

CARDY TWIN PH METER

OPERATION MANUAL

CATALOG #2103



Spectrum
Technologies, Inc.

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This manual will familiarize you with the features and operation of your new Twin pH meter. Please read this manual thoroughly before using your instrument. For customer support, or to place an order, call Spectrum Technologies, Inc. at (800)248-8873 or (815) 436-4440 between 7:30 am and 5:30 p.m. CST
FAX at (815)436-4460,
E-Mail at info@specmeters.com.
www.specmeters.com
Spectrum Technologies, Inc
12360 S. Industrial Dr. East
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GENERAL OVERVIEW

Congratulations on the purchase of your Cardy Twin pH Meter. This manual describes your Cardy pH Meter, tells you how to use it, and keep it working accurately.

The Cardy Twin pH Meter delivers high quality answers with an accuracy of ± 0.1 pH. This self-contained digital meter allows you to test the pH levels in water, soil, sap and much more.

The replaceable sensor makes measurement of small samples much more convenient. See page 8 for details.

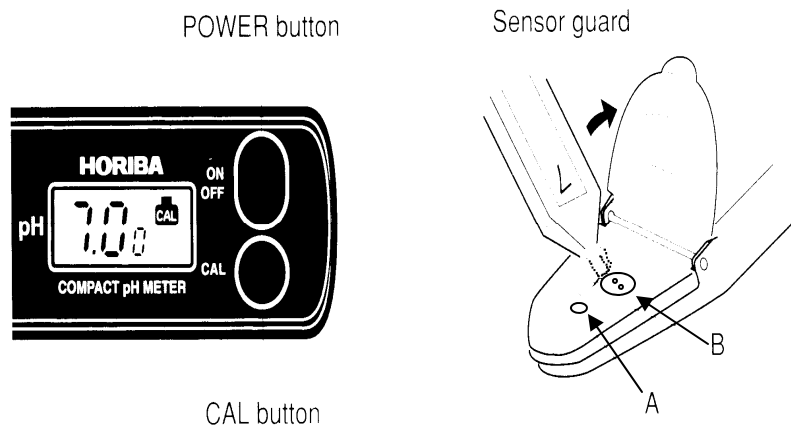
There is a two-point automatic calibration (4.0, and 7.0 pH), with a range of pH 2.0-12.0. The display will read out your results to the hundredth place.

SPECIFICATIONS

Model:	B-213
Measurement:	Glass electrode method
Calibration:	Automatic two point calibration
Display:	LCD, digital. (Resolution: 0.1 pH)
Range:	pH 2.0 - pH 12.0
Reproducibility:	± 0.1pH
Accuracy:	± 0.1pH
Operating Temperature:	5 - 40°C (41 - 104°F)
Temperature Compensation:	Automatic temperature compensation sensor
Power Source:	3V (Lithium dry cell CR2032) x 2
Dry Cell Service Life:	Approx. 150 hours for continuous use, except dry cells supplied with the pH meter
Dimensions:	165 x 29 x 19 mm (5.6 x 1.1 x 0.6")
Weight:	48 g (1.7 oz)

METER COMPONENTS

1. **Reference Junction (A)**
2. **Glass Electrode Sensor (B)** - Measurement is made when liquid covers both the reference junction and the sensor.
3. **LCD** - Gives measurement and calibration information. Also indicates when battery needs replacement.
4. **On/Off Button** - Turns meter on and off.
5. **CAL Button** - Holding this button down toggles through the pH7 and pH4 calibrations. Also used to enter temperature measurement mode.
6. **Sensor Guard** - Protects the sensor during and after measurement.



CALIBRATION & MEASUREMENT

- 1) Turn power supply on.
- 2) Rinse the sensor with distilled water. Gently blot dry.
- 3) Apply a few drops of pH 7 Standard Solution to the Sensor. Confirm that the sensor and the reference junction **are connected** with the Standard Solution.
- 4) Press and hold the **CAL** button once. The “CAL” symbol will illuminate on the LCD and pH 7.00 will appear on the display.
- 5) Calibration is complete when the “CAL” symbol disappears and the readout reads pH 7.0 . Rinse the Sensor with distilled water and blot dry.
- 6) Apply a few drops of pH 4 standard solution to the sensor. Confirm that the sensor and the reference junction **are connected** with the Standard Solution.
- 7) Press and hold the **CAL** button until the “CAL” symbol and pH 4.01 appear on the display.
- 8) Calibration is complete when the “CAL” symbol disappears and the readout reads pH 4.0. Rinse the Sensor with distilled water and blot dry.
- 9) Apply the sample to the Sensor by placing a small amount of the sample on the Sensor with the pipet, immersing the Sensor in the sample, or by scooping out a representative measurement sample. Confirm that the glass sensor and the Liquid Junction **are entirely covered** by the sample.
- 10) Read the data when figure on the LCD is stabilized and the ☺ symbol appears.
- 11) Rinse the sensor thoroughly with distilled water after each measurement. Replace the sensor cap on the sensor when finished.

