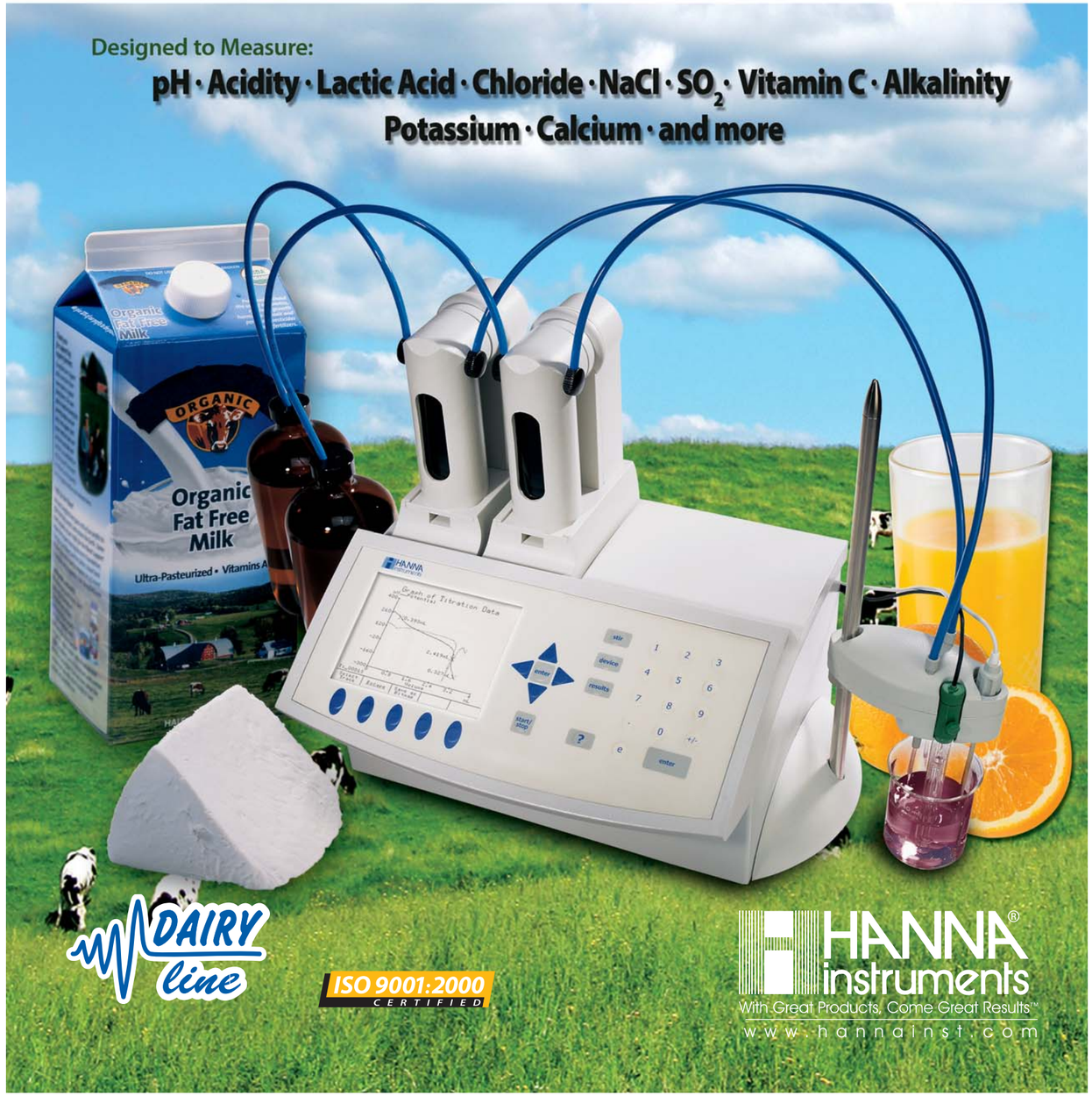
HI 901 • HI 902

# Multiparameter Food and Dairy Titration Systems



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Multiparameter Food and Dairy Titration Systems

