

# Operating Manual



## PCTSTestr™ 5 Pocket Tester (pH/Conductivity/TDS/Salinity/Temperature)

Thank you for purchasing the Oakton PCTSTestr 5 Multiparameter Pocket Tester. Please carefully read this operating manual before using the product to obtain an accurate and reliable test result and avoid unnecessary damage to the meter or probe.



### Features

- Five measuring parameters: pH, conductivity, TDS, salinity, and temperature
- Large easy-to-read LCD with 2-color backlight
- Replaceable single-junction sensor saves you money
- Auto power-off function conserves battery life
- IP67 waterproof rating

### Keypad Functions

Short press = <2 seconds      Long press = >2 seconds

	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 mode. 3. In measurement mode, short press to turn on backlight.
	1. In measurement mode, short press to switch parameter from pH to Cond to TDS to Sal. 2. In mode setting, short press to change parameter (unidirectional).
	1. Long press to enter calibration mode. 2. In calibration mode, short press to confirm calibration. 3. When measured value is locked (HOLD icon), short press to unlock.

### Preparation Before Use

If it is first-time use or the tester hasn't been used for a long time, pour some 3M KCL solution in the probe cap (about 1/5 of the probe cap) and soak the probe for 15 to 30 minutes.

When not in use, we recommend storing the probe in 3M KCL storage solution (preferably Oakton Electrode Storage Solution SKU 00653-04) in the probe cap to maintain the sensor's accuracy. But even if stored dry, it won't do any permanent damage to the sensor. It will only temporarily cause the probe to lose its sensitivity, which can always be restored by soaking in the storage solution.

If the soaking solution was contaminated, please replace immediately.

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### Conductivity Calibration

1. Press MODE/△ key to switch to conductivity measurement mode. Rinse the probe in distilled water and dry it.
2. Pour a small amount of 1413 μS/cm and 12.88 mS/cm conductivity calibration solutions into separate calibration bottles.
3. Long press CAL/↔ key to enter calibration mode, short press Ⓞ/MEAS to exit.
4. Dip the probe into 1413 μS/cm calibration solution. Stir gently, leave it to stand. Wait for the measurement stability icon (Ⓞ) to appear and stay on the display (see Fig 1); then short press CAL/↔ to complete the 1st calibration. Tester returns to measurement mode, and indication icon "M" appears on bottom left side of display.
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 a 2nd point calibration. If it is inaccurate, follow the steps above to complete the 2nd point of calibration using 12.88 mS/cm buffer solution. Indication icons "M" and "H" will appear on bottom left side of display.

\*1000 μS/cm = 1 mS/cm

### 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. Take reading after stability icon (Ⓞ) comes up and stays. Press MODE/△ key 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 84 μS/cm, 1413 μS/cm and 12.88 mS/cm conductivity calibration solution. User can conduct 1 to 3 points of calibration (refer to table below). Usually calibrating the tester with 1413 μS/cm conductivity standard solution alone will meet the testing requirement.

Calibration indication icon	Calibration standard	Measuring range
L	84 μS/cm	0 to 200 μS/cm
M	1413 μS/cm	200 to 2000 μS/cm
H	12.88 mS/cm	2 to 20 mS/cm

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

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

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### pH Calibration

1. Short press Ⓞ/MEAS key to turn on the meter. Rinse the probe in distilled water and use tissue paper to gently dab off excess water (never rub or wipe the sensor).
2. Pour a small amount of pH 7.00 and pH 4.00 buffer solutions in separate calibration bottles.
3. Long press CAL/↔ key to enter calibration mode; short press Ⓞ/MEAS key to exit.
4. Dip the probe in pH 7.00 buffer solution (SKU 00654-04), stir gently, and allow it to stand still in the buffer solution until a stable reading is reached. When stability icon (Ⓞ) appears and remains on the screen (see Fig 1); then short press CAL/↔ key to complete the 1-point calibration. The tester returns to measurement mode and indication icon "M" will appear at the bottom left of the screen, indicating the middle point of calibration has been completed.
5. To perform a 2-point calibration after the pH 7.00 buffer, rinse the probe in distilled water and dry it. Long press CAL/↔ key to enter calibration mode.
6. Dip the probe in pH 4.00 buffer solution (SKU 00654-00), stir gently, and allow it to stand still in the buffer solution. When the stability icon (Ⓞ) appears and remains on the screen, short press CAL/↔ key to complete 2-point calibration. The tester returns to measurement mode and indication icons "L" and "M" will appear at the bottom left of the screen.
7. If necessary, rinse the probe in distilled water and dry it, and dip the probe in 10.01 buffer solution (SKU 00654-08) to complete 3rd point of calibration according to above steps. Indication icons "L", "M", and "H" will appear at the bottom left of the screen.

