

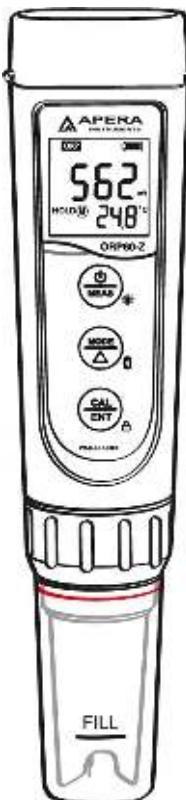
SKU:AI3717



ORP60-Z Smart ORP/Redox Tester

(*ORP/Temp.*)

Instruction Manual



ISO9001:2015



Bluetooth®



APERA INSTRUMENTS (Europe) GmbH

www.aperainst.de

V1.03

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ATTENTION

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 must FACE UP.

1. Introduction

Dear Customer,

Thank you for choosing Apera Instruments ORP60-Z Smart ORP Tester. Please carefully read this manual before using the product in order to have a reliable testing experience.

1.1 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	LCD display	1. Basic Mode: digital display+calibration info 2. Dial Mode: digital display+dial display 3. Graph Mode: digital display+graph display 4. Table Mode: digital display+real time measurement and history display	Swipe to switch among various modes
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 preset for each parameter	
Datalogger	N/A	Manual or Auto. Datalogger; notes can be added to saved data	
Data Output	N/A	Share data via Email	

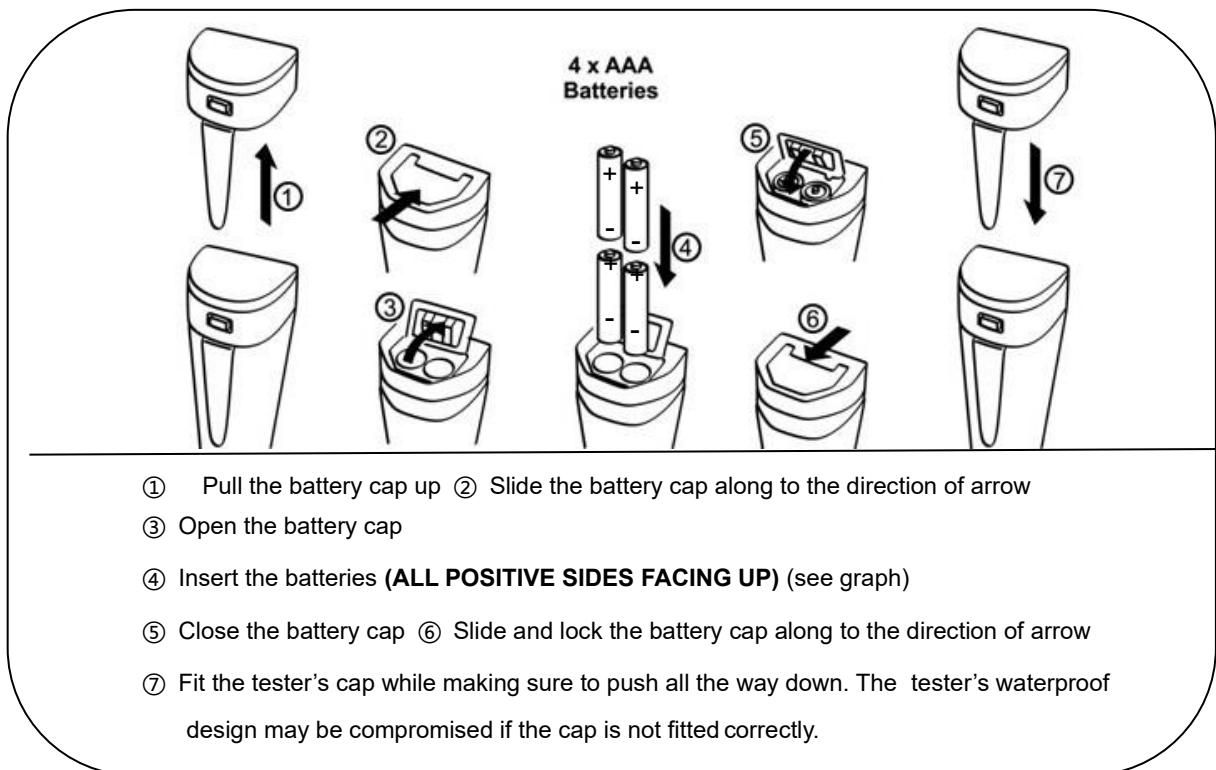
1.2 Search ZenTest in Apple App Store or Google Play App Store to download the latest App for your tester.