## List of Methods

**A pH value**
Calibration and handling of electrodes, measuring pH

**B Preparation and titer determination of the most important titrants**
NaOH, KOH, HCl,$H_2SO_4$, iodine, thiosulfate, permanganate, $AgNO_3$, EDTA

**C Drinking water and mineral waters**
pH value, acid capacity, water hardness, Ca, Mg, chloride, sulfate, sulfide, chlorine, $CO_2$, $O_2$, oxidizability

**D Milk, Cheese & Dairy products**
pH value, acidity, chloride, Ca, vitamin C, Kjeldahl N

**E Edible fats and oils**
Acid number; free fatty acids, hydroxyl value, iodine value, peroxide values, saponification value

**F Cereals, dry pasta**
pH value, acidity, NaCl, Kjeldahl N/total protein, Ca, Mg

**G Honey, sugar and sweets**
pH value, free acid, formol number, reducing sugars

**H Soft drinks, lemonades**
Citric acid/citrate, phosphoric acid, K, total P

**J Fruit and vegetable juices, jams**
pH value, total acid, vitamin C, $SO_2$, chloride, total P, sulfate, Ca, Mg, K, ash alkalinity, Kjeldahl N, formol number, reducing sugars

**K Beer, vinegar, liquor and wine**
pH value, total acid, CO2, SO2, vitamin C, ash alkalinity, chloride, sulfate, total esters

**L Coffee, cocoa and chocolate**
pH value, acidity, chloride, reducing sugars, Kjeldahl N, free fatty acids

**M Sweetners, gelling and thickening agents**
Methoxy-and ethoxy groups, cyclamate, saccharin

**N Fruit, vegetable and mushroom preserves**
Oxalic acid, NaCl, $SO_2$

**O Table salt, spices, pickling salt, seasoning salt, herbal salt and flavored salt**
NaCl, total iodine, fluoride, tricalciumphosphate, nitrite

**P Meat products, meat extracts, consommé cubes, jellied meat, seasonings, soups, sauces**
NaCl, Kjeldahl N/raw protein, $SO_2$

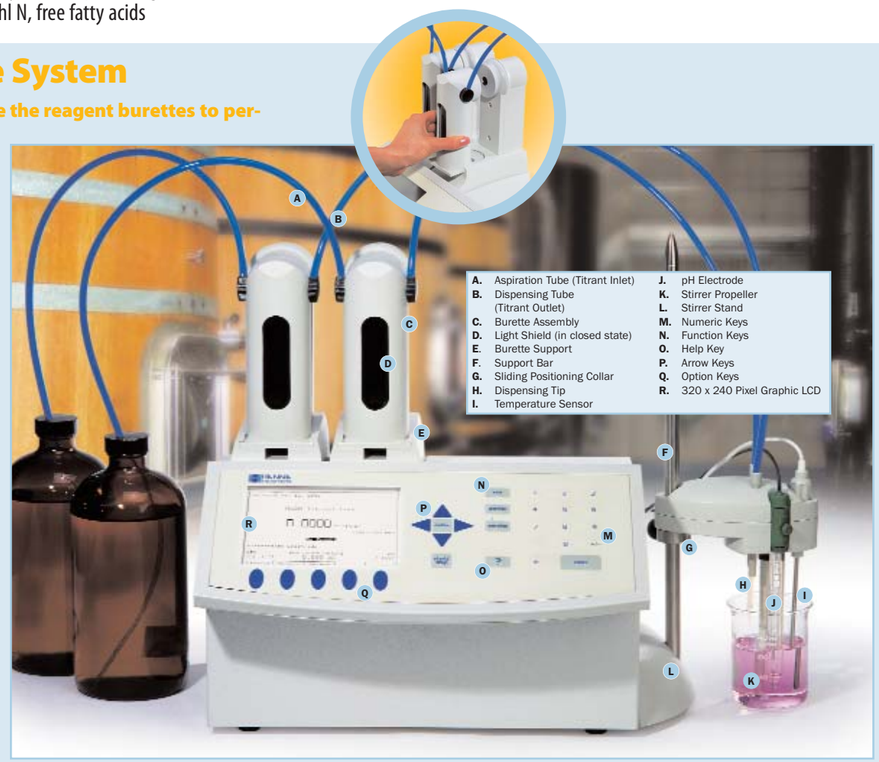
**Q Qualification of the titrator, validation of a titration method**

