



Lab SCIENTIFIC PH60F-Z Smart Series pH Tester Kit User Manual

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Lab SCIENTIFIC PH60F-Z Smart Series pH Tester Kit



Specifications

- Product Name: PH60F-Z SMART SERIES pH TESTER KIT (pH/Temp./ORP)
- Email: sales@labcoscientific.com.au
- Website: labcoscientific.com.au
- Phone: 1800 052 226
- Address: PO Box 5816, Brendale, QLD 4500
- ABN: 57 622 896 593
- Version: 1.1

Introduction

Thank you for choosing the Apera Instruments PH60-Z Smart pH Tester. Please read the manual for a reliable testing experience.

Battery Installation

Follow these steps to install batteries correctly:

- The positive side (+) of every single battery must face up to avoid damage and battery leakage.

Keypad Functions

Refer to the manual for details on keypad functions.

Complete Kit

Ensure you have all components in the kit for proper operation.

Things to Know Before Use

- Handle the glass tip of the probe carefully to avoid breakage.
- Prepare distilled or deionized water for rinsing and tissue paper for drying the probe.

pH Calibration

1. Short press...

FAQ

Q: Why are there water droplets in the probe cap?

A: The water droplets maintain the pH sensor's sensitivity before product use.

PH60F-Z SMART SERIES pH TESTER KIT (pH/Temp./ORP)

USER MANUAL

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ATTENTION

1. You may find a few drops of water in the probe cap. These water droplets are added to maintain the sensitivity of the pH sensor before the product leaves factory. It does NOT mean the product is used.
2. The batteries are already preinstalled. Just pull off the paper slip before using the tester. When you replace the batteries, make sure to follow the correct directions: all four AAA batteries' positive sides (+) FACE UP.



INTRODUCTION

Dear Customer, Thank you for choosing Apera Instruments PH60-Z Smart pH Tester. Please carefully read this manual before using the product in order to have a reliable testing experience.


This product is designed with a two-way control on both the tester and ZenTest Mobile App. Please refer to the functions available on each platform in the following table. This manual shows you how to operate the tester without connecting to a smartphone.

Table 1: Functions on 60-Z Tester and ZenTest® Mobile App

| FUNCTIONS | 60-Z TESTER | ZENTEST MOBILE APP | |
|------------------------|--|---|-------------------------------------|
| DISPLAY | LED display | Basic Mode: digital display + calibration info | Swipe to switch among various modes |
| | | Dial Mode: digital display + dial display | |
| | | Graph Mode: digital display + graph display | |
| | | Table Mode: digital display + real time measurement and history display | |
| CALIBRATION | Press buttons to operate | Operate on smartphone following graphic guides | |
| SELF- DIAGNOSIS | Er1 – Er6 icons | Detailed problem analysis and solutions | |
| PARAMETER SETUP | Press buttons to set up (except for P7 and P11) | All parameters can be set up in Settings. | |
| ALARM | The screen turns red when alarm triggered; cannot be setup | Alarm display and alarm values can be setup for pH and ORP | |
| DATALOGGER | N/A | Manual or Auto. Datalogger; notes can be added to saved data | |
| DATA OUTPUT | N/A | Share data via Email | |

- 1.2 Search ZenTest in Apple App Store or Google Play App Store to download the latest App for your tester.
- 1.3 For video tutorials on how to connect the tester to your smartphone and perform more functions in ZenTest Mobile App, please go to support.aperainst.com

