Go Direct® Flat pH BNC Electrode

(Order Code GDX-FPH-BNC)

The Go Direct Flat pH BNC Electrode is designed to be used with the Vernier Go Direct Electrode Amplifier (order code GDX-EA) to make measurements in the pH range of 0 to 14. Our Go Direct Flat pH BNC Electrode can be used for any lab or demonstration that can be done with a traditional pH meter, including acid-base titrations, monitoring pH in an aquarium, and investigating the water quality of streams and lakes.

Note: Vernier products are designed for educational use. Our products are not designed nor are they recommended for any industrial, medical, or commercial process such as life support, patient diagnosis, control of a manufacturing process, or industrial testing of any kind.

What's Included

- Go Direct Flat pH BNC Electrode
- Electrode Storage bottle, containing pH 4/KCl solution

Using the Product

To prepare the electrode to make pH measurements, follow this procedure:

1. Remove the storage bottle from the electrode by first unscrewing the lid and then removing the bottle and lid. Thoroughly rinse the lower section of the probe, especially the tip, using distilled or deionized water.
2. Connect the Go Direct Flat pH BNC Electrode to the Go Direct Electrode Amplifier. Push the BNC connector of the electrode onto the connector on the amplifier, then turn the BNC connector about one-half turn clockwise.
3. Connect the amplifier to your computer, Chromebook™, LabQuest 2 or newer, or mobile device and run the data-collection software.

When you are finished making measurements, rinse the electrode with distilled water. Slide the cap onto the electrode body. Screw the cap onto the storage bottle so the tip of the electrode is immersed in the storage solution. When the probe is not being stored in the storage bottle, it can be stored for short periods of time (up to 24 hours) in pH 4 or pH 7 buffer solution.

The electrode should never be stored in distilled water. It is a good idea to prepare a quantity of pH 4 buffer/KCl storage solution (see the section on Care and Maintenance) and use it to replace lost solution. **Note:** Do not completely submerge the sensor. The BNC connection is not waterproof.

Calibrating the Sensor

For many experiments, calibrating the pH sensor is not required.

For the most accurate measurements with this sensor, we recommend calibration. It is a simple process that takes only a few minutes. For additional calibration information, see **www.vernier.com/til/4011**

In order to calibrate a pH Electrode/Electrode Amplifier combination, or to confirm that a saved pH calibration is accurate, you should have a supply of pH buffer solutions that cover the range of the pH values you will be measuring. For more information about pH buffer solutions, including recipes for preparation, see **www.vernier.com/til/3625**

Specifications

Type	Sealed, gel-filled, polycarbonate body, Ag/AgCl, double-junction electrode
Temperature range	5 to 80°C (readings not compensated)
Range	pH 0–14
Accuracy	±0.2 pH units
Isopotential pH	pH 7 (point at which temperature has no effect)
Shaft diameter	12 mm OD

Care and Maintenance

Short-term storage (up to 24 hours): Place the electrode in pH 4 or pH 7 buffer solution.

Long-term storage (more than 24 hours): Store the electrode in a pH 4 buffer/KCl storage solution in the storage bottle. The pH electrode is shipped in this solution. Vernier sells 500 mL bottles of pH Storage Solution (order code PH-SS), or you can prepare additional storage solution by adding 10 g of solid potassium chloride (KCl) to 100 mL of pH 4 buffer solution. By storing the electrode in this solution, the reference portion of the electrode is kept moist. Keeping the reference junction moist contributes to electrode longevity and retains electrode response time when the unit is placed back into service. If the electrode is inadvertently stored dry, immerse the unit in pH 4 buffer/KCl storage solution for a minimum of eight hours prior to service.

Troubleshooting

When testing a Go Direct Flat pH BNC Electrode, it is best to measure a buffer solution because it is easier to determine if the sensor is reading correctly. Do not test your sensor by measuring distilled water. Distilled water can have a pH reading in the range of 5.5–7.0, due to varying amounts of dissolved carbon dioxide. Furthermore, due to a lack of ions, the pH values reported with the sensor in distilled water will be erratic.

If your electrode is reading differently from the pH of a buffer solution (e.g., reads 6.7 in a buffer 7), you may simply need to calibrate the sensor. See the Calibrating the Sensor section for more information.

If your readings are off by several pH values, the pH readings do not change when moved from one buffer solution to a buffer solution of different pH, the sensor was stored dry for an extended period of time, or the sensor's response seems slow, the problem may be more serious. A method called "shocking" can be used to revive pH electrodes. To shock your pH Sensor, perform the following:

1. Soak the pH electrode for 4–8 hours in an HCl solution of 0.1 M–0.5 M.
2. Rinse off the electrode and soak the tip in freshly prepared long term storage solution (recipe above) for 30–60 minutes.
3. Rinse the electrode and test it with buffer solutions of known pH.

Occasionally, mold will grow in the pH 4 buffer/storage solution. Mold will not harm the electrode and can easily be removed using a mild detergent solution. Mold growth in the storage solution can be inhibited by adding a buffer preservative.

For additional troubleshooting and FAQs, see **www.vernier.com/til/4021**

Repair Information

If you have followed the troubleshooting steps and are still having trouble with your Go Direct Flat pH BNC Electrode, contact Vernier Technical Support at support@vernier.com or call 888-837-6437. Support specialists will work with you to determine if the unit needs to be sent in for repair. At that time, a Return Merchandise Authorization (RMA) number will be issued and instructions will be communicated on how to return the unit for repair.

Accessories/Replacements

Item	Order Code
Electrode Storage Solution, 500 mL	PH-SS
Buffer Tablets	PH-BUFCAP
Storage Solution Bottles, pkg of 5	BTL

Warranty

Warranty information for this product can be found on the Support tab at **www.vernier.com/gdx-fph-bnc**

General warranty information can be found at **www.vernier.com/warranty**

Additionally, the warranty does not cover accidental breakage of the glass bulb of the pH sensor.

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Rev. 2/14/2024