## Clip-Lock™ Exchangeable Burette System

**With Clip-Lock™, it only takes a couple seconds to exchange the reagent burettes to perform a different titration.**

HI 901 and HI 902 Automatic Titrators Feature:

- 320 x 240 pixel LCD w/backlight.
- Precise dosing system (accuracy under 0.1% of burette volume).
- Support up to 100 titration methods (standard and user defined).
- Clip Lock™ — change burettes quickly with auto burette recognition
- Dynamic/Linear dosing feature.
- Fixed end point potential or pH.
- Equivalence point detection (first derivative and second derivative).
- The results are displayed directly in the selected units.
- Titration graph can by displayed on-screen & saved.
- User customized reports can be printed, saved on floppy disk or transferred to PC via RS232 interface.
- Reminders for titrant age and standardization expiration.
- Self diagnostic features for peripheral devices including pump, valve, burette and stirrer.




| | | | |
|---|---|---|---|
| A. | Aspiration Tube (Titrant Inlet) | J. | pH Electrode |
| B. | Dispensing Tube (Titrant Outlet) | K. | Stirrer Propeller |
| C. | Burette Assembly | L. | Stirrer Stand |
| D. | Light Shield (in closed state) | M. | Numeric Keys |
| E. | Burette Support | N. | Function Keys |
| F. | Support Bar | O. | Help Key |
| G. | Sliding Positioning Collar | P. | Arrow Keys |
| H. | Dispensing Tip | Q. | Option Keys |
| I. | Temperature Sensor | R. | 320 x 240 Pixel Graphic LCD |

HANNA instruments®

## Keep an accurate record of analyses!

**HANNA's 900 Series titration systems are easily incorporated into any existing GLP data management program:**

- Users can easily record all necessary GLP information with every sample including sample identification, company and operator name, date, time, electrode ID codes and calibration information.
- Data can also be transferred using an integral floppy disk drive for communication with a PC or even other titration systems. Special memory cards are not required.
- All test results can be transferred directly to a PC.
- 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.
- RS 485 port for future expansion.

**Log precision pH or mV measurements**

**Record up to 100 reports**

**Incorporate HANNA 900 series titrators into any GLP data management program**

### A Complete Analysis

These instruments perform a complete analysis comprising of sample preparation, dispensing of titrant solution, stirring, measuring and waiting times, recognition of the end point and storing the results. All the parameters that a titration requires are grouped into *a method*.

The titrators are already supplied with a pack of standard methods or you can create your own. Using a floppy disk or connecting the titrator to the HI 900 PC application, methods (standard and user) can be upgraded, stored or deleted.

## Program View Store Print

*with HANNA PC Connectivity*

**PC Connectivity**
The HI 900 series titrators can be connected to a computer in conjunction with HANNA software.

**VGA Display Connectivity**
The information shown on the titrator display can be viewed on a standard VGA display via a 15-pin socket.

