

# Test Pro 7

Photometric Water Test System

## Instruction Manual

Revision 09/05/01

Ideal for Swimming Pool & Spa Water Testing

USEPA, DIN & ISO Compliant for Free & Total Chlorine Testing



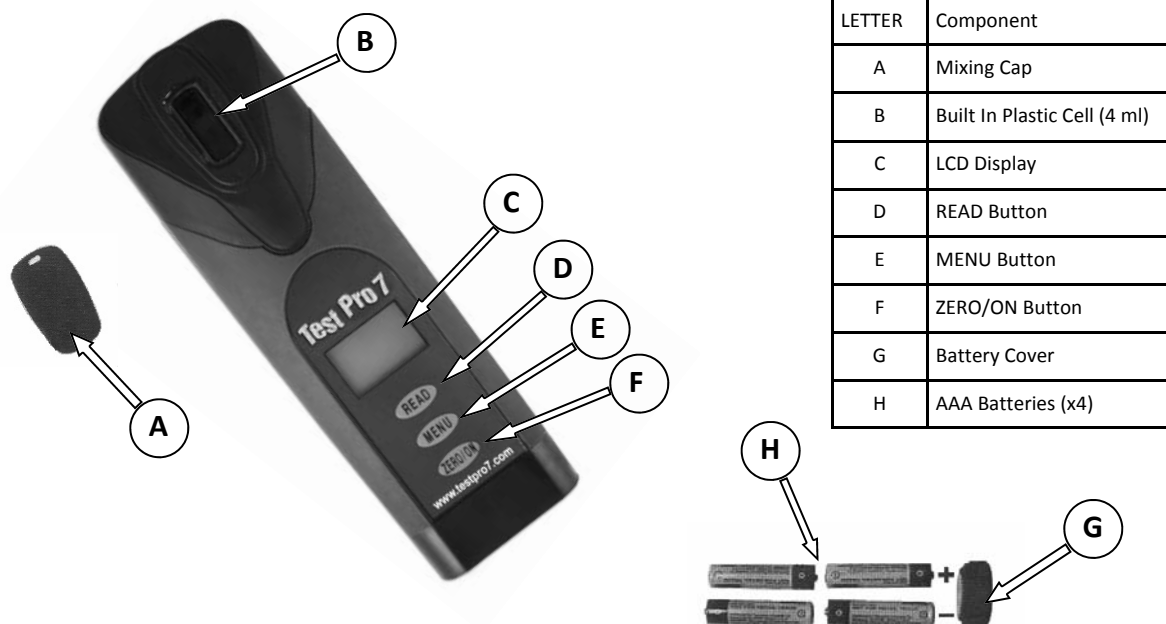
The Test Pro 7 Photometric Water Test System has been designed for use with the Test Pro 7 reagent delivery strips.

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## Test Pro 7 Meter



## Test Pro 7 Meter Specifications

Measurement Method:	Photometric	Cell Chamber:	Custom Molded, proprietary PET plastic fused into chamber
Light Source:	Light Emitting Diode (LED)		
Wavelength:	525nm	Sample Required:	4 ml (0.13 oz)
Transmission Range:	100—0.00% T	Operating Temperature Range:	0—50° C (32° - 122°F)
Photometric Precision:	+/- 0.1/0.01 % T	Power Supply:	4 AAA alkaline batteries
Automatic Range Selection:	See Chart Below	Battery Life:	>2000 tests with alkaline batteries
Display:	3 digit customized LCD with annunciators	Electromagnetic compliance (EMC)	Emitted Interference EN61326 Immunity Interference EN61326
CELL Pathlength:	20 mm	Waterproof Rating:	Exceeds IP67
Weight:	Meter: 140 g (5 oz)	Dimensions:	Meter: 5W x 3.5D x 15H cm (2 x 1.4 x 6 in)

## Test Pro 7 Meter—Range Specifications

MENU	TEST PRO 7 TESTS FOR	RANGE	RESOLUTION	± ACCURACY
CL1	Free Chlorine (DPD1) & Total Chlorine (DPD3)	0.00—6.00 ppm	0.01 (0.00—2.39 ppm) 0.1 (2.4—6.0 ppm)	0.02 0.1 or 4%
PH2	pH	6.2—8.4	0.1	0.2
BR3	Bromine (DPD-1)	0.00—9.00 ppm	0.01	0.03
AL4	Total Alkalinity	20—180 ppm	5	15
CA5	Calcium as CaCO <sub>3</sub>	20—990 ppm	10	20 or 7%
CU6	Copper	0.00—8.00 ppm	0.01	0.02
CY7	Cyanuric Acid	3.0—90.0 ppm	1	4

