

## Foodcare

HI98169

### pH / Temperature Meter for Wine

HI98169 is a rugged, waterproof, portable pH meter that measures pH and temperature of must in winemaking. This meter is supplied with a specialized pH probe that features an open junction with Clogging Prevention System (CPS™) technology.

- **Waterproof**
  - IP67 rated waterproof, rugged enclosure
- **CAL Check™**
  - Alerts users to problems during calibration including dirty/broken electrode, contaminated buffer and overall probe condition
- **Automatic or manual temperature compensation**
  - pH sensors incorporate a built-in temperature sensor
- **Calibration**
  - Up to a five-point calibration with seven standard buffers and five custom buffers
- **Approximately 200 hour battery life**
  - Powered by four 1.5V AA batteries
- **Clear display**
  - Dot matrix display with multifunction virtual keys
- **Auto hold**
  - Automatically holds the first stable reading on the display
- **Calibration timeout**
  - Alerts when calibration is due at a specified interval
- **Connectivity**
  - PC connectivity via opto-isolated micro-USB with HI92000 software
- **GLP**
  - GLP data provides data from previous calibration to ensure Good Laboratory Practices are met
- **Intuitive keypad**
  - Important and often used functions such as GLP information, help, range, calibration and backlight have a dedicated button
- **Supplied complete**
  - Each meter is supplied complete with sensor, calibration and cleaning solutions, beakers, PC software and connection cable, instruction manual, quick start guide, and batteries in a rugged, custom carrying case



pH

portable

# Wine pH Meter

designed for wine making professionals

Hanna foodcare pH meters are rugged and portable with the performance and features of a benchtop. Eight models are available in this series to measure food, milk, meat, yogurt, cheese, beer, wine, and soil. Each model is supplied with an application specific electrode and cleaning solutions. These waterproof meters comply to IP67 standards and can be easily operated with one hand.



## Backlit Graphic LCD Display

These meters feature a backlit graphic LCD with on-screen help. The graphic display allows for the use of virtual keys to provide for an intuitive user interface.

## Waterproof Protection

The meter is enclosed in an IP67 rated waterproof casing and can withstand immersion in water at a depth of 1 m for up to 30 minutes.

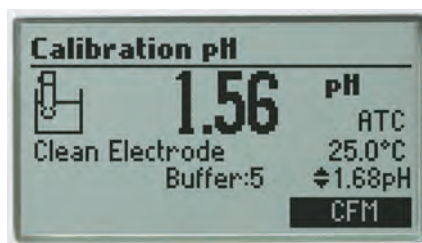


## Quick Connect Probe

Each meter features an application specific pH/temperature probe with a quick connect DIN connector to make attaching and removing the probe simple and easy.

## Calibration Timeout

Alerts when calibration is due at a specified interval.

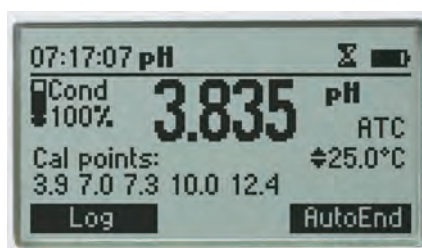


## pH Calibration

Choose from seven standard pH buffers and five custom values to obtain up to five point calibration and achieve high precision readings with a 0.001 pH resolution and a pH accuracy of  $\pm 0.002$ .

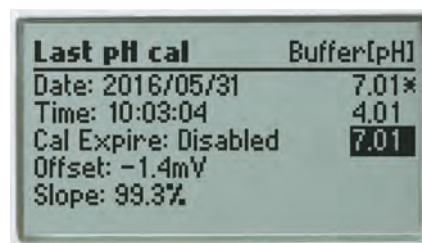
## Enhanced Calibration

An "out of calibration range" warning can be engaged to keep the user informed of the current calibration and help to avoid performing measurements that are out of the bracketed range.



