eXact® Micro 7+

Revision 08/17/10
486691-K **Standard Kit**
486691-KP **Pool/Spa Kit**
486691-WD **Well Driller Kit**
486691-AQ **Pond/Aquarium Kit**

Advanced Photometer System
Instruction Manual

EZ

IDEAL FOR DRINKING WATER, POOLS AND SPAS, ENVIRONMENTAL, & EDUCATIONAL TESTING

USEPA, DIN, & ISO Compliant for Free & Total Chlorine Testing
(4500-CL G, DIN Standard 38 408 G4, ISO 7393/2)

U.S. Patent No. 7,333,194, U.S. Patent No. 7,491,546, South African Patent No. 2007/0628 and international patent applications including International Patent Appln. No. PCT/US2005/033985; and Eur. Pat. App. 1,725,864

COMPLIANT US EPA

Micro 7+ is Manufactured and tested in an ISO 9001 Facility

The eXact® Micro 7+ Advanced Photometer System has been designed for use with the eXact® Strip Micro reagent delivery system.

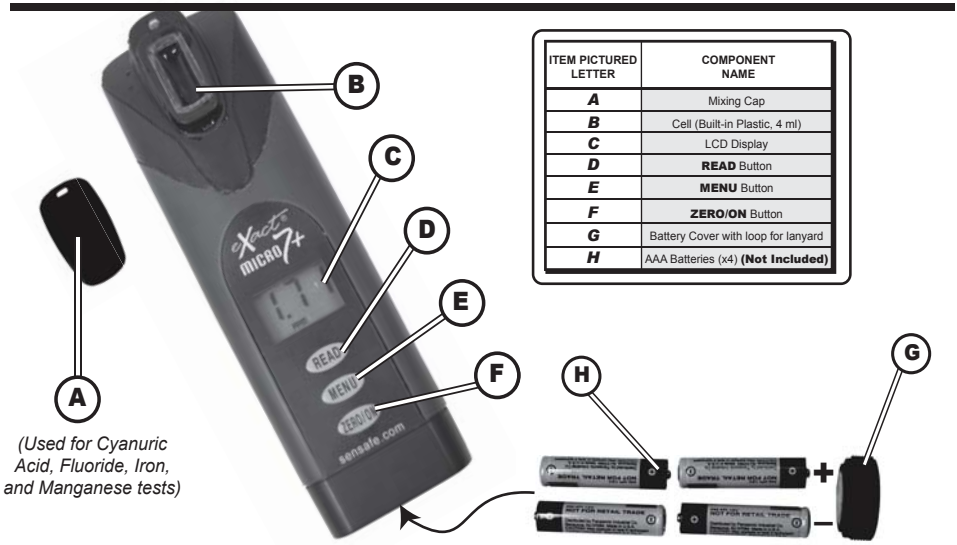
Manufactured By: Industrial Test Systems, Inc.
1875 Langston Street, Rock Hill, SC 29730 USA

Tel: +44 1954 233100
Fax: +44 1954 233101
sales@camlab.co.uk
www.camlab.co.uk

Index:

Visit us online at sensafe.com/micro7+ for up-to-date product information & NEW tests available.

eXact® Micro 7+ Photometer



ITEM PICTURED LETTER	COMPONENT NAME
A	Mixing Cap
B	Cell (Built-in Plastic, 4 ml)
C	LCD Display
D	**READ** Button
E	**MENU** Button
F	**ZERO/ON** Button
G	Battery Cover with loop for lanyard
H	AAA Batteries (x4) **(Not Included)**

(Used for Cyanuric Acid, Fluoride, Iron, and Manganese tests)

eXact® Micro 7+ Meter Specifications

Measurement Method:	Photometric
Light Source:	Light Emitting Diode (LED)
Wavelength:	525 nm
Transmission Range:	100 - 0.00 %T
Photometric Precision:	+/- 0.1/0.01 %T
Automatic Range Selection:	See Specifications below
Display:	3-digit customized liquid crystal display with annunciators
CELL Pathlength:	20mm

Cell Chamber:	Custom-molded, proprietary, PET plastic fused into chamber, non-removable
Sample Required:	4 ml (0.13 oz)
Operating Temperature Range:	0 - 50°C (32° - 122°F)
Power Supply:	(4) AAA alkaline batteries (Not Included)
Battery Life:	>2000 tests with alkaline batteries
Electromagnetic Compliance: (EMC)	Emitted Interference - EN 61326 Immunity to Interference - EN 61326
Waterproof Rating:	Exceeds IP67
Weight:	Instrument: 140 g (5 oz)
Dimensions:	Instrument: 5 (W) x 3.5 (D) x 16.5 (H) cm; (2 x 1.4 x 6.375 in)

We offer a "Green" Alternative

eXact® Strip Micro 7+ has been designed to offer the user a more "Green" and cost-effective alternative to testing. Instead of using a 10ml water sample, *eXact® Strip Micro 7+* uses a 4ml water sample, which uses up to 60% less chemical per test. The accuracy of the meter is maintained by designing the photo cell with a 20mm pathlength.

eXact® Micro 7+ Specifications

Menu	Tests for	Range	Resolution	+/- Accuracy
CL1	Free Chlorine (DPD-1)	0.00 - 5.99 ppm	0.01	0.02
	& Total Chlorine (DPD-3)	6.0 - 11.0 ppm	0.1	0.1, or 10%
PH2	pH	6.2 - 8.4 pH	0.1	0.3
BR3	Bromine (DPD-1)	0.00 - 2.99 ppm	0.01	0.03
		3.0 - 9.0 ppm	0.1	0.1, or 4%
AL4	Total Alkalinity	20 - 180 ppm	1	25
CA5	Calcium as $CaCO_3$	20-990 ppm	10	20 or 7%
CU6	Copper (Cu^{+2})	0.04 - 2.99 ppm	0.01	0.02
		3.0 - 8.0 ppm	0.1	0.1 or 4%
TR7	Transmission	99.9-10.0 %T	0.1	0.1
	(30 other test parameters)	9.99 - 0.01 %T	0.01	0.01

About Your eXact® Micro 7+ Instrument

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 eXact® Micro 7+ 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, TR7. 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**. Continue holding down the MENU key to scroll the stored results for that test, 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 Micro 7+ System

The algorithms in the software reflect the best correlation of the eXact® Micro 7+ Systems against the AWWA, US EPA , DIN, and ISO reference test methods for chlorine. Studies show that the eXact® Micro 7+ System repeatedly agrees with an EPA Compliant reference method greater than 99% (R^2= 0.9912, 0 - 6.0 ppm - see page 36). The eXact® Micro 7+ Advanced 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.

Compliance Verification for Free and Total Chlorine Testing

This DPD test system is accepted by most state health departments because this test is USEPA accepted for testing requirements for Free and Total Chlorine. The Micro 7+ meter uses a wavelength of 525nm; and the compliance requirement is that the colorimeter wavelength is between 490 and 530nm. The eXact® Strip Micro CL (DPD-1) uses the same reagents and proportions, and the resulting solution pH is maintained between 6.2 and 6.5 as specified by AWWA (American Water Works Association) method 4500-Cl G. It should be understood that the USEPA does not "approve" commercial DPD delivery systems such as reagent powder pillows, tablets, dispensers, or eXact® Strip DPD delivery devices. The eXact® Strip Micro CL (DPD-1) for Free Chlorine, and the eXact® Strip Micro CL (DPD-3) or the eXact® Strip Micro CL (DPD-4) for Total Chlorine meet your reportable testing requirements because the eXact® Strip Micro CL delivers the same chemicals in identical proportions (see table below); therefore, the system is compliant. Likewise, AWWA proportions are followed as required for Total Chlorine measurements using Potassium Iodide.

Component (Free Chlorine)	AWWA 4500-Cl G	eXact® DPD-1
Anhydrous DPD sulfate	1.5%	1.5%
Anhydrous Na_2HPO_4	33.4%	33.4%
Anhydrous $KH_2PO_4Na_2$	64.0%	64.0%
EDTA	1.1%	1.1%

MENU
CL1

DPD-1 Free Chlorine Test Procedure

CL

1

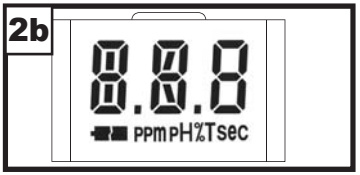
REMOVE STRIP

Remove one (1) ***eXact® Strip Micro CL (DPD-1), Part No. 486637*** 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 **CL1**.

CL1 is also used for testing:
Total Chlorine (DPD-4), Ozone (DPD-4), Permanganate (DPD-1), and Total Chlorine (DPD-3). (Contact ITS for specs and details if you are planning on using **CL1** for Permanganate or Ozone measurements)

4

RINSE AND FILL CELL 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**. Sample is ready for testing.

6

DIP STRIP AND PRESS "READ"

Dip the ***eXact® Strip Micro CL (DPD-1), Part No. 486637*** 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 after "1" on the display disappears**.

7

RECORD RESULT DISPLAYED

The cursor will move across the display while the meter prepares to measure the sample. Record result displayed (this result is automatically stored in CL1). **NOTE: If your result is 3.00 ppm or greater**, repeat Step 6 by using a second DPD-1 Strip within the next 30 seconds. This assures that all chlorine has reacted with adequate DPD reagent. Use this as your Free Chlorine level.

DO NOT discard the sample from the Free Chlorine test, if you are planning to run eXact® Strip Micro DPD-3 (Total Chlorine) Procedure, move directly to steps 8-10 on page 5. Otherwise, rinse the cell immediately.

CL1: Chlorine reacts with N,N-diethyl-p-phenylenediamine as it is released from the strip to form a magenta color, directly proportional to the Chlorine concentration. (Ozone, Total Chlorine, and Permanganate can also be determined in the CL1 MENU)

DPD-3 Total Chlorine Test Procedure

CL

MENU
CL1

This procedure is only valid when run as a continuation of the eXact® Strip Micro CL (DPD-1 Free Chlorine) Test Procedure located on the previous page.

