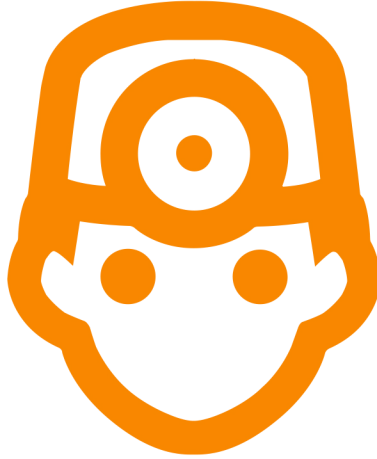


Beverage Doctor pH Meter – #KL04169



The # KL04169pen style pH meter is an accurate, easy to use pen style device that has been designed with reliability in mind. The pH meter has a water resistant casing, replaceable electrode, temperature sensor, ATC, digital calibration, and 0.01 pH resolution just like any high quality pH meter should.

PH METER INSTRUCTION SHEET

BEVERAGE DOCTOR - pH Meter Instructions - # KL04169

Technical Data/Specifications

pH Test Range	pH 0.01-14.00
Temp Test Range	0-50°C (32-122°F)
pH Resolution	0.01 pH
Temp Resolution	1°C (2°F)
Calibration	pH @ 25 °C 3 Point 4.00/6.86/9.18
Working Temperature	0-50°C (32-122°F)
Power	1.5v (LR44) x 4 pcs
Dimension	40mm Diameter x 185mm High
Weight	88grams

Operation

1. Remove the protective cap.
2. Clean the electrode with distilled water, and dab up the excess water on the electrode with filter paper.
3. Press the "ON/OFF" key to turn on the power.
4. Immerse the electrode into the test solution. Stir gently, then, wait until a stable numerical result is displayed on the screen. The upper number is the pH value and the lower number is the temperature of solution.
5. Press the "Hold" key to keep the current value, press the "Hold" key again to release it for re-measurement.
6. Press "ON/OFF" key to turn off the power after use, then clean the electrode and close the cap. This instrument will automatically shutdown if it is not used for 5 mins.
7. To convert the unit between "°C" or "°F", while powered off, press "CAL" key first without release, then press "ON/OFF" key and hold on, release both keys when the right side of screen shows "°C" or "°F", then, press the "CAL" key to choose the unit you prefer, after that press the "HOLD" key to save the unit, the screen will show "SA" then "END" which means the unit you've chosen is saved. The meter will be in measurement mode automatically after 1 second.
8. If the pH value of test solution is lower than "0" or higher than "14", the meter will show "L---" or "H---". If the temperature is too low or too high, the temperature zone on screen will show "L" or "H".

Calibration

Prepare 4.00, 6.86 or 9.18 pH standard buffer solution, press the "ON/OFF" to turn on the instrument, immerse the electrode into buffer solution, stir gently for a moment, then hold still to get a stable pH value shown on screen. Press the "CAL" key for 3seconds and release when the screen shows "CAL". (The meter will identify the corresponding standard pH value for buffer solution with automatic temperature compensation.) First, the screen will show the current reading value for 1 second, then, it will show the pH value of buffer solution with automatic temperature compensation for 2 seconds, after that, the screen will show "SA" and "END" in sequence which means the calibration is finished. After 1 second, the pH meter will be in measurement mode.

Note:

1. If the screen shows "END" after press "CAL" key for 1second, it means the buffer solution is invalid or electrode is in bad condition. Press any key to switch back to measurement mode. In this case, please check the buffer solution and electrode to solve the problem.



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2. Never take out the electrode from the buffer solution before the screen shows "END", otherwise, it may cause inaccurate readings.

3. The calibration should be performed before first use, after replacing the probe or batteries or if you suspect the reading is no longer accurate. Typically for brewing this would be done once a month but can be done more or less often depending on frequency of use and accuracy required.

Battery Installation

If the screen shows battery symbol, it means batteries should be replaced. Just unscrew the battery case and replace it. Pay attention to the directions.

Maintenance

1. The preparation of the calibration buffer solution must use twice distilled water or Non-Ion water, the conductivity should be less than $2\mu\text{ s/cm}$.

2. The calibration buffer solution should be stored in the refrigerator (low temperature around $5-10^{\circ}\text{C}$), can be used for 2-3 months. If there is discoloration, mildew or sediment in the solution, do not use and discard.

3. Don't use the calibration buffer solution older than 2-3 months. Don't pour the used calibration buffer solution into the unused calibration solution bottle.

4. Use the calibration buffer solution which is closest to the pH value of the sample you're testing and the calibration solution temperature as close to the sample temperature as possible.

5. The electrode should not be immersed in distilled water for a long period.

6. In the protective cap there is a sponge absorbed with electrolyte solution which is used to keep electrode hydrated. Replenish this solution to prevent the probe from drying out while in storage using KegLand Electrolyte Solution (part # KL04183).

7. Avoid physical damage to the fragile pH electrode and temperature probe. Always store in the protective cap when not in use.

8. When changing from one solution to another solution, the electrode should be cleaned with distilled water and excess water dabbed with filter paper. Do not wipe the glass ball to avoid sluggish response. It is best to take two samples of the test solution and rinse the probe in one before taking the reading from the second.

9. Restrict the time the electrode is immersed in strong acid and alkali solutions, after testing rinse well.

10. The slope and response time of electrode will decrease a little after long time using, please immerse the electrode ball for 24 hours into 0.1 mol/L HCL solution (preparation: 9ml HCL diluted to 100ml by Non-Ion water).



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Troubleshooting the Electrode

If the instrument is working but the reading is unstable, the instrument responds slowly, or cannot be calibrated to the right pH value, please check electrode first as below:

1. Whether electrode sensor is immersed in testing liquid or not.
2. Electrode ball is not dirty or contaminated from previous samples.
3. Electrode is well connected, and glass ball is in good condition.

If the reading is still unstable and cannot be calibrated the electrode will need replacing (part # KL04176).

Troubleshooting the Calibration Buffer Solution

If the instrument and the electrode is operating well, the readout is not correct or cannot be calibrated, please check the standard buffer solution:

1. Check the calibration buffer solution liquid is made up correctly as per instructions above.
2. The buffer solution is less than two months old and not contaminated.

TABLE 1.1 – Reference Table For Buffer Solution			
Temp	0.05mol/kg Potassium Hydrogen Phthalate	0.025 mol/kg Phosphate Mixture	0.01mol/kg Borax
0°C	4.01	6.98	9.46
5°C	4.00	6.95	9.39
10°C	4.00	6.92	9.33
15°C	4.00	6.90	9.28
20°C	4.00	6.88	9.23
25°C	4.00	6.86	9.18
30°C	4.01	6.85	9.14
35°C	4.02	6.84	9.10
40°C	4.03	6.84	9.07
45°C	4.04	6.83	9.04
50°C	4.06	6.83	9.02
55°C	4.07	6.83	8.99
60°C	4.09	6.84	8.97
70°C	4.12	6.85	8.93
80°C	4.16	6.86	8.89
90°C	4.20	6.88	8.86
95°C	4.22	6.89	8.84

