



Beetrode[®] pH Electrodes

Super-miniature, super-fast coated wire pH electrodes with 100-micron sensing tips – ideal for monitoring fast pH changes in very small places

A solid state pH sensor with ideal characteristics over a wide pH range. Exhibits a larger E_0 than conventional glass electrodes. Requires a separate reference electrode such as WPI's **Dri-Ref** Series.

Beetrodes (except the NMPH2) hook up to your pH meter with a cable terminating in a BNC connector.

Beetrodes generate mV readings on standard pH meters. For use with WPI electrometers, such as the **FD223**, no special connector is needed. To obtain pH-scale readings on standard pH meters, use **BEE-CAL™**, a small, battery-operated compensator which adjusts the electrode

offset potential so that Beetrodes will produce standard pH-scale readings.

Instructions

The tip of the Beetrode pH sensor should be soaked in distilled water for several hours

prior to use. Avoid wetting or immersing the electrical connector.

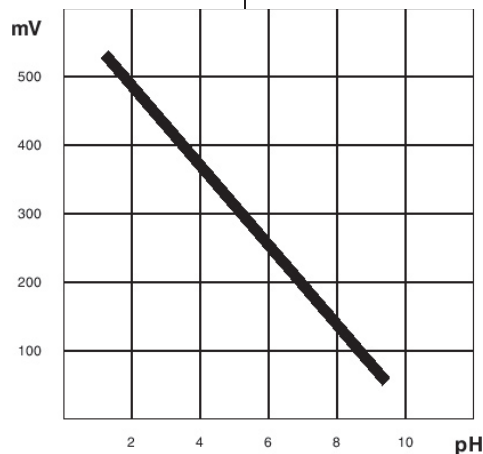
Using a reference electrode, calibrate the electrode in known pH buffers with your pH meter in the millivolt mode. The process is similar to that required for standard pH glass and other ion specific electrodes. A Nernstian plot as shown at left should be obtained.

Once calibrated this electrode is ready for use. Electrode calibration should be checked routinely; baseline drift may occur as the electrode ages. Never connect the Beetrode directly to the reference electrode.

Specifications

Tip Diameter	100 μ (0.1 mm)
Tip Length	2 mm (approx.), except 5 mm (approx.) on MEPH5
Response Time	1 sec (90%) typical
pH Range	0-14
Slope	Nernstian
Resistance	100 k Ω (max)
Selectivity	No significant interference by K ⁺ , Na ⁺ , Ca ⁺⁺ in 0.1 to 1 M solutions.

Cannot be used in blood or highly reducing or oxidizing solutions.



NMPH1*	Beetrode—2 mm sensor, 2 mm receptacle
NMPH2	Beetrode with cable—2 mm OD (1 m cable terminates in bare wire)
NMPH2B	Beetrode w/ BNC cable, 2.0 mm OD, 1 m cable
NMPH2LF	Beetrode, Luer-tip, with 1 m cable (unterminated)
NMPH3*	Dental Beetrode, 45° Bend, 2 mm receptacle
NMPH3L*	Dental Beetrode w/ 2 mm loop, 2 mm receptacle
NMPH5*	Beetrode, 5 mm sensor, 2 mm receptacle
BEECAL	Beetrode Offset & Cable (BNC)
3508	BNC-to-US Standard Adapter
1358	BNC-to-2 mm Pin Adapter

**Requires BEE-CAL or 1358 BNC-to-2mm Pin Cable (4-ft) for connection to a pH meter.*



Beetrode® pH Electrodes

Warranty

WPI (World Precision Instruments, Inc.) warrants to the original purchaser that this equipment, including its components and parts, shall be free from defects in material and workmanship for a period of 30 days from the date of receipt. WPI's obligation under this warranty shall be limited to repair or replacement, at WPI's option, of the equipment or defective components or parts upon receipt thereof f.o.b. WPI, Sarasota, Florida U.S.A. Return of a repaired instrument shall be f.o.b. Sarasota.

The above warranty is contingent upon normal usage and does not cover products which have been modified without WPI's approval or which have been subjected to unusual physical or electrical stress or on which the original identification marks have been removed or altered. The above warranty will not apply if adjustment, repair or parts replacement is required because of accident, neglect, misuse, failure of electric power, air conditioning, humidity control, or causes other than normal and ordinary usage.

To the extent that any of its equipment is furnished by a manufacturer other than WPI, the foregoing warranty shall be applicable only to the extent of the warranty furnished by such other manufacturer. This warranty will not apply to appearance terms, such as knobs, handles, dials or the like.

WPI makes no warranty of any kind, express or implied or statutory, including without limitation any warranties of merchantability and/or fitness for a particular purpose. WPI shall not be liable for any damages, whether direct, indirect, special or consequential arising from a failure of this product to operate in the manner desired by the user. WPI shall not be liable for any damage to data or property that may be caused directly or indirectly by use of this product.

Claims and Returns

- Inspect all shipments upon receipt. Missing cartons or obvious damage to cartons should be noted on the delivery receipt before signing. Concealed loss or damage should be reported at once to the carrier and an inspection requested. All claims for shortage or damage must be made within 10 days after receipt of shipment. Claims for lost shipments must be made within 30 days of invoice or other notification of shipment. Please save damaged or pilfered cartons until claim settles. In some instances, photographic documentation may be required. Some items are time sensitive; WPI assumes no extended warranty or any liability for use beyond the date specified on the container.
- WPI cannot be held responsible for items damaged in shipment en route to us. Please enclose merchandise in its original shipping container to avoid damage from handling. We recommend that you insure merchandise when shipping. The customer is responsible for paying shipping expenses including adequate insurance on all items returned.
- Do not return any goods to WPI without obtaining prior approval and instructions (RMA#) from our returns department. Goods returned unauthorized or by collect freight may be refused. The RMA# must be clearly displayed on the outside of the box, or the package will not be accepted. Please contact the RMA department for a request form.
- Goods returned for repair must be reasonably clean and free of hazardous materials.
- A handling fee is charged for goods returned for exchange or credit. This fee may add up to 25% of the sale price depending on the condition of the item. Goods ordered in error are also subject to the handling fee.
- Equipment which was built as a special order cannot be returned.
- Always refer to the RMA# when contacting WPI to obtain a status of your returned item.
- For any other issues regarding a claim or return, please contact the RMA department

Warning: This equipment is not designed or intended for use on humans.

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