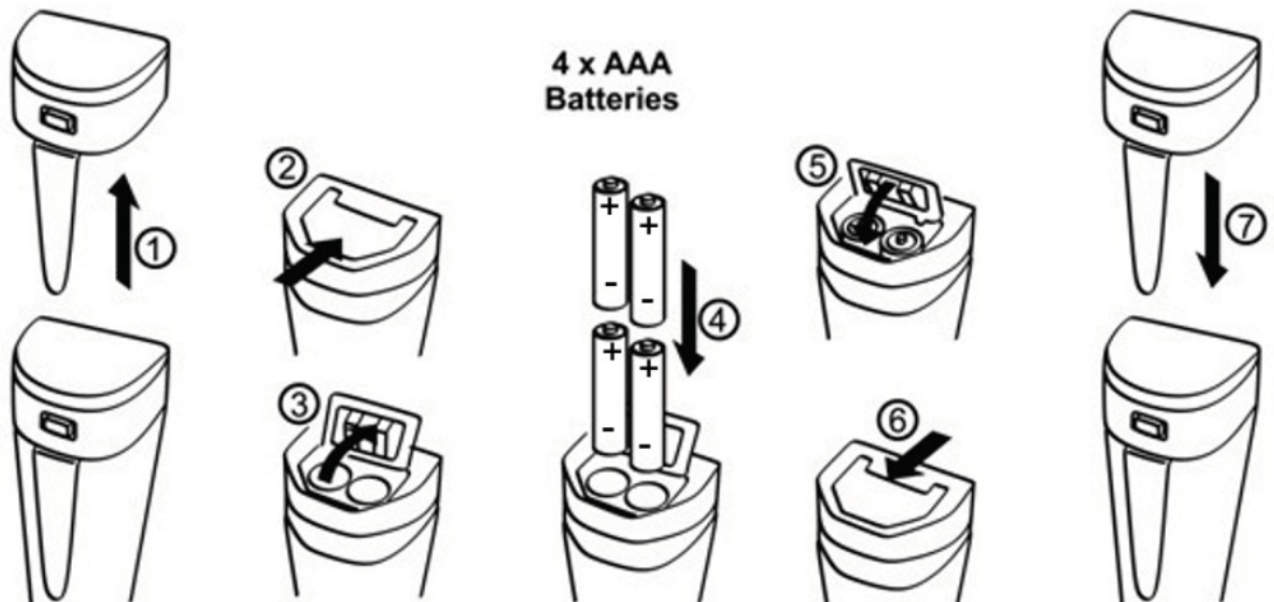
BATTERY INSTALLATION

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.



Pull the battery cap up

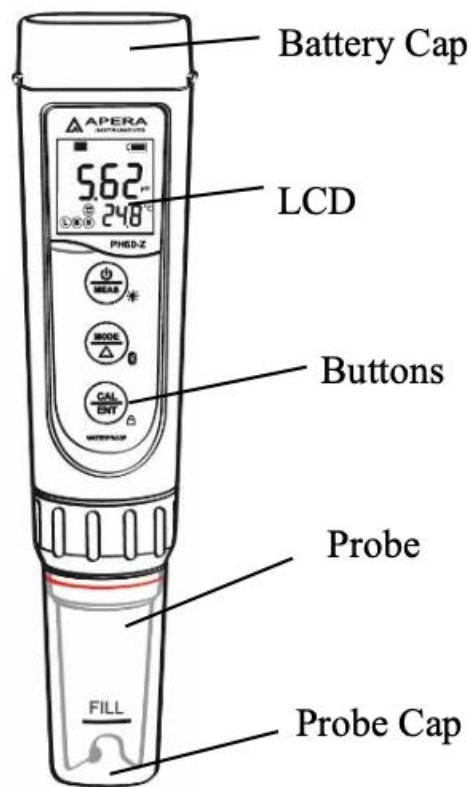
2. Slide the battery cap along to the direction of arrow
3. Open the battery cap
4. Insert the batteries (ALL POSITIVE SIDES FACING UP) (see graph)
5. Close the battery cap
6. Slide and lock the battery cap along to the direction of arrow
7. Fit the tester's cap while making sure to push all the way down. The tester's waterproof design may be compromised if the cap is not fitted correctly.

KEYPAD FUNCTIONS Short




Press: < 2 seconds Long Press: > 2 seconds



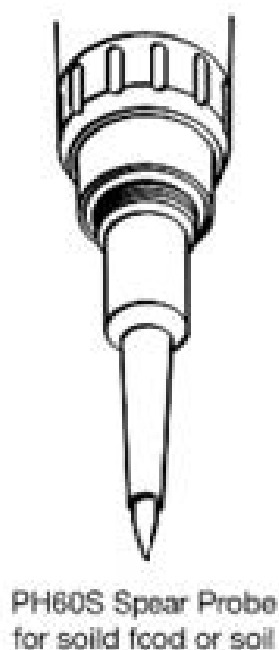
1. When turned off, short press to turn on the tester; long press to enter parameter setting.
2. In calibration mode or parameter setting, short press to return to measurement mode.
3. In measurement mode, long press to turn off the tester, short press to turn on/off backlight.




