



HI 903

Karl Fischer
Volumetric Titrator



 **HANNA**[®]
instruments

Features

- **Flexible, accurate detection of the titration endpoint**
 - Dual platinum pin polarization electrode for bivalent indication
 - Selectable endpoint criteria: fixed mV persistence, relative drift stop or absolute drift stop
- **Sealed solvent system**
 - Change to fresh solvent in a matter of seconds without opening the titration vessel
 - Minimizes exposure to ambient humidity, reducing titrant consumption and saving time
 - PTFE solvent tubing is resistant to harsh KF solvents and titrants
- **Beaker top**
 - Chemically-resistant reaction vessel cap and fittings
 - Quick-remove sample port plug with replaceable silicone rubber septum
- **Anti-diffusion burette tip**
 - Delivers titrant in high turbulence zone, ensuring rapid reaction
- Prevents unwanted diffusion of titrant
- **Built-in stirrer**
 - Automatic, integrated magnetic stirrer adjustable from 200-2000 RPM
 - Optical feedback for automatic speed control
 - Optional external stirrer available
 - Rechargeable indicating desiccant
 - Prevents the ingress of ambient humidity into the sealed solvent system while maintaining full titrator functionality
 - Minimizes changes to titrant titre
 - Indicates when adsorption capacity is depleted
 - Regenerates at 150°C
- **PTFE bottle cap**
 - Caps fit any GL45-threaded bottle
 - Chemically resistant caps and fittings
 - Removable desiccant cartridges
- **Precision titrant delivery system**
 - 40,000 step, piston dosing pump
 - Accurate to 0.1%
 - Delivers as little as 0.125 µL of titrant
- Precision ground, 5 mL glass burette with PTFE plunger, PTFE burette tubing, and polyurethane tube jacketing (thermally insulating, light blocking)
- Glass anti-diffusion dispensing tip
- Clip-Lock™ exchangeable burette system enables users to exchange reagent burettes in a matter of seconds
- **USB flash drive input**
 - Transfer methods, reports and graphs to either a PC or other titration system
 - User upgradable software
- **Supports up to 100 titration methods (standard and user defined)**
- **Multi language support**
- **Proper mixing of titrant and analyte**
 - Digital, magnetic stirring system with optical feedback
 - Conical titration cell to facilitate mixing over a wide volume range
 - Upward dispensing of titrant to ensure rapid reaction

Measures 100 ppm to 100% water content

HI 903

The HI 903 Karl Fischer Volumetric Titrator for moisture analysis is an extension of Hanna's highly successful potentiometric titrator platform. The HI 903 combines an ultra-high precision titrant delivery system with optically regulated magnetic stirring, sophisticated endpoint determination, dynamic dosing and background drift correction algorithms.

The result is an extremely accurate and adaptable titrator capable of titrating even samples with low moisture content. The HI 903 dispenses the titrant, detects the endpoint and performs all necessary calculations automatically.

The HI 903 comes equipped with a solvent handling system to reduce cell conditioning time. It can be connected directly to your laboratory balance via serial interface.

The HI 903's powerful software and intuitive menus are easily navigated on the large, color LCD display making it simple to view results. Choose from pre-program methods or develop a custom method for almost any application or sample type. With USB connectivity to the HI 900PC application or flash drive, methods (standard and user) can be upgraded, stored or deleted.

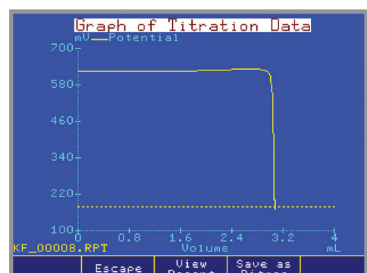
The HI 903 also features Hanna's exclusive Clip-Lock™ burette system. With Clip-Lock™, reagents burettes can be exchanged quickly and easily to perform different titrations. The Clip-Lock™ exchangeable burette system prevents cross contamination while reducing loss of time and reagents. Burettes simply slide out for quick exchanges, and detaching the aspiration and dispensing tubes from the titrant bottles is easy.

Interrupting an important cycle of analysis due to a malfunctioning burette is a thing of the past. With the Hanna Clip-Lock™ system you can simply substitute the burette and complete all your tests with the same titrant! Having several prepared burettes on hand will make the Hanna HI 903 one of the fastest and most versatile titration systems available.