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 www.aperainst.de

2. Battery Installation

Please install batteries according to the following steps. *Please note direction of batteries:

ALL POSITIVE SIDES ("+") FACING UP. (Wrong installation of batteries will cause damage to the tester and potential hazards)

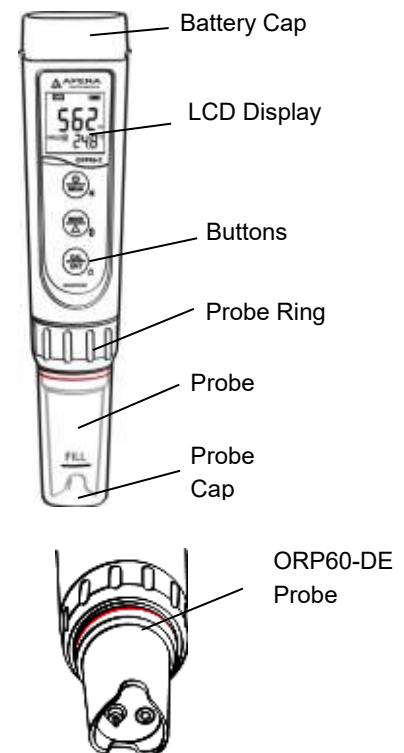


- ① Pull the battery cap up
- ② Slide the battery cap along to the direction of arrow
- ③ Open the battery cap
- ④ Insert the batteries (**ALL POSITIVE SIDES FACING UP**) (see graph)
- ⑤ Close the battery cap
- ⑥ Slide and lock the battery cap along to the direction of arrow
- ⑦ Fit the tester's cap while making sure to push all the way down. The tester's waterproof design may be compromised if the cap is not fitted correctly.

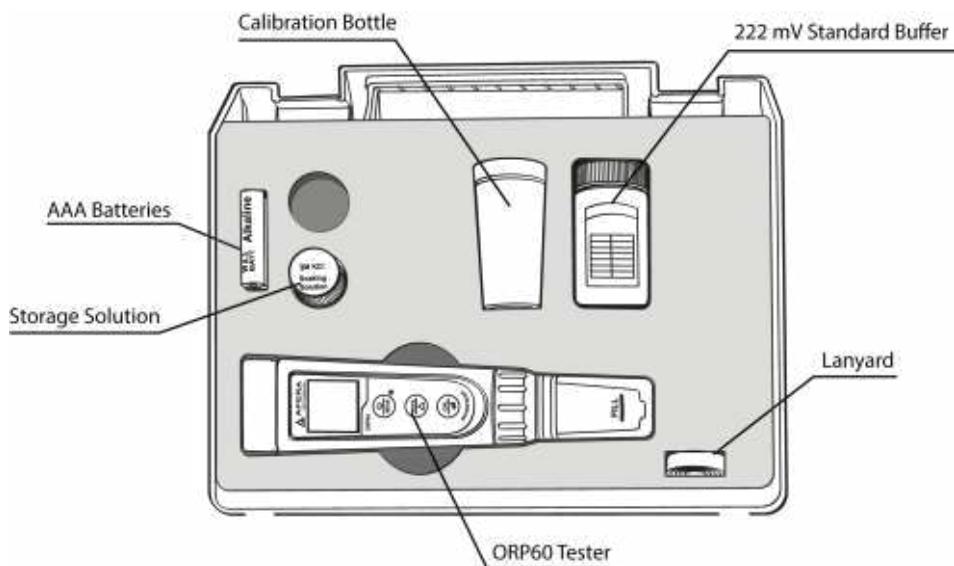
3. Keypad Functions

■ Short press----- < 2 seconds, Long press----- > 2 seconds

	<ol style="list-style-type: none">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.
	<ol style="list-style-type: none">1. In measurement mode, long press to turn on/off Bluetooth® receiver. When turned on, will be flashing; when connected to smartphone, will stay on.2. In parameter setting, short press to change parameter (Uni-directional).
	<ol style="list-style-type: none">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.



4. Complete Kit



5. Things to Know Before Use

- 5.1 Generally, users can start using the tester directly. If the measuring response is slow, users can soak the ORP 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 ORP electrode responds slowly, You can soak the ORP electrode for 8 hours in the storage solution before using.
- 5.2 When the tester is not in use, keep the ORP electrode in storage solution.
- 5.3 Do not soak the ORP electrode in purified (e.g. distilled/deionized) water for a long time, which will make the electrode response slow. If this happens, soak the ORP electrode in 3M KCl solution for 3~5 hours, and then re-calibrate it before using.
- 5.4 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.
- 5.5 Things needed in addition to what's in the box:
 - a) Distilled or deionized water (8-16oz) for rinsing the probe after each test
 - b) Tissue paper for drying the probe

6. 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. Rinse the probe in distilled water and dry it. Dip the probe in sample solution, shake for a few seconds, and allow it to stand still. Get the ORP readings after 😊 appears and stays on screen.

