HI932

Automatic Potentiometric Titration System (pH/mV/ISE)

The HI932 Advanced Automatic Titrator is the answer to your advanced titration needs. Fully customizable to meet your testing needs, the HI932 delivers accurate results and intuitive user experience, all in a compact package. Titrate for a variety of published methods at the push of a button, as well as perform direct measurements and back titrations for complex samples. For those that require greater automation, pair your HI932 with the HI922 Autosampler for the most accurate results with the least amount of effort.

- Small footprint so you can fully optimize your benchtop and increase productivity.
- Reduce downtime and increase efficiency when you perform multiple analyses linked in sequence.
- Works seamlessly with the HI922 Autosampler for automation of up to 18 samples.

Superior design for superior results.

The Cycoloy® body is durable, heat-resistant, and resists staining. Menu buttons are part of the display making it fully sealed and easy to clean. A high contrast LCD display makes every character on the display stand out and the wide viewing angle allows measurements to be seen from any angle. The backlight is adjustable for perfect viewing and a backlight saver option protects the display during periods of inactivity.

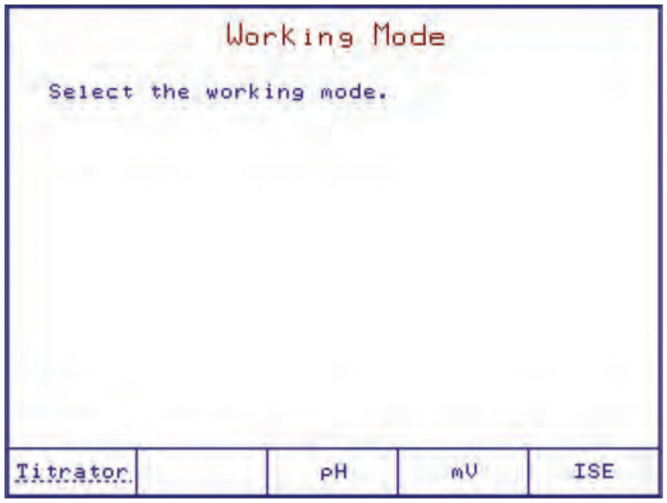
Maximize your workspace.

This new generation of titrator features a 50% smaller footprint than the HI902 Automatic Titrator for maximum use of your lab space. Use it in any sized space while providing accurate and consistent results.

Simple user experience

Virtual keys present on the display allow for simple and quick navigation between screens and menus without getting lost in a nest of information. If you need additional information about a screen, simply press the dedicated button for help.

Titrator Capabilities



Multiple Titration Types

Paired with the right electrode from our sensor line, this potentiometric titrator can perform any number of standard titrations, back titrations, as well as perform direct pH, ORP, and ion selective readings.

Dynamic titrant dosing

The dynamic dosing feature allows for timely and accurate titration results by relating the titrant volume dosed to the mV response from the titration reaction. This provides for larger doses near the beginning of a titration and smaller, more precise doses near the titration endpoint.

Equivalence endpoint detection

Equivalence endpoint detection is critical in applications where fixed endpoints are not specified in standard methods. This endpoint indicates where the mV response from the titration is greatest with respect to the volume of titrant dosed.

Multiple equivalence point detection

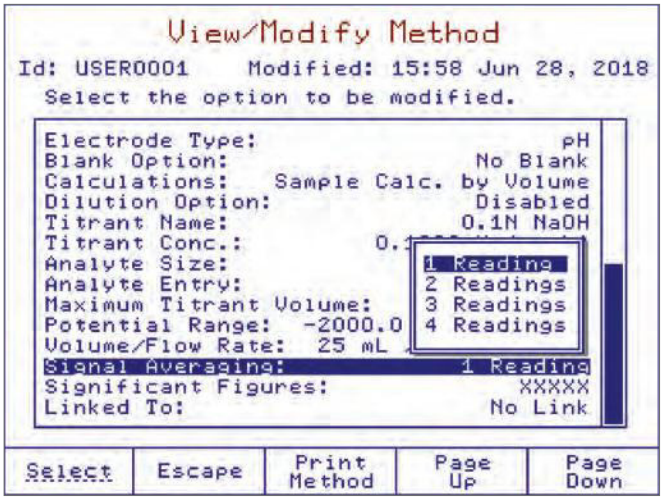
HI932 can detect multiple equivalence points during one titration as specified and required in certain standard methods and applications.

