

Premium Series PC60 5-in-1 Tester

pH | Conductivity | TDS | Salinity | Temperature

User Manual

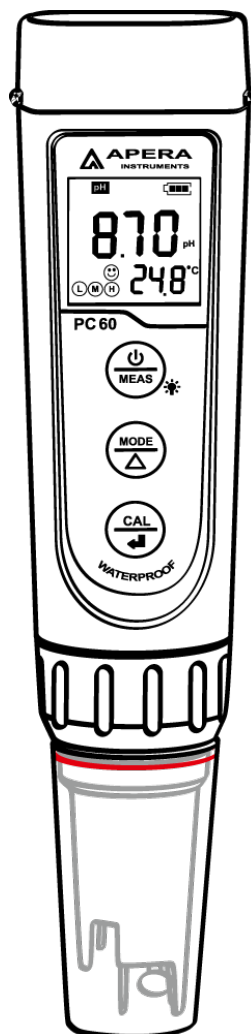


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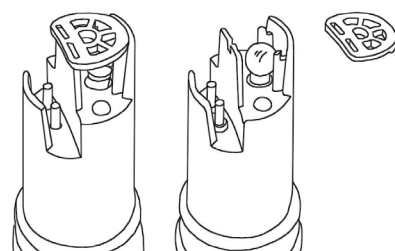


[scan to watch video tutorial](#)

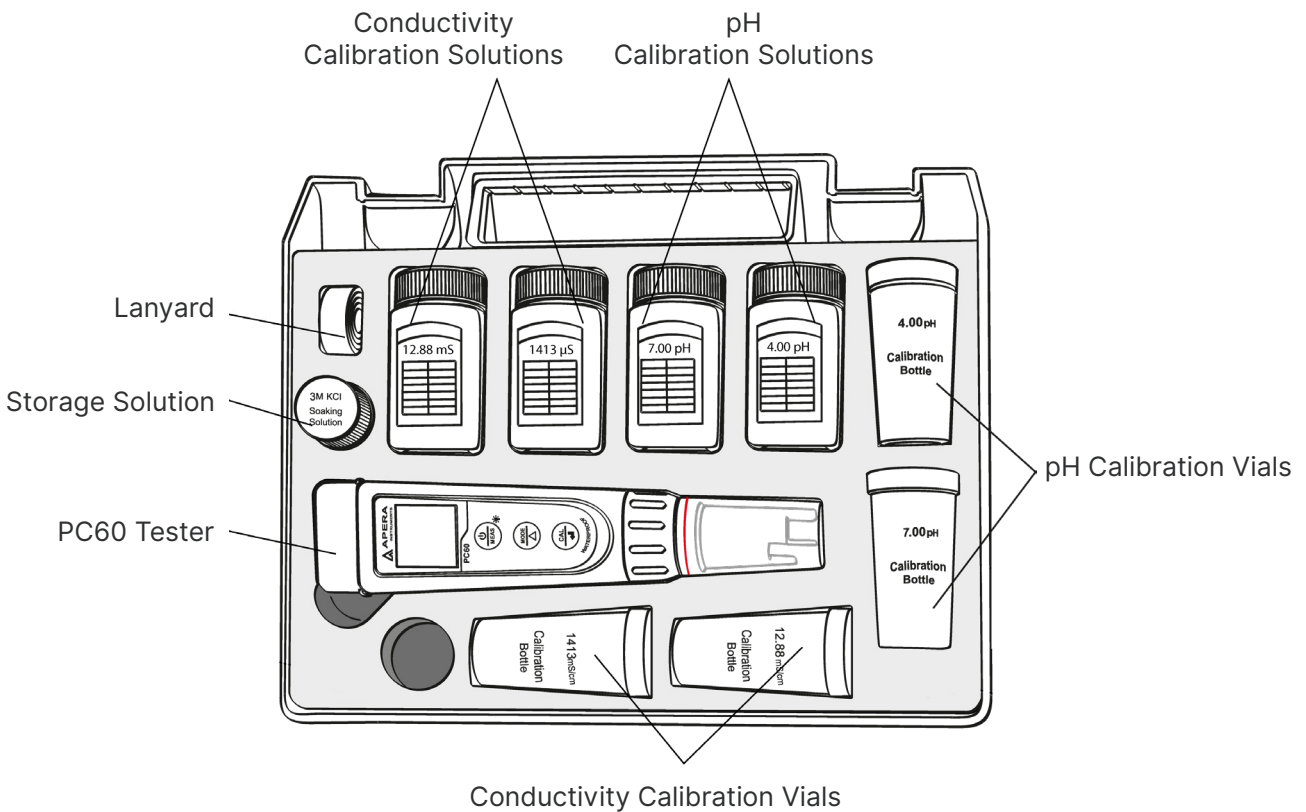
Thank you for choosing Apera Instruments PC60 Premium Multi-parameter Tester. Please read this manual before use in order to properly use and maintain the product.

