

# Digital pH, Conductivity, and Temperature Tester

## Operating Manual



### PREFACE

Material in this manual is subject to change without notice. Manual revisions will be made on an as needed basis. Special circumstances involving important design, operation or application information will be released via Technical Service Bulletins.

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### PARAMETERS

#### CONDUCTANCE

##### 4 Ranges

- 0 to 20 micromhos
- 0 to 200 micromhos
- 0 to 2,000 micromhos
- 0 to 20,000 micromhos

Integral sample cup

Accessible internal calibration potentiometer

Standard solution available: 500 ml bottle of 0.01 molar potassium chloride 1413 micromhos @ 77° F (25° C)

#### pH

- 0 to 14 range
- Slope and zero adjustments on face of unit
- External electrode (purchased separately)
- Buffer solution kit available, includes: Buffer solutions, 4, 7 and 10 pH; and Bottle of (distilled) water for rinse

#### TEMPERATURE

0 to 160° F (2.5 to 70° C)

Integral sample cup

#### ACCURACY

Conductivity  $\pm 2\%$  full scale at 77° F (25° C)

Temperature  $\pm 2^\circ$  F (1° C)

pH units at 77° F (25° C)

### OPERATING INSTRUCTIONS

1. Rinse the inside of sample cup with liquid to be measured. (This is especially important if samples with a wide range of conductivity or pH are to be measured.)
2. Fill sample cup. (See Figure 1).

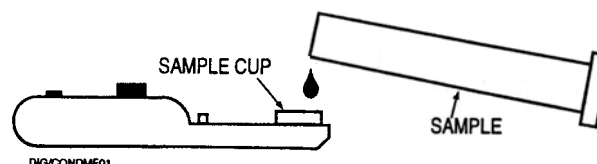


Figure 1



The main body is not waterproof (Do not subject unit to splashing water!)



Unit designed for aqueous solutions only!

3. Fill sample cup at least 2/3 full. If the sample is hot boiler water, allow to cool to 160° F or below.
4. Slide the right hand function switch to "TEMP" and push the "READ" button. If temperature reading is not stable, empty and refill cup several times to bring cup and sample to the same temperature.
5. Read the temperature on the digital display panel and adjust both temperature compensation knobs accordingly.
6. If the approximate conductance is known, slide the left hand range selector switch to the proper range.  
Example: If you expect the sample to be around 2000 micromhos, slide the left hand selector switch to x1000.
7. Slide the right hand function switch to "COND" and push the "READ" button.
8. Multiply the digital display reading by the factor indicated by the position of the left hand range switch to determine conductance.

Example: A display reading of 1.00 with the left hand range selector switch indicating x1000 is: 1.00 x 1000 or 1000 micromhos.



If a single "1" appears on the left hand side of the digital display, the sample conductance is higher than the selected range. Slide the left hand (range) selector switch in one step intervals until a 3 or 4 digit display appears.



Conversely, if a decimal display appears (such as 0.11) move the range selector switch to the left until a 3 or 4 digit number, 1.00 or larger, appears on the display. This puts the unit in a range affording the best accuracy.

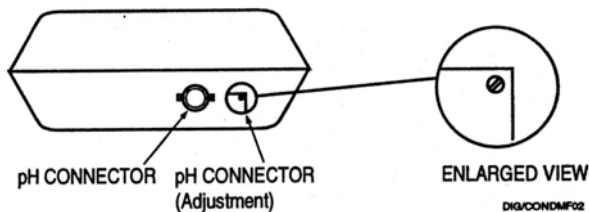


A single "1" always means that the conductance is higher than the selected range.

9. Slide the right hand function selector switch to "pH".
10. Insert the pH cable connector onto the tester. Push on and twist clockwise.
11. Remove probe from storage solution bottle.
12. Place the pH electrode in the sample cup or any non-metallic container holding the remainder of the sample to be measured. If you use the tester's sample cup, you will have to hold the electrode.
13. Press the "READ" button: pH value will appear on the digital display.
14. Always obtain conductivity reading before placing pH probe in sample cup. pH probes tend to carry contamination over into the sample.



The main body is not waterproof.



(NOTE- Hole is normally covered by a black plug)

Figure 2. Conductivity Calibration, End View

## CALIBRATION

Temperature and conductance are factory calibrated. You may check conductance accuracy with a solution of known conductance and recalibrate, if necessary.

