



Incremental Method Analysis Example



First Step — An Example for Known Addition

The first step in performing an incremental method analysis is to enter the required parameters including sample, ISA and standard volumes and standard concentration.

When repeating the analysis on additional samples, the settings do not need to be reentered.

Sequence of Readings

Once the variables are entered, the user is guided step-by-step through the protocol.

A mV measurement is initially taken. The user is then prompted for the addition of a known standard and then a second measurement is taken.

Results

The results are automatically calculated and shown together with all the settings used.

At this time, results can be saved into an ISE Methods Report (if necessary, the user can edit the settings without having to redo the entire analysis). Multiple samples analysis is possible without having to reenter set-up data.

Contextual Help Screen

Users can consult the on-screen help from any mode simply by pressing the HELP key.

The instrument will then display the meaning and options available of the current screen.

ORDERING INFORMATION

HI 4221-01 (115V) and **HI 4221-02** (230V) are supplied with glass body pH electrode, temperature probe, power adapter, pH 4 and pH 7 buffer solutions, electrode refilling solution, electrode holder and instructions.

HI 4222-01 (115V) and **HI 4222-02** (230V) are supplied with glass body pH electrode, temperature probe, power adapter, pH 4 and pH 7 buffer solutions, electrode refilling solution, electrode holder and instructions.

HI 4521-01 (115V) and **HI 4521-02** (230V) are supplied with 4-ring EC probe, glass body pH electrode, temperature probe, power adapter, pH 4 and pH 7 buffer solutions, electrode refilling solution, electrode holder and instructions.

HI 4522-01 (115V) and **HI 4522-02** (230V) are supplied with 4-ring EC probe, glass body pH electrode, temperature probe, power adapter, pH 4 and pH 7 buffer solutions, electrode refilling solution, electrode holder and instructions.

ELECTRODES

HI 1131B Refillable pH electrode with BNC connector and 1m (3.3') cable

HI 76312 Platinum 4-ring Conductivity/TDS probe with temperature sensor and 1 m (3.3') cable

HI 7662-T Temperature probe

SOLUTIONS

HI 5004 pH 4.01 buffer solution, 500 mL

HI 5007 pH 7.01 buffer solution, 500 mL

HI 5010 pH 10.01 buffer solution, 500 mL

HI 54710 pH 4.01, pH 7.01 and pH 10.01 buffer solution, 500 mL ea.

HI 70300L Electrode storage solution, 500 mL

HI 7061L Electrode cleaning solution, 500 mL

HI 50XX buffers are technical buffers with ± 0.1 accuracy and are provided with certificate

ACCESSORIES

HI 76404N Electrode holder

HI 92000 Windows® compatible software

HI 920010 RS232 cable for PC connection

HI 920013 USB cable for PC connection

HI 190M * Magnetic stirrer with ABS plastic cover max 1000 rpm, Speedsafe™

HI 200M * Magnetic stirrer with AISI stainless steel cover, max 1000 rpm, Speedsafe™