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 PC60 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 after cleaning.






1. What's in the Kit

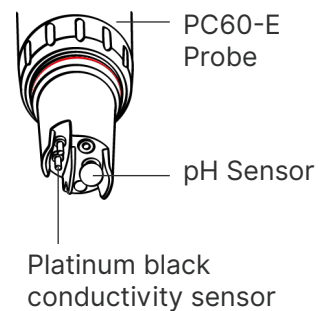
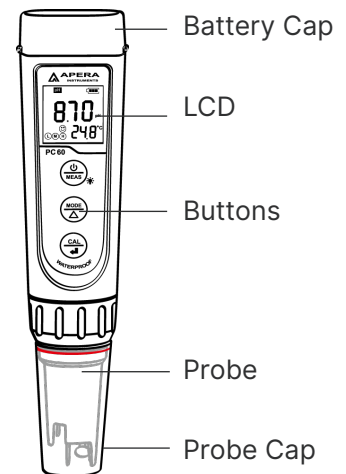


2. Keypad Functions

Short press (tap): < 2 seconds

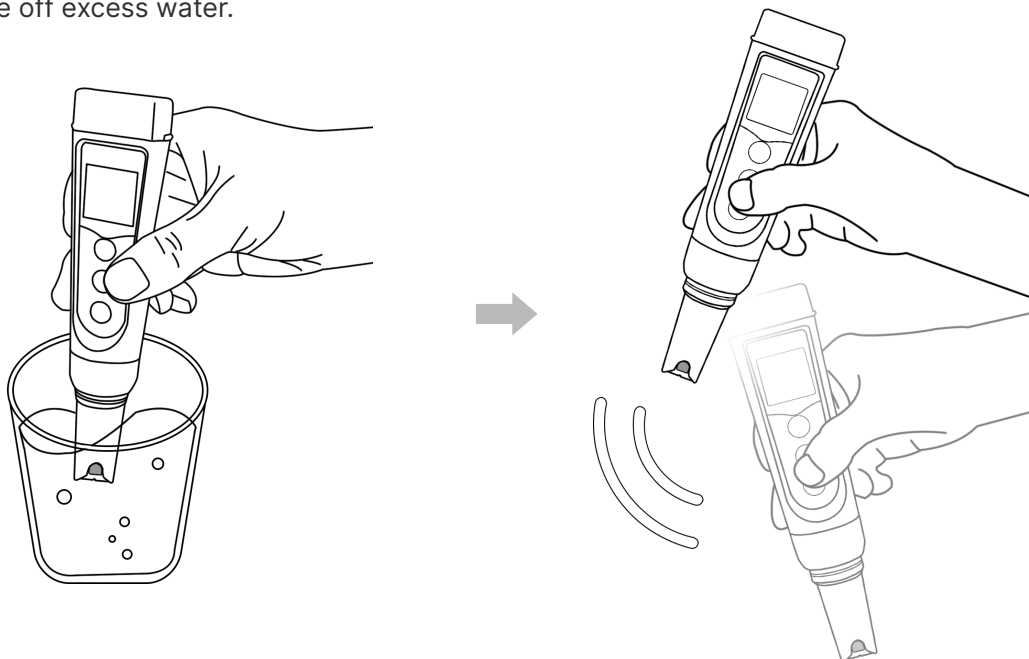
Long press (hold): > 2 seconds

	<ol style="list-style-type: none"> Short press to power on the tester and long press to power off the tester. When the tester is powered off, long press to enter settings mode In measurement mode, short press to turn on backlight.
	<ol style="list-style-type: none"> In measurement mode, short press to switch parameter pH→Cond→TDS→Sal. In settings mode, short press to make change (Unidirectional).
	<ol style="list-style-type: none"> Long press to enter calibration mode. In calibration mode, short press to finish calibration. When reading is locked (auto. HOLD on), short press to unlock.



3. Preparation before Use




- 3.1 Pull out the battery insulation slip, and take off the probe cap.
- 3.2 Rinse off the probe in pure water (preferably distilled or deionized water. RO water is ok) , then shake off excess water.

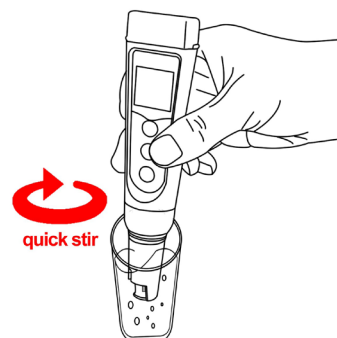









- 3.3 Perform calibration. For pH calibration tutorial, refer to Section 4; For conductivity calibration, refer to Section 6.
- 3.4 If the tester hasn't been used for a long time (over 1 month), please soak the probe in the 3M KCL soaking solution for 15 minutes, then calibrate it before test.

4. pH Calibration

4.1 How to Calibrate









- 4.1.1 Short press  to power on.
- 4.1.2 Pour pH buffer solutions into the corresponding calibration vials to about half volume.
- 4.1.3 Rinse the probe in pure water; Shake off excess water. Dip the probe in the pH 7.00 buffer solution first, and make a quick stir in the solution, then let it stand.