1. In measurement mode, long press to turn on/off Bluetooth® receiver.

2.  When turned on,  will be flashing; when connected to smartphone,  will stay on.

3. In parameter setting, short press to change parameter (Uni-directional).

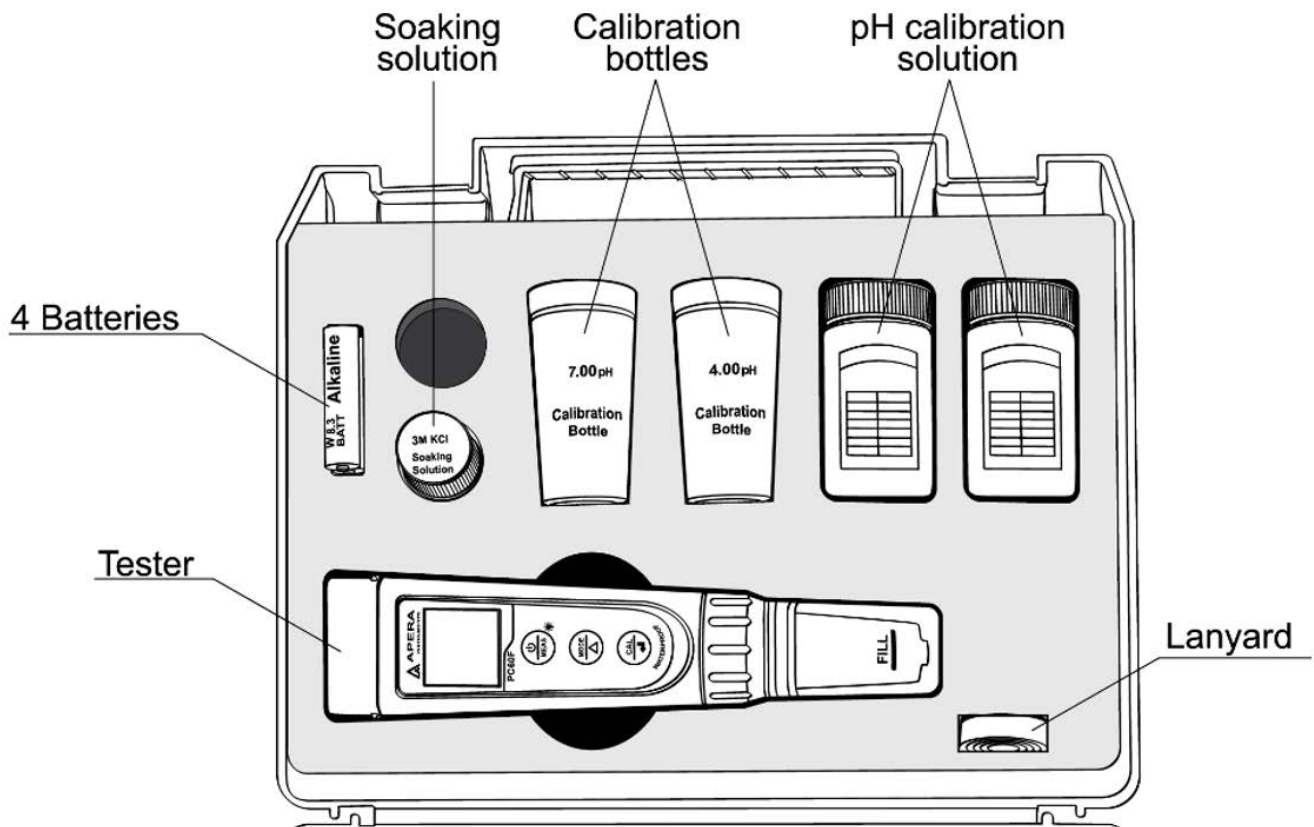


1.  Long press to enter calibration mode.

2. In calibration mode, short press to confirm calibration.

3. In measurement mode, when automatic lock is turned off, short press to manually lock or unlock readings.

COMPLETE KIT
















THINGS TO KNOW BEFORE USE

1. Be careful about the glass tip of the probe. It can break if being contacted by external force. If broken, the probe needs to be replaced.
2. Things needed in addition to what's in the box:
 - Distilled or deionized water (8-16oz) for rinsing the probe after each test
 - Tissue paper for drying the probe
3. For PH60 and PH60F testers:
 - A few drops of water are added to the probe cap to keep the pH electrode in an activated state before the tester leaves factory. Generally, users can start using the tester directly. If the measuring response is slow, users can soak the pH electrode for 30 minutes in the 3M KCL storage solution (fill to the fill-line) before using it; if the electrode is dry for a long time (> 1 month), the pH electrode responds slowly, You can soak the pH electrode for 8 hours in the storage solution before using.
 - When the tester is not in use, we recommend adding one to two drops of tap water to the probe cap, and close the cap (be careful not to add too much water). This way, the pH probe's sensitivity can be maintained and users can start using the tester right away next time.
 - Do not soak the pH electrode in purified (e.g. distilled/deionized) water for a long time, which will make the electrode response slow. If this happens, soak the pH electrode in 3M KCl solution for 3~5 hours, and then re-calibrate it before using.
 - The storage solution is 3M KCL (SKU: AI1107), and the tester kit comes with a bottle of 10mL storage solution (can be used repeatedly). If it is contaminated, replace it with a new one. Please do not use other brands' storage solutions as they may contain other chemicals that can cause damage to the electrodes.
4. For PH60S Spear pH Tester:

- NEVER store the spear probe in a dry condition because permanent damage CAN be caused. The spear probe should always be stored in the 3M KCL soaking solution.





pH CALIBRATION

Calibration Steps

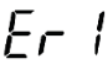
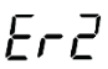



1. Short  press to turn on the meter; rinse the probe in distilled water, shake the meter in the air and use tissue paper to dap off excess water (never rub or wipe the sensor tip).
