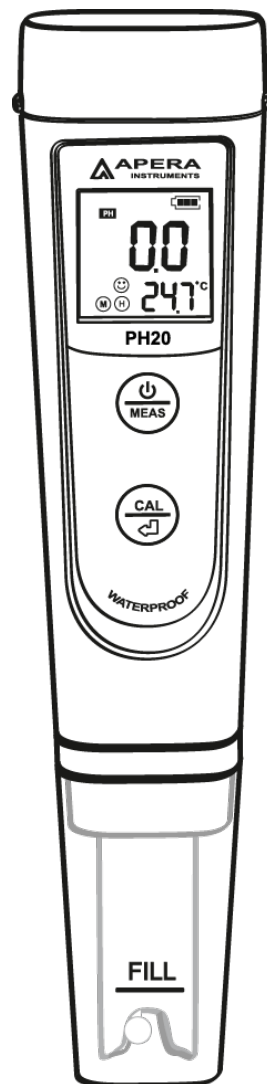


# PH20 Pocket pH Tester Kit User Manual



ISO 9001: 2015



IP67

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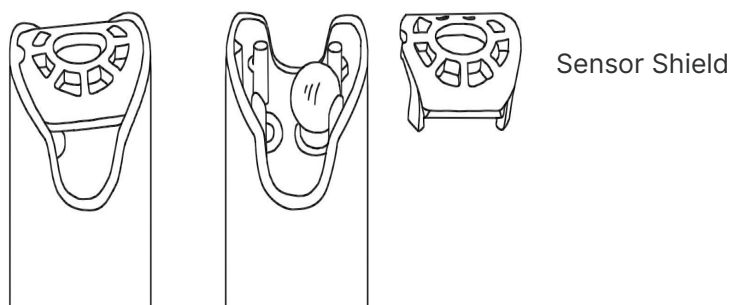
Thank you for choosing Apera Instruments PH20 Pocket pH Tester Kit. Please read this manual carefully before use in order to properly use and maintain the product.



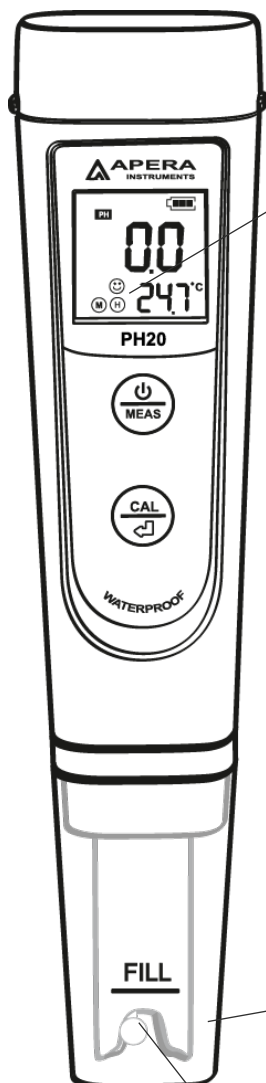
**scan to watch video tutorial**

### **ATTENTION**

- Water droplets are added during production to maintain the moisture of the probe. This is normal practice and should not be attributed to used product.
- Never use the product when it's freezing cold. Let it warm to room temperature before using.
- The latest PH20 Tester comes with an upgraded probe structure equipped with a sensor shield that prevents glass bulb breakage from accidental collisions (see picture below). You can remove the shield when cleaning the sensor and put it back on afterwards.



# 1. General Introduction



☺ stands for stabilized reading

Ⓛ Ⓜ Ⓜ stands for successful calibration: Ⓛ is pH 4, Ⓜ is pH 7, Ⓜ is pH 10.



## Probe Cap

- Water droplets are added during production to maintain the moisture of the probe. This is normal practice and should not be attributed to used product.
- The fill line shows the level to which you should pour the soaking solution or sample solution.
- For details of probe storage, see Section 10.

