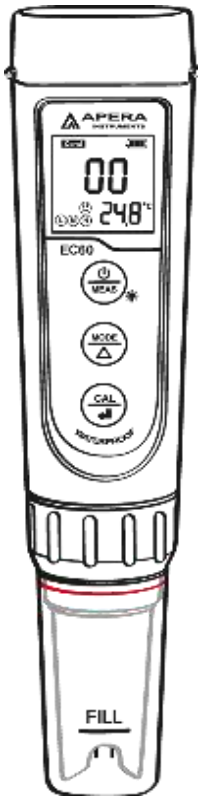
EC60 Premium Conductivity Tester
(EC/TDS/Salinity/Temp.)

Instruction Manual



RoHS compliant CE ISO 9001: 2015 IP67 WATERPROOF

APERA INSTRUMENTS (Europe) GmbH

www.aperainst.de

V6.3

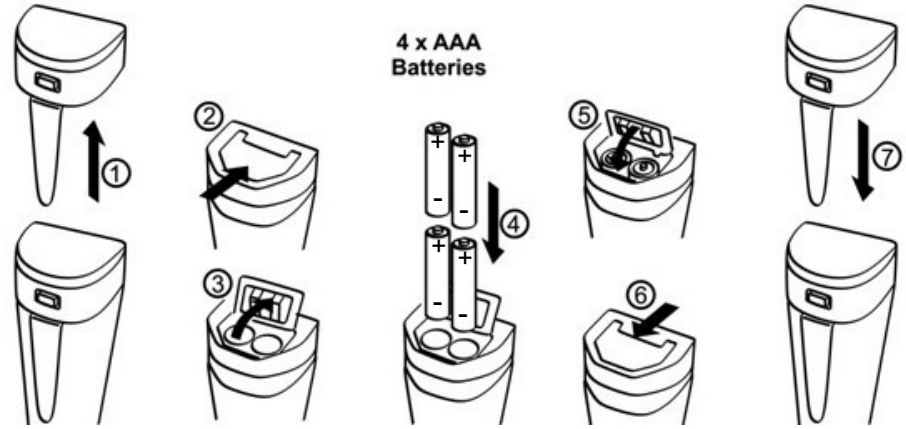
Thank you for purchasing Apera Instruments EC60 Premium Conductivity Tester. Please carefully read this instruction manual before using the product in order to have an accurate and reliable test result, and avoid unnecessary damages to the meter or probe.

For video tutorials, please go to www.aperainst.de

Contents

1. 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)**

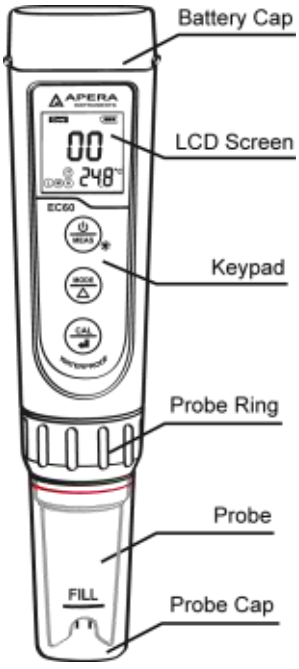


① Pull the battery cap up
② Slide the battery cap along to the direction of arrow
③ Open the battery cap
④ Insert the batteries **(ALL POSITIVE SIDES FACING UP)** (see graph)
⑤ Close the battery cap
⑥ Slide and lock the battery cap along to the direction of arrow
⑦ Fit the tester's cap while making sure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

2. Keypad Functions

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

MEAS	1.Short press to turn on the tester and long press to turn off the tester. 2.When turned off, long press to enter parameter setting. 3. In measurement mode, short press to turn on backlight.
MODE	1.In measurement mode, short press to switch parameter COND→TDS→SAL 2.In mode setting, short press to change parameter (Unidirectional)
CAL	1. Long press to enter calibration mode. 2. In calibration mode, short press to confirm calibration. 3.When measured value is locked, short press to unlock