2. Pour a certain amount of pH 7.00 and pH 4.00 buffer solution into the corresponding calibration bottles (to about half volume of the bottle);
3. Long  press to enter calibration mode; Short press  to exit.
4. Place the probe in pH7.00 buffer solution, shake it for a few seconds,  and allow it to stand still in the buffer solution until a stable reading is reached. When stable icon  stays on the LCD screen, short press **M** to complete 1st point calibration and the tester returns to measurement mode. Indication Icon will appear at the bottom left of the LCD screen.
5. Rinse the probe in distilled water and dry it. Long press  to enter calibration mode to perform 2nd point of calibration.
6. Place the probe in pH 4.00 buffer solution, shake it for a few seconds, and allow it to stand still in the buffer solution. When stable icon  stays on the LCD screen, short press  to complete 2-point calibration and the tester returns to measurement mode. Indication icon   will appear at the bottom left of the LCD screen.
7. If necessary, rinse the probe in distilled water and dry it, and place the probe in 10.01 buffer solution (sold separately) to complete 3rd point of calibration according to the steps in 6),    will appear at the bottom left of the LCD.

Notes

1. Tester will automatically recognize pH buffer solution. Users can perform one-point, two-point, or three-point calibration. For the 1st point calibration, only 7.00 pH/6.86 pH solution can be used. Then use other buffer solutions to conduct 2nd or 3rd point calibration. Perform the 2nd point calibration (4.00 pH) immediately after the 1st point. Do NOT turn off the meter before you perform 2nd point calibration. If the meter is turned off after 1st point calibration, users will need to restart the calibration process with the 7.00 pH or 6.86 pH first and the 2nd point following after. Otherwise, Er1 will occur.
2. The tester will automatically recognize 5 kinds of pH buffer solutions in both USA and NIST series of standards. Refer to the table below:


| CALIBRATION | USA SERIES | NIST SERIES | CALIBRATION INDICATION ICON | RECOMMENDED |
|-------------|--|---|---|-----------------------------|
| 1-POINT | 7.00 pH | 6.86 pH |  | Accuracy ≥ 0.1 pH |
| 2-POINT | 1) 7.00 pH 2) 4.00 pH or 1.68 pH | 1) 6.86 pH 2) 4.01 pH or 1.68 pH |  | Measurement Range < 7.00 pH |
| | 1) 7.00 pH 2) 10.01 pH or 12.45 pH | 1) 6.86 pH 2) 9.18 pH or 12.45 pH |  | Measurement Range < 7.00 pH |
| 3-POINT | 1) 7.00 pH 2) 4.00 or 1.68 pH 3) 10.01 or 12.45 pH | 1) 6.86 pH 2) 4.01 or 1.68 pH 3) 9.18 or 12.45 pH |  | Wide Measurement Range |

