INTRODUCTION
This guide explains the calibration procedures for the pHoenix Meter. See the User Guide for reference information.

The Level 1 Calibration covers the mid-range conductivity and pH functions. Use a conductivity standard solution whose value is closest to the solutions you will be measuring (10 to 18 mS/cm), and 7.00 pH buffer solution.

Additional materials required: TRI-STATION (or a clean, 100 ml container), sampling tube, calibration labels.

The Level 2 Calibration is used for adjusting the gain of the pH circuit and adjusting for differences in the low and high conductivity ranges. Mid-range conductivity cannot be adjusted in level 2. If attempted, an “E” symbol will be displayed. A complete calibration includes level 1 and level 2 and should be performed at least monthly by a designated technician.

Throughout this guide, instrument switches will be enclosed in [brackets]. Display symbols will be enclosed in “quotations.”

Meters should be checked daily for accuracy. Calibrate as needed.

USE THE PROPER LABORATORY STANDARD
For verification of accurate conductivity and pH function, use a conductivity standard solution and pH buffer solution traceable to the National Institute of Standards and Technology (NIST) or an equivalent standards organization. Use sodium chloride (NaCl) conductivity standard solution. Using other solutions may result in inaccurate calibration.

CALIBRATION METHODS
When using conductivity standard and pH buffer solutions, first rinse a clean container with the solution being used. Discard the rinse solution. Pour fresh solution into the rinsed container. Measurements should be taken immediately after pouring—evaporation could cause errors.

Connect a clean sampling tube to the distal port of the meter. Insert the end of the tube into the solution. Flush first, then draw solution through the cell and take the reading.

After calibration, rinse the cell and syringe interior by drawing water through the cell, filling the syringe. Expel and repeat. At the end of the day, draw NEO-CARE into the syringe 2-3 times. Disconnect the meter from the NEO-CARE solution and draw the syringe halfway back pulling air into the cell and then cap the sample port. Place your meter in the instrument holder rack for overnight storage.

SERVICE AND SUPPORT
Mesa Laboratories, Inc. offers full repair and calibration service for the pHoenix Meter at its corporate headquarters in Lakewood, Colorado, USA and at authorized distributor locations throughout the world. Contact MESA LABS for further information.

- Telephone 1-800-992-6372
- Fax 1-303-987-8989
- E-mail medservice@mesalabs.com
- Website www.mesalabs.com
# Level 1 Calibration

**Materials needed**
- 14.0 mS conductivity standard solution or a value closest to the solutions you will be measuring
- 7.00 pH buffer solution
- TRI-STATION, or a clean 100 ml container and sampling tube
- Calibration label

**TASK**

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<td>To enter the Level 1 calibration mode</td>
<td>Press and hold the [MODE] switch until a flashing &quot;CAL&quot; symbol appears.</td>
<td>Within 3 seconds, press either arrow switch;</td>
<td>a steady &quot;CAL&quot; symbol will be displayed.</td>
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<tr>
<td>To adjust mid-range conductivity (2.0-19.9 mS)</td>
<td>Press the [MODE] switch until the conductivity function is displayed.</td>
<td>Initially flush solution through the cell, then draw a sample and observe the reading while it's flowing.</td>
<td>When the reading stabilizes, press the [UP] or [DOWN] switch to change the displayed value to match the solution value.</td>
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<tr>
<td>To adjust pH to 7.0</td>
<td>Press the [MODE] switch until the pH function is displayed.</td>
<td>Initially flush the 7.0 pH solution through the cell, then draw solution through the cell until the syringe is 1/3 to 1/2 full.</td>
<td>When the reading stabilizes, press the [UP] or [DOWN] switch once—the displayed value will automatically adjust to 7.0.</td>
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<tr>
<td>To perform Level 2 Calibration</td>
<td></td>
<td></td>
<td>Expel and discard the solution. Draw fresh solution to confirm the accuracy of the displayed reading. Repeat steps 2 and 3, if needed.</td>
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**LEVEL 2 CALIBRATION**

**Task**

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<tr>
<td>To enter the Level 2 calibration mode</td>
<td>Press and hold the [MODE] switch until the &quot;HOLD&quot; and &quot;CAL&quot; symbols appear (+5 seconds).</td>
<td>NOTE: A quick press of the [MODE] switch will alternate between the functions to be calibrated.</td>
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<tr>
<td>To adjust pH to 4.0 and 10.0</td>
<td>Press the [MODE] switch until the pH function is displayed.</td>
<td>Using 4.00 (10.00) solution, initially flush through the cell, then draw solution until the syringe is 1/3 to 1/2 full.</td>
<td>When the reading stabilizes, press the [UP] or [DOWN] switch once—the displayed value will automatically adjust to 4.0 (10).</td>
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<tr>
<td>To adjust the low and high conductivity ranges (10-199 mS)</td>
<td>Press the [MODE] switch until the conductivity function is displayed.</td>
<td>Using 1mS (100 mS) solution, initially flush through the cell, then, observe the reading while drawing solution through the cell.</td>
<td>Expel the solution and discard. Draw fresh solution to confirm the accuracy of the displayed reading. Repeat steps 2 and 3 if needed.</td>
</tr>
<tr>
<td>To exit calibration mode</td>
<td>Press and hold the [MODE] switch until the &quot;CAL&quot; symbol disappears.</td>
<td>NOTE: The display will show &quot;C1&quot; then &quot;C2&quot; to confirm that new calibration values were correctly saved. If the display shows &quot;ER&quot;, the values were not saved. In that event, contact MESA LABS or your local distributor.</td>
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**Resetting Factory Default Values**

1. Enter Level 2 Calibration mode.
2. Press the [MODE] switch and both of the [UP] and [DOWN] switches on the back of the unit simultaneously. On the display, you should see a single digit in the pH area, "CAL" in the upper right, and two digits in the conductivity area.
3. Repeat step 2, ensuring that all three switches are pushed at the same time. This causes the values to be reset to the factory defaults. The display should read "C1" then "C2" as it resets the values.
4. The meter has now been reset to known nominal values.

**CAUTION:** Resetting factory default values requires complete recalibration for all ranges and modes.