Care and Maintenance

To obtain the highest accuracy for measurements it is important to follow these tips:

- Calibration is only as good as the buffer being used. The pH buffer values change over time once the sachets are opened. Fresh buffer should be used for each calibration.
- The probe should be rinsed with purified water each time before placing in buffer or sample to be tested.
- When the meter is not in use it is important to add several drops of storage solution to the protective cap to keep the probe hydrated. If storage solution is not available, pH 4.01 or pH 7.01 buffer can be used.
- For improved accuracy it is recommended to calibrate in two buffers.
- It is important to calibrate and measure samples at the same temperature. A dramatic change in temperature between buffer solutions and samples to be tested will give inaccurate readings.
- If fouled, clean the electrode by soaking in cleaning solution for 20 minutes, then rinse the tip and soak in storage solution at least 30 minutes before use. Recalibrate after each cleaning.

Warranty

The meter is warranted for a period of one year against defects in workmanship and materials when used for their intended purpose and maintained according to instructions. This warranty is limited to repair or replacement free of charge. Damage due to accidents, misuse, tampering or lack of prescribed maintenance is not covered. If service is required, contact your local Hanna Instruments Office. If under warranty, report the model number, date of purchase, serial number and the nature of the problem. If the repair is not covered by the warranty, you will be notified of the charges incurred. If the instrument is to be returned to Hanna Instruments, first obtain a Returned Goods Authorization (RGA) number from the Technical Service department and then send it with shipping costs prepaid. When shipping any instrument, make sure it is properly packaged for complete protection.

Recommendations for Users

Before using this product, make sure it is entirely suitable for your specific application and for the environment in which it is used. Any variation introduced by the user to the supplied equipment may degrade the meters' performance. For yours and the meter's safety do not use or store the meter in hazardous environments.

Certification

All Hanna Instruments conform to the **CE European Directives**. CE RoHS compliant

Disposal of Electrical & Electronic Equipment. The product should not be treated as household waste. Instead hand it over to the appropriate collection point for the recycling of electrical and electronic equipment which will conserve natural resources.

Disposal of waste batteries. This product contains batteries, do not dispose of them with other household waste. Hand them over to the appropriate collection point for recycling.

Ensuring proper product and battery disposal prevents potential negative consequences for the environment and human health. For more information, contact your city, your local household waste disposal service, the place of purchase or go to www.hannainst.com.

Auto-off

From measurement mode, press and hold the ON/OFF button. The meter will cycle through "OFF," "CAL," then current auto-off setting.

The default setting is 8 minutes ("d08"). Press ON/OFF button to change. "d60" is auto-off after 60 minutes, and "d--" disables the auto-off feature. Press and hold the button to exit the menu.

Clear Calibration

Place meter in calibration mode. Press and hold ON/OFF until "CLr" is displayed. The meter will now be at default calibration.

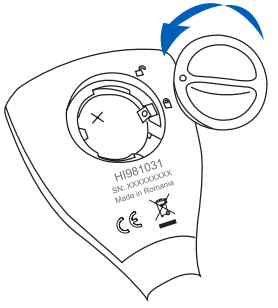
"Err" Message

In calibration mode, if the meter displays an "Err" message when in the correct fresh buffer solution then the probe should be cleaned. Place the probe in the HI700682 cleaning solution for 20 minutes. Rinse with purified water and place in storage solution for 30 minutes before calibrating.

Battery Indicator

The meter features a low battery indicator. When the battery is running low, the tag will blink on screen. When the battery has been depleted, "Erb" will appear on screen and the meter will turn off.

Battery Replacement



To change the CR2032 Li-ion battery, turn the battery cover located on the back of the meter counterclockwise to unlock. Remove cover and replace the battery with + side facing up.

Note: Batteries should only be replaced in a safe area using the battery type specified in this instruction manual. Old batteries should be disposed in accordance with local regulations.