7 REMOVE STRIP

Remove one (1) ***eXact® Strip Micro CL (DPD-3), Part No. 486638*** 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 ***eXact® Strip Micro CL (DPD-3)*** 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 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. If this reading matches the previous result, then record this as the Total Chlorine result. This value is automatically stored in CL1. If reading has increased by 0.01, press **READ** again and repeat as before. 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 KI is added. For compliance testing, you must time the two minutes and then make your measurement. NOTE: From testing in our lab, water samples above 70°F (20°C), generally, reach a stabilized reading quicker then 2 minutes.

eXact® Strip Micro CL (DPD-1/DPD-3/DPD-4) Interferences (part nos. 486637/486638/486670)

Interfering Substance	Interfering Levels & Treatments
Acidity	If sample has acidity above 150mg/L $CaCO_3$ test may not develop full color. Neutralize to pH 6.0 to 7.0 with 0.5N Sodium hydroxide.
Alkalinity	If sample has alkalinity above 200mg/L $CaCO_3$ test may not develop full color. Neutralize to pH 6.0 to 7.0 with 0.5N Sulfuric acid.
Bromine & Bromamines, Br_2	Color similar to free chlorine reaction at all levels.
Chlorine Dioxide, ClO_2	Color similar to free chlorine reaction at all levels.
Copper, Cu^{+2}	Color development is reduced above 10 ppm (mg/L).
Iodine, I_2	Color similar to free chlorine reaction at all levels.
Manganese, oxidized (Mn^{+4}, Mn^{+7}) or Chromium, oxidized (Cr^{+6})	See AWWA procedure 4500-CL F, 1(d) for removal of interferences.
Monochloramines (NH_2Cl) (applies to DPD-1 only)	Monochloramine interferences are known to occur in free chlorine DPD methods. This interference is dependent on temperature and monochloramine concentration.
Ozone, O_3	Color similar to free chlorine reaction at all levels.
Peroxides	Interference is possible.
pH	Typical pH samples of potable water with a pH of 6.0 to 9.0 are OK. If outside this range adjust to pH 6.0 to 7.0 using acid (0.5N Sulfuric acid) or base (0.5N Sodium hydroxide).

MENU DPD-4 (Total Chlorine or Ozone) Test Procedure

CL1

1 **REMOVE STRIP**

Remove one (1) ***eXact® Strip Micro CL (DPD-4 for Total Chlorine or Ozone), Part No. 486670*** 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 **CL1**.

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**. Sample is ready for testing.

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

Dip the ***eXact® Strip Micro CL (DPD-4), Part No. 486670*** 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 after "1" on the display disappears**. The cursor will move across the display while the meter prepares to measure the sample. Record result displayed (this result is automatically stored in CL1).

7 **PRESS READ AGAIN**

Press READ again and the meter will count down and display the next Total Chlorine result. If this reading matches the previous result, then record this as Total Chlorine value (this result is stored in CL1). If reading has increased by 0.01, press READ again and repeat. 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. 2 minute wait is not necessary for Ozone measurements.

MENU pH Test Procedure

PH2

1 **REMOVE STRIP**

Remove one (1) ***eXact® Strip Micro PH, Part No. 486639*** 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 ***eXact® Strip Micro PH, Part No. 486639*** 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 after "1" on the display disappears** (if water temperature is above 100°F/38°C remove and discard the strip when the time displays 15, countdown continues). The cursor will move across the display while the meter prepares to measure the sample. Record result displayed (this result is automatically stored in PH2). After testing, rinse cell immediately. NOTE: For best results, Total Alkalinity of the sample should be 40-140 ppm. PH2: pH reacts with Phenol Red, which is yellow at pH 6.1, but forms a red color as the pH level rises. Maximum red is at about pH 8.4.

DPD-1 Bromine Test Procedure

CL

MENU
BR3

1 **REMOVE STRIP**

Remove one (1) ***eXact® Strip Micro CL (DPD-1), Part No. 486637*** 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 ***eXact® Strip Micro CL (DPD-1), Part No. 486637*** 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 after "1" on the display disappears**. The cursor will move across the display while the meter prepares to measure the sample. Record result displayed (this result is automatically stored in BR3). After testing is completed, rinse cell immediately. **NOTE:** Bromine result is the sum reaction of Bromine and Bromamine. This reaction will have interferences from other oxidizers such as Chlorine, Iodine, and Permanganate. **DO NOT** discard the sample from the Bromine test if you are using MPS and desire to measure total oxidizer present. Run eXact® Strip Micro DPD-3 (Total Chlorine) Procedure, see steps 7-9 on page 5. Otherwise, rinse the cell immediately.

BR3: Bromine reacts with N,N-diethyl-p-phenylenediamine sulfate as it is released from the strip to form a magenta color, directly proportional to the Bromine Concentration.

Total Alkalinity Test Procedure

AL

MENU
AL4

1 **REMOVE STRIP**

Remove one (1) ***eXact® Strip Micro AL, Part No. 486641*** 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 ***eXact® Strip Micro AL, Part No. 486641*** 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 after "1" on the display disappears** (if water temperature is above 100°F/38°C remove and discard the strip when the time displays 15, countdown continues). The cursor will move across the display while the meter prepares to measure the sample. Record result displayed (this result is automatically stored in AL4). After testing is completed, rinse cell immediately.

AL4: Total Alkalinity reacts with the Alizarin Red S and citric acid as it is released from the strip to form a red color, directly proportional to the alkalinity present in the sample.

MENU

CA5

Calcium Hardness Test Procedure

1 **REMOVE STRIP**

Remove one (1) ***eXact® Strip Micro CA, Part No. 486629*** 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** 2 or 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 ***eXact® Strip Micro CA, Part No. 486629*** 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 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.

CA5: Calcium reacts with Oxalic acid as it is released from the strip to form a white precipitate, directly proportional to the Calcium concentration. Values are reported as Calcium Carbonate.

MENU

CU6

Copper Test Procedure

1 **REMOVE STRIP**

Remove one (1) ***eXact® Strip Micro CU, Part No. 486632*** 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 ***eXact® Strip Micro CU, Part No. 486632*** 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 **"Slt"** and begin immediately counting up from **1 to 20** (this extra time allows more thorough color development). At 20 sec, 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.

CU6: Copper reacts with Biquinoline or Bicinchoninic Acid as it is released from the strip to form a purple color, directly proportional to the copper concentration.

TR Transmission Test Procedure MENU TR7

1 REMOVE STRIP

Remove one (1) ***eXact® Strip Micro***, part number is dependent upon the test being run, 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: TR7

Press and re-press the **MENU** button until the display shows the parameter **TR7**.
Tests listed on pages 10 through 30 will require the TR7 MENU and the conversion charts included. Other tests listed on page 35 will require the use of a conversion chart available at www.sensafe.com.

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 **100 %T**. The sample is ready for testing.

6 DIP STRIP AND PRESS “READ”

Dip the ***eXact® Strip Micro (or add Reagent)*** into the **CELL** 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 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 TR7). After testing is completed, rinse cell immediately.

TR7: Different ions react with a specific indicator to form a color or a precipitate that proportionally indicates the concentration of the ion present by the transmission value found. A conversion table is then used to determine the ion concentration using the transmission value. The advantage of using transmission measurement is that many different ions can be determined in one MENU, which expands the flexibility of this meter. Once you have determined the %T result for the test you ran, find this %T result in the conversion chart and read the concentration corresponding for this %T. The Micro 7+ gives the %T values as 3 digits (example 99.2) but only the first two digits are used in the charts (round off your %T value to two digits). Tests that can be used with the Micro 7+ in TR7 MENU are listed on page 35. Typically, the most common tests are supplied with the conversion chart in this booklet. For conversion charts and information about the tests not given in this booklet, visit our website. You can also use the TR7 MENU to develop your own custom conversion chart for unusual samples to get more accurate results.

MENU
TR7

Acid pH Test Procedure

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: TR7

Press and re-press the **MENU** button until the display shows the parameter TR7.

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 **100 %T**. Sample is ready for testing.

5 DIP STRIP AND PRESS "READ"

Dip the ***eXact® Strip Micro Acid pH, Part No. 486624*** 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 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 TR7).

6 USE TABLE

Find the "TR7" result in the table below to determine the pH. (Example: a "TR7" result of 65.3 (use only the 65 for the chart) equals a pH value of 4.9). Record result. After testing is completed, rinse cell immediately.

Acid pH Table

Acid pH results require the table below. Follow **eXact® Micro 7+ Acid pH Test Procedure** (above) using *eXact® Strip Micro Acid pH, Part No. 486624*

eXact® Strip Micro Acid pH, Part No. 486624 - for 4mL Samples										
%T	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
90	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	3.0	3.1	3.2	3.2
80	3.3	3.4	3.5	3.6	3.7	3.8	3.9	3.9	4.0	4.1
70	4.2	4.2	4.3	4.3	4.4	4.4	4.5	4.5	4.6	4.6
60	4.7	4.7	4.8	4.8	4.9	4.9	4.9	5.0	5.0	5.1
50	5.1	5.1	5.2	5.2	5.2	5.3	5.3	5.3	5.4	5.4
40	5.4	5.5	5.5	5.5	5.6	5.6	5.7	5.7	5.7	5.8
30	5.8	5.8	5.9	5.9	5.9	6.0	6.0	6.1	6.1	6.2
20	6.2	>6.2	>6.2	>6.2	>6.2	>6.2	>6.2	>6.2	>6.2	>6.2
10	>6.2	>6.2	>6.2	>6.2	>6.2	>6.2	>6.2	>6.2	>6.2	>6.2
0	>6.2	>6.2	>6.2	>6.2	>6.2	>6.2	>6.2	>6.2	>6.2	>6.2

Rev. 020609 AcpH

ALKALI PH

Alkali pH Test Procedure

MENU
TR7

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: TR7**

Press and re-press the **MENU** button until the display shows the parameter TR7.

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 **100 %T**. Sample is ready for testing.

5 **DIP STRIP AND PRESS "READ"**

Dip the ***eXact® Strip Micro Alkali pH, Part No. 486609*** 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 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 TR7).

6 **USE TABLE**

Find the "TR7" result in the table below to determine the pH. (Example: a "TR7" result of 65.3 (use only the 65 for the chart) equals a pH value of 8.4). Record result. After testing is completed, rinse cell immediately.

Alkali pH Table

Alkali pH results require the table below. Follow **eXact® Micro 7+ Alkali pH Test Procedure** (above) using *eXact® Strip Micro Alkali pH, Part No. 486609*

eXact® Strip Micro Alkali pH, Part No. 486609 - for 4mL Samples										
%T	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
90	<8.3	<8.3	<8.3	<8.3	<8.3	<8.3	<8.3	<8.3	<8.3	<8.3
80	<8.3	<8.3	<8.3	<8.3	<8.3	<8.3	<8.3	<8.3	<8.3	<8.3
70	<8.3	<8.3	<8.3	<8.3	<8.3	<8.3	<8.3	<8.3	<8.3	<8.3
60	8.3	8.3	8.4	8.4	8.4	8.4	8.5	8.5	8.5	8.5
50	8.5	8.6	8.6	8.6	8.6	8.6	8.6	8.7	8.7	8.7
40	8.7	8.7	8.7	8.8	8.8	8.8	8.8	8.8	8.9	8.9
30	8.9	8.9	8.9	8.9	9.0	9.0	9.0	9.0	9.0	9.1
20	9.1	9.1	9.1	9.1	9.2	9.2	9.2	9.2	9.3	9.3
10	9.3	9.4	9.4	9.5	9.6	>9.6	>9.6	>9.6	>9.6	>9.6
0	>9.6	>9.6	>9.6	>9.6	>9.6	>9.6	>9.6	>9.6	>9.6	>9.6

Rev. 020509 AlkpH

MENU TR7 Ammonia (NH_3/NH_4^+) Test Procedure

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: TR7**

Press and re-press the **MENU** button until the display shows the parameter TR7.

