

Nico2000 Ltd. ELIT brand Electro-Analytical Chemistry Products

For more details please visit our comprehensive website: 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	Outer Chamber	Order Code	Formula	Add
AMMONIUM	ELIT 8051	NH ₄ ⁺	0.9 - 1,800	0 - 8.5	0 - 50	K ⁺	D.J. 0.1M CH ₃ COOLi	ELIT 003	1M MgSO ₄	10% v/v
BARIUM	ELIT 8081	Ba ²⁺	0.5 - 13,700	3 - 10	0 - 50	Ca ²⁺ , K ⁺ , Mg ²⁺ , Na ⁺ , NH ₄ ⁺ , Sr ²⁺	S.J. AgCl	ELIT 001	NONE	
BROMIDE	ELIT 8271	Br ⁻	0.4 - 8,000	1 - 12	0 - 80	CN ⁻ , I ⁻ , S ⁻² , Cl ⁻	D.J. 0.1M KNO ₃	ELIT 002	5M NaNO ₃	2% v/v
CADMIUM	ELIT 8241	Cd ²⁺	0.1 - 11,200	3 - 7	0 - 80	Ag ⁺ , Cu ²⁺ , Fe ²⁺ , Fe ³⁺ , Hg ²⁺ , Pb ²⁺	D.J. 0.1M KNO ₃	ELIT 002	5M NaNO ₃	2% v/v
CALCIUM	ELIT 8041	Ca ²⁺	0.02 - 4,010	3.5 - 11	0 - 50	Al ³⁺ , Ba ²⁺ , Fe ²⁺ , Cu ²⁺ , Sr ²⁺	S.J. AgCl	ELIT 001	4M KCl	2% v/v
CHLORIDE	ELIT 8261	Cl ⁻	1 - 3,500	1 - 12	0 - 80	Br ⁻ , CN ⁻ , I ⁻ , S ⁻²	D.J. 0.1M KNO ₃	ELIT 002	5M NaNO ₃	2% v/v
CUPRIC	ELIT 8227	Cu ²⁺	0.5 - 6,400	2 - 7	0 - 80	Ag ⁺ , Br ⁻ , Cd ²⁺ , Cl ⁻ , Fe ²⁺ , Hg ²⁺ , S ⁻²	D.J. 0.1M KNO ₃	ELIT 002	5M NaNO ₃	2% v/v
CYANIDE	ELIT 8291	CN ⁻	0.03 - 260	11 - 13	0 - 80	Br ⁻ , Cl ⁻ , I ⁻ , S ⁻²	D.J. 0.1M KNO ₃	ELIT 002	10M NaOH	2% v/v
FLUORIDE	ELIT 8221	F ⁻	0.02 - 1,900	4 - 8	0 - 80	OH ⁻	S.J. AgCl	ELIT 001	TISAB	1:1
IODIDE	ELIT 8281	I ⁻	0.06 - 12,700	2 - 12	0 - 80	CN ⁻ , S ⁻² , Ag ⁺ , S ₂ O ₃ ⁻²	D.J. 0.1M KNO ₃	ELIT 002	5M NaNO ₃	2% v/v
LEAD	ELIT 8231	Pb ²⁺	0.2 - 20,800	3 - 7	0 - 80	Ag ⁺ , Cd ²⁺ , Cu ²⁺ , Fe ²⁺ , Fe ³⁺ , Hg ²⁺	D.J. 0.1M KNO ₃	ELIT 002	5M NaNO ₃	2% v/v
MERCURY	ELIT 8251	Hg ²⁺	0.2 - 20,000	0 - 2	0 - 80	Ag ⁺ , S ⁻²	D.J. 0.1M KNO ₃	ELIT 002	0.1M HNO ₃	1:1
NITRATE	ELIT 8021	NO ₃ ⁻	0.4 - 6,200	2 - 11	0 - 50	BF ₄ ⁻ , Cl ⁻ , ClO ₄ ⁻ , CN ⁻ , I ⁻ , NO ₂ ⁻ , HCO ₃ ⁻	D.J. 0.1M CH ₃ COOLi	ELIT 003	2M (NH ₄) ₂ SO ₄	2% v/v
NITRITE	ELIT 8071	NO ₂ ⁻	0.5 - 460	4.5 - 8.0	0 - 50	CN ⁻	S.J. AgCl	ELIT 001	BS1 or BS2	1:1
PERCHLORATE	ELIT 8061	ClO ₄ ⁻	0.2 - 9,950	0 - 11	0 - 50	Cl ⁻ , I ⁻ , NO ₃ ⁻ , SCN ⁻	S.J. AgCl	ELIT 001	1M CH ₃ COONa	2% v/v
POTASSIUM	ELIT 8031	K ⁺	0.4 - 3,900	1 - 9	0 - 50	CS ⁺ , NH ₄ ⁺	D.J. 0.1M CH ₃ COOLi	ELIT 003	2.5M NaCl	2% v/v
SILVER	ELIT 8211	Ag ⁺	0.05 - 10,800	1 - 9	0 - 80	Hg ²⁺ , S ⁻²	D.J. 0.1M KNO ₃	ELIT 002	5M NaNO ₃	2% v/v
SODIUM	ELIT 8230	Na ⁺	0.2 - 2,300	3 - 10	0 - 50	Most cations	S.J. AgCl	ELIT 001	NONE	
SULPHIDE	ELIT 8225	S ⁻²	0.003 - 3,200	13 - 14	0 - 80	Ag ⁺ , Hg ²⁺	D.J. 0.1M KNO ₃	ELIT 002	10M NaOH	2% v/v
THIOCYANATE	ELIT 8229	SCN ⁻	1 - 5,800	2 - 12	0 - 80	Br ⁻ , Cl ⁻ , I ⁻ , Ag ⁺ , S ⁻² , S ₂ O ₃ ⁻²	D.J. 0.1M KNO ₃	ELIT 002	5M NaNO ₃	2% v/v