- 4.1.4 Long press  to enter calibration mode, the screen will turn green (Short press  if you decide to quit calibration and return to measurement mode).



- 4.1.5 Wait for the reading to stabilize (when 😊 stays on the screen), then short press  to finish the first point calibration. After calibration is completed, the tester will return to measurement mode. Icon  will appear at the bottom left of the screen, indicating a successful 1-point calibration (the middle point).
- 4.1.6 To calibrate second point, use pH 4.00 buffer and repeat Step 4.1.3 to 4.1.5 (Do NOT turn off the tester after you finish pH 7 calibration).  will display next to , indicating a successful 2-point calibration (low and middle points).
- 4.1.7 To calibrate third point, use pH 10.01 buffer and repeat Step 4.1.3 to 4.1.5 (Do NOT turn off the tester after you finish second point calibration),  will show up next to  and , indicating a successful 3-point calibration (high, low, and middle points).




4.2 Notes about Calibration

- 4.2.1 **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, Er1 error will be generated and you will have to calibrate with pH 7.00 again. For more troubleshooting tips with calibration, refer to Section 14.
- 4.2.2 The pH 4.00 and 7.00 buffer solutions poured into the calibration vials can be used for up to 10 times as long as they are not contaminated and the bottles are capped when not in use. pH 10.01 can only be used for up to 5 times as it will lose its accuracy much faster. After that, replace the buffer solutions in the calibration vials with new ones to keep the accuracy. Keeping the freshness and cleanliness of calibration buffers is essential for accurate pH measurement. **NEVER** pour back used calibration solutions into the solution bottles.
- 4.2.3 The tester can perform 1 to 3 points of automatic calibration and can recognize 5 types of pH standard solutions. For details, please refer to the following table:

Calibration	USA Series		NIST Series		Icon	When to Use
1-point	7.00 pH		6.86 pH			Accuracy requirement ≥ 0.1 pH
2-point	Option A	1st pt: 7.00 pH 2nd pt: 4.00 pH or 1.68 pH	Option A	1st pt: 6.86 pH 2nd pt: 4.01 pH or 1.68 pH	 	Range < 7.00 pH
	Option B	1st pt: 7.00 pH 2nd pt: 10.01 pH or 12.45 pH	Option B	1st pt: 6.86 pH 2nd pt: 9.18 pH or 12.45 pH	 	Range >7.00 pH
3-point	1st pt: 7.00 pH 2nd pt: 4.00 or 1.68 pH 3rd pt: 10.01 or 12.45 pH		1st pt: 6.86 pH 2nd pt: 4.01 or 1.68 pH 3rd pt: 9.18 pH or 12.45 pH		  	Range: 0 to 14.00 pH

5. pH Measurement








5.1 How to Take pH measurements

- 5.1.1 Short press  to turn on the tester. Rinse off the probe in pure water, shake off excess water. Dip the probe in your sample solution at least 1 inch deep, make a quick stir and hold still. Record the stabilized reading as your pH measurement ( comes up and stays on screen). Note that when the pH probe is in the air, it's normal that the reading is randomly jumping.
- 5.1.2 If you turn on the Auto-Hold function (refer to Section 10.2.b), the reading will be automatically locked when it's stable for more than 10 seconds. Short press  to cancel the Auto-Hold and keep measuring.
- 5.1.3 To achieve the best measurement accuracy, calibrate the pH probe at the same/similar temperature as your sample.
- 5.1.4 **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.

5.2 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 (Al1107) 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. Conductivity Calibration

- 6.1 Power on the tester. Press  to switch to conductivity (**Cond**) measurement mode. Rinse the probe in pure water and shake off excess water.
- 6.2 Pour conductivity calibration solutions into the corresponding calibration vials to about half volume.
- 6.3 Long press  to enter calibration mode (screen turns green).
- 6.4 Dip the probe into 1413 μ S conductivity calibration solution, stir gently and hold still. When the reading is fully stabilized ( stays on screen), short press  to finish the first point calibration, the tester returns to measurement mode and  will appear at the bottom left of the screen, indicating a successful first point conductivity calibration.
- 6.5 If needed (your estimated sample conductivity level is greater than 2 mS or 2000 μ S), dip the probe into the 12.88 mS conductivity calibration solution. Follow the steps in 6.3 to 6.4 to finish the second point of calibration using the 12.88 mS standard solution.  will appear next to , indicating a successful 2-point conductivity calibration.
- 6.6 Conductivity Calibration Notes

The tester can calibrate with 84 μ S, 1413 μ S and 12.88 mS conductivity calibration solution. User can conduct 1 to 3 points calibration. Refer to the next table.

Calibration Indication Icon	Calibration Standards	Measuring Range
(L)	84 μ S	0 - 200 μ S
(M)	1413 μ S	200 - 2000 μ S
(H)	12.88 mS	2 - 20 mS (2000 - 20,000 μ S)

For conductivity calibration solutions, we recommend replacing new solutions after 5 times of use to keep the standard solution's accuracy. **NEVER** pour back used calibration solutions into the solution bottles.

7. Conductivity Measurement

7.1 Short press (MEAS) to turn on the tester. Rinse the probe in pure water and shake off excess water. Dip the probe into your sample solution, make a quick stir, and hold still. Record the reading as your measurement after it is fully stabilized (😊 comes up and stays). Press (MODE) to switch from conductivity to TDS, and Salinity. Or if you turn on the Auto-Hold function (refer to Section 10.2.b), the reading will be automatically locked when it's stable for more than 10 seconds. Short press (CAL) to cancel the Auto-Hold and keep measuring.

