

PH-2

pH Meter

Operator's Manual



Newport Electronics, Inc.

Additional products from



Newport Electronics, Inc.

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Or call your local Newport Office.

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This product may be covered by one or more
of the following patents:

United States Patents Des. 336,895; 5,274,577

France Brevet No. 91 12756

Spain 2039150

United Kingdom Patent No. 2248954

and other international patents pending

From the technical library of:

Warranty

All Products from NEWPORT ELECTRONICS, INC. are warranted against defective material and workmanship for a period of one (1) year from the date of delivery.

If the unit should malfunction, it must be returned to the factory for evaluation. NEWPORT's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by Newport, if the unit is found to be defective it will be repaired or replaced at no charge. However, this WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of being damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of NEWPORT's control. Components which wear or which are damaged by misuse are not warranted. These include contact points, fuses, and triacs.

In addition to NEWPORT's standard warranty period, NEWPORT ELECTRONICS will extend the warranty period for one (1) additional year only if the warranty card enclosed with each instrument is returned to NEWPORT.

Newport is glad to offer suggestions on the use of its various products. Nevertheless, NEWPORT warrants only that the parts manufactured by it will be as specified and free of defects. NEWPORT MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIMITATION OF LIABILITY: The remedies of purchaser set forth herein are exclusive and the total liability of NEWPORT with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the component upon which liability is based. In no event shall NEWPORT be liable for consequential, incidental or special damages.

Every precaution for accuracy has been taken in the preparation of this manual; however, NEWPORT neither assumes responsibility for any omissions or errors that may appear nor assumes liability for any damages that result from the use of the products in accordance with the information contained in the manual.

SPECIAL CONDITIONS: Should this equipment be used in any nuclear installation or activity, purchaser will indemnify NEWPORT and hold NEWPORT harmless from any liability or damage whatsoever arising out of the use of the equipment in such a manner.

Return Requests

Direct all warranty and repair requests/inquiries to the NEWPORT Customer Service Department. BEFORE RETURNING ANY PRODUCTS(S) TO NEWPORT, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM NEWPORT'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit. NEWPORT's warranty does not apply to defects resulting from action of the buyer, mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting NEWPORT:

1. P.O. number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult NEWPORT for current repair charges. Have the following information available BEFORE contacting NEWPORT:

1. P.O. number to cover the COST of the repair,
2. Model and serial number of product, and
3. Repair instructions and/or specific problems relative to the product.

For technical or application assistance please call:

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Unpacking

Remove the Packing List and verify that you have received all equipment, including the following (quantities in parentheses):.

- 1 soft carrying case
- 1 9V alkaline battery
- 1 bottle of buffer solution (pH 7.00)
- 1 Operator's Manual

The carrying case contains the following:

- 1 small screwdriver
- 1 PH-2 Meter.

If you have any questions about the shipment, please call the OMEGA Customer Service Department.

When you receive the shipment, inspect the container and equipment for signs of damage. Note any evidence of rough handling in transit. Immediately report any damage to the shipping agent.



NOTE

The carrier will not honor damage claims unless all shipping material is saved for inspection. After examining and removing contents, save packing material and carton in the event reshipment is necessary.



General Description

The NEWPORT® PH-2 meter is an ideal pH meter for general purpose measurements in the plant, production line or lab. The unit has a 3¹/₂" digit LCD display that gives a 0.01 pH resolution. The PH-2 meter is supplied with electrode, screwdriver, pH 7 buffer and vinyl case. An optional item for this meter are the replacement pH electrodes - NEWPORT part numbers PHE-8100/N and PHE-8136/N.

Parts of the Meter

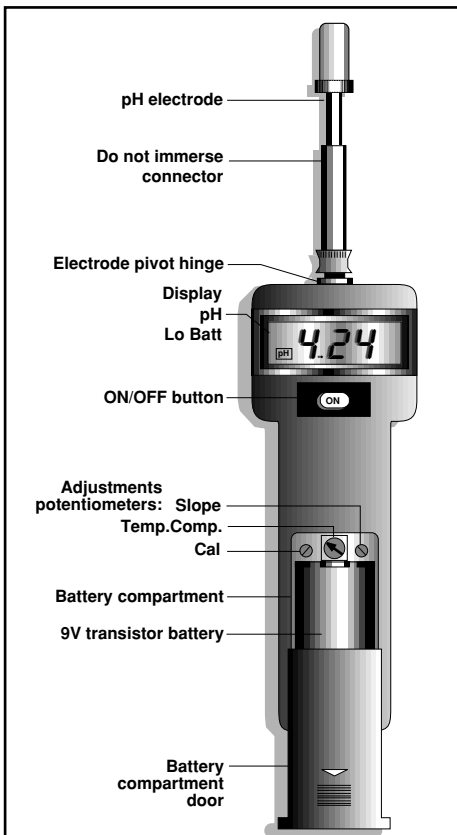


Figure 1. Parts of the Meter



Setting up the Meter

Installing the Battery (Fig 2)

Carefully remove the meter from the carrying case making sure you don't lose the small screwdriver and detergent in a small plastic bag.

