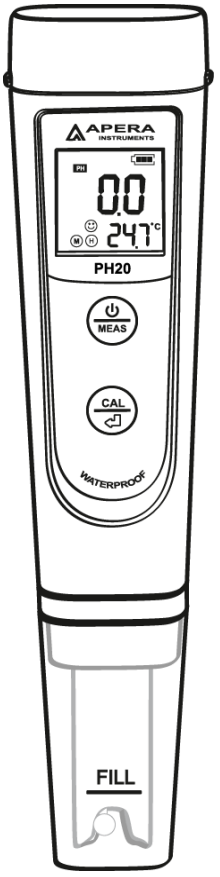
APERA INSTRUMENTS

Fluid Precision since 1991

PH20 Value pH Tester Kit

User Manual



RoHS compliant

ISO 9001: 2015

CE

IP67 WATERPROOF

APERA INSTRUMENTS (Europe) GmbH

www.aperainst.de

v 5.1

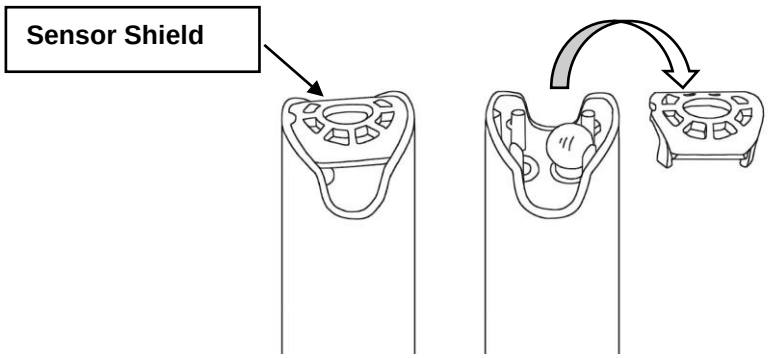
Thank you for purchasing the Apera Instruments PH20 Pocket pH Tester Kit. Please read this manual carefully before use in order to properly use and maintain the product.

For video tutorials, please go to aperainst.de/service/support

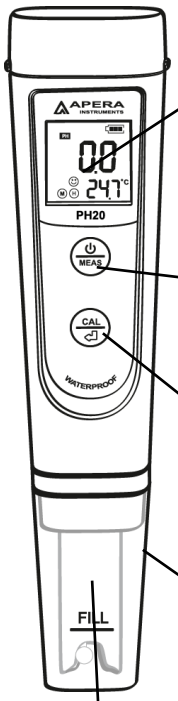
Table of Contents:

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 products.
- **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



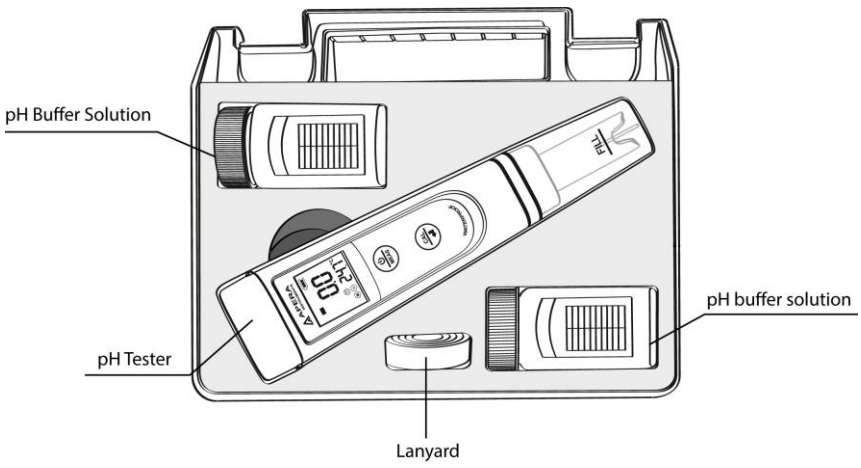
☺ stands for stabilized reading
Ⓛ Ⓜ Ⓗ stands for successful calibration Ⓛ is pH 4, Ⓜ is pH 7, Ⓗ is pH 10.

	Short Press (tap)	Long Press (hold for 2 seconds)
MEAS	1) Power on 2) In settings, change parameter 3) In calibration mode, cancel calibration.	1) Power Off 2) When turned off, long press to enter settings.
CAL	1) In calibration mode, start calibration 2) In settings, short press to confirm changes.	In measurement mode, long press to enter calibration mode.

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.

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 products. • The fill line shows the level to which you should pour the soaking solution or sample solution. • For details of probe storage, see Section 7.