## About Your Test Pro 7 Instrument

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In order to save power, the meter is designed to turn off after 3 minutes (timed from the last button pressed). Should the meter turn off in the middle of a test, the last stored zero in the meter will remain valid when the meter is turned on again. Also, the test result is stored in memory for easy retrieval. The TestPro7 meter is controlled by three buttons:

1. **ZERO/ON:** When first pressed, this button turns the meter on. When the meter is on and this button is pressed, it zeroes the sample in the cell. Once the meter is zeroed, this zero value applies to all parameters and is stored and retained even when meter turns off. However, it is recommended that each new water sample analyzed is zeroed before testing, to maximize sensitivity and accuracy.
2. **MENU:** With each press, the menu button advances through the tests in the following sequence: CL1, PH2, BR3, AL4, CA5, CU6, CY7. Each test menu can store up to 20 results. To retrieve the stored results, go to the desired test using the menu key. When the desired test is displayed, press and hold down the menu key. The stored results for that test are then displayed, starting with the most recent result. The meter will display, from memory, the last 20 readings in sequence beginning with -20, which is the latest result, followed by -19, which is the 2nd latest result, etc; and finally -01, which is the oldest result retained. Only the last 20 readings are stored in each MENU. This meter is able to store 140 results in memory (20 in each menu).
3. **READ:** When pressed once, this button starts the timer for the parameter being tested. When pressed a second time the meter exits the timer and immediately prepares to colorimetrically measure the sample, and simultaneously stores the measurement in memory.

If the parameter being measured is below or above the detection range, the display will show "LO" (Under Range) or "HI" (Over Range), respectively. This feature is menu specific and does not apply to all parameters.

## About The Accuracy / Calibration Of The Test Pro 7 System

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The algorithms in the software reflect the best correlation of the Test Pro 7 against the AWWA, US EPA, Din, and ISO reference test methods for chlorine. Studies show that the Test Pro 7 repeatedly agrees with an EPA Compliant reference method greater than 99%. The Test Pro 7 Photometric system has been factory calibrated for your convenience. Customer calibration can be performed in the Transmission Menu. You can expect the fixed calibrations in the meter to be valid for the life of the meter because of the quality, Long-Life LED, the photo cell, and the software as written into the meter.

## About The Built-In Cell

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The built-in CELL is transparent plastic and, when filled to the top, contains 4ml. The sturdy CELL design will last for over 20,000 readings. Scratches on the CELL will not interfere or compromise the accuracy of the readings because of its fixed position. For best accuracy, rinse cell with clean water immediately after a test is completed. Do not use solvents, such as acetone, to clean the cell. When the CELL becomes stained or cloudy from repeated testing, or when the meter does not "zero" when you press the ZERO METER button, the cell needs to be cleaned.

Clean as follows: Fill cell with clean water and move the Cell cleaning brush up-and-down and back-and-forth along the walls of the cell. Afterwards, rinse the cell and the meter is ready for use again. Cleaning the cell regularly is especially recommended after you run a test that is using turbidity or precipitation chemistry for analysis (Calcium Hardness and Cyanuric Acid).



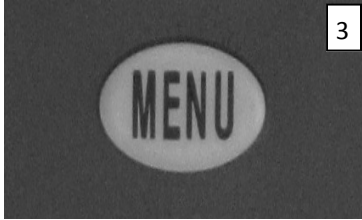
**STEP 1. REMOVE STRIP**

Remove one (1) Test Pro 7 CL strip from the bottle before beginning the test. Set the strip aside in a dry, convenient place and recap the bottle immediately.



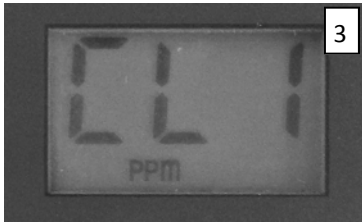
**STEP 2. TURN METER ON**

Press the ZERO/ON button to power the meter on. The display will show all annunciators, then the current MENU selection, followed by the last reading.



**STEP 3. SELECT TEST—CL1**

Press and repress the MENU button until the display shows the parameter you want to test.