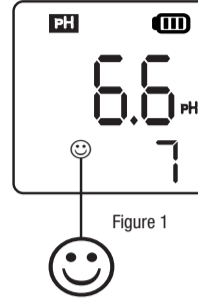


Figure 1

### Notes

A. Tester will automatically recognize pH buffer solution. User can perform 1-, 2-, or 3-point calibration. **But for the 1st point calibration, only 7.00 pH solution can be used.** Then use other buffer solutions to conduct 2nd or 3rd point calibration. Tester will automatically recognize five kinds of pH buffer solutions. Refer to the table below:

Calibration	USA series	NIST series	Indication icons	Recommended
1-point	1) 7.00 pH	1) 6.86 pH	M	Accuracy ≥0.1 pH
2-point	1) 7.00 pH 2) 4.00 or 1.68 pH	1) 6.86 pH 2) 4.01 or 1.68 pH	L M	Range <7.00 pH
	1) 7.00 pH 2) 10.01 or 12.45 pH	1) 6.86 pH 2) 9.18 or 12.45 pH	M H	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	L M H	Wide measurement range

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E. Temperature compensation factor: The default setting of the temperature compensation factor is 2.0%/°C. User can adjust the factor based on test solution and experimental data in parameter setting P4.

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

F. TDS and conductivity are linear related, and the conversion factor is 0.40 to 1.00. Adjust the TDS factor in parameter setting P5 based on the requirements in different industries. The factory default setting is 0.71. Salinity and conductivity are linear related, and the 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.

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

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

Symbol	Self-diagnostic information	Checking and methods 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.
Er 1	CAL/↔ key is pushed before measurement is stable (Ⓞ comes up and stays on screen).	Wait for the stability (Ⓞ) icon to come up and stay, then press CAL/↔ key.



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B. For pH Calibration buffer solutions, we recommend that user replaces new buffer solution after each use to maintain the standard buffer's accuracy. Do not pour the used calibration solutions back into the solution bottles in case of contamination.

C. This pH probe will NOT give accurate and stable readings for distilled or deionized water. This is because distilled and deionized water do not have enough ions present for the electrode to function properly. Specialized pH probes and techniques are needed for distilled/deionized water measurement.

D. When testing purified water like spring water or drinking water, it will take longer for the readings to stabilize (typically 3 to 5 minutes) because there are very few ions left to be detected by the sensor in the purified water.

E. Do NOT store pH probe in distilled water to prevent permanent damage to the probe.

F. For self-diagnosis information, please refer to table:

Symbol	Self-diagnostic information	Checking and methods to fix
Er 1	Wrong calibration solution or the range of calibration solution exceeds standard.	1. Check if calibration solution is correct (1st point of pH calibration must be pH 7.00). 2. Check if electrode is damaged. 3. Check if there is any air bubble in the glass bulb pH sensor.
Er 2	CAL/↔ key is pushed before measurement is stable (Ⓞ) comes up and stays on screen).	Wait for the stability (Ⓞ) icon to come up and stay, then press CAL/↔ key.

\*If you find any air bubble in the glass bulb of the pH sensor, simply invert the probe for a few times to remove it. The existence of an air bubble in the glass bulb will significantly decrease the accuracy of measurement.

\* The 1st point calibration must be 7.00 pH. Perform the 2nd point calibration (4.00 pH) immediately after the 1st point. Do NOT turn off the meter before you conduct 2nd point calibration. If the meter is turned off after 1st point calibration, user will need to restart the calibration process with the 7.00 pH first and the 4.00 pH following after. Calibrating directly in pH 4.00 after turning meter off and back on will cause "Er1".

### pH Measurement

1. Short press CAL/↔ 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. Take readings after stability indicator icon (Ⓞ) appears and stays on the screen.

### Setting the Parameters

When tester is turned off, long press Ⓞ/MEAS key to enter parameter setting. Short press MODE/△ key to switch from P1 to P2...P8. Short press CAL/↔ key and parameter will flash, then short press MODE/△ key to choose desired parameter. Short press CAL/↔ key to confirm parameter selection. Long press Ⓞ/MEAS key to return to measurement mode.

Symbol	Menu setting	Selection	Factory default
P1	Select pH buffer standards	USA – NIST	USA
P2	Select Automatic Lock (HOLD)	Off – On	Off
P3	Select backlight	Off – 1 – On	1
P4	Set temperature compensation factor	0.00 to 4.00%	2.00%
P5	Set TDS factor	0.40 to 1.00	0.71
P6	Select salinity unit	ppt – mg/L	ppt
P7	Select temperature unit	°C – °F	°C
P8	Restore to factory default	No – Yes	No

### Notes

A. Select standard pH buffer solution (P1).

There are two options of standard buffer solutions: USA series and NIST series. Refer to following chart:

Icons	pH Standard Buffer Solution Series	
	USA series	NIST series
Three-point calibration	L	1.68 pH or 4.00 pH
	M	7.00 pH
	H	10.01 pH or 12.45 pH
		1.68 pH or 4.01 pH
		6.86 pH
		9.18 pH or 12.45 pH

B. Automatic Lock (P2)

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 appear on the bottom left of the screen. Press CAL/↔ key to cancel HOLD on reading.