7. ORP Calibration

- 7.1 Pour some 222 mV ORP standard solution into the calibration bottle (to about half volume).
- 7.2 Rinse electrode in distilled water and dry it. Short press  to turn the meter on. Long press  to enter calibration mode. If you need to exit calibration mode, short press 
- 7.3 Dip electrode in the standard solution, stir gently, and allow it to stand still in the calibration solution until a stable reading is reached. When stable icon  comes up and stays, press  to adjust the calibration value according to the table below (also on the solution bottle's label). Then short press  to complete the calibration.

222 mV (25°C) ORP Standard Buffer Solution Calibration Reference Table			
Temperature (°C)	mV	Temperature (°C)	mV
10	242	30	215
15	235	35	209
20	227	38	205
25	222	40	201

For example, if the temperature is around 25°C, then adjust the calibration value to 222 mV. If the temperature is around 20°C, then adjust the calibration value to 227 mV.

7.4 Notes

Usually there's no need to calibrate for ORP testing. When the tester has been used for a long time, users can test it in 222 mV ORP standard buffer. If the error is big, please calibrate according to the steps in 7.1 to 7.3.

The meter has self-diagnosis function. Please refer to the followed chart for detailed information.

Symbol	Self-Diagnosis information	How to fix
<i>Er 2</i>	 is pressed before the measurement becomes stable (smiley face comes up)	Wait till the smile icon appears and stays, then short press 
<i>Er 3</i>	During calibration, readings being unstable for over 3 minutes	<ol style="list-style-type: none"> 1. Please check whether ORP electrode is damaged or broken. If so, please replace with a new one. 2. The platinum pin 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.

7.5 The Maintenance of ORP Probes

After long-time use, the surface of the platinum pin can be contaminated and cause inaccuracy or slow response time. If that happened, the following methods can be adopted to clean and reactivate the sensor:

- a) For contamination caused by inorganic substances, dip the probe into 0.1 mol/L dilute hydrochloric acid for 30 minutes. Clean it with distilled water, soak it into the KCL storage solution for 6 hours, and then it will be ready for use again.
 - b) For contamination caused by organic substances and oiliness, clean the platinum surface with dishwashing liquid, and rinse with distilled water. And then the probe will be ready for use again after 6 hours' soaking in the storage solution.
 - c) If the platinum surface is so severely contaminated that there forms an oxide film, toothpaste can be used to clean the platinum surface, and then wash it with distilled water. The probe will be ready for use again after 6 hours' soaking in the storage solution.
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8. Parameter Setting

8.1 Table of Settings

Symbol	Parameter Setting Contents	Content	Factory Default
P1	Temperature Unit	°C – °F	°F
P2	Select 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	ORP restores back to factory default	On -- Off	Off

8.2 Parameter Setting

- 1) When the meter is turned off, long press  to enter parameter setting → short press  to switch P01-P02... → P5. 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. Lock (P02)** — Users can set the auto lock time from 5 to 20 seconds. For example, if 10 seconds is set, when the measured value is stable for more than 10 seconds, the measured value will be automatically locked, and the HOLD icon will be displayed. Short press  to release the lock. When the setting is "Off", the Auto. lock function is turned off, that is, the measured value can only be manually locked. Short press  to lock or unlock the measured value. The HOLD icon will be displayed when reading is locked.
- 3) **Auto. Backlight (P03)** — Users 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) **ORP Back to Factory Default (P05)** — Select "Yes" to restore 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.

9. Technical Specifications

ORP (mV)	Range	-1000 mV to 1000 mV
	Accuracy	±0.2% F.S
Temperature	Range	0 to 50°C (32-122°F)
	Accuracy	±0.5°C

10. Icons and Functions

Self-Diagnosis Symbol	Er2, Er3		
Stable reading indicator		Waterproof Rating	IP67, floats on water
Reading Lock	HOLD	Power	DC3V, AAA batteries*4
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: 40×40×178mm/133g; case: 255×210×50mm/500g;		

11. 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 probe that is compatible with ORP60-Z is **ORP60-DE (ORP Probe)**.

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: accidental damage, 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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