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 **100 %T**. Sample is ready for testing.

5 **DIP STRIP - (read carefully and follow procedure closely)**

Dip the ***eXact® Strip Micro NH_3, Part No. 483343-M*** 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 cursor will move across the display, informing you that it is about to measure the sample (ignore this result). Time the reaction in the cell for **480 seconds (8 minutes)** (timer not included). During this time, meter will shut off. When **480 seconds** have elapsed, turn on the meter and wait for the last reading to be displayed and then press **READ**, which will start a final **20 SECOND** countdown. 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 TR7).

6 **USE TABLE**

Find the "TR7" result in the table below to determine the Ammonia concentration in ppm (parts per million). (Example: a "TR7" result of 66.3 (use only the 66 for the chart) equals an Ammonia value of 0.66 ppm). Record result. After testing is completed, rinse cell immediately.

Ammonia (NH_3/NH_4^+) Table

Ammonia results require the table below. Follow **eXact® Micro 7+ Ammonia (NH_3/NH_4^+) Test Procedure** (above) using *eXact® Strip Micro NH_3, Part No. 483343-M*

eXact® Strip Micro NH_3, Part No. 483343-M - for 4mL Samples										
%T	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
90	0	0	0	0	0	0	0	0	0	0
80	0	0	0	0	<0.06	<0.06	<0.06	<0.06	<0.06	0.06
70	0.09	0.16	0.19	0.22	0.28	0.32	0.35	0.41	0.44	0.51
60	0.54	0.6	0.63	0.66	0.73	0.79	0.85	0.89	0.95	1.01
50	1.04	1.11	1.17	1.23	1.3	1.36	1.39	1.46	1.55	1.61
40	1.68	1.74	1.8	1.9	1.96	2.02	2.15	2.21	2.28	2.37
30	2.47	2.56	2.66	2.75	2.88	2.97	3.1	3.23	3.32	3.45
20	3.61	3.73	3.89	4.05	4.21	4.4	4.56	4.78	5	5.25
10	5.5	5.8	6.2	6.5	7	>7	>7	>7	>7	>7
0	>7	>7	>7	>7	>7	>7	>7	>7	>7	>7

Rev. 051910-BT

For Tap Water
Chloride (as NaCl) Test Procedure

CHLORIDE

MENU TR7

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: TR7**

Press and re-press the **MENU** button until the display shows the parameter TR7.

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 **100 %T**. Sample is ready for testing.

5 **DIP STRIP AND PRESS "READ"**

Dip the ***eXact® Strip Micro CHLORIDE (as NaCl), Part No. 481657*** 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 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 TR7).

6 **USE TABLE**

Find the "TR7" result in the table below to determine the Chloride concentration in ppm (parts per million). (Example: a "TR7" result of 65.3 (use only the 65 for the chart) equals a Chloride value of 115 ppm). Record result. After testing is completed, rinse cell immediately.

Chloride (as NaCl) Table

Sodium Chloride results require the table below. Follow **eXact® Strip Micro 7+ Chloride (as NaCl) Test Procedure** (above) using *eXact® Strip Micro CHLORIDE, Part No. 481657*. ***NOTE:*** *To convert the NaCl value to Chloride (as Cl^-), multiply the value from the chart below by 0.6. (Example: 115ppm NaCl = 69ppm Cl^-)*

eXact® Strip Micro CHLORIDE, Part No. 481657 - for 4mL Samples										
%T	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
90	<3	<3	3	5	10	15	18	23	25	30
80	33	38	43	45	50	53	58	60	65	68
70	73	75	78	83	85	88	93	95	98	100
60	105	108	110	113	115	118	120	125	128	130
50	133	135	138	140	143	145	148	150	153	155
40	158	160	163	165	168	168	170	173	175	178
30	180	183	185	188	190	193	195	198	200	203
20	205	208	210	213	215	218	220	223	225	228
10	230	235	238	240	243	245	250	255	263	273
0	285	>290	>290	>290	>290	>290	>290	>290	>290	>290

Rev. 121608 NACL

For Pool and Spa Salt Systems
MENU Salt/Chloride (as NaCl) Test Procedure
TR7

CHLORIDE

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: TR7**

Press and re-press the **MENU** button until the display shows the parameter **TR7**.

3 **PREPARE THE CELL**

Using deionized or distilled water, rinse the **CELL** at least 3 times to minimize potential cross contamination from a previous test. Finally, fill the cell to the top with deionized or distilled water.

4 **ADD THE SAMPLE**

Use the small pipet provided to add 0.1ml of the sample to the water in the cell. This is a 1 to 40 dilution of the pool water that is required to perform this test. NOTE: If you are using the more accurate dilution procedure with the Dilution Kit (487200) or Mini Dilution Kit (487201), follow the procedure as provided with those kits.

5 **ZERO METER**

Press the **ZERO/ON** button. The cursor will move across the display, followed by **100 %T**. Meter is ready for testing.

6 **DIP STRIP**

Dip the ***eXact® Strip Micro CHLORIDE (as NaCl), Part No. 481657*** 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 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 TR7).

7 **USE TABLE**

Find the "TR7" result in the table below to determine the Sodium Chloride concentration in ppm (parts per million). (Example: a "TR7" result of 65.3 (use only the 65 for the chart) equals a Sodium Chloride value of 4600 ppm). Record result. After testing is completed, rinse cell immediately.

Chloride (as NaCl) Table

Sodium Chloride results require the table below. Follow **eXact® Micro 7+ Chloride (as NaCl) Test Procedure** (above) using *eXact® Strip Micro CHLORIDE, Part No. 481657.* ***NOTE:*** *To convert the NaCl value to Chloride (Cl^-), multiply the value from the chart below by 0.6. (Example: 4600ppm NaCl = 2760ppm Cl^-)*

eXact® Strip Micro CHLORIDE, Part No. 481657 - for 4mL Samples										
%T	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
90	<100	<100	100	200	400	600	700	900	1000	1200
80	1300	1500	1700	1800	2000	2100	2300	2400	2600	2700
70	2900	3000	3100	3300	3400	3500	3700	3800	3900	4000
60	4200	4300	4400	4500	4600	4700	4800	5000	5100	5200
50	5300	5400	5500	5600	5700	5800	5900	6000	6100	6200
40	6300	6400	6500	6600	6700	6700	6800	6900	7000	7100
30	7200	7300	7400	7500	7600	7700	7800	7900	8000	8100
20	8200	8300	8400	8500	8600	8700	8800	8900	9000	9100
10	9200	9400	9500	9600	9700	9800	10000	10200	10500	11000
0	>11000	>11000	>11000	>11000	>11000	>11000	>11000	>11000	>11000	>11000

Rev. 121608 NACL

Chlorine Dioxide Test Procedure

CLO2

MENU
TR7

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: TR7**

Press and re-press the **MENU** button until the display shows the parameter TR7.

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 **100 %T**. Sample is ready for testing.

5 **DIP STRIP - (read carefully and follow procedure closely)**

Dip the ***Glycine ReagentStrip™, Part No. 484014*** 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 cursor will move across the display, informing you that it is about to measure the sample (ignore this result). Dip the ***eXact® Strip Micro CL (DPD-1), Part No. 486637*** 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 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 TR7). After testing is completed, rinse cell immediately.

6 **USE TABLE**

Find the "TR7" result in the table below to determine the Chlorine Dioxide concentration in ppm (parts per million). (Example: a "TR7" result of 65.3 (use only the 65 for the chart) equals a Chlorine Dioxide value of 0.96 ppm). Record result. After testing is completed, rinse cell immediately.

Chlorine Dioxide Table

Chlorine Dioxide results require the table below. Follow **eXact® Micro 7+ Chlorine Dioxide Test Procedure** (above) using *eXact® Strip Micro CL (DPD-1), Part No. 486637*

eXact® Strip Micro CL (DPD-1), Part No. 486637 - for 4mL Samples										
%T	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
90	<0.03	<0.03	0.03	0.06	0.08	0.11	0.13	0.16	0.18	0.21
80	0.23	0.26	0.29	0.31	0.34	0.37	0.40	0.42	0.45	0.48
70	0.51	0.54	0.57	0.60	0.63	0.66	0.69	0.73	0.76	0.79
60	0.82	0.86	0.90	0.93	0.96	1.00	1.03	1.07	1.11	1.15
50	1.19	1.23	1.27	1.31	1.35	1.40	1.44	1.48	1.53	1.58
40	1.62	1.67	1.72	1.78	1.83	1.88	1.94	2.0	2.1	2.1
30	2.2	2.2	2.3	2.4	2.5	2.5	2.6	2.7	2.8	2.9
20	2.9	3.0	3.1	3.2	33	3.5	3.6	3.7	3.8	4.0
10	4.1	4.2	4.4	4.6	4.7	4.9	5.0	5.2	5.4	5.5
0	5.7	5.9	6.0	6.2	6.3	6.5	>6.5	>6.5	>6.5	>6.5

Rev. 121908 ClO2

MENU Chromate (Chromium) Test Procedure

TR7

CR

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: TR7

Press and re-press the **MENU** button until the display shows the parameter TR7.

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 **100 %T**. Sample is ready for testing.

5 DIP STRIP - (read carefully and follow procedure closely)

Dip the ***eXact® Strip Micro CR, Part No. 486614*** 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 cursor will move across the display, informing you that it is about to measure the sample (ignore this result). Time the reaction in the cell for **three (3) minutes** (timer not included). During this time, meter will shut off. When **3** minutes have elapsed, turn on the meter and wait for the last reading to be displayed and then press **READ**, which will start a final **20 SECOND** countdown. 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 TR7).

6 USE TABLE

Find the "TR7" result in the table below to determine the Chromate concentration in ppm (parts per million). (Example: a "TR7" result of 66.3 (use only the 66 for the chart) equals a Chromate value of 0.52 ppm). Record result. After testing is completed, rinse cell immediately.

Chromate (Chromium) Table

Chromate results require the table below. Follow **eXact® Micro 7+ Chromate (Chromium) Test Procedure** (above) using *eXact® Strip Micro CR, Part No. 486614.*

eXact® Strip Micro CR Part No. 486614 - for 4mL Samples

%T	9	8	7	6	5	4	3	2	1	0
90	<0.02	0.02	0.03	0.04	0.06	0.07	0.09	0.10	0.12	0.13
80	0.14	0.16	0.17	0.19	0.20	0.22	0.23	0.25	0.26	0.28
70	0.29	0.31	0.33	0.35	0.36	0.38	0.40	0.41	0.43	0.45
60	0.47	0.48	0.50	0.52	0.54	0.56	0.58	0.60	0.62	0.64
50	0.66	0.68	0.70	0.73	0.75	0.77	0.80	0.82	0.84	0.87
40	0.89	0.92	0.94	0.97	0.99	1.02	1.05	1.08	1.11	1.14
30	1.17	1.20	1.23	1.27	1.30	1.34	1.37	1.41	1.45	1.49
20	1.54	1.58	1.63	1.67	1.72	1.77	1.83	1.89	1.95	2.02
10	2.09	2.17	2.26	2.35	2.46	2.57	2.72	2.89	3.08	3.36
0	3.69	3.95	4.16	4.36	4.55	4.72	4.89	>4.89	>4.89	>4.90

This test is designed to detect Chromate ($CrO4^{-2}$) but values are given as Chromium Cr^{+6}. If Chromium is present as Cr^{+3}, it has to be first converted to Chromate for detection. See conversion procedure below.