**STEP 4. FILL METER WITH SAMPLE WATER**

Rinse the cell at least 3 times with the sample water to be tested—rinsing minimizes the potential for cross-contamination from a previous test. Finally, fill the cell to capacity (4 ml) with the sample water.



**STEP 5. ZERO THE METER**

Press the ZERO/ON button. The cursor will move across the display followed by 0.00 ppm. The sample is ready for testing.



**STEP 6. DIP STRIP**

Dip the strip into the CELL and immediately press READ. This starts the 20 second countdown timer. During this time move the strip in a gentle back and forth motion through the CELL. Remove and discard the strip when the time displays 1. The cursor will move across the display as it measures the sample. Record the result displayed. This is also stored automatically in CL1.



## **Test Pro 7 CL (Free Chlorine DPD-1 ) Test Procedure**

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### **1 REMOVE STRIP**

Remove one (1) Test Pro 7 CL Free Chlorine (DPD-1) test strip from the bottle before beginning the test. Set the strip in a dry, convenient place and recap the bottle immediately.

### **2 TURN METER ON**

Press the ZERO/ON button to power the meter on; the display will show all annunciators, then the current MENU selection, followed by the last reading.

### **3 SELECT TEST: CL1**

Press and re-press the MENU button until the display shows the parameter you want to run.

CL1 is also used for testing Total Chlorine (DPD-3)

### **4 FILL METER WITH SAMPLE**

Rinse the CELL at least 3 times with the water sample you will be testing - rinsing minimizes the potential for cross-contamination from a previous test. Finally, fill cell to capacity (4ml) with the water sample.

### **5 ZERO METER**

Press the ZERO/ON button. The cursor will move across the display followed by **0.00 PPM**. The sample is ready for testing.

### **6 DIP STRIP AND PRESS "READ"**

Dip the Test Pro 7 CL (DPD-1) test strip into the CELL and immediately press READ. This starts the 20 SECOND countdown timer. During this time move the strip in a gentle back and forth motion in the sample cell. Remove and discard the strip when the time displays 1. The cursor will move across the display, informing you that it is about to measure the sample. Record result displayed (this result is automatically stored in CL1).

**DO NOT** discard the sample from the Free Chlorine test, if you are planning to run Test Pro 7 CL Total Chlorine (DPD-3) procedure, continue steps 7-9 on below. Otherwise, rinse the cell immediately.

## **Test Pro 7 CL (Total Chlorine DPD-3 ) Test Procedure**

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### **7 REMOVE STRIP**

Remove one (1) Test Pro 7 CL Total Chlorine (DPD-3) test strip from the bottle before beginning the test. Set the strip in a dry, convenient place and recap the bottle immediately.

### **8 DIP STRIP AND PRESS "READ"**

Dip the Test Pro 7 CL (DPD-3) test strip into the CELL and immediately press READ. This starts the 20 SECOND countdown timer. During this time move the strip in a gentle back and forth motion in the sample cell. Remove and discard the strip when the time displays 1. The cursor will move across the display, informing you that it is about to measure the sample. This result is automatically stored in CL1.

### **9 PRESS READ AGAIN**

Press READ again and the meter will count down and display the next reading as the Total Chlorine result. This value is automatically stored in CL1. After testing is completed, rinse cell immediately. Record the Total Chlorine as the highest value the meter displayed.

\*NOTE: Standard Method (4500-Cl G, procedure for total chlorine) requires the reading to be made after 2 minutes from the time the DPD 3 strip is added. For compliance testing, you must time the two minutes and then make your measurement.

## Test Pro 7 pH Test Procedure

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### **1 REMOVE STRIP**

Remove one (1) Test Pro 7 PH test strip from the bottle before beginning the test. Set the strip in a dry, convenient place and recap the bottle immediately.

### **2 TURN METER ON**

Press the ZERO/ON button to power the meter on; the display will show all annunciators, then the current MENU selection, followed by the last reading.

### **3 SELECT TEST: PH2**

Press and re-press the MENU button until the display shows the parameter PH2.

### **4 FILL METER WITH SAMPLE**

Rinse the CELL at least 3 times with the water sample you will be testing - rinsing minimizes the potential for cross-contamination from a previous test. Finally, fill cell to capacity (4ml) with the water sample.

### **5 ZERO METER**

Press the ZERO/ON button. When the display shows **0.0** PH, the sample is ready for testing.