* -1: 110/115V, 50/60Hz -2: 220/240V, 50/60Hz



L C D Display Examples

Dual Channel Display



Real Time Logging



Simultaneous Dual-channel Graphing



Calibration Data shown for both channels



Research Grade pH Meters

with Color Display

SPECIFICATIONS		HI 4522	HI 4521	HI 4222	HI 4221
pH	Range	-2.0 to 20.0; -2.00 to 20.00; -2.000 to 20.000 pH			
	Resolution	0.1 pH; 0.01 pH; 0.001 pH			
	Accuracy	±0.1 pH; ±0.01 pH; ±0.002 pH			
mV	Range	±2000 mV			
	Resolution	0.1 mV			
	Accuracy	±0.2 mV			
ISE	Range	1 x 10 ⁻⁷ to 9.99 x 10 ¹⁰ concentration ±0.2 mV	—	1 x 10 ⁻⁷ to 9.99 x 10 ¹⁰ concentration ±0.2 mV	—
	Resolution	1; 0.1; 0.01 concentration	—	1; 0.1; 0.01 concentration	—
	Accuracy	±0.5% (monovalent ions); ±1% (divalent ions)	—	±0.5% (monovalent ions); ±1% (divalent ions)	—
Conductivity	Range	0.000 to 9.999 µS/cm; 10.00 to 99.99 µS/cm; 100.0 to 999.9 µS/cm; 1.000 to 9.999 mS/cm; 10.00 to 99.99 mS/cm; 100.0 to 999.9 mS/cm; 1000 mS/cm			—
	Resolution	0.001 µS/cm; 0.01 µS/cm; 0.1 µS/cm; 0.001 mS/cm; 0.01 mS/cm; 0.1 mS/cm; 1 mS/cm			—
	Accuracy	±1% of reading (±0.01 µS/cm)			—
Resistivity	Range	1.00 to 99.99 Ohm·cm; 100.0 to 999.9 Ohm·cm; 1.000 to 9.999 kOhm·cm; 10.00 to 99.99 kOhm·cm; 100.0 to 999.9 kOhm·cm; 1.00 to 9.99 MOhm·cm; 10.0 to 100.0 MOhm·cm		—	
	Resolution	0.01 Ohm·cm; 0.1 Ohm·cm; 0.001 kOhm·cm; 0.01 kOhm·cm; 0.1 kOhm·cm; 0.01 MOhm·cm; 0.1 MOhm·cm		—	
	Accuracy	±2% of reading (±1 Ohm·cm)		—	
TDS	Range	0.000 to 9.999 ppm; 10.00 to 99.99 ppm; 100.0 to 999.9 ppm; 1.000 to 9.999 ppt; 10.00 to 99.99 ppt; 100.0 to 400.0 ppt			—
	Resolution	0.001 ppm; 0.01 ppm; 0.1 ppm; 0.001 ppt; 0.01 ppt; 0.1 ppt			—
	Accuracy	±1% of reading (±0.01 ppm)			—
	Factor	0.40 to 1.00			—
Salinity	Range	Practical salinity: 0.00 to 42.00; Natural seawater: 0.00 to 80.00 ppt; Percent: 0.0 to 400.0%		—	
	Resolution	0.01 for practical salinity/natural sea water; 0.1% for percent scale		—	
	Accuracy	±1% of reading		—	
Temperature	Range	-20.0 to 120°C; -4.0 to 248.0°F; 253.15 to 393.15K			
	Resolution	0.1°C; 0.1°F; 0.1K			
	Accuracy	±0.2°C; ±0.4°F; ±0.2K			
Calibration	pH	Automatic, Up to five-point calibration, 8 standard buffers available (1.68, 3.00, 4.01, 6.86, 7.01, 9.18, 10.01, 12.45), and 5 custom buffers			
	ISE	Automatic, Up to 5 point calibration, 5 fixed standard solutions available for each measurement unit, and 5 user defined standards	—	Automatic, Up to 5 point calibration, 5 fixed standard solutions available for each measurement unit, and 5 user defined standards	—
	Conductivity	Up to 4 point calibration with standard or custom values			—
	Salinity	Percent scale—1 point (with HI 7037 solution)			—
	Temperature	3 points			
Relative mV Offset Range	±2000 mV				
Input Channel(s)	1 pH/mV /ISE + 1 EC	1 pH/mV + 1 EC	2 pH/mV/ISE	1 pH/mV	
Calibration Check™	pH electrode and buffer condition				
Temperature Compensation	pH: Automatic or manual from -20.0 to 120.0°C (-4.0 to 248.0°F); EC: Linear and non-linear (natural water)				
Log-on-demand	100 Lots, 5000 samples per lot				
Logging Intervals	User defined, minimum 1 second				
Auto Endpoint	Yes				
PC Connection	Opto-isolated USB and RS232				
Display	240 x 320 dot-matrix color LCD with on-screen help, graphing, language selection and custom configuration				
Power	12 Vdc adapter (included)				
Dimensions/Weight	160 x 231 x 94 mm (6.3 x 9.1 x 3.7")/800 g (1.8 lbs.)				

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