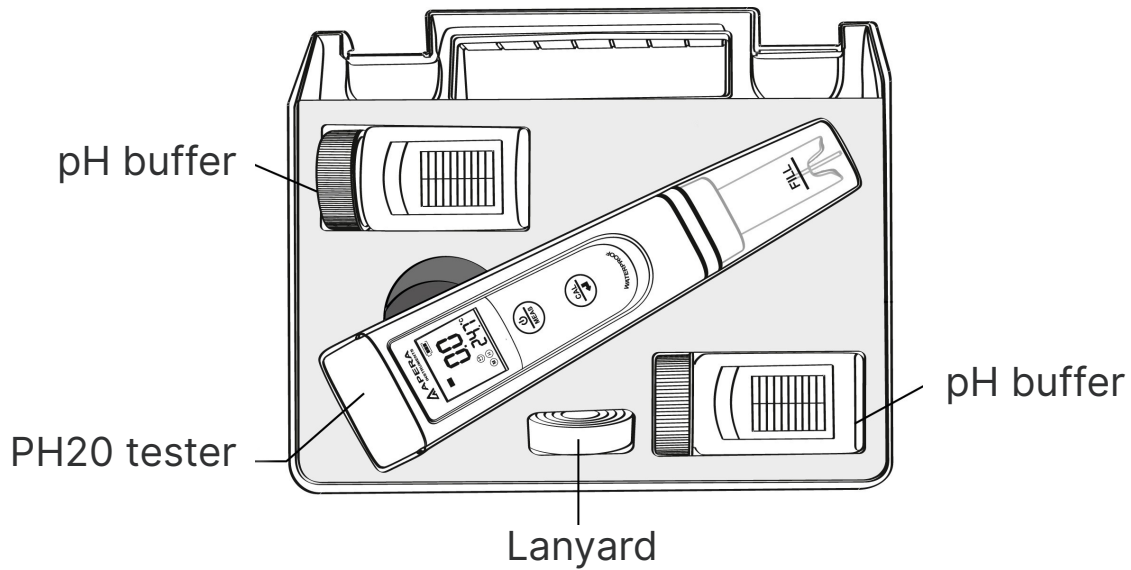
## pH Probe

- Built with Apera's proprietary lithium glass membrane for high accuracy and fast response.
- Temp. sensor is built in for automatic temp. compensation.
- The pH probe is non-replaceable.

## 2. Keypad Functions

	Short Press (tap)	Long Press (press >2 seconds)
	<ul style="list-style-type: none"> <li>• Short press to power on;</li> <li>• In settings mode</li> <li>• short press to change parameter;</li> <li>• In calibration mode, short press to cancel calibration.</li> </ul>	<ul style="list-style-type: none"> <li>• Long press to power Off;</li> <li>• When the tester is powered off, long press to enter settings mode.</li> </ul>
	<ul style="list-style-type: none"> <li>• In calibration mode, short press to finish calibration;</li> <li>• In settings mode, short press to confirm changes.</li> </ul>	<ul style="list-style-type: none"> <li>• In measurement mode, long press to enter calibration mode.</li> </ul>

### 3. What's in the Kit



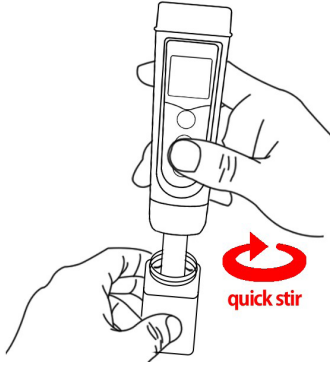
### 4. Preparation before Use

**4.1** Prepare a cup of pure water (8-16oz) for probe rinsing. Pure water refers to drinking water, RO water, distilled water, or deionized water.



**4.2** Pull off the battery insulation paper; Take off the probe cap.


**4.3** Perform a 2-point calibration in pH 7.00 and pH 4.00 standard buffers. Refer to Section 4 for tutorial.



## 5. pH Calibration

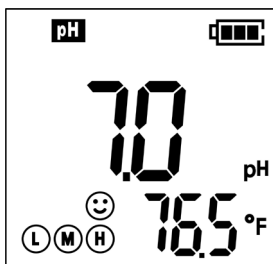




**5.1** Short press  to power on.




**5.2** Rinse the probe in pure water and shake off excess water. Long press  to enter calibration mode. (short press  to go back to measurement mode if you want to cancel the calibration). "7" will show up at the lower right corner, reminding you to calibrate pH 7 first.

**5.3** Insert the probe in the 7.00 pH calibration solution to start 1st point calibration; Make a quick stir in the solution then hold still; Wait for  to appear and stay on the screen.