The ELIT Electrode Head System

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

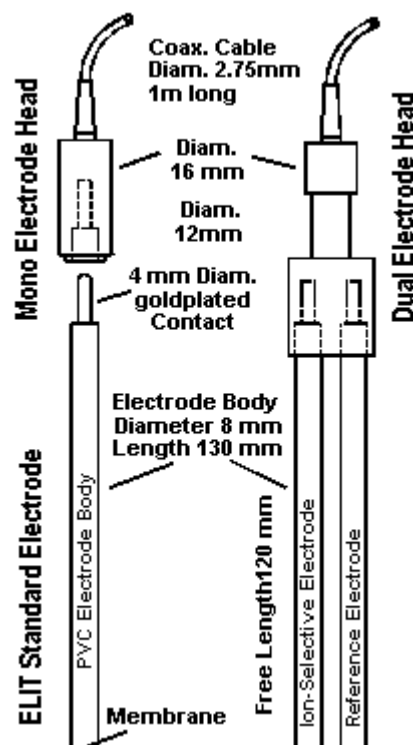
- Use of one reference electrode for several ion-selective electrodes.
- Replacement of a defective reference system without sacrificing the more expensive ISE.
- Expensive low-noise cable and connector are attached to the re-usable head and do not need to be replaced if the ISE becomes defective.
- 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).

Three types are available - named according to the composition of the filling solution (gel):

- **Potassium chloride** (Single Junction) - for Ba, Ca, F, NO₂, Na, ClO₄.
- **Potassium nitrate** (Double Junction) - for Br, Cd, Cl, Cu, CN, I, Pb, Hg, Ag, S, SCN.
- **Lithium acetate** (Double Junction) - 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 P14 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:

Three types available: two polarographic and one galvanic.

All have a standard 12mm body diameter.

The two polarographic types differ in their output currents in air-saturated water (20.9% Oxygen), one gives 600nA, the other 60nA.

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

The residual output in zero oxygen solutions for all 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 customers 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 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.

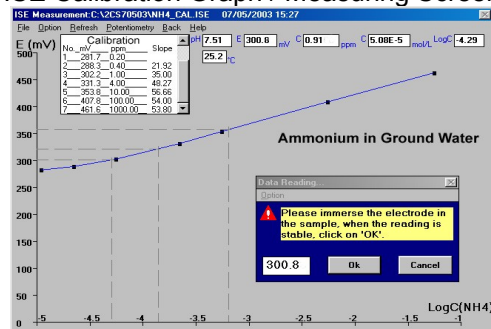
Both channels can be used for **monitoring pH or Redox** electrodes simultaneously and both have real-time graphical display. In addition, two temperature sensors can be connected and continuously monitored. **Ideal for routine analysis or student training.**

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)

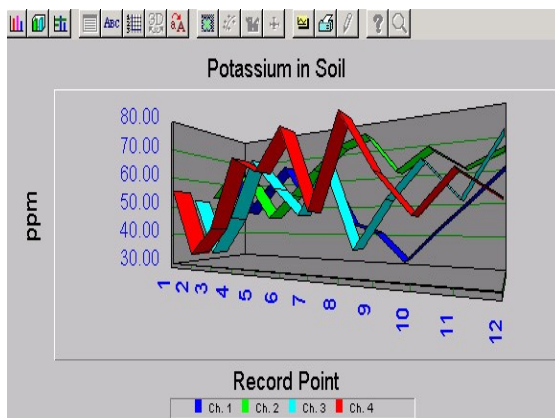
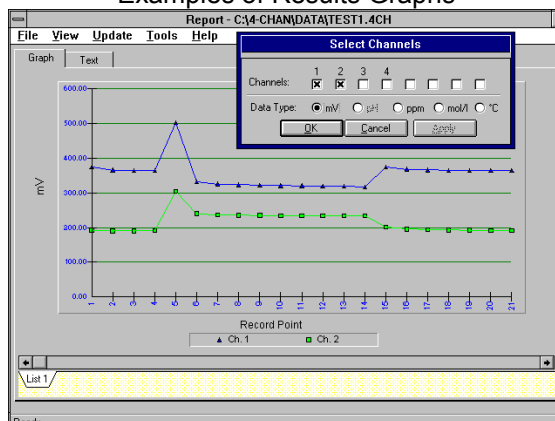