To install/change the battery, do the following:

1. Insert your thumb in the recessed area of the battery compartment door and pull it away from the display.
2. Snap the 9V alkaline battery into the battery clip.
3. Place the battery clip/battery assembly at the top of the battery compartment.
3. Replace the battery compartment door and snap into place.

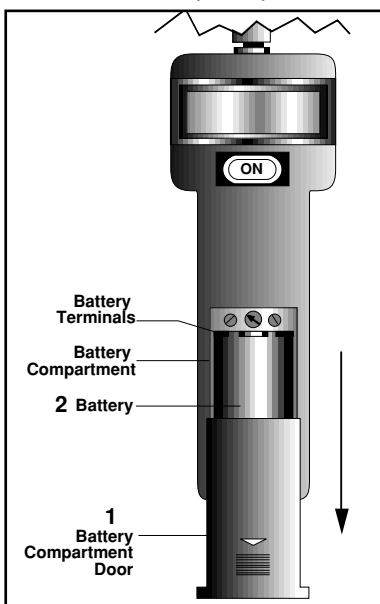


Figure 2. Installing the Battery



Operating Instructions

When you are ready to take your measurement(s), you must first remove the protective bottle. The pH electrode has the soaker bottle in place to protect the glass bulb from contamination and to prevent the electrode from drying out.

1. Hold part of the electrode shaft and the white cap with one hand, with thumb and forefinger of the other hand loosen the bottle a couple of turns and slide the bottle and cap off carefully.
2. Slide the battery compartment door open to the first stop and locate the TEMPCO (Temperature Compensation) screw.
3. Adjust the TEMPCO screw to the approximate temperature of the solution to be measured and close the battery compartment door.
4. Insert the pH probe into the test sample.

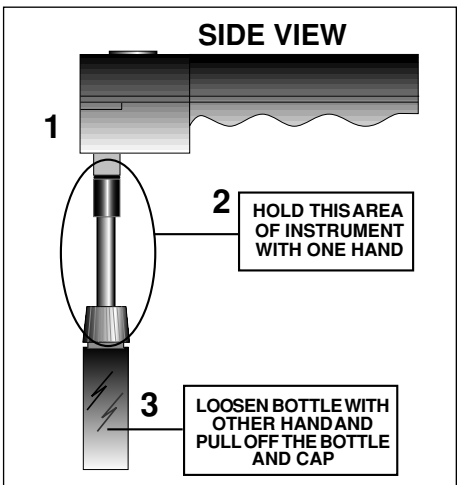


Figure 3. How to Loosen Bottle



PH-2 pH Meter

5. Press the ON button and hold to observe the pH reading. Allow 10 to 15 seconds for the reading to stabilize.
6. Remove the pH electrode and rinse thoroughly.
7. Replace the protective plastic bottle or the vinyl storage cap. Make sure the bottle or cap is filled with pH 4 buffer solution (preferably) or tap water.

Operating Tips

1. pH electrode should be rinsed thoroughly in tap water after each test.
2. Make sure to keep the electrode in the plastic bottle between uses.
3. Keep these storage devices filled with 4 buffer (preferably) or tap water. **DO NOT USE DISTILLED WATER.**
4. Remove battery if the pH meter will not be used for an extended period of time.
5. For best results, perform a two-point calibration using two buffers. One should always be a pH 7.00 buffer and the second buffer being used would depend on the application. (Buffer pH 4 for acidic solutions and Buffer pH 10 for basic solutions).
6. Do not immerse electrode in pH 10 buffer except when necessary for calibration.



Calibrating the Meter

The meter is factory calibrated prior to shipping. However, since the electrode outputs change with age and condition it is important to calibrate with fresh pH buffers. For best results, calibrate pH with a buffer that is within 3 pH units of the test sample.