### **6 DIP STRIP AND PRESS "READ"**

Dip the Test Pro 7 PH test strip into the CELL and immediately press READ. This starts the 20 SECOND countdown timer. During this time move the strip in a gentle back and forth motion in the sample cell. Remove and discard the strip when the time displays 1. The cursor will move across the display, informing you that it is about to measure the sample. Record result displayed (this result is automatically stored in PH2). After testing is completed, rinse cell immediately.

**NOTE:** For best results, Total Alkalinity of the water should be in the range of 40-140 ppm.

## Test Pro 7 BR (Bromine DPD-1 ) Test Procedure

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### **1 REMOVE STRIP**

Remove one (1) Test Pro 7 CL Free Chlorine (DPD-1) test strip from the bottle before beginning the test. Set the strip in a dry, convenient place and recap the bottle immediately.

### **2 TURN METER ON**

Press the ZERO/ON button to power the meter on; the display will show all annunciators, then the current MENU selection, followed by the last reading.

### **3 SELECT TEST: BR3**

Press and re-press the MENU button until the display shows the parameter BR3.

### **4 FILL METER WITH SAMPLE**

Rinse the CELL at least 3 times with the water sample you will be testing - rinsing minimizes the potential for cross-contamination from a previous test. Finally, fill cell to capacity (4ml) with the water sample.

### **5 ZERO METER**

Press the ZERO/ON button. The cursor will move across the display, followed by **0.00** PPM. The sample is ready for testing.

### **6 DIP STRIP AND PRESS "READ"**

Dip the Test Pro 7 CL (DPD-1) test strip into the CELL and immediately press READ. This starts the 20 SECOND countdown timer. During this time move the strip in a gentle back and forth motion in the sample cell. Remove and discard the strip when the time displays 1. The cursor will move across the display, informing you that it is about to measure the sample. Record result displayed (this result is automatically stored in BR3 ). After testing is completed, rinse cell immediately.

## Test Pro 7 AL (Total Alkalinity) Test Procedure

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### 1 REMOVE STRIP

Remove one (1) Test Pro 7 AL (Total Alkalinity) test strip from the bottle before beginning the test. Set the strip in a dry, convenient place and recap the bottle immediately.

### 2 TURN METER ON

Press the ZERO/ON button to power the meter on; the display will show all annunciators, then the current MENU selection, followed by the last reading.

### 3 SELECT TEST: AL4

Press and re-press the MENU button until the display shows the parameter AL4.

### 4 FILL METER WITH SAMPLE

Rinse the CELL at least 3 times with the water sample you will be testing - rinsing minimizes the potential for cross-contamination from a previous test. Finally, fill cell to capacity (4ml) with the water sample.

### 5 ZERO METER

Press the ZERO/ON button. The cursor will move across the display, followed by **0.00** PPM. The sample is ready for testing.

### 6 DIP STRIP AND PRESS "READ"

Dip the Test Pro 7 AL test strip into the CELL and immediately press READ. This starts the 20 SECOND countdown timer. During this time move the strip in a gentle back and forth motion in the sample cell. Remove and discard the strip when the time displays 1. The cursor will move across the display, informing you that it is about to measure the sample. Record result displayed (this result is automatically stored in AL4). After testing is completed, rinse cell immediately.

## Test Pro 7 CA (Calcium Hardness) Test Procedure

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### 1 REMOVE STRIP

Remove one (1) Test Pro 7 CA (Calcium Hardness) test strip from the bottle before beginning the test. Set the strip in a dry, convenient place and recap the bottle immediately.

### 2 TURN METER ON

Press the ZERO/ON button to power the meter on; the display will show all annunciators, then the current MENU selection, followed by the last reading.

### 3 SELECT TEST: CA5

Press and re-press the MENU button until the display shows the parameter CA5.

### 4 FILL METER WITH SAMPLE

Rinse the CELL at least 3 times with the water sample you will be testing - rinsing minimizes the potential for cross-contamination from a previous test. Finally, fill cell to capacity (4ml) with the water sample.

### 5 ZERO METER

Press the ZERO/ON button. The cursor will move across the display, followed by **0.00** PPM. The sample is ready for testing.

### 6 DIP STRIP AND PRESS "READ"

Dip the Test Pro 7 CA test strip into the CELL and immediately press READ. This starts the 20 SECOND countdown timer. During this time move the strip in a gentle back and forth motion in the sample cell. Remove and discard the strip when the time displays 1. The cursor will move across the display, informing you that it is about to measure the sample. Record result displayed (this result is automatically stored in CA5). After testing is completed, rinse cell immediately.