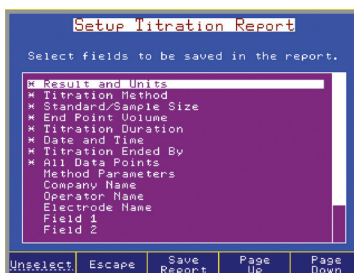
Versatile Data Management

- HI 903 Series titration systems can be easily incorporated into any existing GLP data management program
- Easily record all necessary GLP information with every sample such as sample identification, company and operator name, date, time, electrode ID codes and calibration information
- Data can be transferred to a PC using the Hanna HI 900PC application
- The USB port allows for the easy transfer of methods, reports and software upgrades via USB flash drive
- Users can print reports of analyses directly from the titrator using a standard parallel printer
- An external monitor and keyboard can be attached for added versatility



Titration graphs

Titration graphs can be viewed on screen or saved as bitmaps and transferred to a PC via USB



Customizable reports

Titration reports are fully customizable

Hr	Volume (mL)	mV	Time
0	0.0000	330.5	00:00:00
1	0.5000	330.4	00:00:01
2	0.5102	330.4	00:00:03
3	0.5302	330.4	00:00:04
4	0.5502	330.4	00:00:06
5	0.5702	330.4	00:00:07

Versatile results

Titration reports can be viewed on-screen or transferred to a USB storage device

HI 903 Specifications

Range	100 ppm to 100%
Resolution	1 ppm (0.0001%)
Result Units	%, ppm, mg/g, µg/g, mg, µg, mg/mL, µg/mL, mg/pc, ua/dc
Sample Type	liquid or solid
Determination	
Pre Titration Conditioning	automatic
Background Drift Correction	automatic or user selectable value
Endpoint Criteria	fixed mV persistence, relative drift stop or absolute drift stop
Dosing	dynamic with optional pre-dispensing rate
Result statistic	mean, standard deviation

Peripheral Devices

PC	easily view, transfer, print or delete methods and reports via HI900PC application
USB Flash Drive	easily upgrade software or transfer methods and reports between devices using a USB drive
Laboratory Analytical Balance	RS232 to connect any laboratory balance
Printer	print directly from the HI 903 to a printer via parallel port
Monitor	instrument status and titrations can be viewed on a larger screen using any VGA compatible external monitor
Keyboard	alphanumeric text can be entered using an optional PS/2 keyboard

Additional Specifications

Graphic Display	5.7" (320 x 240 pixel) color LCD
Titration Methods	up to 100 (standard and user) methods
Data Storage	up to 100 complete titration reports and drift rate reports can be stored
GLP Conformity	Good Laboratory Practice and instrument data storage and printing
Languages	English, Portuguese and Spanish
Enclosure Material	ABS plastic and steel
Keypad	polycarbonate
Power Supply	"-01" model: 115VAC, 50/60 Hz; "-02" model: 230VAC, 50/60 Hz;
Operating Environment	10 to 40°C, up to 95% RH
Storage Environment	-20 to 70°C, up to 95% RH
Dimensions / Weight	390 x 350 x 380 mm (15.3 x 13.8 x 14.9"); approximately 10 kg (22 lbs.)

Ordering Information

HI 903-01 (115V) and HI 903-02 (230V) are supplied with dual platinum pin electrode, dosing pump, 5 mL burette assembly with tubing, air pump assembly with tubing, beaker and bottle top assemblies and all fittings, desiccant cartridges (4) with indicating desiccant, stir bar, waste bottle, calibration key, USB cable, power cable, HI 900PC application, USB flash drive, quality certificate, ISO 8655 burette compliance report and instruction manual binder.

Clip Lock™ Exchangeable Burette System

Dosing Pump Resolution	1/40000 of the burette volume (0.125 µL per dose)
Dosing Pump Accuracy	±0.1% of full burette volume
Syringe	5 mL precision ground glass with PTFE plunger
Valve	motor driven 3-way, PTFE liquid contact material
Tubing	PTFE with light block and thermal jacketing
Dispensing Tip	glass, fixed position, anti-diffusing
Titration Vessel	conical with operation volume between 50-150 mL
Solvent Handling System	sealed system, integrated diaphragm air pump

Electrode

Type / Connection	dual platinum pin, polarization electrode / BNC
Polarization Current	1, 2, 5, 10, 15, 20, 30 or 40 µA
Voltage Range	2 mV to 1000 mV
Voltage Resolution	0.1 mV
Accuracy (@25°C/77°F)	±0.1 mV



We Design, Manufacture, Supply and Support All of Our Products.

When you buy a Hanna product, you're not only buying the best value for your money, but you're also receiving the benefit of Hanna's unsurpassed customer service and post-sale technical support.

With 60 offices in over 40 countries, Hanna dedicates itself to be a worldwide leader in service and selection.

Offering research grade quality at competitive prices, every Hanna office strives to work with each customer to develop a solution tailored to their needs, on their budget.