**5.4** Short press  to start 1st point calibration; tester will return to measurement mode;  will display on the lower left corner, indicating a successful 1-point calibration.




**5.5** To calibrate 2nd point, use 4.00 pH buffer and repeat Step 5.2 to 5.4 (Do NOT turn off the tester after you finish pH 7 calibration).  will display next to , indicating a successful 2-point calibration.

**5.6** If necessary (target pH>8.0), calibrate 3rd point using 10.01 standard pH buffer (sold separately) and repeat Step 5.2 to 5.4.  will show up next to  and , indicating a successful 3-point calibration.

## 5.7 Notes about Calibration

**5.7.1 Always start calibrating with pH 7.00 first.** Perform the 2nd and 3rd point calibration immediately after the 1st point is finished. **Do NOT turn off the meter before you calibrate the second or third point.**









Otherwise, after you restart the meter and perform calibration in pH 4.00 or pH 10.01,  $E_{r-1}$  error will be generated and you will have to calibrate with pH 7.00 again. For more troubleshooting tips with calibration, refer to Section 11.

**5.7.2** In calibration mode, when the reading is not fully stabilized (☺ is not staying on LCD), pressing  will cause  $E_{r-2}$  error. Refer to Section 11 Trouble Shooting Guide for more details.

**5.7.3** Only pH 4.00 and pH 7.00 buffer solutions are included in the test kit, pH 10.01 is not. You can purchase it separately if needed (when your target pH level is >9.0 pH).


**5.7.4** Having **good-quality calibration buffers** ready is the basis for reliable pH measurement. The bottled buffers (2 oz.) in the kit can be used for up to 10 times of calibration (make sure they are tightly closed when not in use). After that, we recommend replacing them with new ones to keep the accuracy.

**5.7.5** Tester will automatically recognize pH buffer solutions, you can choose 1 to 3 points of calibration. For details, please refer to the following table:

Calibration	Calibration Solution	Icon	When to use
1-point Calibration	7.00 pH		Required Accuracy $\geq$ 0.3 pH
2-point Calibration	7.00 pH and 4.00 pH	 	Target pH level < 9.0 pH
	7.00 pH and 10.01 pH	 	Target pH level > 9.0 pH
3-point Calibration	7.00 pH, 4.00 pH and 10.01 pH	  	Wide measurement range



## 6. pH Measurement

**6.1** Short press  to power on the tester. Remove the probe cap.

**6.2** Rinse the probe in pure water. Then shake off excess water.

**6.3** Dip the probe into your sample solution at least 1 inch deep, make a quick stir and hold still. Record the reading as the pH measurement after it's stabilized (😊 comes up and stays on screen). When the probe is in the air, it's normal that the reading is randomly jumping.

### 6.4 Pure Water pH Measurement

When testing pure water like tap water, drinking water, RO water and distilled water, it will take longer for the readings to get fully stabilized (typically 1-5 minutes). Please be patient. Before taking measurement, soak the probe in pH 4.00 buffer solution for 30 seconds. If reading is not stabilized in 5 minutes, add Apera 3M KCL (AI1107) to your pure water at the ratio of 1:1000 (e.g. 1 ml KCL to 1000 ml water) to accelerate stabilization while minimizing pH change. If the accuracy does not meet your requirement, please contact Apera to find the specialized meter designed for pure water pH test.

**6.5** To achieve the best measurement accuracy, calibrate the pH probe at the same/similar temperature as your sample.







**6.6 Avoid** testing in very high (>113°F) or very low (<41°F) temperature solutions as it will cause greater measurement error and will shorten the pH probe's life span.

## 7. Parameter Settings

### 7.1 Settings Menu

Symbol	Parameter Setting Content	Code	Factory Default
P1	Select pH buffer standard series	USA – NIST	USA
P2	Select temperature unit	°F – °C	°F
P3	Back to factory default setting	No – Yes	No

### 6.2 Parameter Setup

When the tester is turned off, long press  to enter parameter settings → short press  to switch P1-P2-P3 → Short press  to select the parameter you want to change (parameter flicking) → short press  to make changes, short press  to confirm parameter change → Long press  to go back to measurement mode.