## Test Pro 7 CU (Copper) Test Procedure

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### **1 REMOVE STRIP**

Remove one (1) Test Pro 7 CU (Copper) test strip from the bottle before beginning the test. Set the strip in a dry, convenient place and recap the bottle immediately.

### **2 TURN METER ON**

Press the ZERO/ON button to power the meter on; the display will show all annunciators, then the current MENU selection, followed by the last reading.

### **3 SELECT TEST: CU6**

Press and re-press the MENU button until the display shows the parameter CU6.

### **4 FILL METER WITH SAMPLE**

Rinse the CELL at least 3 times with the water sample you will be testing - rinsing minimizes the potential for cross-contamination from a previous test. Finally, fill cell to capacity (4ml) with the water sample.

### **5 ZERO METER**

Press the ZERO/ON button. The cursor will move across the display, followed by **0.00** PPM. The sample is ready for testing.

### **6 DIP STRIP AND PRESS "READ"**

Dip the Test Pro 7 CU test strip into the CELL and immediately press READ. This starts the 20 SECOND countdown timer. During this time move the strip in a gentle back and forth motion. Remove and discard the strip when the time displays 1. The display will flash "Sit" and begin immediately counting up from 1 to 20 (this extra time allows more thorough color development). When the timer reaches 20, the cursor will move across the display, informing you that it is about to measure the sample. Record result displayed (this result is automatically stored in CU6). After testing is completed, rinse cell immediately.

## Test Pro 7 CY (Cyanuric Acid) Test Procedure

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### **1 TURN METER ON**

Press the ZERO/ON button to power the meter on; the display will show all annunciators, then the current MENU selection, followed by the last reading.

### **2 SELECT TEST: CY7**

Press and re-press the MENU button until the display shows the parameter CY7.

### **3 FILL METER WITH SAMPLE**

Rinse the CELL at least 3 times with the water sample you will be testing - rinsing minimizes the potential for cross-contamination from a previous test. Finally, fill cell to capacity (4ml) with the water sample.

### **4 ZERO METER**

Press the ZERO/ON button. The cursor will move across the display, followed by **0.00** PPM. The sample is ready for testing.

### **5 ADD REAGENT, CAP, PRESS "READ", AND MIX**

Shake the bottle of Test Pro 7 Reagent CY to mix the chemical in the bottle. Then, add five (5) drops of Test Pro 7 Reagent CY to the cell and cap meter cell with mixing cap. Press READ to start timer, mix sample by pressing one finger over the cap to keep it in place. Then, turn the meter over from side to side to mix during the 20 second countdown. At the end of 20 seconds the meter will immediately begin counting up from 1 to 20. At the end of the second 20 seconds, the cursor will move across the display, informing you that it is about to measure the sample. Record result displayed (this result is automatically stored in CY7). After testing is completed, rinse cell immediately.

## Test Pro 7 Tips For Best Accuracy


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1. Become familiar with the meter and the different tests by reading the instructions carefully.
2. Tests are calibrated at 75°F +/- 2°F (24°C +/- 1°C). If water sample is 60°F (15°C) or cooler, most tests may require additional time for full chemical development. For cold samples, best results are obtained when a 40 second dip time is used (Dip one strip for two (2) twenty second periods). If the new value is higher, then use the new value for your result. It is recommended that the water sample be warmed to room temperature before testing.
3. The Free Chlorine and Total Chlorine results are compliant for meeting USEPA (4500-Cl G); ISO 7393/2; and German DIN 38408 G4-2 requirements.
4. Observe the dip time (as required for the test) for accurate results.
5. Test immediately after filling the CELL with water sample when testing for an oxidizer such as Chlorine and Bromine.
6. Be sure the CELL is filled to capacity (4ml), especially for pH and Total Alkalinity.
7. Sample water that may splash out of the CELL during movement of the Test Pro 7 will not affect accuracy, as long as the cell is 50% full at end of test.
8. Rinse the CELL with clean water immediately after completing the test. (Some test reagents will stain or coat the CELL)
9. Just before testing, rinse the sample CELL with the sample water several times to get a representative sample. (Use distilled water for rinsing if you have a limited amount of sample).
10. Store the meter and all test materials out of direct sunlight and away from chemical storage.
11. Do not expose the meter or test reagents to long term ambient temperature above 100°F (38°C).
12. Dry the outside of the meter when testing is complete or before storage of the meter.
13. When running a DPD-1 Free Chlorine test AFTER a Total Chlorine DPD-3, rinsing is very important to remove residual of the previous test which may interfere with the next reading.
14. Each Test Pro 7 test strip is valid for ONLY one test. Discard strip after single use in regular trash that is inaccessible to children and pets.
15. Each bottle of Test Pro 7 contains the quantity of strips notated on the bottle. Due to the manufacturing process, you may find one or two strips that are noticeably smaller or larger in width than the normal strips in the bottle. These should be discarded. Using these strips may give unreliable results.
16. The Test Pro 7 meter is not compatible for use with DPD-1, DPD-3, and DPD-4 powder pillows, tablets, and liquids available from other manufacturers. Accurate results can only be guaranteed by using genuine Test Pro 7 strips or reagents.
17. The mixing cap is used for the Cyanuric Acid test. A stirrer (such as a clean, plastic coffee stirrer) may also be used in place of the mixing cap by using the stirrer with gentle, back and forth motion, during the 20-second countdown timing.
18. Lab testing with the Test Pro 7 meter has shown that zeroing and measuring of the sample does not require any cell cover for accurate results, even in full sunlight.
19. Remove batteries when meter is not used for more than a month.
20. Pool and Spa samples should be taken 18 inches below the surface as follows; submerge meter with open cell facing down 18 inches, and then turn meter upright to fill cell. Remove meter from water with the sample for testing.