3. Complete Kit

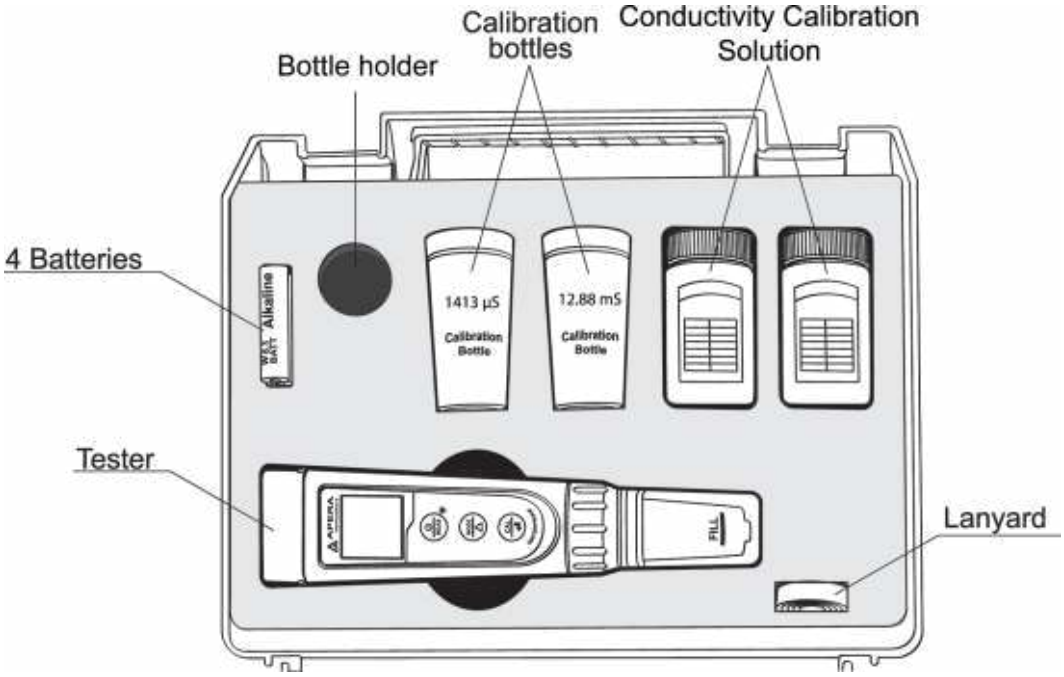


Diagram - 2

4.Conductivity Calibration

4.1 Press MODE key to switch to conductivity measurement mode. Rinse the probe in distilled water and dry it.

4.2 Pour certain amount (about half volume of the calibration bottle) of 1413μS/cm and 12.88 mS/cm conductivity calibration solution into accordant calibration bottles.

4.3 Long press CAL key to enter calibration mode, short press MEAS to exit.

4.4 Dip the probe in 1413 μS/cm conductivity calibration solution, stir gently and allow it to stand still in the solution until a stable reading is reached. When stable icon appears and stays on the LCD screen, short press CAL key to complete one-point calibration, the tester returns to measurement mode and indication icon (M) will appear at the bottom left of the LCD screen.

4.5 After calibration, dip the probe in 12.88 mS/cm conductivity calibration solution. If the value is accurate, it is not necessary to conduct 2nd point calibration. If it is inaccurate, follow the steps in 4.3 to 4.4 to complete the 2nd point of calibration using 12.88 mS/cm buffer solution.

*** 1000 μS/cm = 1 mS/cm**

*** 1000ppm = 1ppt**

5. Conductivity Measurement

Press MEAS key to turn on the tester. Rinse the probe in distilled water and dry it.
Dip the probe in sample solution, stir gently, and allow it to stand still in the solution until a stable reading is reached. Get readings after ☺ comes up and stays. Press MODE △ to switch from Conductivity to TDS, and Salinity

■ **Notes**

a) The TDS and Salinity measurements are converted from the conductivity measurements via a certain conversion factor.

b) The tester can calibrate 84μS, 1413 μS/cm and 12.88 mS/cm conductivity calibration solution. User can conduct 1 to 3 points calibration. Refer to the table below. Usually calibrating the tester with 1413 μS/cm conductivity buffer solution alone shall meet the testing requirement.

Calibration Indication Icon	Calibration Standards	Measuring Range
(L)	84 μS/cm	0 - 200 μS/cm
(M)	1413 μS/cm	200 - 2000 μS/cm
(H)	12.88 mS/cm	2 - 20 mS/cm

5.1 The tester has been calibrated before leaving the factory. Generally, users can use the tester directly or users can test conductivity buffer solutions first. If the error is large, then calibration is needed.