Rev. 122908 CrO4

Note: To report results as Hexavalent Chromium (Cr^{+6}) multiply the $CrO4^{-2}$ result by 0.45 Example: A reading of 1.59ppm $CrO4^{-2}$ multiplied by 0.45 = 0.72ppm Cr^{+6}.

For the rapid determination of Cr^{+3} with our chromate test, follow this simple procedure that converts Cr^{+3} to CrO_4^{-2} which allows the use of ITS chromate test to detect Cr^{+3} and CrO_4^{-2} (or Total Chromate). For this procedure you will need three chemicals:

1. 10% Sodium Hydroxide Solution
2. 3% Hydrogen Peroxide Solution
3. 10% Nitric Acid Solution

1. Add 10 ml of the water sample to be tested into a small beaker. **2.** Add 2ml of 10% Sodium Hydroxide Solution to the beaker and mix/swirl gently. **3.** Add 1 ml of 3% Hydrogen Peroxide Solution to the beaker and mix/swirl gently. **4.** Let mix sit undisturbed for a minimum of one (1) minute. **5.** Follow the eXact® Micro 7+ Test Procedure on this page using this prepared solution for your sample.

For best precision multiply the result by 1.3 (example: if level found is 10 PPM then 10 X 1.3 =13 PPM). This will accommodate the dilution of the sample by the reagents that were added.

Cyanuric Acid Test Procedure

CY

MENU
TR7

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: TR7**

Press and re-press the **MENU** button until the display shows the parameter **TR7**.

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 **100 %T**. Sample is ready for testing.

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

Shake the bottle of ***eXact® Reagent CY, Part No. 481652*** to mix the chemical in the bottle. Then, add five (5) drops of eXact® 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. **When timer displays 1**, hold meter upright and 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 TR7).

6 **USE TABLE**

Find the "TR7" result in the table below to determine the Cyanuric Acid concentration in ppm (parts per million). (Example: a "TR7" result of 75.3 (use only the 75 for the chart) equals a Cyanuric Acid value of 7 ppm). Record result. After testing is completed, rinse cell immediately.

Cyanuric Acid Table

Cyanuric Acid results require the table below. Follow **eXact® Micro 7+ Cyanuric Acid Test Procedure** (above) using *eXact® Reagent CY, Part No. 481652*

NOTE: For levels above 60ppm Cyanuric Acid, dilute the sample ½ or ¼ with distilled water and retest.

eXact® Reagent CY, Part No. 481652 - for 4mL Samples										
%T	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
90	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
80	<5	<5	<5	<5	<5	5	5	5	5	6
70	6	6	7	7	7	7	8	8	8	9
60	9	9	10	10	10	11	11	11	12	12
50	12	13	13	13	14	14	14	15	15	15
40	16	16	17	17	17	18	18	19	19	20
30	20	21	21	21	22	23	23	24	24	25
20	25	26	26	27	28	29	29	30	31	31
10	32	33	34	35	36	37	39	40	42	45
0	48	51	54	57	59	60	>60	>60	>60	>60

Rev. 121408 CY

MENU
TR7

Fluoride (as F^-) Test Procedure

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: TR7**

Press and re-press the **MENU** button until the display shows the parameter TR7.

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 **100 %T**. Discard the sample (empty cell).

5 **ADD REAGENT**

Shake the bottle of **eXact® Reagent F^- (SPADNS), Part No. 486643** to mix chemical in the bottle. Then, add ten (10) drops of eXact® Reagent F^- (SPADNS) to the empty cell.

6 **ADD SAMPLE AND CAP**

Fill the cell to the top with the sample to be tested (do this slowly to prevent overfilling). Cap the meter with the cell mixing cap.

7 **PRESS READ**

Press READ to start timer, mix sample by pressing one finger over the cap to keep it in place. Then, gently turn the meter over from side to side to mix during the **20 SECOND** countdown. **When time displays 1**, hold meter upright and 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 TR7).

8 **USE TABLE**

Find the "TR7" result in the table below to determine the Fluoride concentration in ppm (parts per million). (Example: a "TR7" result of 3.42 (use only the 3.4 for the chart) equals a Fluoride value of 0.9 ppm). Record result. After testing is completed, rinse cell immediately. For all values with a Transmission above 5.00%, the Fluoride level is greater than 1.1 ppm. For all samples above 1.1 ppm, it is recommended that the sample is diluted with distilled or deionized water and retested.

Fluoride Table

Fluoride results require the table below. Follow **eXact® Micro 7+ Fluoride (as F^-) Test Procedure** (above) using *eXact® Reagent F^- (SPADNS), Part No. 486643.*

eXact Reagent F^- (SPADNS), Part No. 486643 - for 4mL Samples										
%T	**0.9**	**0.8**	**0.7**	**0.6**	**0.5**	**0.4**	**0.3**	**0.2**	**0.1**	**0**
4	>1.1	>1.1	>1.1	>1.1	>1.1	>1.1	>1.1	>1.1	>1.1	>1.1
3	1.1	1.1	1.0	1.0	0.9	0.9	0.8	0.8	0.7	0.7
2	0.7	0.6	0.6	0.5	0.5	0.4	0.4	0.4	0.3	0.3
1	0.2	0.2	0.2	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
										Rev. 121208 F

H_2O_2 LR Hydrogen Peroxide LR Test Procedure MENU TR7

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: TR7**

Press and re-press the **MENU** button until the display shows the parameter TR7.

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 **100 %T**. Sample is ready for testing.

5 **DIP STRIP AND PRESS "READ"**

Dip the ***eXact® Strip Micro H_2O_2 LR, Part No. 486616*** 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 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 TR7).

6 **USE TABLE**

Find the "TR7" result in the table below to determine the Peroxide concentration in ppm (parts per million). (Example: a "TR7" result of 65.3 (use only the 65 for the chart) equals a Peroxide value of 0.18 ppm). Record result. After testing is completed, rinse cell immediately.

Hydrogen Peroxide LR Table

Peroxide results require the table below. Follow **eXact® Micro 7+ Hydrogen Peroxide LR Test Procedure** (above) using *eXact® Strip Micro H_2O_2 LR, Part No. 486616.*

eXact® Strip Micro H_2O_2 LR, Part No. 486616 - for 4mL Samples

%T	9	8	7	6	5	4	3	2	1	0
90	0	0	0	<0.01	<0.01	<0.01	0.01	0.01	0.02	0.02
80	0.02	0.03	0.03	0.04	0.04	0.05	0.05	0.06	0.07	0.08
70	0.08	0.09	0.10	0.10	0.11	0.12	0.13	0.14	0.15	0.15
60	0.16	0.16	0.17	0.17	0.18	0.18	0.19	0.20	0.21	0.22
50	0.23	0.24	0.25	0.26	0.27	0.28	0.29	0.30	0.31	0.32
40	0.33	0.34	0.35	0.36	0.37	0.38	0.39	0.40	0.41	0.42
30	0.43	0.45	0.46	0.47	0.48	0.50	0.52	0.54	0.56	0.58
20	0.60	0.62	0.64	0.66	0.68	0.70	0.72	0.75	0.77	0.80
10	0.83	0.86	0.90	0.93	0.97	1.0	1.0	1.0	1.2	1.2
0	1.3	1.4	1.5	1.6	1.8	2	3	4	>5	>10

Rev. 041009 H2O2

About Our Hydrogen Peroxide Tests with Micro 7+

We offer two different Hydrogen Peroxide tests and they all develop a colorimetric red color by a slow oxidation reaction of hydrogen peroxide (H2O2) with Iodide to form Iodine. The iodine then reacts instantly with the DPD indicator to form a red color. To speed up the reaction a catalyst, Molybdate salt, is added in the Low range and Mid Range products.

The Low Range product (part No. 486616) is buffered to about a pH of 5.0 to 5.5, and the chemistry is essentially complete in 2 minutes at this pH if the water sample is at room temperature (between 18°C to 22°C). Cold samples (below 14C) will require 4 minutes or more to complete the reaction. Warm samples (above 23°C) will read about 10% higher. Follow directions as written to get accurate results. For values above 1.8 PPM you should dilute with distilled or Deionized water and retest.

The Mid range product (part no. 486648) is buffered to about a pH of 2.1 to 2.4. This slows the catalytic reaction and allows the test to measure higher levels of hydrogen peroxide. This test is only accurate if your sample is at room temperature and if you follow directions as written.

The High Range product (part no. 486670) uses no Molybdate catalyst; and therefore the reaction proceeds slowly. This allows for the detection range to be expanded to 2100 PPM. This test is accurate when directions are followed and sample temperature is at 73°F/23°C. Sample temperature has significant effect on High Range results; at 13°C values are about 40% low, and at 33°C values are about 40% high.

MENU Hydrogen Peroxide MR Test Procedure

TR7

H_2O_2 MR

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: TR7**

Press and re-press the **MENU** button until the display shows the parameter TR7.

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 **100 %T**. Sample is ready for testing.

5 **DIP STRIP AND PRESS "READ"**

Dip the ***eXact® Strip Micro H_2O_2 MR, Part No. 486648*** 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 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 TR7).

6 **USE TABLE**

Find the "TR7" result in the table below to determine the Peroxide concentration in ppm (parts per million). (Example: a "TR7" result of 65.3 (use only the 65 for the chart) equals a Peroxide value of 4 ppm). Record result. After testing is completed, rinse cell immediately.

Hydrogen Peroxide MR Table

Peroxide results require the table below. Follow **eXact® Micro 7+ Hydrogen Peroxide MR Test Procedure** (above) using *eXact® Strip Micro H_2O_2 MR, Part No. 486648.*

eXact® Strip Micro H_2O_2 MR, Part No. 486648 - for 4mL Samples

%T	9	8	7	6	5	4	3	2	1	0
90	0	0	0	0	0	0	0	0	0	0
80	0	0	0	0	0	0	<1	<1	<1	<1
70	1	1	1	2	2	2	2	2	3	3
60	3	3	3	3	4	4	4	4	4	5
50	5	5	5	5	5	6	6	6	6	7
40	7	7	7	7	8	8	8	8	8	9
30	9	9	9	9	10	10	10	10	10	11
20	11	11	12	12	13	13	14	14	15	15
10	16	16	17	17	18	18	19	20	21	22
0	23	24	25	26	27	29	32	35	38	42

Rev. 041309 H2O2 MR

About Our Hydrogen Peroxide Tests with Micro 7+

We offer two different Hydrogen Peroxide tests and they all develop a colorimetric red color by a slow oxidation reaction of hydrogen peroxide (H2O2) with Iodide to form Iodine. The iodine then reacts instantly with the DPD indicator to form a red color. To speed up the reaction a catalyst, Molybdate salt, is added in the Low range and Mid Range products.