Accessories

pH Buffer Solution

Code	Description
HI70004P	pH 4.01 buffer solution, 20 mL sachets (25 pcs.)
HI70007P	pH 7.01 buffer solution, 20 mL sachets (25 pcs.)
HI77400P	pH 4.01 & 7.01 buffer solution, 20 mL sachets (10 pcs., 5 ea.)

Electrode Cleaning Solution

Code	Description
HI700601P	General purpose cleaning solution, 20 mL sachets (25 pcs.)
HI700682P	Electrode cleaning solution for brewing deposits, 20 mL sachets (25 pcs.)

Electrode Storage Solution

Code	Description
HI70300L	Electrode storage solution, 500 mL bottle
HI70300M	Electrode storage solution, 230 mL bottle
HI9072	Electrode storage solution, 13 mL dropper

IST981031 05/18-1

INSTRUCTION MANUAL

Foodcare

HI981031

Beer pH Tester

HANNA® instruments

Thank You

Thank you for choosing a Hanna Instruments product. Please read this instruction manual carefully before using this instrument.

For technical support, contact your local Hanna Instruments Office or email us at tech@hannainst.com.

To find your local Hanna Instruments Office or for additional information on Hanna Instruments products, visit www.hannainst.com

Preliminary Examination

Remove the meter from the packing material and examine it carefully to make sure that no damage has occurred during shipment. If noticeable damage is evident, contact your local Hanna Instruments Office.

Each meter is supplied with:

- pH 4.01 buffer solution liquid sachet (2 pcs.)
- pH 7.01 buffer solution liquid sachet (2 pcs.)
- Cleaning solution for brewing deposits (2 pcs.)
- Electrode storage solution, 13 mL dropper
- Instruction manual
- Quality Certificate

Note: Save all packing material until you are sure that the instrument functions correctly. All defective items must be returned in the original packaging with the supplied accessories.

Intended Use

pH is measured at various points during the brewing process. This electrode is intended to measure the pH of the mash for the optimization of starch conversion. The enzymes required to convert the starch into sugar are pH-sensitive with an optimal pH range between 5.2 and 5.6 pH. Different compounds are used to adjust the pH including phosphoric acid, lactic acid, and gypsum.

As a living catalyst, yeast maintains a pH around 6.5 within its cells; however, the preference is to inhabit a more acidic environment. During the fermentation stage, the pH should be lower to accommodate the yeast and also to ensure microbial stability and consistent flavoring of the beer; an optimal pH range during fermentation is between pH 4.1 and 4.3.

This pH electrode can be used to measure the wort before and after boiling. It is important to note that if used after the boil that the wort be allowed to cool to below 80 °C (176 °F) in order to prevent damaging the sensitive glass.

Probe Features

Titanium Body

A pH measurement is a very sensitive voltage measurement that is susceptible to interference from electrical noise and humidity. To overcome these issues the titanium body works as an electronic shield. The titanium body, being made of metal, is virtually unbreakable and offers additional protection from accidental breakage.

Flat Glass

The flat glass tip is easy to clean and prevents solids in samples from collecting on the sensor. It is suitable to use with samples that measure up to 80 °C (176 °F). Due to the small dimensions of the meter, don't remain in contact with very hot samples for a long time.

Renewable Cloth junction

It is possible to renew the junction when it gets dirty. Simply extract a few millimeters of the cloth junction to expose a fresh portion and cut off the old part.

Specifications

Range	0.0 to 14.0 pH
Resolution	0.1 pH
Accuracy	±0.2 pH @25 °C/77 °F
Calibration	Automatic, one or two-point
Electrode	Built-in probe for specific application
Battery Type	CR2032 Li-ion
Battery Life	Approximately 1000 hours of continuous use
Auto-off	8 minutes, 60 minutes or can be disabled
Environment	0 to 50 °C (32 to 122 °F); RH 95% max
Dimensions	51 x 165 x 21 mm (2 x 6.5 x 0.9")
Weight	58 g (2 oz.)