1. Rinse the pH electrode in tap water.
2. Insert pH electrode in a fresh pH buffer solution.
3. Slide back the battery compartment door to the first stop, exposing the adjustment screws.
4. Measure the temperature of the buffer solution.
5. Adjust the TEMPCO screw to the corresponding temperature value.
6. Observe the pH reading and adjust the "Cal" screw to pH 7 if required.
7. Remove pH electrode and rinse in distilled water.
8. Insert in a pH 4 if measuring an acid solution, or pH 10 buffer if measuring an alkaline solution.
9. Adjust the slope screw until the measurement value corresponds with the pH 4 or pH 10 buffer.



pH Electrode Care

The pH Electrode supplied with the NEWPORT model PH-2 pH meter uses the industry standard BNC type connector. In addition to the "stick" electrode which comes standard with the meter, NEWPORT offers an electrode on a 36" cable which is ideal for table-top applications.

The PH-2 pH meter can also be used with hundreds of special purpose pH electrodes available from NEWPORT.

PH Electrodes must be kept moist. The pH electrode was shipped stored in a soaker storage bottle or vinyl cap, depending on model. The storage solution contained in the bottle is a potassium chloride solution. Do not be alarmed if white crystals form at the end of the electrode. It is simply potassium chloride. Rinse with water to dissolve the crystals before using the electrode.

For storage, place the electrode back in the soaker bottle. If the potassium chloride solution evaporates or is lost, simply use pH buffer 4.0 or pH buffer 7.0 supplied for storage. DO NOT use distilled or deionized water as this will drastically reduce the electrode lifespan.

If the pH electrode should dry out, soak the electrode up to 2 hours in pH buffer 4.0 solution. If the electrode is left dry for an extended period of time, rinse in a 10% HCl solution for 10 seconds. Rinse with tap water and store in a KCl solution overnight. This may regenerate the pH electrode.



pH Electrode Replacement

Even with the best of care, pH Electrodes do not last forever. As with batteries or light bulbs, exactly how long a pH Electrode will provide satisfactory performance depends largely on each user's application as well as the care taken in use and storage.

Inaccurate or unstable pH readings, drift, slow response, and difficulty in calibration are usually indications that the pH electrode has exceeded its useful life.

Replacement electrodes are available from NEWPORT Engineering. (Part number PHE-8100/N and PHE-8136/N.)

Tilt Stand

The vinyl coated wire tilt stand folds flat against the meter handle, or can be completely removed and later snapped back in place. It is particularly useful for benchtop applications with electrode cable extensions.



PH-2 pH Meter

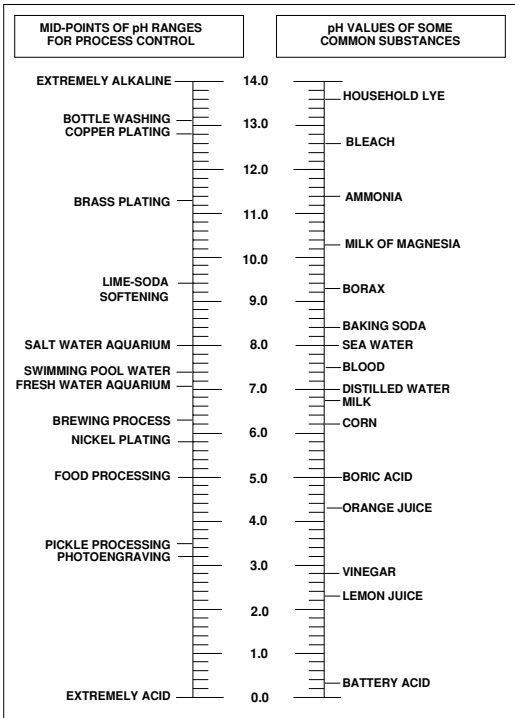


Table of pH Values Common Industrial and Household products

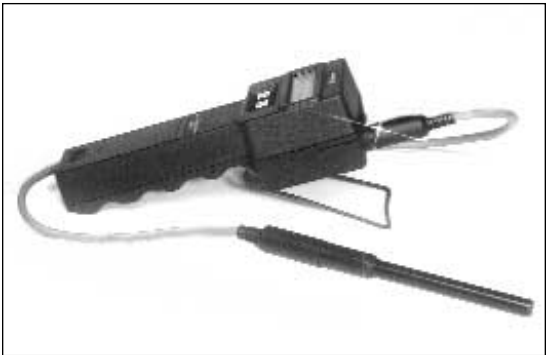


Specifications

Range:	0 to 14.00 pH
Resolution:	0.01 pH
Accuracy:	±0.2 pH
Temperature Compensation:	Manual 0 to 100°C
Power:	9V battery

Accessories

PHE-8100/N	Replacement pH stick electrode
PHE-8136/N	pH extension cable, triaxial connector





PHH-81A
pH Meter

NOTES