## Test Pro 7 Meter Messages

The following are some common messages that may be displayed, including error messages

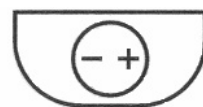
LCD Message	Description	Corrective Action
HI	When measured concentration is above the measurement range (test specific)	Ensure sample value is within the measurement range as listed in the Specification Table.
LO	When measured concentration is below the measurement range (test specific)	Ensure sample value is within the measurement range as listed in the Specification Table.
*ER1	Inappropriate signal to recognize the meter value. Sample absorbance is too high for meter reset or is too low to achieve specific resolution. If the meter does not reset, either the sample is too cloudy or the cell is dirty.	Ensure that test value is reset to zero before the test strip is added. Repeat the "ZERO/ON" procedure starting with a fresh water sample. Follow the cell cleaning procedure as outlined in Page 3 of this manual. (About the Built-In Cell)
*ER2	Excessive stray light detected. Normally this does not occur, even in sunlight measurements.	Place the light blocking cap over the cell for zeroing and for reading the result. Moving to a shaded area can also fix this problem.
	Low battery indication.	Replace the batteries.

### To Replace/Install "AAA" Batteries

1. Unscrew the O-ring sealed battery compartment counter-clockwise. Do not disturb the sealing O-ring.
2. Remove the used batteries.
3. Install 4 new AAA batteries following the diagram for correct polarity (see below).
4. Replace the battery cover. Be sure not to over tighten the cover.
5. Dispose of the used batteries in accordance with your local regulations.
6. Press ZERO/ON button to confirm the meter turns on.

The meter is now ready for operation.

7. The meter will not work if the battery orientation is incorrect.





### Test Pro 7 Meter Limited Warranty

The manufacturer warrants this product to be free from defects in materials and workmanship, and to conform to its published product specifications, under normal use and service, for a period of 24 months commencing from the date of purchase. This limited warranty is extended only to the first purchaser and applies only to product failures due to defective materials and/or workmanship. Without limiting the generality of the foregoing, the foregoing warranty will not apply if, upon inspection, it is found that the product was: misused or abused; used for a purpose for which it is not designed; mishandled; placed in an improper environment; repaired by unauthorized personnel; or improperly adjusted. The sole and exclusive remedy in the event of any breach of the foregoing warranty shall be for the original purchaser to return the product FOB CL Marketing Inc. Calgary warehouse, for repair or replacement, at CL Marketing Inc.'s discretion. Any product repair or replacement under the foregoing warranty shall be shipped back to the customer freight and insurance prepaid. In no event shall CL Marketing Inc. be liable for any loss, inconvenience, or damages, including without limitation, direct, indirect, special, incidental or consequential damages, resulting from or relating to the use or inability to use a product whether resulting from breach of warranty or any other legal theory, even if CL Marketing Inc. has been advised of the possibility of such inconvenience, damage, or loss.

To ensure optimal performance, store the Test Pro 7 kit in a cool, dry location away from excess heat (below 38°C/100°F), moisture and oxidizers such as chlorine.

# Test Pro 7

Photometric Water Test System



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