The Low Range product (part No. 486616) is buffered to about a pH of 5.0 to 5.5, and the chemistry is essentially complete in 2 minutes at this pH if the water sample is at room temperature (between 18°C to 22°C). Cold samples (below 14C) will require 4 minutes or more to complete the reaction. Warm samples (above 23°C) will read about 10% higher. Follow directions as written to get accurate results. For values above 1.8 PPM you should dilute with distilled or Deionized water and retest.

The Mid range product (part no. 486648) is buffered to about a pH of 2.1 to 2.4. This slows the catalytic reaction and allows the test to measure higher levels of hydrogen peroxide. This test is only accurate if your sample is at room temperature and if you follow directions as written.

The High Range product (part no. 486670) uses no Molybdate catalyst; and therefore the reaction proceeds slowly. This allows for the detection range to be expanded to 2100 PPM. This test is accurate when directions are followed and sample temperature is at 73°F/23°C. Sample temperature has significant effect on High Range results; at 13°C values are about 40% low, and at 33°C values are about 40% high.

FE Total Iron, TPTZ (Fe^{+2}/Fe^{+3}) Test Procedure MENU
Ferrous Iron, TPTZ (Fe^{+2}) Test Procedure TR7

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: TR7**

Press and re-press the **MENU** button until the display shows the parameter **TR7**.

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. Fill cell to capacity (4ml) with the water sample.

4 **ADD REAGENT, CAP, AND MIX (For Ferrous Iron, skip this step)**

Tilt meter to discard about 0.2mL water in order to leave room for powder reagent. Add the contents of one ***eXact® Reagent EZ Open REDUCER, Part No. 486601*** to the **CELL** and cap meter cell with mixing cap. Press **READ** to start the **20 SECOND** countdown timer, place thumb over cap, and mix the sample by turning the meter upside-down repetitively. **When time displays 1**, hold the meter upright and the cursor will move across the display, informing you that it is about to measure the sample (ignore this result). Wait 40 seconds (timer not included).

5 **ZERO METER**

Press the **ZERO/ON** button. The cursor will move across the display, followed by **100 %T**. Sample is ready for testing.

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

Dip the ***eXact® Strip Micro FE (TPTZ), Part No. 486631*** 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 cursor will move across the display, informing you that it is about to measure the sample (ignore this result). Wait 20 seconds (timer not included) and press **READ** to start an additional **20 SECOND** countdown. **When 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 TR7).

7 **USE TABLE**

Find the "TR7" result in the table below to determine the Iron concentration in ppm (parts per million). (Example: a "TR7" result of 85.3 (use only the 85 for the chart) equals an Iron value of 0.12 ppm). Record result. After testing is completed, rinse cell immediately.

Ferrous & Total Iron, TPTZ (Fe^{+2}/Fe^{+3}) Table

Iron results require the table below. For Ferrous Iron (Fe^{+2}) detection only, be sure to skip Step 4 (addition of REDUCER reagent).

eXact® Reagent EZ Open REDUCER, Part No. 486601 - for 4mL Samples										
%T	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
90	<0.02	<0.02	<0.02	<0.02	<0.02	0.03	0.04	0.05	0.06	0.07
80	0.08	0.09	0.10	0.11	0.12	0.13	0.15	0.16	0.17	0.18
70	0.19	0.20	0.21	0.23	0.24	0.25	0.26	0.28	0.29	0.30
60	0.32	0.33	0.34	0.36	0.37	0.38	0.40	0.41	0.43	0.44
50	0.45	0.47	0.48	0.50	0.52	0.53	0.54	0.56	0.58	0.60
40	0.61	0.63	0.65	0.67	0.69	0.70	0.72	0.74	0.76	0.78
30	0.81	0.83	0.85	0.87	0.89	0.92	0.94	0.97	0.99	1.02
20	1.04	1.07	1.10	1.14	1.17	1.20	1.23	1.27	1.31	1.35
10	1.39	1.43	1.48	1.53	1.58	1.64	1.70	1.77	1.85	1.93
0	2.03	2.14	2.28	2.5	2.7	3.0	3.8	>4	>4	>4

This table was calibrated using Fe^{+2} Iron Standards **Rev. 050609 TPTZ**

MENU Total Iron, Ferro (Fe^{+2}/Fe^{+3}) Test Procedure

TR7

FE

NOTE: Water samples with suspended solids and particulates may cause incorrect results, since the reducing agent in the powder pillow often dissolves the suspended solids and particulates. If the meter is zeroed with the original water sample the zero is no longer valid for this kind of sample. So, for this kind of sample, zero the meter using a water sample free of suspended solids and particulates (use distilled, deionized, or bottled water in Step 4). Then, rinse the cell three times with the water sample you will be testing, and finally fill the cell with this water sample. Continue with Steps 5 and 6 as directed.

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: TR7

Press and re-press the **MENU** button until the display shows the parameter TR7.

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. In order to leave room for powder reagent, do not overfill cell.

4

ZERO METER

Press the **ZERO/ON** button. The cursor will move across the display, followed by **100 %T**. Sample is ready for testing.

5

ADD REAGENT, CAP, PRESS "READ", AND MIX

Add the contents of one ***eXact® Reagent Iron Ferro Powder Pillow, Part No. 481623*** to the **CELL** and cap meter cell with mixing cap. Press **READ** to start the timer, mix the 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. **When time displays 1**, hold the meter upright and the cursor will move across the display, informing you that it is about to measure the sample. Time the reaction in the cell for an additional **three (3) minutes** (timer not included). During this time, meter will shut off. When **3 minutes** have elapsed, turn meter on and wait for the display to show last reading. Then, press **READ**, which will start a final **20 SECOND** countdown. 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 TR7).

6

USE TABLE

Find the "TR7" result in the table below to determine the Iron concentration in ppm (parts per million). (Example: a "TR7" result of 85.3 (use only the 85 for the chart) equals an Iron value of 0.37 ppm). Record result. After testing is completed, rinse cell immediately.

Total Iron, Ferro (Fe^{+2}/Fe^{+3}) Table

Iron results require the table below. Follow **eXact® Micro 7+ Total Iron, Ferro (Fe^{+2}/Fe^{+3}) Test Procedure** (above) using *eXact® Reagent Iron Ferro Powder Pillow, Part No. 481623*

eXact® Reagent Iron Ferro Powder Pillow, Part No. 481623 - for 4mL Samples

%T	9	8	7	6	5	4	3	2	1	0
90	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	0.15	0.18	0.21	0.24
80	0.25	0.29	0.32	0.35	0.37	0.40	0.43	0.46	0.49	0.52
70	0.55	0.58	0.61	0.64	0.67	0.70	0.74	0.77	0.80	0.84
60	0.87	0.90	0.94	0.97	1.01	1.05	1.09	1.12	1.16	1.20
50	1.24	1.28	1.32	1.36	1.41	1.45	1.49	1.54	1.59	1.64
40	1.69	1.74	1.79	1.84	1.89	1.95	2.00	2.07	2.13	2.19
30	2.26	2.32	2.39	2.46	2.5	2.6	2.7	2.8	2.9	3.0
20	3.1	3.2	3.4	3.5	>3.5	>3.5	>3.5	>3.5	>3.5	>3.5
10	>3.5	>3.5	>3.5	>3.5	>3.5	>3.5	>3.5	>3.5	>3.5	>3.5
0	>3.5	>3.5	>3.5	>3.5	>3.5	>3.5	>3.5	>3.5	>3.5	>3.5

This table was calibrated using Fe^{+2} Iron Standards **Rev. 012809 TFE**

Total Hardness Low Range Test Procedure

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: TR7**

Press and re-press the **MENU** button until the display shows the parameter TR7.

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 **100 %T**. Sample is ready for testing.

5 **DIP STRIP AND PRESS "READ"**

Dip the ***eXact® Strip Micro TH, Part No. 486630*** 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 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 TR7).

6 **USE TABLE**

Find the "TR7" result in the table below to determine the Total Hardness concentration in ppm (parts per million). (Example: a "TR7" result of 65.3 (use only the 65 for the chart) equals a Total Hardness value of 8 ppm). Record result. After testing is completed, rinse cell immediately.

Total Hardness Low Range Table

Low Range Total Hardness results require the table below. Follow **eXact® Micro 7+ Total Hardness Low Range Test Procedure** (above) using *eXact® Strip Micro TH, Part No. 486630*

eXact® Strip Micro TH, Part No. 486630 - for 4mL Samples										
%T	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
90	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
80	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2	3	3
70	3	3	4	4	4	5	5	6	6	6
60	7	7	7	8	8	9	9	10	10	10
50	11	11	12	12	13	13	14	14	15	15
40	16	16	17	17	18	19	19	20	21	22
30	22	23	24	25	25	26	27	28	29	30
20	31	32	33	34	35	36	38	39	41	43
10	46	49	53	56	59	63	66	70	73	77
0	>80	>80	>80	>80	>80	>80	>80	>80	>80	>80

This table was calibrated using $CaCO_3$ Standards **Rev. 121308 LRTH**

MENU Manganese (as Mn^{+2}) Test Procedure

TR7

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: TR7**

Press and re-press the **MENU** button until the display shows the parameter TR7.

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 **100 %T**. Sample is ready for testing.

5 **DIP STRIP - (read carefully and follow procedure closely)**

Dip the ***Mn Strip #1, Part No. 481020-1*** 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 cursor will move across the display, informing you that it is about to measure the sample (ignore this result). Next, Dip the ***Mn Strip #2, Part No. 481020-2*** into the **CELL** and immediately press **READ**. This starts a **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** (CAUTION: discard this strip in regular trash that is inaccessible to children and pets). The cursor will move across the display, informing you that it is about to measure the sample (ignore this result again).

6 **ADD REAGENT, CAP, MIX, AND WAIT 2 MINUTES**

Add three (3) drops of **eXact® Reagent MN, Part No. 486606-R** to the cell, cap, and mix sample briefly by pressing one finger over the cap to keep it in place and rotate meter upside-down twice. Wait for **two (2) minutes**, then press **READ.** This will start a final **20 SECOND** countdown timer. **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 TR7).

7 **USE TABLE**

Find the "TR7" result in the table below to determine the Manganese concentration in ppm (parts per million). (Example: a "TR7" result of 65.3 (use only the 65 for the chart) equals a Manganese value of 0.04 ppm). Record result. After testing is completed, rinse cell immediately.