To recalibrate conductance, remove black plug revealing the adjustment potentiometer screw. Add standard solution to cup, discard and refill. Repeat procedure until the digital display indicates the same value twice in a row. Adjust the potentiometer until the digital display indicates the known value of conductance. To increase the digital display reading, turn the adjustment potentiometer screw counterclockwise (clockwise to decrease). See Figure 2.

To standardize the pH electrode and meter, place the pH electrode in the 7.0 buffer bottle. Adjust the "ZERO"

potentiometer on the face of the tester so that the digital display indicates 7.00.

Place the pH electrode in the 4.0 or 10.0 buffer bottle (depending on where you expect the actual measurement to be). Adjust the "SLOPE" potentiometer on the face of the tester so that the digital display indicates the value of the buffer chosen.



There is interaction between the "ZERO" and "SLOPE" adjustments, so the procedure should be repeated several times.



Do not subject the pH electrode to freezing temperatures!

It is good practice to rinse the electrode in distilled water when going from one buffer to another. When not in use, the electrode should be kept wet in the storage bottle.

## MAINTENANCE

### BATTERY REPLACEMENT

The battery is located behind the snap-off cover on the bottom of the tester. Use a small tool to pop out the cover. Replace battery with a 9 volt; an alkaline battery such as Duracell MN 1604. Replace the battery whenever "LO BAT" appears on the display.

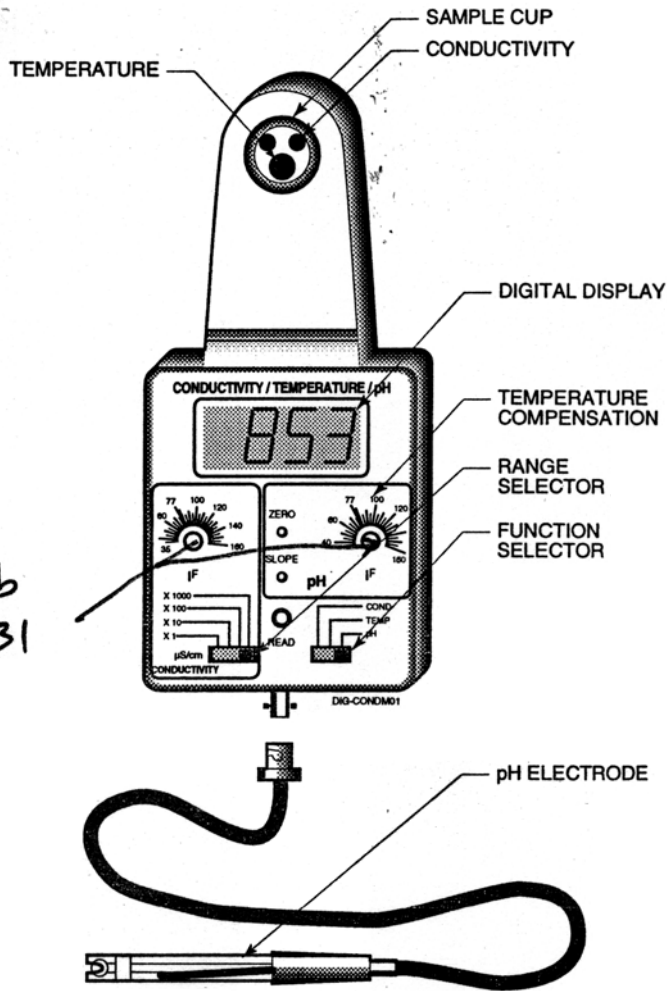
### SAMPLE CUP

The carbon electrodes in the cup may be cleaned with a mild abrasive, 400 grit or finer on the end of the flat surface.



To avoid ever having to resort to harsher methods of cleaning, when rinsing cup out with liquid to be measured, wipe cup with paper towel or Kleenex and rinse again.

Wipe cup after every sample and rinse with tap water when possible.



## SPARE PARTS

### Item N° Description

- 033538 Tester with case including battery, probe and buffer solution
- 015235 Tester with case including battery
- 028306 pH electrode with BNC connector
- 031937 Standard Conductance Solution 1413 micromhos
- 028307 Buffer solution kit includes buffer solutions 4, 7 and 10 pH; also bottle of (distilled) water for rinse.



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