Hardware Setup Screen

Data Acquisition Screen

Channel	1	2	3	4	5	6	7	8
Prime Elect. Type:	K	Cl	Redox	Redox	None	None	None	None
S/N:	1234	2345	3456	4567	N/A	N/A	N/A	N/A
Ref. Elect. Type:	LiAc	LiAc	None	None	None	None	None	None
S/N:	1234	2468						
mV:	364.4	191.8	364.5	191.9				
pH:	9.8	9.8	N/A	N/A				
ppm:			N/A	N/A				
mol/l:	2.52E-04	2.77E-04	N/A	N/A				
Temp. Sensor:	1	1	None	None	N/A	N/A	N/A	N/A
Temp. (°C):	56.8	56.8	N/A	N/A				

Examples of Results Graphs



ELIT Aqualyser range of Instrumentation



ELIT Aqualysers Measure and Monitor important Parameters of Aqueous Solutions such as Dissolved Oxygen, pH, ORP, Ion Concentration, Conductivity and Temperature.

Use with Lap-top or Desk-top PCs with MS Windows operating systems via RS232 or USB Serial Data Transmission.

Available in 4 different versions, with various Combinations of Parameters.

Each Aqualyser comes with a Software which enables the user to Calibrate, Display and Store the Sensor Signals and the resulting Parameter Values. The Data are stored in Text form and can be viewed, edited or exported to Excel or any other Software.

The system includes: Country-specific Power Adaptor, 2m Serial Data Cable with 9-way to 25-way Connector-Adapter, Software on CD ROM, Manual.

ELIT DO-MON-1a Aqualyser - for Monitoring Dissolved Oxygen only.

A 4-way Mini-DIN connector accepts Galvanic or Polarographic D.O. sensors with built-in Pt1000 (Pt100) Temperature Sensors.

A 4-way Mode-Switch enables the Optimal Adjustment to the Signal Levels of different D.O. Sensors.

ELIT 9702b Aqualyser - for Dissolved Oxygen and Temperature plus pH, ORP or Ion-concentration.

A BNC Input and a 2 mm Reference Input allows the connection of a pH, ORP, or Ion-selective Electrode. Two 3.5 mm Inputs accept Temperature Sensors with PT1000 or Thermistor Sensor elements.

ELIT 9705b Aqualyser – for Dissolved Oxygen, Temperature, pH, ORP and 3 Ion-concentrations.

4 BNC Inputs and 3 of 2 mm Reference Input allow the simultaneous connection of pH or ORP and 3 Ion-Selective Electrodes.

ELIT 9705c Aqualyser for Dissolved Oxygen, Temperature, pH, ORP, one Ion-concentration, plus Conductivity/Salinity.

A 6-way DIN Connector accepts 2-Electrode Conductivity Sensors with Cell Constants of K=0.1, K=1, and K=10.

Features

- Suitable for Individual Sample Measurements or continuous Real-time Monitoring
- Compact Unit for Monitoring all important Water Parameters
- User-friendly Software for MS Windows
- Ideal for Research Projects
- Suitable for Education and Training
- Mainly for Laboratory and Indoor Applications

Application Examples

- Water Quality Analysis
- Environmental Control
- Food and Drink Quality Control
- Pharmaceutical Research
- Aquacultural Research
- Agricultural Research
- BioReactors and Fermentors

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 Industrial/Laboratory Electrochemical Signal Converters

- **Enable** the use of electrochemical sensors in industrial, laboratory and field applications, using any type of data acquisition or process control systems.
- **Suitable** for monitoring: pH, ISE, Redox, Dissolved Oxygen, Temperature.
- **Use with:** Industrial Data Acquisition and Processing Systems; Industrial or Laboratory Process Control Systems; Desk-top or Lap-top Computers.
- **Use for:** Triggering alarms or process control equipment at critical values.
- **Convert**, for example, a typical ± 1000 mV signal produced by an Ion-Selective or pH electrode to, for example, 0 - 5V, 0 - 10V or 4 - 20mA, 0 - 20mA, or to digital format for RS232 or RS485.
- **Rugged**, dust and splash-proof units. IP65 Protection Class. ABS Enclosure 200mm x 120mm x 75mm.
- **Data Transfer** Protocol based on ASCII.

SC1-ISE1-A – 1-channel, 0-5V, 4-20mA



Battery-powered Sensor Amplifiers

Two types: to connect ISE.pH/ORP or DO sensors directly to commercial data loggers – particularly for field use..

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.

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