Manganese (as Mn^{+2}) Table

Manganese results require the table below. Follow **eXact® Micro 7+ Manganese Test Procedure** (above) using *Mn Strip #1, Part No. 481020-1, Mn Strip #2, Part No. 481020-2, and PAN Reagent, Part Number 486606-R.*

Mn Strip #1, Part No. 481020-1, Mn Strip #2, Part No. 481020-2, & PAN Reagent, Part No. 486606-R - for 4mL Samples

%T	9	8	7	6	5	4	3	2	1	0
90	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
80	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
70	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
60	<0.03	<0.03	0.03	0.04	0.04	0.05	0.06	0.06	0.07	0.08
50	0.09	0.10	0.10	0.11	0.12	0.13	0.13	0.14	0.15	0.16
40	0.17	0.18	0.19	0.20	0.21	0.22	0.23	0.24	0.25	0.26
30	0.27	0.29	0.30	0.31	0.33	0.34	0.36	0.37	0.39	0.40
20	0.42	0.44	0.46	0.48	0.50	0.53	0.55	0.57	0.59	0.61
10	0.65	0.68	0.72	0.75	0.78	0.82	0.87	0.91	0.96	1.00
0	1.06	1.11	1.18	1.25	1.35	1.5	>1.5	>1.5	>1.5	>1.5

This table was calibrated using Mn^{+2} Manganese Standards **Rev. 121108 MN**

Nitrate (NO_3^-) Test Procedure

MENU
TR7

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: TR7**

Press and re-press the **MENU** button until the display shows the parameter **TR7**.

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 **100 %T**. Sample is ready for testing.

5 **DIP STRIP - (read carefully and follow procedure closely)**

Dip the ***eXact® Strip Micro NO_3, Part No. 486617*** into the **CELL** and immediately press **READ**. This starts the **20 SECOND** countdown timer. During this time move the strip in a very gentle back and forth motion with a light touch on the cell wall. **When the time displays 1**, continue the back and forth motion with the strip. The cursor will move across the display, informing you that it is about to measure the sample (ignore this result). Press **READ** again, which will start another **20 SECOND** countdown. **This time when the time displays 1**, remove the strip and observe that all test pads are present, then discard the strip. If a test pad is remaining in the sample cell, remove test pad(s) prior to reading result. Note that the total dip time was approximately 50 seconds. Ignore the result that is displayed. Time the reaction in the cell for **five (5) minutes** (timer not included). During this time, meter will shut off. When **5 minutes** have elapsed, turn meter on and wait for the display to show last reading. Then, press **READ**, which will start a final **20 SECOND** countdown. 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 TR7).

6 **USE TABLE**

Find the "TR7" result in the table below to determine the Nitrate concentration in ppm (parts per million). (Example: a "TR7" result of 65.8 (use only the 66 for the chart) equals a Nitrate value of 77 ppm). Record result. After testing is completed, rinse cell immediately.

Nitrate (NO_3^-) Table

Nitrate results require the table below. Follow **eXact® Micro 7+ Nitrate (NO_3^-) Test Procedure** (above) using *eXact® Strip Micro NO_3, Part No. 486617*
NOTE: For levels above 140ppm Nitrate, dilute the sample ½ or ¼ with distilled water and retest.

eXact® Strip Micro NO_3, Part No. 486617 - for 4mL Samples										
%T	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
90	<8	<8	<8	<8	<8	<8	<8	<8	13	18
80	22	26	30	33	36	39	41	43	46	49
70	51	53	55	57	60	62	64	66	68	70
60	71	73	75	77	78	80	82	84	86	88
50	90	92	94	96	98	100	102	104	106	108
40	110	112	114	117	119	121	124	126	128	131
30	134	137	140	>140	>140	>140	>140	>140	>140	>140
20	>140	>140	>140	>140	>140	>140	>140	>140	>140	>140
10	>140	>140	>140	>140	>140	>140	>140	>140	>140	>140
0	>140	>140	>140	>140	>140	>140	>140	>140	>140	>140
This table was calibrated using NO_3^- Nitrate Standards										**Rev. 121708 NO3**

NOTE: Divide the above Nitrate result by 4.4 to determine Nitrate value as Nitrogen (NO_3 as N)

MENU
TR7

Nitrite (NO_2^{-2}) Test Procedure

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: TR7

Press and re-press the **MENU** button until the display shows the parameter TR7.

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 **100 %T**. Sample is ready for testing.

5 DIP STRIP - (read carefully and follow procedure closely)

Dip the ***eXact® Strip Micro NO_2, Part No. 486623*** 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 cursor will move across the display, informing you that it is about to measure the sample (ignore this result). Time the reaction in the cell for **four (4) minutes** (timer not included). During this time, meter will shut off. When **4** minutes have elapsed, turn on the meter and wait for the last reading to be displayed and then press **READ**, which will start a final **20 SECOND** countdown. 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 TR7).

6 USE TABLE

Find the "TR7" result in the table below to determine the Nitrite concentration in ppm (parts per million). (Example: a "TR7" result of 66.3 (use only the 66 for the chart) equals a Nitrite value of 0.52 ppm). Record result. After testing is completed, rinse cell immediately.

Nitrite (NO_2^{-2}) Table

Nitrite results require the table below. Follow **eXact® Micro 7+ Nitrite (NO_2^{-2}) Test Procedure** (above) using *eXact® Strip Micro NO_2, Part No. 486623*

eXact® Strip Micro NO_2, Part No. 486623 - for 4mL Samples										
%T	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
90	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	0.08
80	0.09	0.11	0.13	0.15	0.16	0.18	0.20	0.22	0.23	0.25
70	0.27	0.29	0.31	0.32	0.34	0.36	0.38	0.40	0.42	0.44
60	0.46	0.48	0.50	0.52	0.54	0.56	0.58	0.60	0.62	0.64
50	0.66	0.68	0.70	0.73	0.75	0.77	0.79	0.82	0.84	0.86
40	0.89	0.91	0.93	0.96	0.98	1.01	1.03	1.06	1.09	1.12
30	1.15	1.17	1.20	1.23	1.26	1.29	1.33	1.36	1.39	1.43
20	1.46	1.50	1.53	1.57	1.61	1.65	1.70	1.75	1.79	1.84
10	1.90	1.96	2.02	2.08	2.16	2.24	2.33	2.43	2.56	2.71
0	2.9	3.1	3.3	3.5	>3.5	>3.5	>3.5	>3.5	>3.5	>3.5

This table was calibrated using NO_2^{-2} Nitrite Standards **Rev. 121608 NO2**

NOTE: Divide the above Nitrite result by 3.3 to determine Nitrite value as Nitrogen (NO_2^- as N)

Peracetic Acid Test Procedure

PAA

MENU TR7

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: TR7**

Press and re-press the **MENU** button until the display shows the parameter TR7.

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 **100 %T**. Sample is ready for testing.

5 **DIP STRIP AND PRESS "READ"**

Dip the ***eXact® Strip Micro CL (DPD-4), Part No. 486670*** 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 after "1" on the display disappears**. The cursor will move across the display while the meter prepares to measure the sample. Record the result displayed (this result is automatically stored in TR7).

6 **USE TABLE**

Find the "TR7" result in the table below to determine the Peracetic Acid concentration in ppm (parts per million). (Example: a "TR7" result of 65.3 (use only the 65 for the chart) equals a Peracetic Acid value of 0.35). Record result. After testing is completed, rinse cell immediately.

Peracetic Acid Table

Peracetic Acid results require the table below. Follow **eXact® Micro 7+ Peracetic Acid Test Procedure** (above) using *eXact® Strip Micro CL (DPD-4), Part No. 486670*

eXact® Strip Micro CL (DPD-4), Part No. 486670 - for 4mL Samples										
%T	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
90	0	0	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08
80	0.09	0.10	0.11	0.12	0.13	0.14	0.15	0.16	0.17	0.18
70	0.19	0.20	0.21	0.22	0.23	0.24	0.25	0.27	0.28	0.29
60	0.30	0.31	0.33	0.34	0.35	0.36	0.38	0.39	0.41	0.42
50	0.44	0.45	0.47	0.48	0.50	0.52	0.53	0.55	0.56	0.58
40	0.59	0.61	0.64	0.66	0.67	0.70	0.72	0.73	0.76	0.80
30	0.80	0.83	0.85	0.88	0.90	0.92	0.95	0.98	1.01	1.05
20	1.08	1.11	1.14	1.18	1.22	1.26	1.30	1.34	1.38	1.43
10	1.48	1.54	1.59	1.66	1.72	1.80	1.89	1.98	2.08	2.18
0	2.30	2.44	2.61	2.88	3.2	3.6	4	>4	>4	>4
										Rev. 032510 PAA

NOTE: Various oxidizing agents such as halogens, ferric ions, and cupric ions will produce high test results. Hydrogen Peroxide does NOT interfere with this test if levels are comparable to the peracetic acid levels. If your Hydrogen Peroxide to Peracetic Acid ratio is in excess, it is recommended that Hydrogen Peroxide interference be removed by adding a small amount of catalase enzyme to the test solution before testing.

MENU
TR7

Potassium (as K^+) Test Procedure

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: TR7**

Press and re-press the **MENU** button until the display shows the parameter TR7.

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 **100 %T**. Sample is ready for testing.

5 **DIP STRIP AND PRESS "READ"**

Dip the ***eXact® Strip Micro K, Part No. 486621*** 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 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 TR7).

6 **USE TABLE**

Find the "TR7" result in the table below to determine the Potassium concentration in ppm (parts per million). (Example: a "TR7" result of 65.3 (use only the 65 for the chart) equals a Potassium value of 6.4 ppm). Record result. After testing is completed, rinse cell immediately.

Potassium (as K^+) Table

Potassium results require the table below. Follow **eXact® Micro 7+ Potassium Test Procedure** (above) using *eXact® Strip Micro K, Part No. 486621.*

eXact® Strip Micro K, Part No. 486621 - for 4mL Samples										
%T	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
90	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1	<3.1	3.1	3.3
80	3.5	3.6	3.7	3.9	4.0	4.1	4.2	4.3	4.4	4.4
70	4.5	4.6	4.7	4.7	4.8	4.9	4.9	5.0	5.1	5.1
60	5.2	5.3	5.3	5.4	5.5	5.5	5.6	5.6	5.7	5.7
50	5.8	5.9	5.9	6.0	6.0	6.1	6.1	6.2	6.3	6.3
40	6.4	6.4	6.5	6.5	6.6	6.6	6.7	6.8	6.9	6.9
30	7.0	7.0	7.1	7.2	7.2	7.3	7.4	7.5	7.5	7.6
20	7.7	7.8	7.9	7.9	8.0	8.1	8.2	8.3	8.4	8.5
10	8.6	8.8	8.9	9.0	9.2	9.3	9.5	9.6	9.8	10.0
0	10.2	10.5	10.7	11.0	11.4	11.8	>11.8	>11.8	>11.8	>11.8

Rev. 080209 K

Sulfate (SO_4^{-2}) Test Procedure

MENU
TR7

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: TR7

Press and re-press the **MENU** button until the display shows the parameter TR7.

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 **100 %T**. Sample is ready for testing.

5 DIP STRIP AND PRESS "READ"

Dip the ***eXact® Strip Micro SO_4, Part No. 486608*** 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 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 TR7).