Signal stability timing

The signal stability feature monitors when the mV response of the titration reaction stabilizes before providing the next titrant dose. This ensures reliable measurement values throughout the length of a titration.

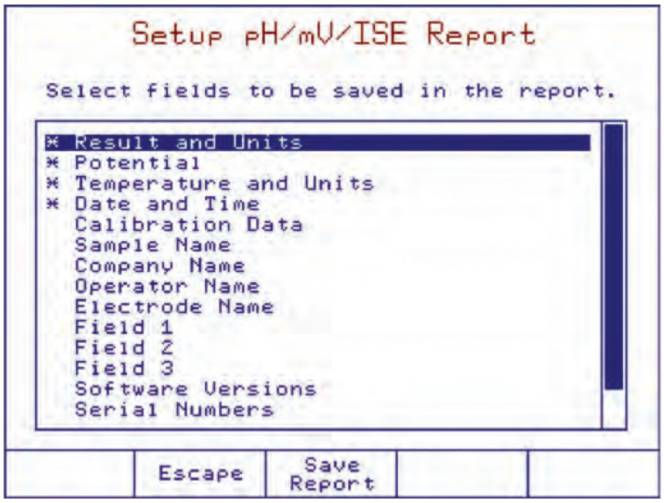
Streamline your testing with method sequencing

Reduce downtime and increase efficiency when you perform multiple analyses linked in sequence. A linked method function allows for two analyses to be run on the same sample including direct measurements, fixed endpoint titrations, multiple (up to 5) equivalence point titrations, and back titrations. Track your progress in real-time with onscreen titration curves.



Customizable methods

These titrators can store up to 100 user-defined or standard titration and direct measurement methods. Each method may be modified and optimized for performance based on application and user requirements.



Customizable Analysis Reports

Each analysis report is fully customizable to ensure the best data required for an application is stored and filed. The Multiselect feature makes batch processing simple.

Burrettes and Dosing System

Clip Lock™ exchangeable burette system

With Hanna's Clip-Lock™ burette feature, it only takes a few seconds to exchange titrants and reagents preventing cross-contamination and saving time.

Multiple burette sizes

HI932 is supplied with a 25 mL burette but may be equipped with a 5 mL, 10 mL, or 50 mL burette. Each burette is constructed with a ground glass syringe and chemically resistant PTFE plunger.

Automatic Reagent Addition

A peristaltic pump or a second burette may be programmed to volumetrically dispense reagent prior to titration or direct measurement or aspirate post-analysis. This helps achieve consistent and accurate results and prevents operator errors such as incorrect volumes or forgetting reagent addition.

Precision dosing pump

Our unmatched 40,000-step piston driven pump is capable of dosing extremely small and highly accurate volumes of titrant or reagent.

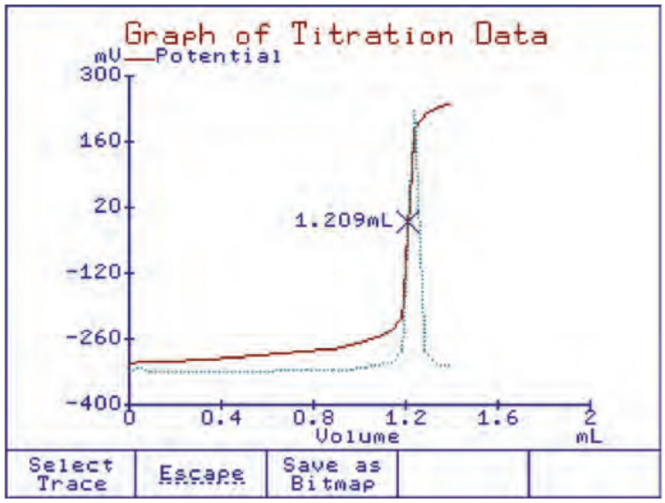
Chemically resistant tubing

Aspiration and dispensing tubes are constructed of durable, chemically resistant PTFE and feature a light-blocking polyurethane outer sleeve to protect light sensitive reagents.

