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Pictorial Guide on how to calibrate your New PHscan Meter.
There is a video, as well, so go to our media section @ www.sciencesupply.com.au

The only issues you may encounter when calibrating are this.
And this all depends on how accurate you want the measurement to be.
I will start buy recommending the best tools, but you can substitute where you see fit.

1) You will need 2 x 250ml Volumetric Flasks… (I wonder who would sell these…..Hint)
   You can store you calibration solutions in these indefinately, or until they run out.
2) You will need 2 x 100 ml beakers, or any glass jars able to fit probe in. The less volume the better, as who wants to waste calibration solution.
3) A glass or plastic funnel
4) Distilled or de-ionised water – (de-ionesed is best, and also happens to be the cheapest at you local supermarket)
5) 1 hour free to get this done.
6) **Just use a 3M solution of KCL to store the electrode, for long periods.**
   This is done by leaving solution in nose cap, and then tightening.
7) A cheap thermometer or similar to measure the room temp, for even better accuracy

Below, are tips, and tricks, for when measuring dirty solutions, and how to clean, and maintain your electrode. Don't let it scare you, and really just use the instruction guide that came with you unit, as it is a million times simpler.

There are english instructions, that came with your PHscan10 and it is much easier if you just follow them. The only issue you may have is when you are chosing calibration solutions on the device. You are first offered 4-7, which is the one you choose. This just means you ph solutions you have are between 4 and 7. And that's it, the rest is pretty straight forward.

Notes: Remember to always rinse the electrode between measurements, and calibration solutions. The absorbtion of solution into electrode takes a few seconds to rinse off, and after that you are golden.

And the beauty is that even if you break the glass electrode, you can always just by another, from me. That are not very expensive. But these guides below, should make your PHSCAN10 last forever, if you have the nouse to follow them. ***It all depends on the accuracy you require.***

And remember to have fun, make mistakes, as that is how we really learn. I love this thing, it is so accurate, and waterproof. It easily can do $1/10^{th}$ of a ph. This is a very powerful tool, so enjoy.
Once you have calibrated it, you work is done, after that it is just looking after it.

Matty

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Electrode Storage for long periods.

1. **Introduction**
Taking care of your pH electrodes will ensure proper functioning, as well as enhance their longevity. Read the following primer on the best methods for storing, cleaning, and reconditioning electrodes:

2. **Storing Electrodes**
For best results, always keep the pH bulb wet, preferably in a storage solution or in pH 4.01 buffer with 1/100 part of saturated potassium chloride (KCl) added. Other pH buffers or tap water are acceptable storage media, but avoid storing in distilled water because it will deplete the hydration layer of refillable electrodes, and decrease the life of nonrefillable electrodes. The electrolyte level in the outer cavity should be kept above the level of the solution measured. An electrode storage bottle can be used for short- or long-term storage.

To reuse the storage bottle included with the electrode, slide the cap and then the O-ring onto the electrode, insert the electrode midway into the bottle containing storage solution (or a 50:50 mixture of 4 M potassium chloride and pH 4 standard buffer), and gently screw on cap. Close the fill hole on liquid-filled units. (Insertion directly into the cap/bottle assembly with the cap/O-ring in place may cause harm to the electrode by damaging the junction or it may develop pressure and cause storage liquid to flow into the electrode.)

KCl and pH 4 buffer provide good conditions for mold to grow. To prevent mold from growing in storage solutions, use up to 4% of sodium benzoate or azide in the reference fill and storage solutions.

If the electrode has not been hydrated (i.e. placed in solution for more than one hour), allow the electrode to soak in a buffer (preferably pH 4) prior to standardization or measurement. This will help optimize and re-establish the thin hydration layer on the sensing bulb, which is critical to pH measurement.

NOTE: Electrodes should not be stored for a period longer than six months. Electrode stock should be rotated accordingly.

3. ***Cleaning Electrodes***

Mechanically intact electrodes with no broken parts can often be restored to normal performance by one of the following procedures:

 General Cleaning: Soak the electrode in 1:10 dilution of household laundry bleach in a 0.1 to 0.5% liquid detergent solution in hot water with vigorous stirring for 15 minutes. Place junction under warm, running tap water for 15 seconds. Drain/refill the reference chamber. Soak the electrode in storage solution for at least 10 minutes.

 Salt Deposits: Dissolve the deposit by immersing the electrode in 0.1 M HCl for five minutes, followed by immersion in 0.1 M NaOH for five minutes, and thorough rinsing with distilled water.

 Oil/Grease Films: Wash electrode pH bulb in mild detergent or methanol. Rinse electrode tip with distilled water.

 Clogged Reference Junction: Heat a diluted KCl solution to 60 to 80oC. Place the reference portion of the pH electrode into the heated KCl solution for approximately 10 minutes. Allow the electrode to cool while immersed in unheated KCl solution.

