures for data acquisition, processing, recording and display.

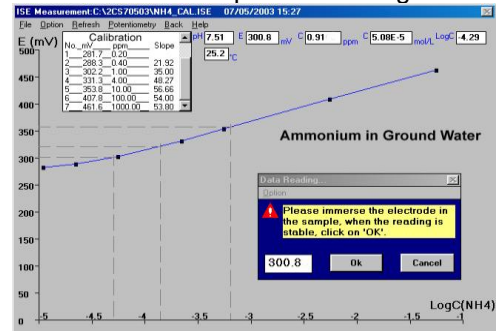
Both channels can be used for **monitoring pH or Redox** electrodes simultaneously and both have real-time graphical display. In addition, two temperature sensors can be connected and continuously monitored. **Ideal for routine analysis or student training.**

### ELIT ISE/pH Ion Analyser



The ELIT ISE/pH Ion Analyser can be used with **any Ion Selective Electrode**, and can be quickly and easily swapped between different ISEs. The unit also includes a separate dedicated channel to permit **simultaneous measurement of pH** in the same solution.

### ISE Calibration Graph / Measuring Screen



### Two-pH Measurement Screen



## ELIT Electrochemical Software

- Guides the user reliably through the measurements.
- Monitors all sensor signals simultaneously and continuously.
- Simplifies Standard Addition & Sample Addition techniques (not on 4 or 8 Chan. versions).
- Records the measured calibration and sample data automatically.
- Displays the measured data in graphs and tables.
- Permits automatic data acquisition over a wide range of sampling intervals and durations.
- Enables real-time graphical display during automatic data acquisition.
- Allows immediate printing of graphs and tables.
- Allows the export of data to standard software packages.
- Eliminates any possibility of operator error in data transfer.
- Records all analytical details: i.e. date, time, temperature, electrode types electrode serial numbers, sample numbers, name of operator.
- Increases the efficiency of producing written reports.
- Supports **Good Laboratory Practice** effectively.
- **Demonstration Software available on request - CD or Download.**

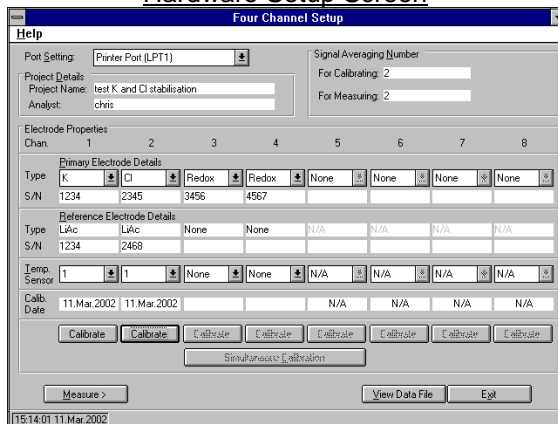
## ELIT 4 & 8 Channel Ion/pH Analysers

- Enable the direct connection of up to 8 pH, Ion-Selective, and/or Redox electrodes (in any combination) and up to 4 Temperature sensors, to any Desk-top or Lap-top computer with Windows Operating System.
- Option to calibrate each channel separately when different electrodes are used, or calibrate similar channels simultaneously if the same type of electrode is required in more than one solution at the same time.
- Data can be displayed individually or in any combination of channels.
- Sophisticated graphics tools permit wide range of data presentation and display.

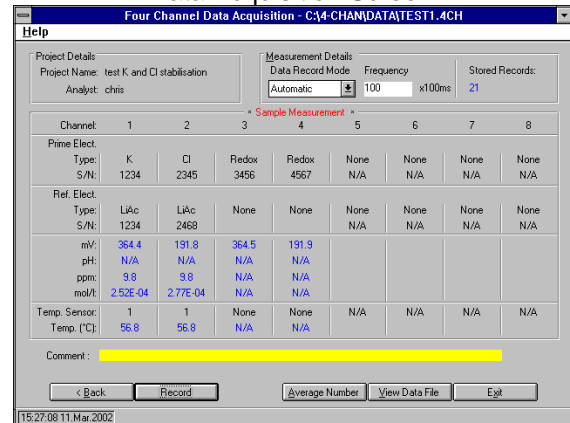
### 4 Channel Analyser (8 Chan has 4 extra inputs on back)



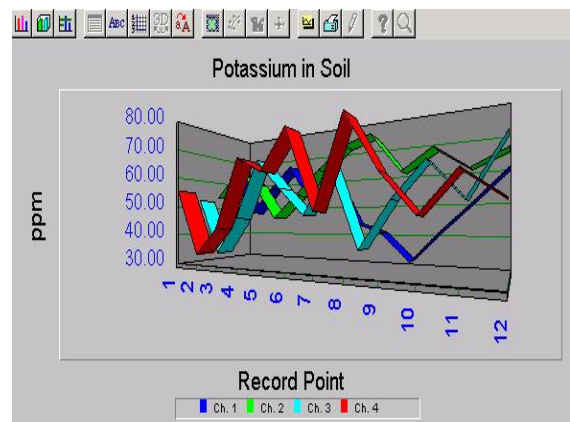
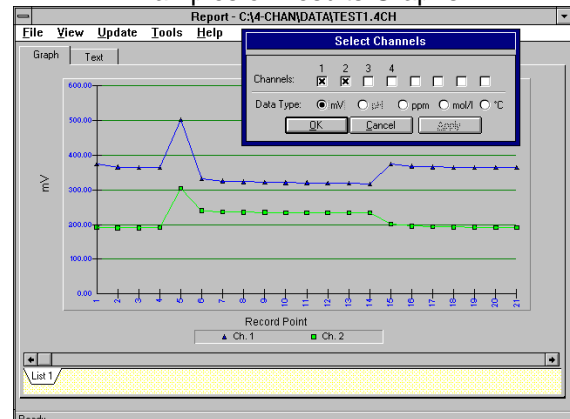
### Hardware Setup Screen