- For pH Calibration buffer solutions, we recommend that users replace new buffer solution after 10 to 15 times of use to keep the standard buffer's accuracy. Do NOT pour the used calibration solutions back into the solution bottles in case of contamination.
- When calibrating strong basic solutions (pH>10), use 7.00 pH and 1245 pH to calibrate; When measuring strong acidic solutions (pH<4), 7.00 pH and 1.68 pH should be calibrated.
- For the self-diagnosis information, please refer to the table below:

| Symbol | Self-Diagnosis information | Potential problems and how to fix |
|---|---|---|
|  | The pH calibration solution cannot be recognized by the meter. | <ol style="list-style-type: none"> Make sure the probe is fully immersed in the calibration solution. Check if calibration solution is expired or polluted. 1st point of pH calibration must be pH 7.00 or 6.86. See 6.2 (1). Please check whether pH electrode is damaged or broken. If so, please replace with a new one. The glass bulb or junction is severely contaminated. Please use a soft brush with soap water to clean it thoroughly. Then soak it in 3M KCL 3-5 hours before performing calibration again. If none of the above, please contact us at info@aperainst.com or +1 (614) 285-3080 |
|  |  is pressed before measurement is fully stable | Wait for  to come up and stay on screen before pressing  |

| | | |
|------|--|--|
| Er-3 | During calibration, readings being unstable for over 3 minutes | <ol style="list-style-type: none"> 1. Please check whether pH electrode is damaged or broken. If so, please replace with a new one. 2. The glass bulb or junction is severely contaminated. Please use a soft brush with soap water to clean it thoroughly. Then soak it in 3M KCL overnight before performing calibration again. 3. The electrode is aged (used for over a year and has a much slower response). A replacement is needed. 4. If none of the above, please contact us at info@apcrainst.com or +1 (614) 285-3080 |
| Er-4 | pH electrode zero electric potential out of range (<-60mV or >60mV) | <ol style="list-style-type: none"> 1. Check whether pH buffer solutions comply with the USA or NIST standard. 2. Check whether pH buffers are expired or contaminated. 3. Please check whether pH electrode is damaged or broken. If so, please replace with a new one. 4. The electrode is aged (used for over a year and has a much slower response). A replacement is needed. 5. The electrode is invalidated (Er4/Er5 repetitively appears, and problems 1, 2, 3 are excluded). A replacement is needed. 6. If none of the above, please contact us at info@apcrainst.com or +1 (614) 285-3080 |
| Er-5 | pH electrode slope out of range (<85% or >110%) | |
| Er-6 | The calibration reminder is triggered. It's time to perform a new pH calibration | Perform pH calibration or cancel calibration reminder in ZenTest settings. |

PH MEASUREMENT

Short press  to turn on the tester. Rinse the probe in pure water, shake off excess water. Insert the probe in your sample solution, make a quick stir and hold still. Record the reading when it is stabilized (😊 comes up and stays on screen).

Notes

For solutions with low ionic strength (e.g. distilled or deionized water), the pH measurements will be fluctuating and difficult to get a stable reading. A specialized pure water pH electrode is required. For more information, please contact us at info@apcrainst.com Likewise, when testing clean water such as drinking water, RO water or tap water, the test time could be longer, usually 2-4 minutes.

Applications of Different Models

| MODEL/PROVE | APPLICATION |
|------------------------------------|--|
| PH60 – GLASS BULB SENSOR | General water solutions' pH measurement such as hydroponics, aquaculture, pools and spas, water treatment, beverage, etc. |
| PH60S – SPEAR TIP SENSOR | Solid samples such as cheese, meat, fruit, vegetables, sushi rice, bread, and soil; also works well for general water solution. |
| PH60F – FLAT GLASS MEMBRANE | Flat surface measurement such as skin, paper, fabric, leather and so on; micro sample testing; also works well for general water solution. |