## 8. Technical Specifications

pH	Measurement Range	0 – 14.0 pH
	Resolution	0.1 pH
	Accuracy	±0.1 pH
	Calibration Points	1 – 3 points
	Automatic Temperature Compensation (ATC)	0 – 50°C (32 – 122°F)
Temp.	Measurement Range	0 – 50°C (32 – 122°F)
	Resolution	0.1 °C /°F
	Accuracy	±0.5°C/±1°F

pH probes do NOT last forever. They age through normal use and will eventually fail. The average lifetime of a probe is 1-3 years depending how it is used and maintained. To ensure you receive a long life from your tester, please ensure you follow the guide below.

## 9. Probe Cleaning

**9.1** The tester is only as accurate as the probe is clean. Always thoroughly rinse off the probe before and after each test with clean water in a container and shake off excess water.

**9.2** For tough contaminants, detach the sensor shield, soak the probe in Apera's cleaning solution (AI1166) or detergent water for 30 minutes. Then use a soft brush to remove the contaminants. Afterwards, soak the probe in Apera 3M KCL soaking solution (AI1107) for at least 1 hour. Rinse it off, then re-calibrate the tester before using.

**9.3 Never** use your finger to touch the glass membrane or use other material to rub it. Doing so could generate static electricity and cause measurement errors. To remove excess water, just shake them off or use clean tissue paper or Kimwipe to dap off.

## 10. Probe Storage



**10.1** For short-term storage under regular usage (daily or weekly use), just make sure probe cap is wet with some water droplets or soak the probe in pH 4 buffer solution, and tightly close the cap with the red O-ring.

**10.2** For long-term storage (>1 month), add Apera 3M KCL soaking solution (AI1107) to the Fill line in the probe cap and store the probe in it. Close on the probe cap tightly with the red O-ring.

**10.3** If you find white crystals inside or outside the probe cap, don't worry. It is the 3M KCL soaking solution that crystalizes over time by its nature. Just rinse them off. This chemical is not poisonous or dangerous. And the probe's performance will not be affected at all.

**10.4 NEVER** store the probe in pure water like tap, RO, distilled, or deionized water as they could damage the pH probe. If this happens, immediately soak the pH probe in Apera 3M KCL soaking solution overnight, then re-calibrate it before using. Pure water is only for rinsing the probe.

## 11. Troubleshooting Guide

Trouble	Reasons	How to fix
Cannot calibrate	Wrong calibration order (Er 1)	Refer to Section 5.7.1
	Poor quality standard buffer solutions (Er 1)	Replace with fresh and clean standard calibration solutions made by legitimate scientific instrument manufacturers.
	Contaminated probe (Er 1)	Thoroughly clean off the probe (refer to Section 9)
	Pressing  too soon (Er 2)	Wait for the reading to get stabilized (smiley face to stay on the screen) before pressing  button to finish calibration.
	Broken probe (Er 1)	If you don't find any visible damage of the probe, contact Apera for warranty fulfillment. If there is visible damage, replace the tester.
	Dried-out probe (Er 1)	Soak the probe in Apera 3M KCL soaking solution for at least 1 hour. And refer to Section 10 for proper probe storage.
	Probe is not fully submerged in the solution (Er 1)	Make sure the probe is fully immersed in the solution at least 1 inch deep.
	Air bubbles around or inside the probe (Er 1)	Make a quick stir in the solution to remove air bubbles.