5.2 For conductivity calibration solutions, we recommend that users replace new solutions after 5 to 10 times of use to keep the standard solution's accuracy. Do NOT pour the used calibration solutions back into the solution bottles in case of contamination.

5.3 Temperature compensation factor: The default setting of the temp. compensation factor is 2.0%/℃. User can adjust the factor based on test solution and experimental data in parameter setting P4.

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		

5.4 TDS and conductivity is linear related, and its conversion factor is 0.40-1.00. 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. The tester only needs to be calibrated in Conductivity mode, then after calibration of conductivity, the meter can switch from conductivity to TDS or salinity.

5.5 **Conversion Example**: if conductivity measurement is 1000μS/cm^2, then the default TDS measurement will be 710 ppm (under the default 0.71 conversion factor), and the salinity be 0.5 ppt.

5.6 For the self-diagnosis information, please refer to the table below:

Symbol	Self-Diagnosis information	How to fix
Er 1	Wrong conductivity buffer solution, which exceeds the recognizable range of the meter.	1. Check if buffer solution is correct 2. Check if electrode is damaged.
Er2	CAL Is pushed before measurement is stable (☺ comes up and stays)	Wait for the smile icon to come up and then press CAL

6. Parameter Setting

6.1 Setting Chart

Symbol	Content	Parameter	Factory Default
P1	Auto Hold	Off-On	Off
P2	Backlight	Off-1-On	1 (1 min auto-off)
P3	Temp. Compensation Coefficient	0.00 to 4.00%	2.00%
P4	TDS Coefficient	0.40 to 1.00	0.71
P5	Salinity Unit	ppt-g/l	ppt
P6	Temperature Unit	˚C-˚F	˚C
P7	Restore to Factory Default	No-Yes	No

6.2 Parameter Setting

When turned off, long press MEAS to enter parameter setting →short press MODE to switch P1-P2… →P8. Short Press CAL, parameter flashes → short press MODE to choose parameter, → short press CAL to confirm →Long press MEAS to turn off.

6.3 Parameter Setting Instruction

a) Automatic lock (P1):

Select “On” to activate auto lock function. When reading is stable for more than 10 seconds, the tester will lock the value automatically, and HOLD icon will display on LCD. Press CAL key to cancel auto hold.

b) Backlight (P2)

“Off”-turn off backlight, “On”-turn on backlight, 1- backlight will last for 1 minute.

c) Factory default Setting (P7)

Select “Yes” to recover instrument calibration to theoretical value, parameter setting return to initial value. This function can be used when instrument does not work well in calibration or measurement. Calibrate and measure again after recover the instrument to factory default status.

7. Technical Specifications

Conductivity	Range	0-200.0 µS, 0-2000 µS, 0-20.00 mS
	Resolution	0.1/1 µS, 0.01 mS
	Accuracy	±1% F.S
	Calibration	1-3 points automatic calibration
TDS	Range	0-100,0 ppm, 0-1000 ppm, 0-10.00 ppt
	Resolution	0.1/1 ppm, 0.01 ppt
Salinity	Range	0-10.00 ppt
	Resolution	0.01 ppt
Temperature	Range	0-50˚C
	Resolution	0.1˚C
	Accuracy	±0.5˚C

8. Icons and Functions

① Calibration points indication: Ⓛ Ⓜ Ⓗ

② Stable Measurement: ☺

③ Reading value Auto. Lock: **HOLD**

④ Self-Diagnostic Information: **Er1, Er2**

⑤ Low-Voltage warning:  flashes, reminder of battery replacement

⑥ Two-Color backlight:

Blue—Measurement Mode; Green—Calibration Mode;

⑦ Auto. Power off in 8 minutes if no operation.

9. Probe Replacement

Screw off the probe ring, unplug the probe, plug in the new replacement probe (pay attention to the probe's position), and screw on the probe ring. The model numbers of replacement probes that are compatible with EC60 is:

- EC60-E (Conductivity probe)

10. 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** from the delivery (a **six-month** limited warranty applies to probes). This warranty does not apply to defects resulting from actions such as misuse (violation of the instructions in this manual or operations in the manner not specified in this manual), improper maintenance, or unauthorized repairs. Warranty period is the time limit to provide free service for the products purchased by customers, not the service life of the tester or probe.

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