- PH60S-Z Spear pH testers are widely used for solids containing water or semi-solid medium. When performing such tests, pay attention to insert probe evenly, and be careful to prevent probe from damage. If the medium is too hard (such as meat or fruits), please bore a small hole with a knife before inserting the probe.
 - For food pH measurement (e.g. sushi, cheese, meat, fruit, etc.), it should always be a sampling test. That means test samples should no longer be edible.
- For soil direct pH test with PH60S-Z
 - If soil is dry, add small amount of distilled or RO water to moisten the soil (do NOT add tap water since it will affect the pH value significantly). Ideally wait 24 hours before you take a measurement.
 - Rinse the probe with distilled water/RO water before inserting it to the soil.
 - If measuring outside of solution, rockwool or small pots, remove the top 5cm/2inch soil from the surface of the sample area. Insert the spear probe approximately 4 to 6 inches (10 to 15cm) into the soil samples from various locations (3 to 4), wait for the stable readings before recording (smiley face icon stays on the screen).
 - Users can save all the data in ZenTest App. Then take the average of the saved data as the representative pH level of the soil.
 - Do NOT use extra force to insert probe. If you feel like the probe can't be inserted any deeper, stop inserting. The spear tip could break.
 - Rinse off the soil residue between tests using distilled water or RO water for the best results. Use the probe cleaning brush if needed.
- PH60F Flat probe testers are mostly for flat surface sample test.
 - For skin test: skin should be without sweat or dirt, nor be overly cleaned (do not use facewash products before testing) to avoid affecting measurement results, dampen skin with some distilled water, slightly force flat probe onto the skin, get readings after value stabilized.
 - For paper, fabric and leather test: add a few drops of distilled/deionized water on surface before performing tests.
 - For micro sample testing, use a container with an inner diameter $\leq 19\text{mm}$ and a flat bottom. The tester can test volume $\geq 0.5\text{ml}$.

ORP MEASUREMENT

- ORP stands for Oxidation-Reduction Potential, measured in mV. It's also called redox. ORP is a measure of the

cleanliness of water & its ability to break down contaminants. A separate ORP probe (ORP60-DA) needs to be installed to be able to measure ORP.








2. Power on the PC60-Z tester, unscrew the original probe, and install the ORP60-DA probe, then the tester will automatically switch to ORP measurement mode (Refer to Section 14 for how to replace a probe).
3. Rinse the probe in pure water and shake off excess water. Dip the probe in sample solution, make a quick stir and hold still. Record the ORP reading after it's fully stabilized stays 😊 on screen.


PARAMETER SETTINGS

9.1 Table of Settings


| SYMBOL | PARAMETER SETTING CONTENTS | CONTENT | FACTORY DEFAULT |
|--------|----------------------------|---|-----------------|
| P1 | Temperature Unit | °C – °F | °F |
| P2 | Set Automatic Lock | 5 – 20 seconds – Off | Off |
| P3 | Automatic Backlight Off | 1 – 8 minutes – Off | 1 |
| P4 | Automatic Power Off | 10 – 20 minutes – Off | 10 |
| P5 | pH Buffer Series Selection | USA – NIST | USA |
| P6 | pH Resolution | 0.1 – 0.01 | 0.01 |
| P7 | pH Calibration Reminder | H – Hours D-Days (Setup in ZenTest App) | / |
| P8 | pH Back to Factory Default | No – Yes | No |

Parameter Settings


1. When the meter is turned off,  long press to enter parameter setting → short press  to switch P01-P02... → P14. Short Press , parameter flashes → short press  to adjust parameter → Short press to confirm → short press  to exit parameter setting and go back to measurement mode.
2. Auto-Hold (P02) – You can set the auto-hold time from 5 to 20 seconds. For example, if 10 seconds is set, when the reading is stable for more than 10 seconds, the reading will be automatically locked, and the HOLD icon  will be displayed. Short press again to cancel the lock. When the setting is “Off”,  the auto-hold

function is turned off, the reading can only be manually locked. Short press  to lock or unlock readings while measuring.

3. Auto. Backlight (P03) – You can set the automatic backlight time for 1 to 8 minutes. For example, if 3 minutes is set, the backlight will turn off automatically after 3 minutes; when the “Off” is set, the auto. backlight function will

be turned off, and short press  to manually turn the backlight on or off.

4. Auto. Power off (P04) – The auto. power off time can be set to 10 to 20 minutes. For example, if 15 minutes is set, the meter will automatically shut down after 15 minutes if no operation; when “Off” is set, the auto. power off function will





be turned off. Long press  to manually shut down the meter.