### Data Acquisition Screen



### Examples of Results Graphs



## ELIT Aqualyser Systems

**Measure important parameters of natural waters and aqueous solutions such as Dissolved Oxygen, pH, ORP, Ion Concentration, Conductivity and Temperature.**

Available in 2 versions, with different combinations of sensors.

Dedicated software enables the user to calibrate, display and store the sensor signals and the resulting parameter values.

Data Acquisition Rate can be selected over a wide range.

Data are stored in text form and can be viewed, edited or exported to MS Excel or any other software.

## ELIT Multi-channel pH/ORP Monitors

- Enable automatic, simultaneous, continuous monitoring of up to 24 pH or ORP electrodes.
- Data displayed in a real-time table and exportable to other software.
- Compact, cost-effective, bench-top design.



## ELIT 'Multisens' Electrochemical Measuring Systems



These Modular, Multi-function, Multi-channel, Multi-site systems are designed for batch monitoring of a variety of environmental parameters in laboratory or industrial applications where there is a need for automatic simultaneous measurement and recording of data from a number of sites.

They enable the connection of any number of sensors directly to the serial port of one PC with Windows operating system and are currently suitable for pH, Temperature, Ion Selective Electrodes, Redox, Dissolved Oxygen and Bio-sensors.

The basic software displays the measured electrode potential and temperature on screen and stores the results in a data file which can be exported to other software packages for data processing. Special software is available for particular electrode calibration, and on-line data processing and recording.

Standard Sensors with Sensor Glands  
D.O. pH ORP Ion Cond. Temp.

**NEW for 2015** ELIT Flow-through Systems

**Controlled, flow-through cells are the most accurate and efficient way of continuously monitoring sensor signals because the electrodes remain immersed throughout the calibration and measurement cycle. This avoids errors due to variable liquid-junction potentials which occur whenever a reference electrode is immersed in a new solution.**

- Samples are extracted from the source with a smooth-flow peristaltic pump and after measurement can be recycled or led to drain.
- In-situ calibration is achieved by switching the inflow tube to a standard solution. The electrodes need not be moved - saving time and avoiding contamination. The more frequent the calibration the greater the accuracy.
- The robust, modular cells have special air-tight glands for 1-4 electrodes each and can be linked together - Max. 12 sensors, including reference electrode.
- Suitable for Ion Concentrations, pH, ORP, DO, Conductivity and Temperature.
- Can be used with any ELIT Analyser or Monitor with the required channels.
- For dirty industrial environments or outdoor working, all equipment can be housed in a specially-designed, weather-proof, lockable, wall-mountable cabinet which can be up to 20 metres from the computer and 30 metres from the sampling point.

The screenshot shows the 'Measurement and Acquisition' software interface. It includes a 'Project Details' section with fields for Name, Date, and User. Below this is a 'Measurement Settings' section with tabs for 'Recording Method' and 'Data File Settings'. A table displays 'Recorded Data' with columns for Sample No., Date and Time, and various sensor readings (mV, ppm, Temp (C), Temp (F), pH). At the bottom, a real-time display shows the current time (15:34:06), date (11 Thu Dec 2014), and two channels of data: Channel 1 (1.21 ppm (F) and -409.5 mV) and Channel 2 (5.47 pH and 88.6 mV). A 'Print' button is visible below the real-time display.

**NEW**

## ELIT Monitor/Meter Systems

**Continuous, Real-time Monitoring, Measurement and Display of pH, Ions, ORP, Temperature**

2 and 4-channel versions are designed for easy viewing of data.

Instant data display in meter and table mode.

Sensor electrodes are connected to a Windows-based PC (laptop or desktop) via a USB port.

Compatible with all standard pH, Ion, ORP electrodes and temperature sensors



### Electrode Signal Transmitters

**Convert mV signals from Ion Selective, pH or ORP electrodes into 4 - 20 mA format.**

Allows connection to a variety of Data-Acquisition devices (eg dataloggers, PLC etc)

Signals can be used to activate alarms or process-control equipment.

Allows data transmission over longer distances - up to 250m.

Rugged dust and splash proof enclosures.

Suitable for industrial, field or laboratory applications.

One model for Ion Selective electrodes.

Six models for pH: Wide range (pH 0 to 14) or narrow (pH 3.5 to 10.5); with or without temp. channel; wall or DIN rail mounted.



### Electrode Signal Amplifiers

**Amplify mV signals from ISE, pH or Redox electrodes to allow longer cables between electrode and computer or data-acquisition system - up to 50m.**

Three types: TRA-IS1-B, for one electrode, either as combination or with separate reference electrode. Battery-powered - particularly for field use.

LAB-EA4-C. For four electrodes simultaneously with a common reference system in one vessel or in four separate vessels each with own reference.

LAB-EA4-CI As above but with four separate, isolated channels to avoid ground loops.