6 USE TABLE

Find the "TR7" result in the table below to determine the Sulfate concentration in ppm (parts per million). (Example: a "TR7" result of 65.3 (use only the 65 for the chart) equals a Sulfate value of 22.5 ppm). Record result. After testing is completed, rinse cell immediately.

Sulfate (SO_4^{-2}) Table

Sulfate results require the table below. Follow **eXact® Micro 7+ Sulfate (SO_4^{-2}) Test Procedure** (above) using *eXact® Strip Micro SO_4, Part No. 486608.*

eXact® Strip Micro SO_4, Part No. 486608 - for 4mL Samples										
%T	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
90	0	0	0	4	5	5.5	6	6.5	7	8
80	8.5	9	9.5	10	11	11.5	12	12.5	13	13.5
70	14	15	15.5	16	16.5	17	17.5	18	19	19.5
60	20	20.5	21	21	22.5	23	23.5	24	25	26
50	26.5	27	27.5	28	29	30	30.5	31	32	33
40	34	34.5	35	36	37	37.5	38	40	41	41.5
30	42	43	44	45	46	48	49	50	51	52
20	53	55	56	58	59	60	63	64	66	68
10	70	73	75	77	80	83	85	88	92	96
0	100	105	110	115	125	131	143	150	>150	>150

Rev. 051410 BT

MENU
TR7

Sulfide (as H_2S) Test Procedure

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: TR7**

Press and re-press the **MENU** button until the display shows the parameter TR7.

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 **100 %T**. Sample is ready for testing.

5 **DIP STRIP AND PRESS "READ"**

Dip the ***eXact® Strip Micro H_2S, Part No. 486646*** 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 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 TR7).

6 **USE TABLE**

Find the "TR7" result in the table below to determine the Sulfide concentration in ppm (parts per million). (Example: a "TR7" result of 65.3 (use only the 65 for the chart) equals a Sulfide value of 1.0 ppm). Record result. After testing is completed, rinse cell immediately.

Sulfide (as H_2S) Table

Sulfide results require the table below. Follow **eXact® Micro 7+ Sulfide Test Procedure** (above) using *eXact® Strip Micro H_2S, Part No. 486646.*

eXact® Strip Micro H_2S, Part No. 486646 - for 4mL Samples										
%T	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
90	0	0	0	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.1
80	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.4
70	0.5	0.5	0.5	0.6	0.6	0.6	0.7	0.7	0.7	0.8
60	0.8	0.8	0.9	0.9	1.0	1.0	1.0	1.1	1.1	1.1
50	1.2	1.2	1.3	1.3	1.4	1.5	1.5	1.6	1.6	1.7
40	1.7	1.8	1.8	1.9	1.9	2.0	2.0	2.1	2.2	2.2
30	2.3	2.4	2.5	2.5	2.6	2.7	2.8	2.9	3.0	3.1
20	3.2	3.3	3.4	3.5	3.6	3.7	3.9	4.0	4.1	4.2
10	4.4	4.6	4.8	4.9	5	5	5	6	6	7
0	7	8	8	9	9	10	10	11	13	>15

Rev. 040809 H2S

Turbidity Test Procedure

TU

MENU TR7

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: TR7**

Press and re-press the **MENU** button until the display shows the parameter **TR7**.

3 **FILL METER WITH DISTILLED OR DEIONIZED WATER**

Rinse the **CELL** at least 3 times with distilled or deionized water. Finally, fill cell to capacity (4ml) with the distilled or deionized water water.

4 **ZERO METER**

Press the **ZERO/ON** button. The cursor will move across the display, followed by **100 %T**. Discard the distilled or deionized water. Rinse the meter cell at least 3 times and finally fill cell to capacity (4ml) with water to be tested for Turbidity.

5 **PRESS "READ"**

Press **READ**; this starts the **20 SECOND** countdown timer. Press **READ** again and 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 TR7).

6 **USE TABLE**

Find the "TR7" result in the table below to determine the Turbidity concentration in NTU (Nephelometric Turbidity Units). (Example: a "TR7" result of 85.3 (use only the 85 for the chart) equals a Turbidity value of 22 NTU). Record Turbidity result.

Turbidity Table

Turbidity results require the table below. Follow **eXact® Micro 7+ (4mL) Turbidity Test Procedure** (above). Values below are not for Compliance Testing.

(NOTE: These Turbidity values are not for Potable water Compliance Testing)

%T	9	8	7	6	5	4	3	2	1	0
90	<2	3	4	6	7	9	10	12	13	15
80	16	18	19	21	22	24	25	27	28	30
70	32	34	36	37	40	41	43	44	46	48
60	50	52	54	56	58	60	62	64	66	69
50	70	73	75	77	80	83	85	87	90	93
40	96	98	102	105	108	110	114	117	120	123
30	128	130	135	138	142	146	150	155	160	165
20	170	175	180	187	192	199	205	212	220	229
10	238	245	257	268	280	293	308	325	340	360
0	380	405	430	460	490	530	580	>580	>580	>580

This table was calibrated using stabilized Formazin Turbidity Standards. **Rev. 121608 NTU**

MENU How to use Reference Standard Solution

CL1 TR7 NOTE: The 2.0 ppm Reference Standard Solution, *Part No. 486602*, is only valid for verifying the performance of the eXact® Micro 7+ Photometer, *Part No. 486691*.

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: TR7**

Press and re-press the **MENU** button until the display shows the parameter **TR7**.

3 **RINSE AND FILL CELL WITH DISTILLED OR DEIONIZED WATER**

Rinse the **CELL** at least 3 times with distilled or deionized water - rinsing minimizes the potential for cross-contamination from a previous test. Finally, fill cell to capacity (4ml) with the distilled or deionized water.

4 **ZERO METER**

Press the **ZERO/ON** button. The cursor will move across the display followed by **100 %T**. Press the **READ** button. After 20 second countdown, the cursor will move across the display followed by **100 %T**. If result is not **100 %T**, repeat Step 4 by pressing the **ZERO/ON** button again. Press **READ**. If result is **100 %T**, meter is ready for standard testing. Discard water from cell. Gently shake the meter to remove any excess water. **NOTE:** This step is very important for accurate verification of photometer performance.

5 **FILL CELL WITH 2.0 PPM REFERENCE STANDARD SOLUTION**

Fill cell to capacity (4ml) with the ***2.0 ppm Reference Standard Solution, Part No. 486602***. Discard this sample and refill the CELL with fresh 2.0 ppm Reference Standard Solution.

6 **PRESS "READ"**

Press **READ**, to start the **20 SECOND** countdown timer. After 20 seconds, the cursor will move across the display while the meter prepares to measure the sample. Record the displayed result below (this result is automatically stored in TR7). Do not discard solution. Continue with Step 7.

7 **REPEAT STEP 6 ABOVE FOR CL1 MENU**

Press and re-press **MENU** button until CL1 appears on the display. Press **READ** and, after 20 seconds, record result displayed below. The result should fall within the Certified Value range listed on the 2.0 Reference Standard. After meter performance verification is complete, immediately empty the cell and rinse it with clean water.

Serial Number of Meter for Data below_____ (see back of meter)

Date of meter purchase_____ (warranty valid for 5 years)

DATE	TR7	CL1	DATE	TR7	CL1

eXact® Micro 7+ Tips For Best Accuracy

1. Become familiar with the meter and the different tests by reading the instructions carefully.
2. The DPD-1 & DPD-4 strips supply enough reagent for accurate results at room temperature. If samples are below 60°F (15°C) the 20 second strip dip time will give low results for chlorine values above 4 ppm. For cold samples, best results are obtained when a 40 second dip time is used (Dip one strip for two (2) twenty second periods).
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, Bromine, Ozone, etc...
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 eXact® Strip Micro 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 deionized or distilled water for rinsing if you have a limited sample*).
10. Store the meter and all test materials out of direct sunlight and away from chemical storage areas.
11. Minimize exposure of meter and test reagents to heat 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 or DPD-4 test, rinsing is very important to remove residual KI, which may interfere.
14. Each eXact® Strip Micro 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 eXact® Strip Micro contains the quantity of strips notated on the bottle. Due 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. Each conversion table supplied has a unique revision number located in the bottom right corner of the chart. It is recommended that you visit www.sensafe.com at least every 6 months to check for any updated revisions.
17. Tests are calibrated at 75°F +/- 2°F (24°C +/- 1°C). If water sample is 60°F (15°C) or cooler, most tests like Copper, Manganese, Nitrate, and Nitrite may require additional time for full chemical development. At the end of the normal test procedure, press **READ** again and compare value after this countdown. 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.
18. The eXact® Micro 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 eXact® Micro strips or reagents (reorder information on page 35).
19. Normally the mixing cap is used for tests like Cyanuric Acid, Fluoride, Iron, and Manganese. 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.
20. Our lab testing with the Micro 7+ meter has shown that zeroing and measuring of the sample does not require any cell cover for accurate results, even in full sunlight.
21. Remove batteries when meter is not used for more than a month.
22. 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.

eXact® Micro 7+ Meter Messages

The following are some common messages that may be displayed, including error messages. If an error message other than those listed below is displayed, please contact technical support in the USA at (803) 329-0162 (ext. 0).

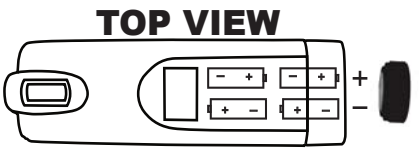
LCD Message	Description	Corrective Action
HI	In READ mode: test sample concentration is above the measurement range (test specific).	Dilute and retest. Dilution Kit available (Part Number 487200).
LO	In READ mode: test sample concentration is below the measurement range (test specific).	Sample value is below measurement range.
LO	In ZERO mode: sample absorbance (due to a cloudy or colored sample or a dirty cell) is too high to zero, the meter will read “LO”.	Dilute sample, filter sample, or clean cell. One of these options should remedy the problem.
ER	Excessive stray light detected. Normally this does not occur, even when testing in sunlight.	Place the LIGHT BLOCKING CAP over the CELL for zeroing and for reading result. Moving to a shaded area can also fix this problem.
+ –	Low battery indication.	Replace the batteries.

About The Built-In Cell

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 blank when you press the **ZERO/ON** 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).