Interface and Display

Interactive color display

A large, color LCD screen clearly shows the chosen titration method along with results, units, titration volume, temperature, and mV or pH values.



Detailed titration graphs

A real-time titration curve can be displayed during each titration; this feature is useful when new methods are tested or when a procedure requires optimization.

Connectivity and Functionality

Stay connected.

Connect devices such as an analytical balance for automatic weight sample entry or a printer to print reports directly from the titrator.

Multifunctional

These titrators also function as a titrator, pH meter, mV/ORP meter, and ISE meter. Valuable laboratory bench space is saved, and multiple analyses can be performed on one sample.

Rear connections

HI932 offers support for two analog boards, allowing up to two electrodes, two burettes, and two stirrers to be connected to one unit.

Data

Data storage

up to 100 titration and pH/mV/ISE reports. Transfer data via USB.

Effortless data transfer

A conveniently located USB port or direct connection to a PC allows for the transfer of titration methods, titration reports, and software upgrades. Easily convert titration methods from our software to an LIMS friendly format.

Flexible GLP Management

All necessary GLP (Good Laboratory Practice) information is recorded with each sample including sample identification, company and operator name, date, time, electrode ID codes, and calibration information.

Enhanced security options

Administrative users can set a PIN code on the device protecting against unauthorized access. Titration method options and results are tamper-proof while a non-administrator operates the titrator, ensuring records remain safe, secure, and traceable.

Designed for dynamic environments.

Don't worry about small spills in the laboratory with built-in spill handling. An external gutter system protects important connections and interior trays safeguard internal electronics

Take advantage of the versatility.

HI932 functions as a titrator, pH meter, mV/ORP meter, and ISE meter. Valuable laboratory bench space is saved, and multiple tests can be performed on one sample.

Titration solutions and reagents begin on page 4.56; See accessories on page 4.57

Electrode holder

This electrode holder can hold up to 3 electrodes, 4 tubes, and 1 temperature probe at any given time. The holder is angled and the stirrer is removable for access to smaller volume titrations without hassle.

Use electrodes with different diameters when needed by simply changing the electrode guide. No need to move electrodes around, get the best tube alignment for your titration with a rotating holder.

For a more compact design, the electrode holder is mounted directly onto the titrator body. The press-to-release button makes for simple height control. Need to save more space? Just reverse the holder to accommodate larger beakers.

The electrode holder is easy to flip to gain added height.

Smarter stirring

The removable overhead stirrer has built-in speed control for more consistent stirring.

Autosampler connectivity

The HI932 works seamlessly with our HI922 Autosampler featuring 16 or 18 sample tray options, automatic tray identification, and automatic beaker detection. Up to three peristaltic pumps for reagent addition and removal can be connected and real-time analysis and sequencing progress is visible on the HI932 display as well as indicated by the LED lights of the Autosampler.

Specifications		HI932C1 / HI932C2
Analysis Type	standard titration (standardization, fixed pH/ mV, equivalence point pH/ mV back Titration direct Reading	
End Point Mode	fixed mV fixed pH mV Equivalence Point (up to 5 points, 1st or 2nd derivate) pH Equivalence Point (up to 5 points, 1st or 2nd derivate)	
Burette	Size	5 mL / 10 mL / 25 mL / 50 mL
	Resolution	0.001 mL
	Flow Rate	0.3 mL to 2 x Burette volume per minute
	Accuracy	± 0.005 mL (5 mL Burette) ± 0.010 mL (10 mL Burette) ± 0.025 mL (25 mL Burette) ± 0.050 mL (50 mL Burette)
Stirrer	Range	200 to 2500 RPM
	Resolution	100 RPM
pH	Range	-2.0 to 20.0 pH; -2.00 to 20.00 pH; -2.000 to 20.000 pH
	Resolution	0.1; 0.01; 0.001 pH
	Accuracy (@25°C/77°F)	±0.001 pH
	pH Calibration	up to five-point calibration, eight standard buffers and five custom buffers