C. Backlight (P3)

Select "Off" to turn off backlight function, "On" to turn on backlight function, or "1" to have backlight last for 1 minute.

D. Temperature Unit (P6)

Select °C or °F; the factory default is °C.

E. Factory Default Setting (P7)

Select "Yes" to recover instrument calibration to theoretical value (pH value in zero potential is 7.00, slope is 100%), 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 resetting the unit to factory default status.

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## Specifications

pH	Range	-2.00 to 16.00 pH
	Resolution	0.01 pH
	Accuracy	±0.01 pH ±1 digit
	Calibration points	1, 2, or 3 points; auto buffer recognition
Conductivity	Automatic temperature compensation (ATC)	32 to 122°F (0 to 50°C)
	Range	0 to 200.0 µS/cm, 0 to 2000 µS/cm, 0 to 20.00 mS/cm
	Resolution	0.1 µS/cm, 1 µS/cm, 0.01 mS/cm
	Accuracy	±1% full-scale
TDS	Calibration points	1, 2, or 3 points; auto standard recognition
	Range	0.1 ppm to 10.00 ppt
Salinity	TDS factor	0.40 to 1.00
	Range	0 to 10.00 ppt
Temperature	Range	32 to 122°F (0 to 50°C)
	Resolution	0.1°C/°F
	Accuracy	±0.9°F (0.5°C)

**Display:** LCD with two-color backlight. Blue = measurement mode; Green = calibration mode

**Reading lock:** HOLD icon

**Power:** four AAA batteries (included); >400 hours of continuous operation

**Low-voltage warning:**  battery status icon flashes

**Auto power-off:** tester automatically turns off after 8 minutes of nonuse

**IP rating:** IP67 (waterproof), floats on water when sensor cap is on

**Dimensions (L x W x H):** 7" x 1.5" x 1.5" (17.8 x 4 x 4 cm)

**Weight:** 4.7 oz (133 g)

## Ordering Information

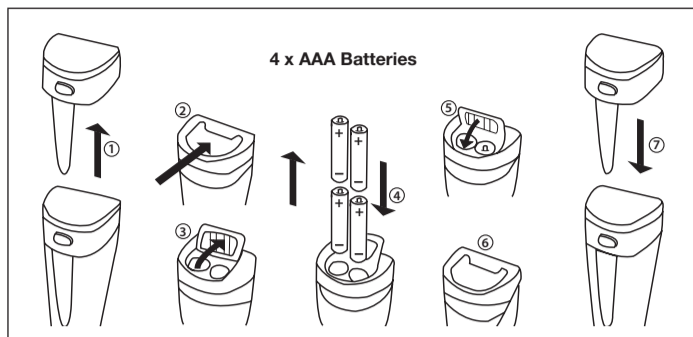
Model	Product description	Catalog number
PCTS5	PCTSTestr 5 multiparameter pocket tester	35634-60
—	Replacement probe for PCTSTestr 5	35634-62
<b>Additional probes compatible with PCTSTestr 5 tester</b>		
—	Standard glass bulb pH probe	35634-18
—	Flat pH probe for surface testing	35634-48
—	Spear-tip pH probe for semisolids and solids	35634-56
—	Conductivity probe	35634-44

## Probe Replacement

Screw off the probe/sensor ring, unplug the probe, plug in the new replacement probe (pay attention to the probe's position), and rescrew on the sensor ring.

## Battery Installation

The tester uses four AAA batteries. Please install batteries according to the following steps. Note the correct direction of battery installation: the positive side (+) of every single battery must face up. Incorrect installation of batteries will cause damage to the tester and create a potential hazard.



1. Pull the battery cap up.
2. Slide the battery cap along the direction of arrow.
3. Open the battery cap.
4. Insert the batteries (**ALL POSITIVE SIDES FACING UP**).
5. Close the battery cap.
6. Slide and lock the battery cap along 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.

## Warranty

We warrant this instrument to be free from defects in material and workmanship and agrees to repair or replace free of charge, at option of Oakton Instruments, any malfunctioned or damaged product attributable to responsibility of Oakton Instruments, for a period of **two years** from the delivery (a **six-month** limited warranty applies to sensors). 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, and 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.

Oakton Instruments reserves the right to update the information in this manual without giving notice in advance.



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