Meter Overview

Preparation:

Check if the pH electrode was maintained hydrated by inspecting the protective cap for the presence of storage solution. If the electrode is dry before using the meter, **remove the protective cap** and condition the electrode by soaking the tip (bottom 4 cm (1.5")) in pH 7.01 buffer solution for several minutes. Then follow the calibration procedure.

- Do not be alarmed if white crystals appear around the cap. This is normal with pH electrodes and they dissolve when rinsed with water.
- Turn the meter on by pressing ON/OFF button.
- Remove the protective cap and immerse the tip of the electrode in the sample to be tested.

NEVER IMMERSE THE ELECTRODE OVER THE MAXIMUM IMMERSION LEVEL.

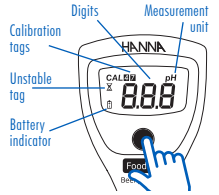
- Stir gently and wait for a stable reading.
- For best results, recalibrate periodically.
- After use, rinse the electrode with water and store it with a few drops of storage solution in the protective cap.
- Reattach the protective cap after each use.

DO NOT USE DISTILLED OR DEIONIZED WATER FOR STORAGE PURPOSES.

Operation

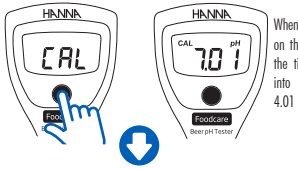
Press the ON/OFF button to turn the meter on. All tags will be displayed.

The meter will go into measurement mode: current reading and calibrated buffers are displayed.



Meter Calibration

From measurement mode, press and hold the ON/OFF button until "CAL" is displayed.

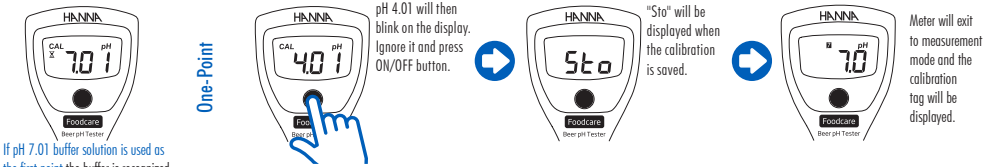


When "7.01" blinks on the display, place the tip of the probe into a pH 7.01 or 4.01 buffer solution.

A For one or two-point calibration using pH 7.01 buffer go to procedure A

B For one-point calibration using pH 4.01 buffer go to procedure B

A One or Two-Point Calibration with pH 7.01



If pH 7.01 buffer solution is used as the first point the buffer is recognized with the blinking stability indicator.

When the reading is stable, the stability indicator will disappear and pH 7.01 will be calibrated.

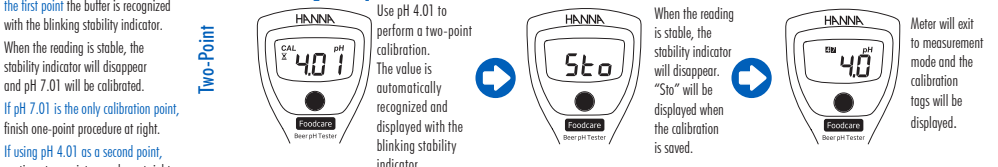
If pH 7.01 is the only calibration point, finish one-point procedure at right.

If using pH 4.01 as a second point, continue two-point procedure at right.

pH 4.01 will then blink on the display. Ignore it and press ON/OFF button.

"Sto" will be displayed when the calibration is saved.

Meter will exit to measurement mode and the calibration tag will be displayed.



Use pH 4.01 to perform a two-point calibration. The value is automatically recognized and displayed with the blinking stability indicator.

When the reading is stable, the stability indicator will disappear. "Sto" will be displayed when the calibration is saved.

Meter will exit to measurement mode and the calibration tags will be displayed.

B One-Point Calibration with pH 4.01

If pH 4.01 buffer solution is used as the first point the value of the buffer is recognized and displayed with the blinking stability indicator.

When the reading is stable, the stability indicator will disappear."Sto" will be displayed when the calibration is saved.

Meter will exit to measurement mode and the calibration tag will be displayed.