mV	Range	-2000.0 to 2000.0 mV
	Resolution	0.1 mV
	Accuracy (@25°C/77°F)	±0.1 mV
	mV Calibration	single point offset
ISE	Range	$1 \cdot 10^{-6}$ to $9.999 \cdot 10^{10}$
	Resolution	1; 0.1; 0.01
	Accuracy (@25°C/77°F)	± 0.001 pH
	ISE Calibration	up to five-point calibration, seven standard solutions and five user-defined standards
Temperature	Range	-5.0 to 105.0°C; 23.0 to 221.0°F; 268.2 to 378.2 K
	Resolution	0.1°C; 0.1°F; 0.1K
	Accuracy (@25°C/77°F)	±0.1°C; ±0.2°F; ±0.1K, excluding probe error
Data Storage	Methods	up to 100 titration methods (standard and user) up to 30 autosampler sequences
	Reports	up to 100 titration and pH/mV/ISE reports up to 40 autosampler tray reports (e.g. 720 reports for 18 beaker tray)
Connections	Measurement (per analog board)	BNC Socket (pH, ORP, ISE half-cell and ISE combination electrodes) 4 mm Banana Socket (reference electrode) RCA Socket (temperature sensor) 6-pin Connector (stirrer)
	Peripheral	6-pin Mini DIN (external PC keyboard) DB-25 Socket (printer) USB Standard B (PC connection) DB-9 Socket (analytical balance) USB Standard A (USB flash drive)
Additional Specifications	Electrode Holder	multi-purpose slots (titrant/reagent tubes) (4) 12-mm electrode slots (3) temperature sensor slot overhead stirrer slot
	Analog Board(s) Capability	2
	Dosing Pump Capability	2
	Burette Included	1 (25 mL)
	Burette Size Capability	5, 10, 25 and 50 mL
	Burette Resolution	1/40000
	Display Resolution	0.001 mL
	Dosing Accuracy	±0.1% of full burette volume
	GLP Conformity	instrumentation data storage and printing capabilities
	Linked Methods	yes
	Back Titrations	yes
	HI922 Compatible	yes
	Display	5.7" graphical color display with backlight
	Languages	English, Portuguese, Spanish
	Power Supply	100-240 Vac, 50/60 Hz "-01" models, US plug (type A) "-02" models, European plug (type C)
	Power Draw	0.5 Amps
	Operating Environment	10 to 40 °C (50 to 104 °F); up to 95 % RH
	Storage Environment	-20 to 70 °C (-4 to 158 °F); up to 95 % RH
	Dimensions	315 x 205 x 375 mm (12.4 x 8.1 x 14.8")
	Weight	approx. 4.3 kg (9.5 lbs.) with 1 pump, stirrer and sensors

Ordering Information

HI932C1-01 and **HI932C1-02** includes titrator with one analog board*.
HI932C2-01 and **HI932C2-02** includes titrator with two analog boards*.

All models also include: overhead propeller stirrer with stand, 25 mL glass burette, dosing pump, temperature sensor, USB cable, USB flash drive and PC software.

Accessories

HI930101	dosing pump with peristaltic pump
HI930100	dosing pump
HI930150	50 mL burette assembly (includes syringe, aspiration, and dispensing tubes)
HI930125	25 mL burette assembly (includes syringe, aspiration, and dispensing tubes)
HI930110	10 mL burette assembly (includes syringe, aspiration, and dispensing tubes)
HI930105	5 mL burette assembly (includes syringe, aspiration, and dispensing tubes)

*Each Analog Board Provides: (1) BNC (pH/mV/ISE) Input, (1) Reference Input, (1)Temperature Input, (1) Stirrer Input

Titration solutions and reagents begin on page 4.72; See accessories on page 4.73