2. What's in the Kit?



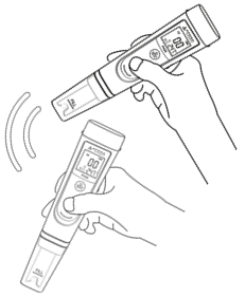
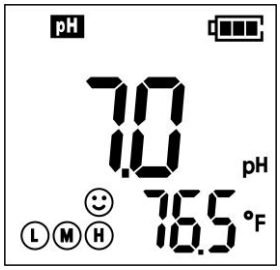
3. Preparation before Use

3.1. Prepare a cup of pure water (250-500ml) for probe rinsing. Pure water refers to tap water, RO water, distilled water, or deionized water.

3.2. Pull off the battery insulation paper; Take off the probe cap.

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

4. Calibration

4.1 Short press (MEAS) to power on. 4.2 Rinse the probe in pure water and shake off excess water. Long press (CAL) to enter calibration mode. (Short press (MEAS) to go back to measurement mode if you want to cancel the calibration).	
4.3 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.	
4.4 Short press (CAL) to start 1st point calibration; tester returns to measurement mode; (M) will display on the lower left corner, indicating a successful 1-point calibration.	
4.5 To calibrate 2nd point, use 4.00 pH buffer and repeat Step 4.2 to 4.4 (Do NOT turn off the tester after you finish pH 7 calibration). (L) will display next to (M), indicating a successful 2-point calibration.	
4.6 If necessary (target pH > 8.0), calibrate 3rd point using 10.01 standard pH buffer (sold separately) and repeat Step 4.2 to 4.4. (H) will show up next to (L) and (M), indicating a successful 3-point calibration.	

■ Notes

a) The 1st point calibration must be 7.00 pH. Perform the 2nd and 3rd point calibrations (4.00 or 10.01) right after the 1st point calibration is finished. Do NOT turn off the tester before you calibrate 2nd or 3rd point. Otherwise, you will need to restart the calibration process with 7.00 pH first.

b) In calibration mode, when the measured value is not fully stabilized (☺ is not staying on LCD), pressing (CAL) will cause Er2.

c) 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 > 8.0 pH).

d) Having good-quality standard calibration buffers ready is the foundation for reliable pH measurement. The bottled buffers (50ml.) 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.

e) Tester will automatically recognize pH buffer solution, users can choose calibration points: 1 point, 2 points, or 3 points. For details, please refer to the following table:

	Calibration Solution	Calibration icon	When
1-point Calibration	7.00 pH	M	Required Accuracy ≥ 0.3 pH
2-point Calibration	7.00 pH and 4.00 pH	L M	Target pH level < 8.0 pH
	7.00 pH and 10.01 pH	M H	Target pH level > 8.0 pH
3-point Calibration	7.00 pH, 4.00 pH and 10.01 pH	L M H	Wide measuring range

5. Measurement

5.1. Short press MEAS to power on the tester. Remove the probe cap.

5.2. Rinse the probe in pure water. Then shake off excess water.

5.3. Fully submerge the probe into your sample solution at least 1 inch deep, then hold still. Record the readings after the reading is fully stabilized (☺ comes up and stays on screen).

◆ **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. If still not working, 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 is not meeting your requirement, please contact us at info@aperainst.de to find the specialized meter designed for pure water pH test.

6. Parameter Setting

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

Parameter Setting Tutorial

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

7. Technical Specifications

pH	Range	0 – 14.0 pH
	Resolution	0.1 pH
	Accuracy	±0.1 pH
	Calibration Points	1 – 3 points
	Automatic Temperature Compensation	0 – 50˚C (32 – 122˚F)
Temperature	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.

8. Probe Cleaning

8.1. 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 or with a wash bottle.

8.2. 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. Probe Storage

9.1. Under regular usage (daily or weekly use), just make sure the probe cap is wet, and tightly close the cap with the red O-ring.

9.2. For long-term storage (when you are not going to use the product for a while), add Apera 3M KCL soaking solution (AI1107) or pH 4.00 buffer solution 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.

9.3. If you find white crystals inside or outside the probe cap, it is perfectly normal. It is the 3M KCL that crystalizes over time by its nature. Just rinse them off and use the tester as normal. This chemical is not poisonous nor dangerous, and the probe's performance will not be affected.

9.4. **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 Apera 3M KCL soaking solution overnight, then re-calibrate it before using. Pure water is only for rinsing the probe.

