HI98167

pH / Temperature Meter for Beer

The HI98167 is a rugged, waterproof, portable pH meter that measures pH and temperature during the brewing process. This meter is supplied with a specialized titanium body pH electrode with a built in temperature sensor that is ideal for measuring the pH of mash, cooled wort, and of the finished product.

- 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

Beer pH Meter

designed for beer making professionals

Hanna foocare 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.
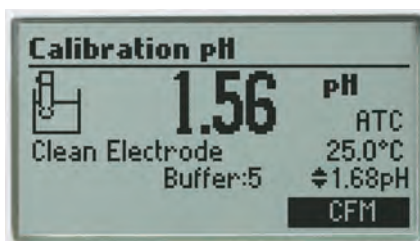
Quick Connect Probe

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

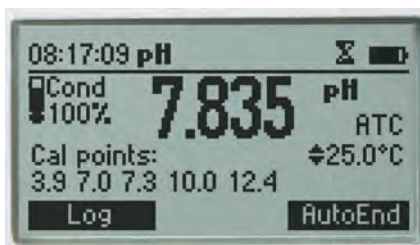Alerts when calibration is due at a specified interval.

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 ±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.
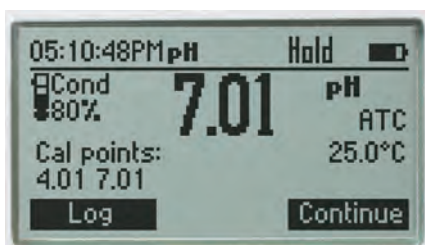
Data Logging

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		HI98167
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	FC2143 Titanium body, flat tip, preamplified pH electrode with internal temperature sensor, quick 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^{12} 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		**HI98167** is supplied with FC2143 pH electrode, HI7004M pH 4.01 buffer solution (230 mL), HI7007M pH 7.01 buffer solution (230 mL), HI700682 Electrode cleaning solution sachets for brewing deposits (2), 100 mL plastic beaker (2), HI92000 PC software, HI920015 micro USB cable, 1.5V AA batteries (4), instruction manual, and quality certificate in a HI720161 hard carrying case with custom insert.
Accessories		**HI710035** blue protective rubber boot

- Optional shockproof silicon rubber boot
  - Specially designed to protect your instrument from damage or impact

  HI710035 Blue

* Limits will be reduced to actual probe/sensor limits.

FC2143

pH / Temperature Probe for Beer

The FC2143 pH electrode is a flat tip pH sensor made with specialized glass to provide a long life when measuring temperatures up to 80°C. A built in temperature sensor compensates for temperature variations. The probe has a built in amplifier and a titanium body that acts as a matching pin to reduce noise as a result from the effect that humidity has on probe connection to the meter. The FC2143 connects to the HI98167 with a quick-connect, waterproof DIN connector, allowing for a secure, non-threaded attachment.

Titanium Body

A pH measurement is a very sensitive voltage measurement that is susceptible to interference. To reduce this susceptibility the titanium body serves as a matching pin. A matching pin is a differential measurement technique used to eliminate electrical noise in the measurement system.

Flat Tip pH Sensor

The flat tip sensor allows for easy cleaning of the pH sensing surface as solids from mash and cooled wort collect on the surface.

Quick Connect DIN Connector

This secure waterproof connector allows for a single cable to be used for both pH and temperature measurements.

Application Importance

The measurement of pH during the beer making process is important due to the effect it has on enzymatic activity in the mash, yeast activity in fermentation, and the incorporation of flavoring components. Monitoring and controlling the pH allows for a consistent flavor profile and ensures a stable product. The brewer is faced with a number of challenges when measuring pH. The mash has a high content of semi-solids and sugars are formed from the conversion of starch by enzymatic activity. Both can pose problems, including coating the glass and clogging the junction. The mash and cooled wort after boiling are typically above room temperature, which leads to the degradation of the sensitive glass. To overcome these challenges the HI98167 beer pH meter is supplied with a uniquely design titanium body pH electrode.

Specifications	FC2143
Description	pH electrode
Reference	single, Ag/AgCl
Junction	cloth
Electrolyte	gel
Max Pressure	3 bar
Range	pH: 0 to 12
Recommended Operating Temperature	0 to 80°C (32 to 176°F)
Glass Type	LT (low temperature)
Tip / Shape	flat
Temperature Sensor	yes
Amplifier	yes
Body Material	titanium with HT glass sensor
Cable	coaxial; 1 m (3.3')
Connection	quick connect DIN