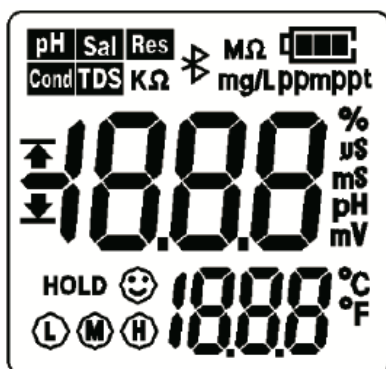
5. pH Calibration Reminder (P07) – set X hours (H) Or X days (D) in ZenTest mobile app – settings – Parameter – pH – Calibration Reminder. On the meter, you can only check the values that’s been set up on ZenTest App. For example, if
6. days is set up, the Er6 icon (see Figure-4) will appear in the lower right corner of the LCD screen in 3 days to remind you to perform calibration, also in the ZenTest App there will be a pop-up reminder. After calibration is finished or the reminder setting is cancelled in the ZenTest App, the Er6 icon will disappear.
7. pH Back to Factory Default (P08) – Select “Yes” to recover instrument calibration to theoretical value. This function can be used when instrument does not work well in calibration or measurement. Calibrate and measure again after setting the instrument back to factory default.

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 to 122°F) |
| ORP (MV) | Range | -1,000 mV to 1,000 mV |
| | Accuracy | ±0.2% F.S |
| TEMPERATURE | Range | 0 to 50°C (32 to 122°F) |
| | Accuracy | ±0.5°C |

ICONS AND FUNCTIONS

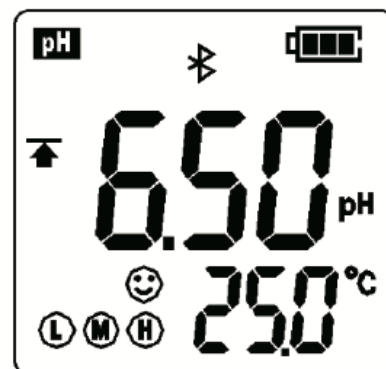
| | | | |
|--------------------------|---|-------------------|--|
| CALIBRATED POINTS |  | SELF-DIAGNOSIS | Er1, Er2, Er3, Er4, Er5, Er6 |
| STABLE READING INDICATOR |  | WATERPROOF RATING | IP67, floats on water |
| READING LOCK | HOLD | POWER | DC3V, AAA Batteries x4 |
| BLUETOOTH SIGNAL |  | BATTERY LIFE | > 200 Hours |
| LOW POWER REMINDER |  | BACKLIGHT | White: Measurement Green: Calibration Red: Alarm |
| AUTO. POWER OFF | Automatically power off if no operation for 10 minutes | | |
| DIMENSION/WEIGHT | Instrument: 40x40x178mm/133g; Case: 255x210x50mm/680g | | |



Graph-3
LCD Display



Graph-4
pH calibration reminder



Graph-5
pH alarm triggered

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 replacement probe (pay attention to the probe's position); 5) screw on the probe ring tightly.

The replacement probes that are compatible with PH60-Z are:

- PH60-DE (Regular pH glass bulb probe), PH60S-DE (Spear pH probe for solids/semi-solids pH testing),
- PH60F-DE (Flat pH probe for surface pH testing), ORP60-DA (ORP Probe).

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, unauthorized repair, normal wear and tear, or external causes such as accidents, abuse, or other actions or events beyond our reasonable control.

To claim for warranty or seek additional help, please go to support.aperainst.com and click New support ticket.

Please provide the following information in the ticket

| | | | |
|--------------|--|--------------------------------|----------------------|
| Your Name | Phone Number | Email | Shipping Address |
| Product Name | Serial Number (on the back of the meter) | Photo or screenshot of receipt | Problems experienced |


After the ticket is submitted, one of our customer care specialists will be assisting you within 1 business day.

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Documents / Resources

| | |
|---|--|
|  | <p>Lab SCIENTIFIC PH60F-Z Smart Series pH Tester Kit [pdf] User Manual</p> <p>PH60F-Z Smart Series pH Tester Kit, PH60F-Z, Smart Series pH Tester Kit, pH Tester Kit, Tester Kit</p> |
|---|--|

References

- [Lab Home Page](#)
- [Support : Apera Instruments](#)
- [User Manual](#)

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