**Printer Connectivity**
The HI 900 series titrators accept a variety of parallel printers for printing of data.

**PC Keyboard Connectivity**
An external PC compatible keyboard can be connected.

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# Multiparameter Wine Analysis Titration Systems

| SPECIFICATIONS | mV | pH | Temperature |
|---|---|---|---|
| Range | -2000.0 to 2000.0 mV | -2.000 to 20.000 pH | -5.0 to 105.0°C/23 to 221°F |
| Resolution | 0.1 mV | 0.1/0.01/0.001 pH | 0.1°C/0.1°F |
| Accuracy | ±0.1 mV (@25°C/77°F) | ±0.001 pH (@25°C/77°F) | ±0.1°C/±0.2°F (excluding probe error) |
| Burette Sizes | 5, 10, and 25 mL | | |
| Burette Resolution | 1/40000 | | |
| Display Resolution | 0.001 mL | | |
| Dosing Accuracy | ±0.1% of full burette volume | | |
| Display | Graphic LCD, 320 x 240 pixel LCD | | |
| Languages | English, Italian, Portuguese | | |
| Methods | 10 standard and 90 user-defined methods | | |
| Burette Auto-Detection | Burette size is automatically recognized when inserted into the unit | | |
| Programmable Stirrer | Propeller type, 100-2500 RPM, automatically held within 10% of the set value, resolution 100 rpm | | |
| Flow Rate | User-selectable from 0.1 mL/min to 2 burette-volumes/min | | |
| pH/mV Measurement | Titrators will also perform direct pH and mV measurements | | |
| Temperature Compensation | pH measurements are automatically temperature compensated | | |
| pH Calibration | Manual or automatic at 1-5 points with 4 buffer sets or custom buffers | | |
| Potentiometric Titrations | Acid-Base (pH or mV-Mode), Redox, Precipitation, Complexometric, Non-Aqueous, Ion-Selective, Argentometric (in mV-mode only) | | |
| HI 901 Titration Methods | Fixed mV or pH end-point detection & first equivalency point detection (with the 1st or 2nd derivatives) | | |
| HI 902 Titration Methods | Fixed mV or pH end-point detection & multiple equivalency point detection (with the 1st or 2nd derivatives); back titration | | |
| Measurement Units | User specified expression of concentration units to suit specific calculation requirements | | |
| Real Time & Stored Graphs | mV-Volume or pH-Volume titration curve, 1st derivative curve or 2nd derivative curve, in pH-mode or mV-mode; pH/mV values versus time-data-logging results | | |
| Data Storage: | Up to 100 complete titration and pH/mV logging complete reports | | |
| Disk Drive: | Built-in 3.5" floppy disk drive allows storage and transfer of configurations, preprogrammed methods, custom methods, titration reports and bitmap graph files | | |
| Peripherals | Connections for VGA display, PC-keyboard, parallel printer, RS 232 interface, interface for future expansion | | |
| GLP Conformity | Instrumentation data storage and printing capabilities | | |
| 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 | Width x Depth x Height = 390 x 350 x 380 mm (15.3 x 13.8 x 14.9 in) | | |
| Weight | approx. 10 kg (22 lb.) with one pump and stirrer assembly | | |

| Preprogrammed Methods Include: | | | |
|---|---|---|---|
| **Name** | **Dosing Type** | **Endpoint Mode** | **Calculation** |
| NaOH Titrant Concentration | Dynamic | mV equivalency, 1st derivative | Tutrant concentration by weight |
| Titratable Acidity with Initial pH Measurement | Dynamic | Endpoint titration | Sample concentration by volume |
| $I_2$ Titrant Concentration | Dynamic | mV equivalency, 1st derivative | Titrant concentration by weight |
| Free & Total $SO_2$ Titrations | Dynamic | mV equivalency, 1st derivative | Sample concentration by volume |

## ORDERING INFORMATION

**HI 901** is supplied with (1) 25 mL burette, (1) burette driver, overhead stirrer, glass body pH electrode, temperature probe, power adapter, electrode holder, and instructions.
**HI 902** is supplied with (1) 25 mL burette, (2) burette drivers, overhead stirrer, glass body pH electrode, temperature probe, power adapter, electrode holder, and instructions.

For more information or for a distributor near you: **888.815.6422** • sales@hannainst.com

Authorized Distributor

ISO 9001:2000 CERTIFIED

HANNA® instruments
With Great Products, Come Great Results™
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