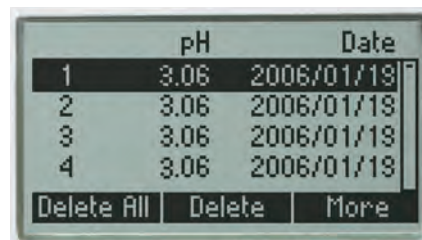
## CAL Check™

Hanna's CAL Check maintains a history of past calibrations and monitors the pH electrode and buffers during subsequent calibrations for any signs of wide variances due to a dirty or broken electrode or contaminated pH buffers. During calibration, users are alerted to problems should they occur. After calibration, the electrode's overall condition is displayed as a percentage.



## GLP

Comprehensive GLP functions are directly accessible by pressing the GLP key. Calibration data, including date, time, and calibration values are stored with logged data for retrieval at a later time.



## Data Logging

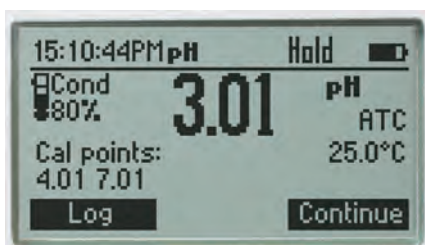
The log-on-demand feature allows users to store up to 200 samples that can later be transferred to a PC with the HI920015 USB cable and HI92000 software.

## Automatic Temperature Compensation

pH sensors incorporate a built-in temperature sensor in the tip of the electrode for a fast and accurate temperature compensated value.

## Intuitive Keypad

The fitted rubber keypad has dedicated keys for many important and often used functions. These meters also feature two virtual soft keys that navigate the user through setup and logging of data. The interface is intuitive for any user's level of experience.



### Auto Hold

Pressing AutoEnd during measurement will automatically hold the first stable reading on the display.



### Dedicated Help Key

Contextual help is always available through a dedicated "HELP" key. Clear tutorial messages and directions are available on-screen to quickly and easily guide users through setup and calibration. The help information displayed is relative to the setting/option being viewed.



### Setup Screen

Our extensive setup screen features a host of configurable options such as time, date, temperature units, and language for help screens and guides.



### PC Connectivity

Logged data can be transferred to a Windows compatible PC with the included HI920015 micro USB cable and HI92000 software.

### Long Battery Life

The display of the meter has a battery icon indicator to show the remaining power. The meter uses four 1.5V AA batteries that provide up to 200 hours of battery life.



### Supplied Complete in a Rugged Custom Carrying Case

Each meter is supplied complete with sensor, calibration and cleaning solutions, beakers, PC software and connection cable, instruction manual, quick start guide, and batteries in a rugged, custom carrying case. The inside compartment of the carrying case is thermoformed to securely hold and protect all of the components.

Specifications	HI98169	
pH*	Range	-2.0 to 20.0 pH; -2.00 to 20.00 pH; -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
	Calibration	up to five-point calibration, seven standard buffers available (1.68, 4.01, 6.86, 7.01, 9.18, 10.01, 12.45) and five custom buffers
	Temperature Compensation	automatic or manual from -20.0 to 120.0°C (-4.0 to 248.0°F)
mV	Range	±2000 mV
	Resolution	0.1 mV
	Accuracy	±0.2 mV
	Relative mV Offset Range	±2000 mV
Temperature*	Range	-20.0 to 120.0 °C (-4.0 to 248.0°F)
	Resolution	0.1°C (0.1°F)
	Accuracy	±0.4°C (±0.8°F) (excluding probe error)
Additional Specifications	pH Probe	FC10483 preamplified pH and temperature probe with flat tip, DIN connector and 1 m (3.3') cable
	Slope Calibration	from 80 to 110%
	Log-on-demand	Up to 200 samples (100 pH, 100 mV)
	PC Connection	opto-isolated USB with HI92000 software and micro USB cable
	Input Impedance	10 <sup>12</sup> Ω
	Battery Type / Life	1.5V AA batteries (4) / approximately 200 hours of continuous use without backlight (50 hours with backlight)
	Auto-off	user selectable: 5, 10, 30, 60 min, disabled
	Environment	0 to 50°C (32 to 122°F); RH 100% IP67
	Dimensions / Weight	185 x 93 x 35.2 mm (7.3 x 3.6 x 1.4") / 400 g (14.2 oz)
	Ordering Information	<b>HI98169</b> is supplied with FC10483 pH electrode, pH 3.00 buffer solution sachets (2), pH 7.01 buffer solution sachets (2), HI700635 Cleaning solution for wine deposits sachet, HI700636 cleaning solution for wine stains sachet, 100 mL plastic beaker (2), HI920015 micro USB cable, 1.5V AA batteries (4), instruction manual, guidebook for winemakers, and quality certificate in a HI720169 hard carrying case with custom insert.
Accessories	<b>HI710035</b> blue protective rubber boot	



