Operating Manual

OAKTON®

CTSTestr™ 5 Pocket Tester

Thank you for purchasing the Oakton® CTSTestr™ 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 tester or probe.

CE

Features

- Measuring parameters: conductivity, TDS, salinity, 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

⏻ 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 mode. 3. In measurement mode, short press to turn on backlight.
MODE △	1. In measurement mode, short press to switch from **COND** to **TDS** to **SAL**. 2. In parameter setting mode, 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 (HOLD icon), short press to unlock.

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 solution into calibration bottles.
3. Long press CAL/↵ key to enter calibration mode, short press ⏻/MEAS key to exit.
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 stability icon (☺) appears and remains on the screen, short press CAL/↵ key to complete the one-point calibration. The tester returns to measurement mode and indication icon "**M**" will appear at the bottom left of the screen.
5. For a 2-point calibration. After 1st point 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, repeat steps #3 and #4 above to complete the 2nd point of calibration using 12.88 mS/cm buffer solution.

Conductivity Measurement

1. Press ⏻/MEAS key to turn on the tester. Rinse the probe in distilled water and dry it.
2. Dip the probe in sample solution, stir gently, and allow it to stand still in the solution until a stable reading is reached and the stability indicator (☺) remains on, then take a conductivity reading.
3. Press MODE/△ key to switch from Conductivity to TDS to Salinity parameters.

Notes

- The TDS and salinity measurements are converted from the conductivity measurements via a certain conversion factor.
- The tester can calibrate 84 µS/cm, 1413 µS/cm, and 12.88 mS/cm conductivity calibration solution. User can conduct 1 to 3 point calibrations (see table below). Usually calibrating the tester with 1413 µS/cm solution alone meet testing requirements.

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

- 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.
- For conductivity calibration solutions, we recommend that users replace with new solution after each calibration to keep the standard solution's accuracy. Do NOT pour the used calibration solution back into the solution bottle in case of contamination.
- For 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 P3.

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

- TDS and conductivity are linear related, and the conversion factor is 0.40 to 1.00. Adjust the factor in parameter setting P4 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 tester can switch from conductivity to TDS or salinity.
- 1000 µS/cm = 1 mS/cm; 1000 ppm = 1 ppt
- **Conversion Example:** If conductivity measurement is 1000 µS/cm², then the default TDS measurement will be 710 ppm (under the default 0.71 conversion factor), and the salinity be 0.5 ppt.

Setting the Parameters

When tester is off, long press ⏻/MEAS key to enter parameter setting mode. Short press MODE/△ key to switch from P1 to P2…P7. Short press CAL/↵ key and parameter will flash, then short press MODE/△ key to choose desired parameter. Short press CAL/↵ key to confirm selection. Long press ⏻/MEAS key to exit parameter setting mode.

Symbol	Menu setting	Selection	Factory default
P1	Auto lock (HOLD)	Off – On	Off
P2	Backlight	Off – 1 – On	1 (1-min auto-off)
P3	Temperature compensation factor	0.00 to 4.00%	2.00%
P4	TDS factor	0.40 to 1.00	0.71
P5	Salinity unit	ppt – mg/L	ppt
P6	Temperature unit	°C – °F	°C
P7	Restore to factory default	No – Yes	No

Notes

- For 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 appear on the bottom left of the screen. Press CAL/↵ key to cancel HOLD on reading.
- For Backlight (P2), select "Off" to turn off backlight function, "On" to turn on backlight function, or "1" to have backlight last for 1 minute.
- For Factory Default (P7), select "Yes" to restore the calibration to theoretical values and parameter settings to initial values. When tester's calibration or measurement performs abnormally, this function can be adopted so the tester returns to factory default setting and then users can conduct calibration or take measurements again.

Self-Diagnostic Messages

Symbol	Self-diagnostic information	How to fix
Er 1	Wrong conductivity standard solution, which exceeds the recognizable range of the meter.	1. Check if standard solution is correct. 2. Check if electrode is damaged.
Er 2	CAL/↵ is pressed before measurement is stable (smiley face (☺) appears).	Wait for the measurement stability icon (☺) to appear and stay, then press CAL/↵ key.

Specifications

Conductivity	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
	Calibration	1, 2, or 3 points; automatic recognition of standards
TDS	Range	0 to 100.0 ppm, 0 to 1000 ppm, 0 to 10.00 ppt
	Resolution	0.1 ppm, 1 ppm, 0.01 ppt
Salinity	Range	0 to 10.00 ppt
	Resolution	0.01 ppt
Temperature	Range	32 to 122°F (0 to 50°C)
	Resolution	0.1°F/°C
	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

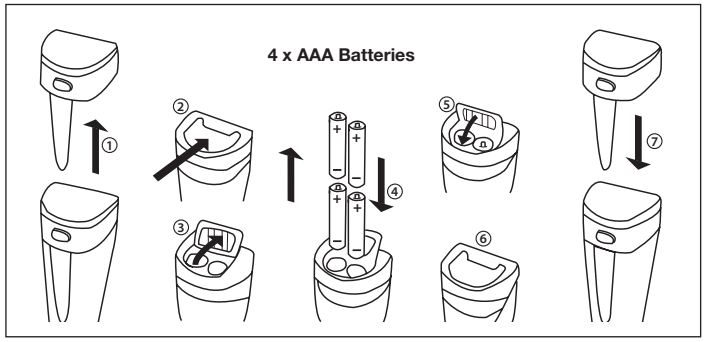
Model	Product description	Catalog number
CTS5	CTSTestr 5 pocket multiparameter tester	35634-42
—	Replacement sensor for CTSTestr 5	35634-44

Sensor Replacement

Screw off the sensor ring, unplug the sensor, plug in the new replacement sensor (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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