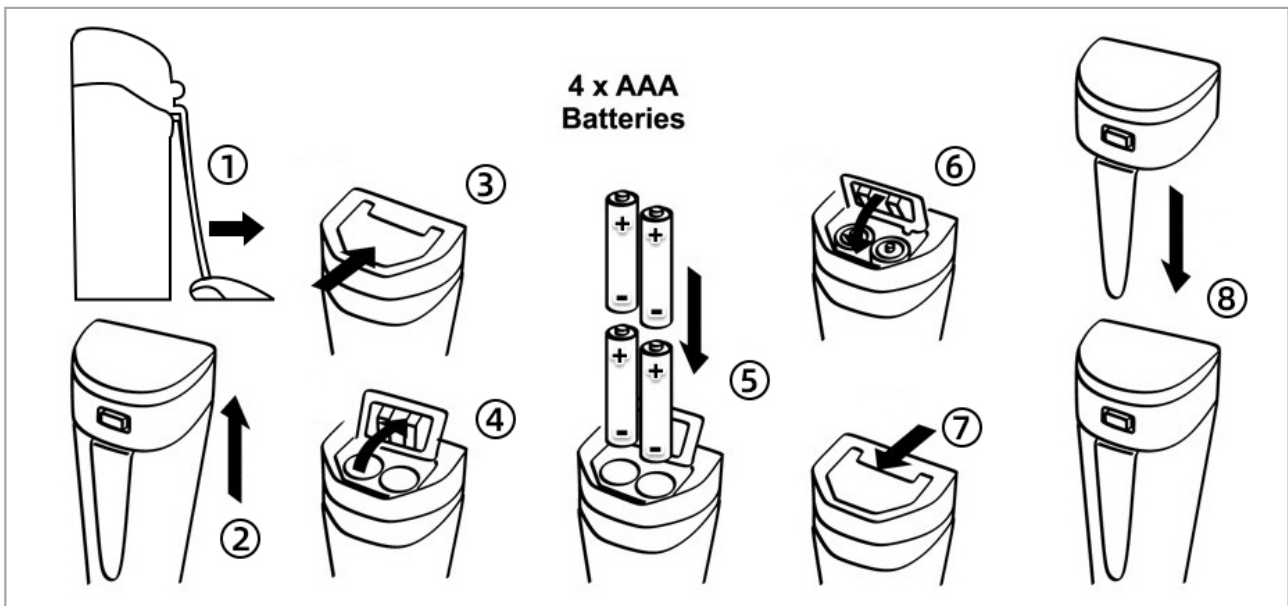
## 11. Troubleshooting Guide

Trouble	Reasons	How to fix
Reading response is much slower, won't stabilize.	Dirty probe or clogged junction	Thoroughly clean off the probe (refer to Section 9)
	Aged probe	Replace the tester
	Testing pure water like tap/drinking/RO/distilled/deionized water	Refer to Section 6.4
Display similar readings in any solutions or always display 7.0 pH	Broken probe	If you don't find any visible damage of the probe, contact Apera for warranty fulfillment. If there is visible damage, replace the tester.
	Instrument defect	Contact Apera for warranty fulfillment
Reading keeps jumping erratically	Probe is not fully submerged in the solution	Make sure the probe is fully immersed in the solution at least 1 inch deep.
	Air bubbles around or inside the probe	Make a quick stir in the solution to remove air bubbles.
Calibration is successful, but reading is not accurate	Aged probe	Replace the tester.
	Comparison with other testers, test strips, or drop tests	To compare with other testers, make sure to calibrate all testers in the same pH 7 buffer, then test pH 4. Whichever gives more accurate reading is the more accurate one. Test strips or drop tests' accuracy is not comparable to pH meters.
	Your pH probe is not suitable for your application	Contact Apera to find the appropriate model for your specific application.

## 12. Battery Replacement

Please install batteries according to the following steps. \*Please note the correct direction of battery installation: **The Positive Side (“+”) OF EVERY SINGLE Battery MUST FACE UP.**

**⚠ (WRONG INSTALLATION OF BATTERIES WILL CAUSE DAMAGE TO THE TESTER AND POTENTIAL HAZARDS!)**



- ① Loosen the pocket clip
- ② Pull off the battery cap
- ③ Slide and unlock battery compartment
- ④ Open the battery compartment
- ⑤ Insert the batteries (**all "+" FACE UP**)
- ⑥ Press down the battery compartment
- ⑦ Slide and lock the battery compartment
- ⑧ Close on the battery cap (make sure it's tightly closed with the O-ring. Otherwise the waterproof rating could be compromised.)

### **13. Limited Warranty**

We warrant this instrument to be free from defects in material and workmanship and agree to repair or replace free of charge, at option of APERA INSTRUMENTS, LLC, any malfunctioned or damaged product attributable to responsibility of APERA INSTRUMENTS, LLC for a period of TWO YEARS (SIX MONTHS for the probe) from the delivery.

This limited warranty does NOT cover any damages due to:

- accidental damage
- transportation, storage
- improper use
- failure to follow the product instructions
- Unauthorized repair or modifications
- normal wear and tear
- Other external causes or actions beyond our reasonable control

To get the fastest warranty fulfillment, go to **[support.aperainst.com](https://support.aperainst.com)** and submit a new Support Ticket. One of our customer service specialists will get in touch with you within one business day.

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