7.2 Unit Conversion

- 1000 μ S/cm = 1 mS/cm = 1 EC (In conductivity mode, the unit will automatically turn from μ S to mS if the reading is greater than 1999 μ S, meaning you will only see 2.XX mS instead of 2XXX μ S)
- 1000 ppm = 1 ppt (In TDS mode, the unit will automatically turn from ppm to ppt if the reading is greater than 999 ppm, meaning you will only see 1.XX ppt instead of 1XXX ppm)
- The TDS and Salinity values are converted from the conductivity values via a certain conversion factor. TDS and conductivity is linear related, and its conversion factor is 0.40 to 1.00. Adjust the factor in parameter setting P5 based on the requirements in different industries. The factory default setting is 0.71.
- Salinity and conductivity is linear related, and its conversion factor is 0.5.
- Once conductivity is calibrated, TDS, salinity, and resistivity will be automatically calibrated.
- Conversion Example: if conductivity measurement is 1000 μ S/cm, then the default TDS measurement will be 710 ppm (under the default 0.71 conversion factor), and the salinity be 0.5 ppt. If TDS conversion rate is changed to 0.5, then the TDS measurement will be 500 ppm.

7.3 Temperature compensation factor

The default setting of the temp. compensation factor is 2.0%/°C. You can adjust the factor based on test solution and experimental data in parameter setting P4. The following table is some common examples for setting up the temp. compensation factor.

Solution	Temperature compensation factor	Solution	Temperature compensation factor
NaCl	2.12%/°C	10% Hydrochloric acid	1.32%/°C
5% NaOH	1.72%/°C	5% Sulfuric acid	0.96%/°C
Dilute ammonia	1.88%/°C		

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 measurement with pure water in a container or with a wash bottle.
- 8.2 For tough contaminants, detach the sensor shield, soak the probe in Apera probe cleaning solution (AI1166) or detergent water for 30 minutes. Then use a soft brush to remove the contaminants. Afterwards, soak the probe in 3M KCL soaking solution for at least 1 hour. Rinse it off, then re-calibrate the tester before using again.
- 8.3 **Never** use your finger to touch the pH 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.







9. Probe Storage

- 9.1 For regular storage, just make sure there are a few water droplets inside the probe cap. Then close on the probe cap tightly to maintain the humidity inside so the probe will not dry out.
- 9.2 If the probe is dried out by accident or if you find the probe's response turns much slower than usual, soak the probe in the 3M KCL soaking solution for 1 hour to recover its sensitivity. **NEVER** leave the probe in the 3M KCL soaking solution for longer than 24 hours as it may cause damage to the conductivity sensor.
- 9.3 If you find white crystals inside or outside the probe cap, it is perfectly normal. It is the 3M KCL soaking solution that crystalizes over time by its nature. Just rinse them off and keep using. This chemical is not poisonous nor dangerous, and the probe's performance will not be affected at all.
- 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 in the 3M KCL soaking solution for 1 hour, then re-calibrate it before using. Pure water is only for rinsing the probe.





10. Parameter Settings

Symbol	Parameter Setting Contents	Code	Factory Default
P1	Select pH buffer standard series	USA – NIST	USA
P2	Auto. Hold	Off – On	Off
P3	Select backlight	Off - 1 - On	1
P4	Temperature compensation factor	0.00 - 4.00%	2.00%
P5	TDS factor	0.40 - 1.00	0.71
P6	Salinity unit	ppt - mg/L	ppt
P7	Select temperature unit	°C - °F	°F
P8	Back to factory default	No – Yes	No

10.1 Parameter Settings Tutorial

When the tester is turned off, long press  to enter parameter settings → Short press  to switch P1-P2-P3...P8 → Short press  to select parameter (starts flickering) → Short press  to change parameter → Short press  to confirm the change → Long press  to return to measurement mode.