 Protein Deposits: Dissolve the deposit by immersing the electrode in a 1% pepsin solution with a background of 0.1 M HCl for five minutes, followed by thorough rinsing with distilled water.

 Air Bubbles: If air bubbles appear in the electrode (especially with microelectrode and narrow test tube electrodes), open up the fill hole, grab the cable of the probe about 18" from the connection to the electrode, and spin in a circular motion over your head (like a helicopter) for about a minute. The centrifugal force should force the air bubble to the fill hole/top of the electrode.

After any of these special cleaning procedures, remember to drain/refill the reference chamber, if refillable. Soak the electrode in storage solution for at least 10 minutes prior to use. If these steps fail to restore normal electrode response, replace the electrode.

1. **Reconditioning Electrodes**

Older electrodes, or electrodes that have been stored dry, may need to be "reconditioned". Recondition an electrode by soaking it in pH 4.01 buffer or electrode storage solution for at least 30 minutes.

Here are other tips for reconditioning or reviving an electrode:

Often electrodes are used in applications that require regular cleaning of the electrode or reference. These applications usually involve very hard waters (with high scale content), dirty samples like soil slurries, viscous materials, or samples with high oil and protein content.

As with any procedure involving strong chemicals, please wear appropriate safety apparel and goggles, and provide adequate ventilation. These procedures are not recommended for persons unfamiliar with, or unable to use, safe techniques involving these chemicals: detergents, HCl (hydrochloric acid), NaOH (sodium hydroxide).

Method 1: Soak the electrode in a 0.4 M of HCl (hydrochloric acid) for 10 minutes, then rinse the electrode with deionized or distilled water. This should remove any organic protein from the glass electrode and the surface of the reference electrode.

Method 2: Soak the electrode in a 3.8 or 4.0 M KCl (potassium chloride) solution heated to 50oC for one hour. Allow the KCl solution to cool down to room temperature, then rinse the electrode with deionized or distilled water. This will open and clean the reference electrode of all contaminants.
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Photo guide is in reverse. Ie. The first photo is what you shuold end up with.

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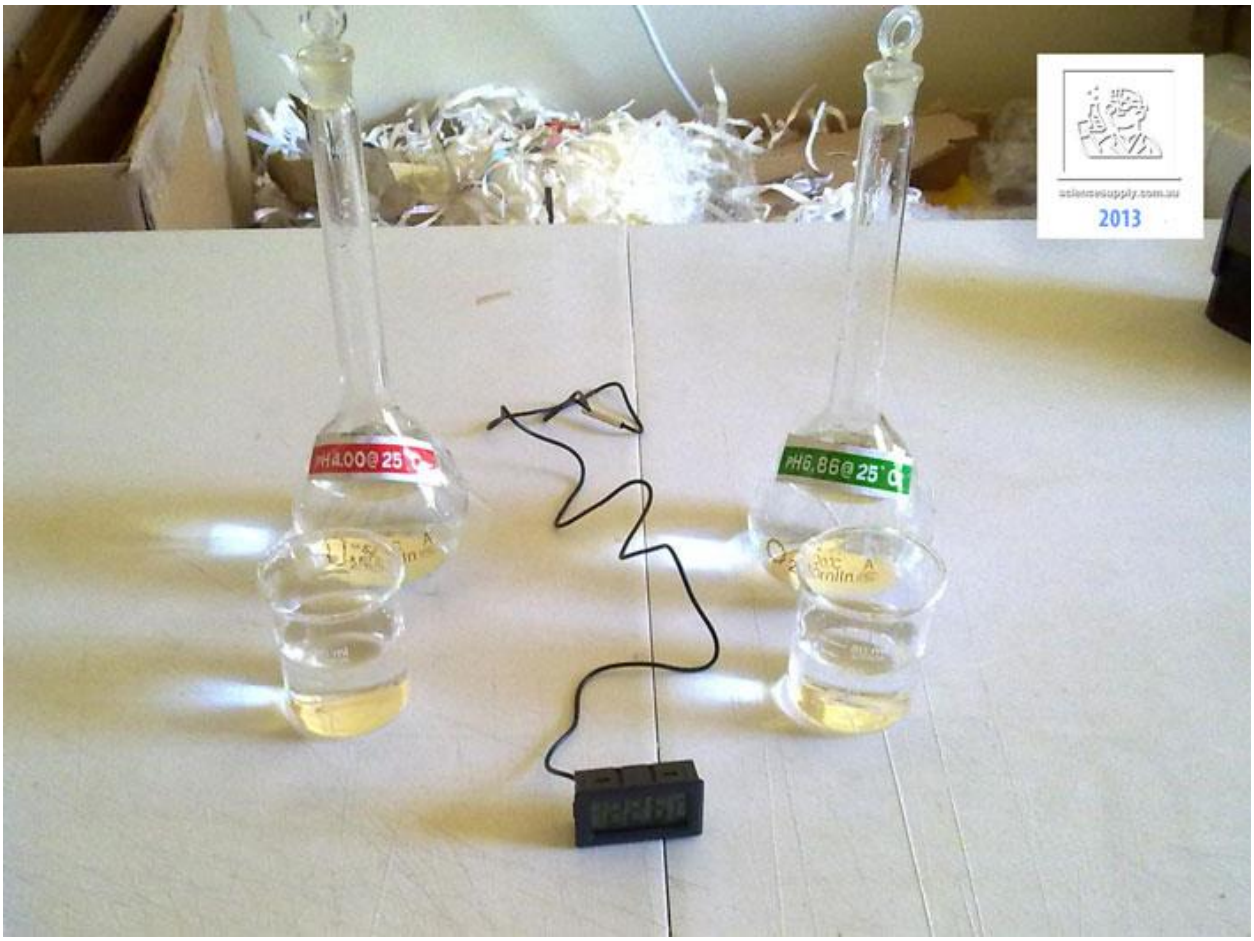