To Install/Replace “AAA” Batteries:

1. Unscrew the O-ring sealed battery cover counter-clockwise. Use proper sized pliers if necessary. 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 to tighten the cover securely. This is necessary for meter to be waterproof.
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. Meter will not work if battery orientation is incorrect.



eXact® Photometer 5-Year Limited Warranty

Registration of your eXact® photometer must be received within 30 days from date of purchase to activate the warranty. The eXact® photometer is warranted to be free from defects in materials and workmanship for a period of five (5) years from the date of purchase by the customer. ITS will repair or replace any part of the product which is deemed to be faulty or otherwise defective. The non-transferable warranty does not cover product damage caused by abuse (such as crushing a tablet in the cell) or improper use. If the meter is faulty or otherwise defective contact ITS by phone (+1-803-329-9712 Ext. 0) or email (its@sensafe.com) to describe the problem and obtain a return authorization form before returning the photometer to ITS. Damage caused by improper packing of the photometer for return shipment to ITS will not be covered by the warranty. Customer is responsible for shipping charges to ITS. ITS pays postage when photometer is returned to customer. A maximum processing fee of $75 will be charged for repair or replacement of non-registered photometers and damages not covered by this warranty. Registration is available over the phone (+1-803-329-9712 Ext. 0) or online at http://www.sensafe.com/micro/warranty/ (Personal data is kept confidential)

eXact® Strip Micro 7+ Reagent Reorder Information

eXact® Strip Micro (4mL) Reagent Specifications - For use with eXact® Micro 7+, Part no. 486691

No.	PARAMETER	PART NO.	# OF TESTS	DETECTION RANGE	CHEMISTRY
	eXact® Micro Carrying Case w/ foam	486001	N/A	N/A	N/A
	Dilution Kit	487200	N/A	N/A	N/A
	Reference Standard	486602	15	N/A	N/A
1	Alkalinity, Total	486641	100	20 - 180 ppm	Alizarin Red S + Citrate
2	Bromine (DPD-1)	486637	100	0.01 - 9.0 ppm	DPD
3	Calcium (as $CaCO_3$)	486629	50	20 - 990 ppm	Oxalic Acid
4	Chlorine, Free (DPD-1)	486637	100	0.01 - 11.0 ppm	DPD
	Chlorine, Free (DPD-1)	484051	100 Foils	0.01 - 11.0 ppm	DPD
5	Chlorine, Total (DPD-3)**	486638	100	0.01 - 11.0 ppm	KI
6	Chlorine, Total (DPD-4)	486670	100	0.01 - 11.0 ppm	DPD + KI
	Chlorine, Total (DPD-4)	484054	100 Foils	0.01 - 11.0 ppm	DPD + KI
7	Copper (Cu^{+2})	486632	50	0.00 - 8.0 ppm	Biquinoline
8	Ozone (DPD-4)	486670	100	0.01 - 11.0 ppm	DPD + KI
9	Permanganate (DPD-1)	486637	100	0.01 - 4.5 ppm	DPD
10	pH	486639	100	6.2 - 8.4 pH	Phenol Red
11	Ammonia (as NH_3/NH_4^+)*	483343-M	25	0 - 7 ppm	Salicylate Method
12	Chloride (as NaCl)*	481657	25	3 - 285 ppm	Silver (ppt)
13	Chlorine Dioxide (DPD-1)*	486637	100	0.03 - 6.5 ppm	DPD
14	Chromate (Chromium)*	486614	50	0.02 - 4.89 ppm	Diphenylcarbazide
15	Cyanuric Acid*	481652	130	5 - 60 ppm	Melamine (ppt)
16	Fluoride (as F^-)*	486643	25	0.1 - 1.1 ppm	SPADNS
17	Hydrazine*	486649	50	0 - 2.5 ppm	4-Dimethylaminocinnamaldehyde
18	Hydrogen Peroxide LR*	486616	50	0.01 - 4 ppm	DPD + PO_4 + MoO_4 + KI
19	Hydrogen Peroxide MR*	486648	50	0 - 42 ppm	DPD + MoO_4 + KI + acid
20	Hydrogen Peroxide HR (DPD-4)*	486670	100	0 - 2100 ppm	DPD + KI
21	Iodine (DPD-1)*	486637	100	0.00 - 11.9 ppm	DPD
22	Iron, Ferrous (Fe^{+2})*	486631	50	0.03 - 3.8 ppm	TPTZ
23	Total Iron, TPTZ (Fe^{+2}/Fe^{+3})*	486650	50	0.03 - 3.8 ppm	TPTZ + PP
24	Total Iron, Ferro (Fe^{+2}/Fe^{+3})*	481623	50	0.15 - 3.5 ppm	1,10 Phenanthroline
25	LR Total Hardness (as $CaCO_3$)*	486630	100	2 - 77 ppm	Phthalein Purple
26	Magnesium (as Mg^{+2})*	486647	50	0 - 130 ppm	Ammonium Phosphate (ppt)
27	Manganese (as Mn^{+2})*	486606	24	0.03 - 1.5 ppm	PAN + Cyanide
28	Molybdate (as MoO_4)*	486653	50	0.04 - 2.3 ppm	Alizarin Red S + Buffer
29	Nitrate (as NO_3^-)*	486617	50	13 - 140 ppm	Zinc Reduction
30	Nitrite (as NO_2^{-2})*	486623	50	0.05 - 3.5 ppm	Chromotropic Acid
31	Peracetic Acid (PAA) (DPD-4)*	486670	100	0 - 4 ppm	DPD + KI
32	pH, Acid*	486624	50	3.0 - 6.2 pH	Alizarin Red S
33	pH, Alkali*	486609	50	8.3 - 9.6 pH	Thymol Blue
34	pH, BT*	486652	100	5.9 - 9.0 pH	Bromothymol Blue and Thymol Blue
35	Phosphate*	486814	50	0.03 - 4.00 ppm	Molybdate Method
36	Potassium (as K^+)*	486621	50	3.1 - 11.8 ppm	Tetraphenylborate
37	Protein (as BSA)*	486620	50	0.3 - 16.0 mg/L	Sulfosalicylic Acid
38	Sulfate (as SO_4^{-2})*	486608	50	0 - 150 ppm	Barium (ppt)
39	Sulfide (as H_2S)*	486646	50	0.1 - 13 ppm	NPS
40	Turbidity* (as transmission)	None	No Reagent	3 - 580 NTU	Turbidity values as NTU

* Results utilize the Tr-7 (Transmission) meter function and require the use of a conversion table. See respective test procedures for more information and tables.
** Total Chlorine DPD-3 Test requires Free Chlorine DPD-1 (486637) to be run first.

NOTE: Because most of our products are test strips or use reagents that have little or no hazard in the quantity sold, MSDS sheets are not supplied with the test. The exceptions are the Manganese (486606) test, which comes with 2 strips and one liquid reagent (PAN); Fluoride (486643) test, which is a liquid reagent (SPADNS), and Iron (481623) test, which is a powder reagent. Hydrazine (486649) uses a liquid and strip.

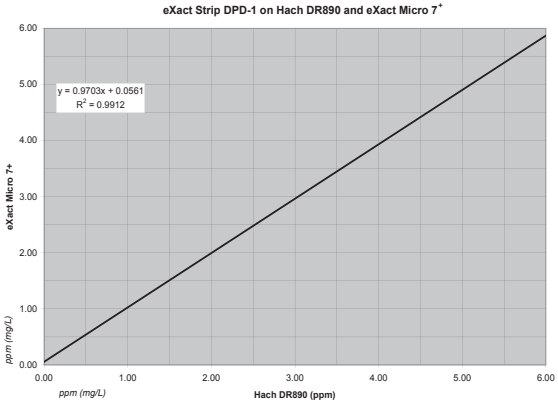
If your required procedure is not listed in this manual, please see the back page for our contact information.

To ensure optimal performance, store your eXact® kit in a cool, dry place away from excess heat (below 100°F / 38°C), moisture, and oxidizers such as Chlorine and Bromine.

eXact® Strip Micro DPD-1 Accuracy

Free Chlorine results are compared using the ***eXact® Strip Micro CL (DPD-1)*** with the eXact® Micro 7+ Meter in Menu CL1 and Hach® DR890 Colorimeter in Program 9 and Program 12 using Hach® powder pillows.

DR890	Micro 7+
0.00	0.01
0.04	0.03
0.07	0.08
0.79	0.73
0.98	0.96
1.55	1.52
2.08	2.12
2.4	2.6
2.9	3.3
4.0	3.9
5.5	5.2



Meter	Menu	Range (PPM)	Resolution
Micro 7+	CL1	0.00 to 2.39	0.01
		2.4 to 6.0	0.1
DR890	Program 9	0.00 to 2.20	0.01
	Program 12	0.0 to 11.0	0.1

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The eXact® Micro 7+ Line of Kits

(486691-K) Standard Kit Includes:

1 eXact® Micro 7+ Meter *(486691)*
eXact® Strip Micro DPD-1 *(486637-25)*
eXact® Strip Micro DPD-3 *(486638-25)*
eXact® Strip Micro pH *(486639-25)*
eXact® Strip Micro Total Alkalinity *(486641-25)*
eXact® Strip Micro Calcium Hardness *(486629-25)*
eXact® Strip Micro Copper *(486632-25)*
1 Mixing Cap
1 Cell Cleaning Brush
This Instruction Booklet
Plastic Carrying Case

(486691-KP) Pool/Spa Kit Includes:

1 eXact® Micro 7+ Meter *(486691)*
eXact® Strip Micro DPD-1 *(486637-25)*
eXact® Strip Micro DPD-3 *(486638-25)*
eXact® Strip Micro pH *(486639-25)*
eXact® Strip Micro Total Alkalinity *(486641-25)*
eXact® Strip Micro Calcium Hardness *(486629-25)*
eXact® Strip Micro Copper *(486632-25)*
eXact® Reagent Cyanuric Acid *(481652)*
1 Mixing Cap
1 Cell Cleaning Brush
This Instruction Booklet
Plastic Carrying Case

(486691-WD) Well Driller Kit Includes:

1 eXact® Micro 7+ Meter *(486691)*
eXact® Strip Micro DPD-1 *(486637-25)*
eXact® Strip Micro DPD-3 *(486638-25)*
eXact® Strip Micro pH *(486639-25)*
eXact® Strip Micro Total Alkalinity *(486641-25)*
eXact® Strip Micro Calcium Hardness *(486629-25)*
eXact® Strip Micro Copper *(486632-25)*
eXact® Micro TPTZ Total Iron *(486650)*
eXact® Micro Manganese *(486606)*
1 Mixing Cap
1 Cell Cleaning Brush
This Instruction Booklet
Plastic Carrying Case

(486691-AQ) Pond/Aquarium Kit Includes:

1 eXact® Micro 7+ Meter *(486691)*
eXact® Strip Micro DPD-1 *(486637-25)*
eXact® Strip Micro DPD-3 *(486638-25)*
eXact® Strip Micro pH *(486639-25)*
eXact® Strip Micro Total Alkalinity *(486641-25)*
eXact® Strip Micro Calcium Hardness *(486629-25)*
eXact® Strip Micro Copper *(486632-25)*
eXact® Strip Micro Nitrite *(486623-25)*
eXact® Strip Micro Nitrate *(486617-25)*
eXact® Strip Micro Ammonia *(483343-M)*
1 Mixing Cap
1 Cell Cleaning Brush
This Instruction Booklet
Plastic Carrying Case

Contact Information

camlab
Camlab Limited, Camlab House, Norman Way, Over, Cambs.
Tel: 01954 233110 • Fax: 01954 233101
email: sales@camlab.co.uk • www.camlab.co.uk