

Digital pH Meter

KL04169



KegLand Distribution PTY LTD

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The digital pen style pH meter ([KL04169](#)) 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.

1. Technical Data/Specifications

pH Test Range	pH 0.01-14.00
Temperature Test Range	0-50°C (32-122°F)
pH Resolution	0.01 pH
pH Accuracy	0.05 pH
Temp Resolution	1°C (2°F)
Calibration	3 Point pH 4.00/6.86/9.18 @ 25 °C
Working Temperature	0-50°C (32-122°F)
Power	1.5v (LR44) x 4 pcs
Dimension	40mm Diameter x 185mm High
Weight	88grams

2. Battery Installation

Batteries are provided in the box for the Digital pH Meter. These will need to be installed prior to first time use.

Unscrew the battery case and place the batteries in position in the correct orientation.

If the screen shows a battery symbol, it means batteries should be replaced.

3. Electrode Hydration

IMPORTANT NOTE: Upon first time use prior to calibration, rehydration of the electrode is essential to get an accurate reading for correct calibration.

In order to get a stable pH measurement, the electrode bulb must be properly hydrated. If the electrode has been in storage for a long period of time or may have dried out it should be rehydrated. To rehydrate soak the electrode in 3M KCL electrolyte solution ([KL04183](#)) for at least one hour. In some cases, it may be necessary to soak the electrode overnight.

4. Calibration

Calibration is required upon first time use.

It is best practice (for most accurate results) to calibrate prior to measurement of your samples. Frequent calibration is recommended. In addition, the pH meter should be recalibrated when:

1. The pH electrode is replaced
2. After testing aggressive chemicals
3. Where high accuracy is required
4. At least once a month.

A minimum two-point calibration is required, however, performing a three-point calibration will result in more accurate results. For a three-point calibration calibrate the pH meter against all three standard buffer solutions; 4.00, 6.86 and

9.18. To quickly calibrate the pH meter if you don't mind the results being slightly inaccurate you can perform a two-point calibration.

When performing a two-point calibration it is best to calibrate the pH meter against the standard buffer solutions which are closest in pH to the pH of the solution you will be measuring. For example: wort from the mash usually has a pH in the range of 5.2-5.5 and hence the pH meter should be calibrated against the standard buffer solutions of 4.00 and 6.86 at a minimum (if you wanted higher accuracy also calibrate against the 9.18 standard buffer solution).

4.1 Preparing the standard buffer solutions.

For each standard buffer solution empty the entirety of the sachet into a clean container or glass which can hold over 250mL

Fill the container with exactly 250mL of 25°C distilled or deionized water (the conductivity should be less than 2µs/cm).

Stir the buffer solution until all the granules have dissolved into solution. After all the granules are dissolved the standard buffer solution is ready to be calibrated against.

Repeat this process with all pH powders you are calibrating the pH meter against.

4.2 Calibrating the pH meter against the buffer solutions

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.
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.

Operation (measuring the pH of your sample)

1. Remove the protective cap and ensure the electrode is hydrated. If the electrode has dried out or has been stored for an extended period of time the electrode will need to be rehydrated.
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 rinse the electrode with distilled water and close the cap. This instrument will automatically shut down 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".

The electrode is sensitive to electrostatic discharge and hence it is best to use distilled or deionized water rather to rinse the electrode.

If measurements are taken in different samples successively, rinse the electrode thoroughly with distilled or deionised water to eliminate cross-contamination; then rinse the electrode with some of the sample to be measured.

Maintenance

1. The preparation of the calibration buffer solution must use twice distilled water or deionized water; the conductivity should be less than 2μ s/cm.
2. The calibration buffer solution should be stored in the refrigerator (low temperature around 5-10°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. If the glass electrode has dried out or has been stored for an extended period of time the electrode will need to be rehydrated. Soak the electrode in 3M KCL electrolyte storage solution for at least one hour to hydrate the electrode.
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 ([KL04183](#)).
7. Avoid physical damage to the fragile pH electrode and temperature probe. Always store in the protective cap with storage solution when not in use.
8. When changing from one solution to another solution, the electrode should be rinsed with distilled water and excess water dabbed with filter paper. Do not wipe the glass ball to avoid a sluggish response. It is best practice to take two samples of the test solution and rinse the probe in one sample 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 a long time using the pH meter, immerse the electrode ball for 24hours in 0.1M HCL solution (preparation: 9ml HCL diluted to 100ml by Non-Ion water) to dissolve any salt deposits on the glass bulb.

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 the following:

1. Electrode has been properly rehydrated.
2. Whether electrode sensor is immersed in testing liquid or not.
3. Electrode ball is not dirty or contaminated from previous samples.
4. 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 ([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