10. Troubleshooting Guide

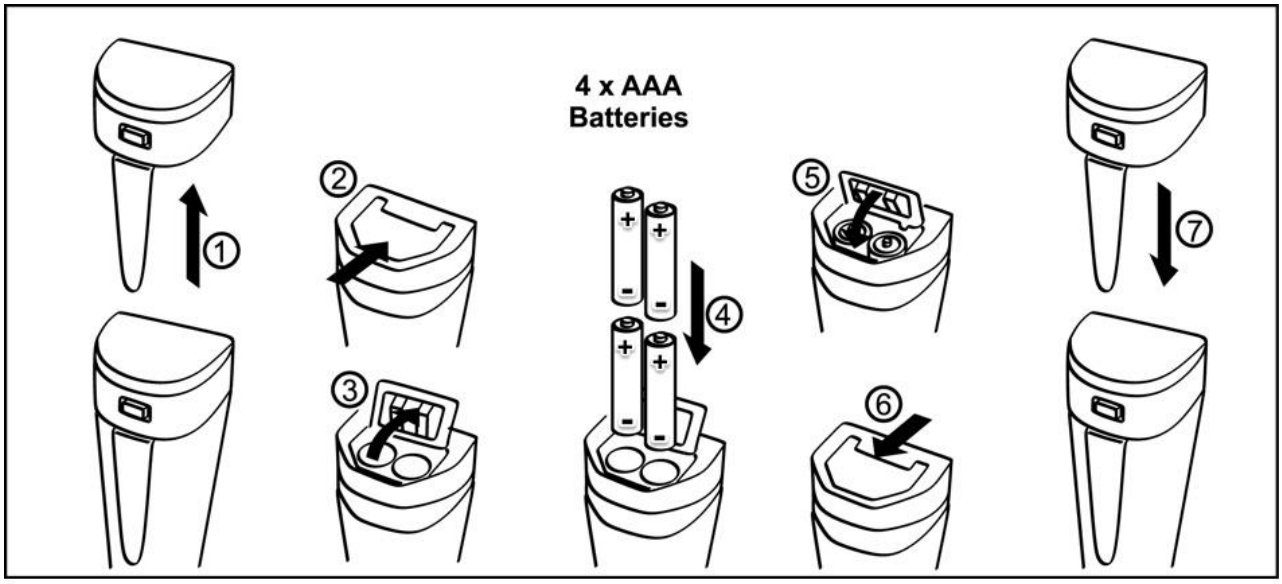
Trouble	Reason	How to fix
Cannot calibrate	Pressing CAL too soon (Showing **Er2**)	Wait for ☺ to stay on screen before pressing CAL.
	Poor quality standard solutions (Showing **Er1**)	Replace with fresh and clean standard calibration solutions made by legitimate scientific instrument manufacturers.
	Contaminated sensor (Showing **Er1**)	Use a soft brush to clean the probe with Apera probe cleaning solution or detergent water.
	Incorrect calibration order (Showing **Er1**)	Reboot tester, calibrate pH 7.0 first, then pH 4.0. For details refer to calibration notes (a).
	Broken probe (Showing **Er1**)	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 (Showing **Er1**)	Soak the probe in Apera 3M KCL solution for at least 15 minutes.
	Probe is not fully submerged solution (Showing **Er1**)	Make sure the probe is fully immersed in the solution at least 1 inch deep.
	Air bubbles around the sensor (Showing **Er1**)	Make a quick stir in the solution to remove air bubbles.
Reading is always slowly changing, won't stabilize	Contaminated sensor	Use a soft brush to clean the probe with Apera probe cleaning solution or detergent water.
	Clogged junction	Use a soft brush to clean the probe with Apera probe cleaning solution or detergent water, then soak it in Apera 3M KCL soaking solution overnight.
	Aged probe	Replace the tester.
	Testing pH of low ionic strength solutions like tap/drinking/RO/distilled water	Be patient, wait for 1-5 minutes to reach a fully stabilized reading. If still not stabilizing, add Apera 3M KCL solution to test water at 1:1000 ratio.
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 or the probe is more than 6 months old, replace the tester.
	Instrument defect	Contact us for warranty fulfillment.
Reading keeps jumping	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 the sensor	Make a quick stir in the solution to remove air bubbles.
	Probe is not properly connected, or the pin connector is broken.	Check the probe's connector, make sure it's not broken and is correctly connected. Align the probe and instrument correctly before plugging in. Never force it. Ensure that the probe connector is not exposed to air too long.
Calibration is successful, but reading is not accurate	Aged probe	Replace the tester.
	Air bubbles around the sensor	Make a quick stir in the solution to remove air bubbles.
	Clogged junction	Clean the probe with Apera probe cleaning solution, then soak it in Apera 3M KCL soaking solution overnight.
	Comparison with other testers, test strips, or drop tests	To compare with other testers, make sure to calibrate all testers in the same pH 7.0 solution, then test pH 4.0. Whichever gives more accurate reading is the most accurate one. Test strips or drop tests' accuracy in not comparable to pH meters'.

11. 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!)



12. 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 (Europe) GmbH, any malfunctioned or damaged product attributable to responsibility of APERA INSTRUMENTS (Europe) GmbH for a period of TWO YEARS (SIX MONTHS for the probe) from the delivery.

This limited warranty does not cover any damages due to:
Transportation, storage, improper use, failure to follow the product instructions or to perform any preventive maintenance, modifications, combination or use with any products, materials, processes, systems or other matter not provided or authorized in writing by us, unauthorized repair, normal wear and tear, or external causes such as accidents, abuse, or other actions or events beyond our reasonable control.

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