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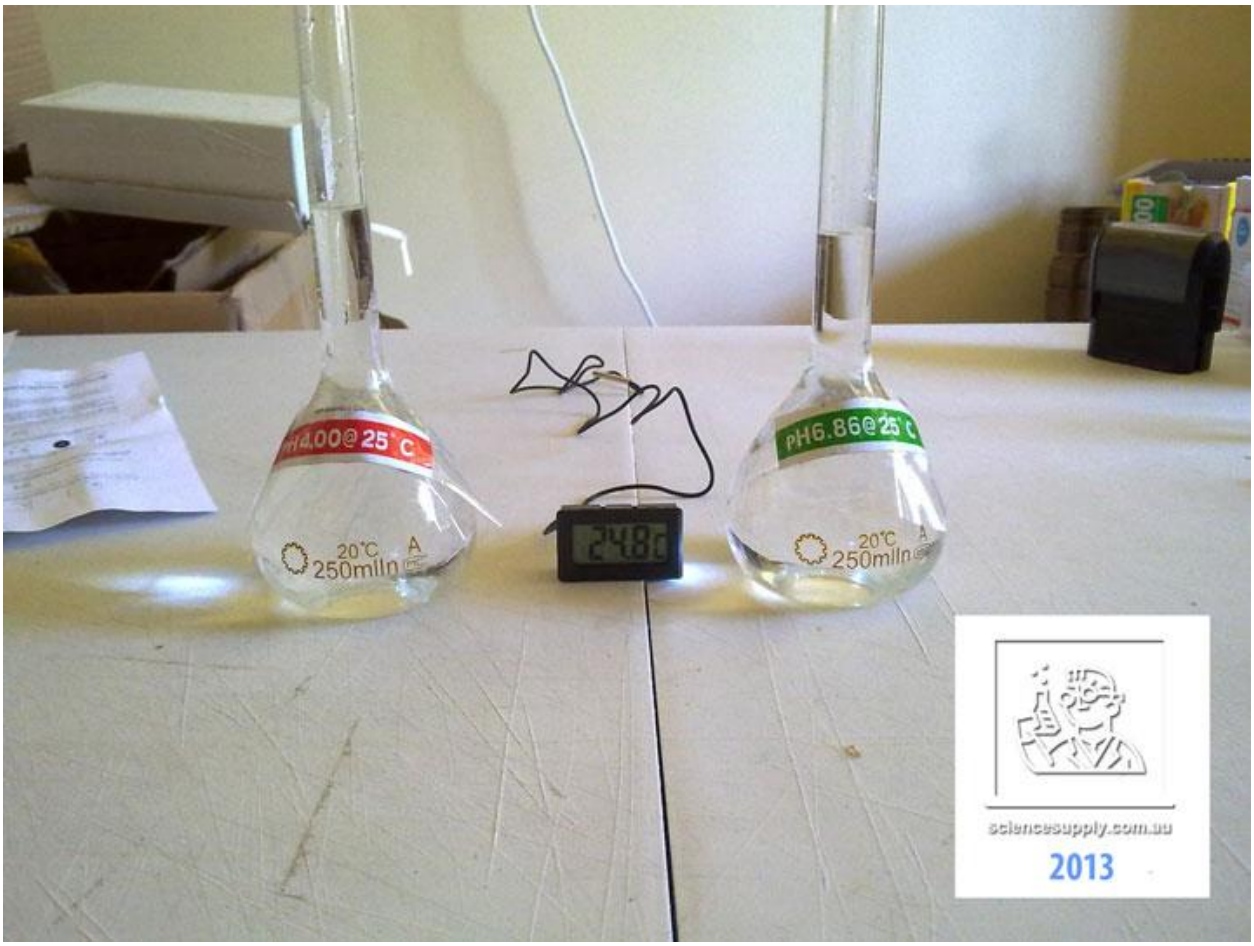

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