## FC10483 pH electrode

- PE sleeve
- Refillable pH electrode
- Clogging prevention system (CPS™)

The HI98169 portable pH meter for wine uses the glass body FC10483 pH electrode with Hanna's unique Clogging Prevention System (CPS™). This electrode provides a fast stable response and resists clogging. The electrolyte solution in the electrode is refillable.

An integral part of any pH electrode is the reference junction. The reference junction is a part of the electrode that allows for the flow of ions located in the reference cell into the sample being measured. The ions provide for an electrical connection between the reference electrode and the indicating electrode. A standard pH electrode will use a single ceramic junction; however, the CPS™ (Clogging Prevention System) is an innovation in electrode technology. Conventional pH electrodes use ceramic junctions that clog quickly when used in wine. When the junction is clogged, the electrode does not function. CPS™ technology utilizes the porousness of ground glass coupled with a PE sleeve to prevent clogging of the junction. The ground glass allows proper flow of the liquid, while the PE sleeve repels dirt. As a result, pH electrodes with CPS™ stay fresh up to 20 times longer than conventional electrodes.

To optimize the flow from the electrode the refill cap should be unscrewed so that it is open. This allows for positive head pressure to be created allowing for the electrolyte to drain more easily from the reference electrode.



pH

portable

### The Importance of pH in Wine Making

The pH of wine is important to determine because it will affect the quality of the final product in terms of taste, color, oxidation, chemical stability and other factors. Generally in winemaking, the higher the pH reading, the lower amount of acidity in the wine. Three important factors in determining the pH of wine include the ratio of malic acid to tartaric acid, the amount of potassium, and the total amount of acid present.

Most wines optimally have a pH between 2.9 and 4.0, with values differing based on the type of wine. Values above pH 4.0 indicate that the wine may spoil quickly and be chemically unstable. Lower pH values allow the wine to stay fresher for a longer period and retain its original color and flavor. High pH wine is more likely to breed bacteria and become unsuitable to drink.

For finished white wines, the ideal pH is between pH 3.00 and pH 3.30, while the final pH for red wine is ideally between pH 3.40 and pH 3.50. The optimal pH before the fermentation process is between pH 2.9 and pH 4.0. The pH of wine therefore not only affects the color of wine, but also the oxidation, yeast fermentation, protein stability, and bacterial growth and fermentation.

Specifications	FC10483
Description	pH electrode
Reference	double, Ag/AgCl
Junction	CPS™
Electrolyte	KCl 3.5M
Max Pressure	0.1 bar
Range	pH: 0 to 12
Recommended Operating Temperature	-5 to 60°C (23 to 140°F)
Glass Type	LT (low temperature)
Tip /Shape	Dome (dia: 8 mm)
Temperature Sensor	yes
Amplifier	yes
Body Material	glass
Cable	coaxial; 1 m (3.3')
Connection	quick connect DIN