10.2 Parameter Setting Instruction

- a) **Standard pH buffer solution (P1):** There are two options of standard buffer solutions: USA series and NIST series. For details, refer to Section 4.2.
- b) **Automatic Hold (P2):** Select “On” to activate the auto-hold function. When reading is stable for more than 10 seconds, tester will lock the value automatically, and **HOLD** icon will show up on LCD. Short-press  to cancel the auto-hold (**HOLD** icon will go off).
- c) **Backlight (P3):** “Off”-turn off backlight, “On”-turn on backlight, **1**-backlight lasts for 1 minute.
- d) **TDS Factor (P5):** Short press  in P5, adjust the TDS factor to your desired value by short-pressing or holding , then short press  again to confirm the change.
- e) **Factory default setting (P8):** Select “Yes” to set the meter to its default status (erase all calibration record and return all parameter settings to the default value). This function can be used when the meter does not work properly or when replacing a new probe. Calibrate the meter again after setting the meter to factory default.

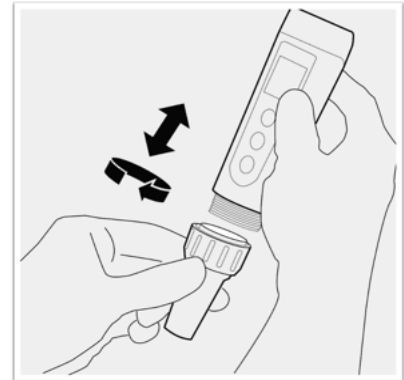
11. Technical Specifications

pH	Range	-2.00 to 16.00 pH
	Resolution	0.01 pH
	Accuracy	±0.01 pH ±1 digit
	Calibration Points	1 to 3 points
	Auto. Temperature Compensation	0 – 50°C (32 – 122°F)
Conductivity	Range	0 to 200.0 µS, 200 to 2000 µS, 2 to 20.00 mS/cm
	Resolution	0.1/1 µS, 0.01 mS/cm
	Accuracy	±1% F.S
	Calibration Points	1 to 3 points
TDS	Range	0.1 ppm to 10.00 ppt
	TDS Factor	0.40 to 1.00
Salinity	Range	0 to 10.00 ppt
Temperature	Range	0 to 50°C (32-122°F)
	Resolution	0.1°C
	Accuracy	±0.5°C

12. Probe Replacement

To replace a probe:

- 1) Take off the probe cap
- 2) Screw off the probe ring
- 3) Unplug the probe
- 4) Plug in the new probe (pay attention to the probe's position);
- 5) Screw on the probe ring tightly. Soak the new probe in 3M KCL for 5-15 minutes. Then perform calibration before testing.



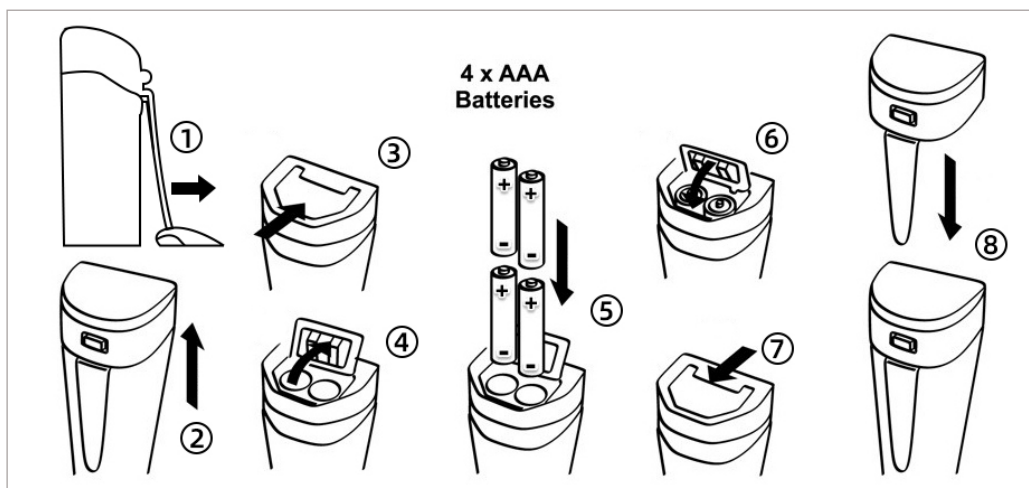
Probes compatible with PC60 Tester:

- PC60-E (Regular pH/conductivity probe)
- PC60-DE (Double-junction pH/conductivity probe)
- PH60-E (Regular pH glass bulb probe)
- PH60-DE (Double-junction pH glass bulb probe)
- PH60S-E (Spear pH probe for solids/semi-solids pH testing)
- PH60F-E (Flat pH probe for surface pH testing)
- EC60-E (Conductivity probe)

13. 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& BATTERY LEAK!)**



- 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 POSITIVE sides FACE UP)
- ⑥ Press down the battery compartment
- ⑦ Slide and lock the battery compartment
- ⑧ Close on the battery cap

* Make sure the battery cap is completely closed with the red O-ring. Otherwise, the waterproof rating could be compromised.

14. Troubleshooting Guide

Trouble	Reasons	How to Fix
Cannot calibrate	Pressing  too soon (E_{r2})	Wait for the reading to get stabilized (smiley face to stay on the screen) before pressing  button to finish calibration.
	Incorrect calibration order (E_{r1})	Refer to Section 4.2.1
	Poor quality calibration solutions (E_{r1})	Make sure your calibration standard solutions are fresh and clean, and made by a legitimate manufacturer.
	Dirty probe or clogged junction (E_{r1})	Thoroughly clean off the probe. Refer to Section 6.
	Aged probe (E_{r1})	Replace the probe.
	Dried-out probe (E_{r1})	Soak the probe in Apera 3M KCL soaking solution for at least 1 hour. And refer to Section 9 for proper probe storage.
	Probe is not fully submerged in the solution (E_{r1})	Make sure the probe is immersed in the solution at least 1 inch deep.
	Air bubbles around/inside the probe (E_{r1})	Make a quick stir in the solution to remove air bubbles.
	Broken Probe (E_{r1})	If you don't find any visible damage of the probe (broken bulb or white rod), contact Apera for warranty fulfillment. If there is visible damage, replace the probe.
Reading is always slowly changing, won't stabilize.	Dirty probe or clogged junction	Thoroughly clean off the probe. Refer to Section 6.
	Aged probe	Replace the probe.
	Testing pure water like tap/drinking/well/RO/distilled water	Refer to Section 5.2
Display similar readings in any solutions or always display 7.00 pH or 0 μ S	Broken probe	If you don't find any visible damage of the probe (broken bulb or white rod), contact Apera for warranty fulfillment. If there is visible damage, replace the probe.
	Instrument defect	Contact Apera for warranty fulfillment
Reading keeps jumping erratically	Probe is not fully submerged in the solution	Make sure the probe is immersed into the solution for at least 1 inch.
	Air bubbles around/inside the probe	Make a quick stir in the solution to remove air bubbles.
	Probe is not properly connected or the connector is broken.	Check the probe's connector, make sure it's not broken and is correctly connected. Align the electrode and instrument correctly before plugging in. Never force it. Ensure that the electrode connector is not exposed to the air too long.
Calibration is successful, but reading is not accurate	Aged probe	Replace the probe.
	Comparison with other testers, test strips, or drop tests	To compare with other testers, make sure to perform a 2-point calibration for all testers in the same standards, then test a 3rd point. Whichever gives more accurate reading in the 3rd point standard is the most 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.

15. 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 or to perform any preventive maintenance, unauthorized repair or modifications, normal wear and tear, or other external causes or actions beyond our reasonable control.

To get the fastest warranty fulfillment, go to support.aperainst.com and click "New Support Ticket" on the upper right corner. Type your email in the requester field, "Warranty" in the Subject field, and then input the following information in the description field:

- Your full name
- Product model
- Serial number (can be found on the back sticker of the tester body)
- What problem or issue you had experienced with the product
- Attach a photo of your proof of purchase
- Attach a photo/video of the problematic product

Then click Submit. One of our customer service specialists will get in touch with you within one business day.

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