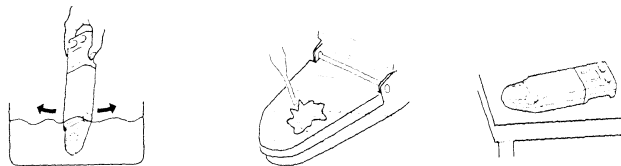
MEASURING SOIL AND LIQUID SAMPLES

Soil Samples

- 1) Collect a representative soil sample.
- 2) Mix the soil and distilled water using a 1:1 proportion. Stir for 30 seconds.
- 3) Allow 1 to 2 minutes before you begin the test.
- 4) Submerge the sensor into the mixture of soil and distilled water. Read the results.
- 5) Wash the sensor with distilled water and blot dry.

Liquid Samples

There are three ways to apply the sample to the sensor.

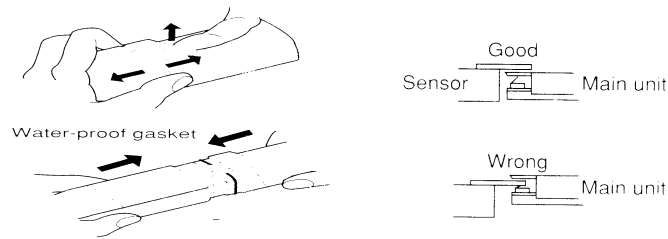


1. Open the sliding cap of the sensor guard and submerge the sensor into the sample solution.
2. Open the sensor guard and apply the solution to the sensor
3. Swirl the sensor in the liquid, scoop out a sample, and set meter on a level surface for taking measurement.

Note: This pH meter is water resistant. However, do not make any measurements by completely submerging the meter in the sample solution. If, by mistake, the meter is dropped into the sample solution, recover it immediately and dry it quickly and thoroughly.

REPLACING THE SENSOR

- 1) Wipe water off the meter.
- 2) Pull the bottom part of the housing away from meter by pushing the tongue located on the backside of the meter and sliding the sensor away from the unit body.
- 3) Confirm that the watertight O-Ring is properly seated.
- 4) Insert the new sensor into the meter firmly.
- 5) Calibration the meter.



NOTE:

- Do not remove the replacement sensor when the pH meter is wet. This can damage the meter's electronics.
- The sensor connection must be watertight. Therefore, the gasket should be replaced every two years.

The sensor should be replaced when:

- Sensor response is slow, measured value is unstable, or calibration cannot be made.
- Measured value does not change when the sample is changed.
- Display of 0.0 blinks during measurement.
- Temperature warning blinks.

BATTERY REPLACEMENT

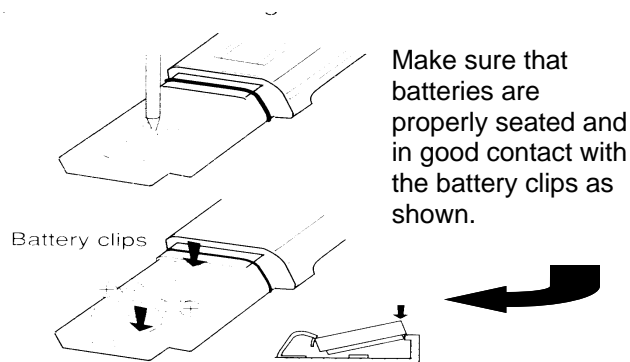
The batteries need to be replaced when the LCD displays “B” while the power is turned on or if it is blank after the Power button is pressed.

Replacing the battery

1. Wipe water off the meter.
2. Pull out upper housing.
3. Remove the dry cell holder.
4. Put two new batteries in with the “+” surface facing upward.
5. Confirm that the watertight O-Ring is properly placed in the housing of the meter. Re-assemble the.

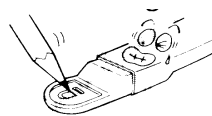
CAUTIONS

- Don't remove housing of the meter when it is wet. This can damage the meter's electronics.
- The sensor connection must be watertight.
- Re-calibrate the meter after the batteries are replaced. The calibration value is deleted when the batteries are removed.
- If the meter does not work properly, check the voltage of the batteries and repeat the battery replacement procedure.



HANDLING PRECAUTIONS

- Calibrate the meter prior to the first use. Daily calibration is recommended.
- Meter will not function correctly when calibration is performed under the following conditions
 - No standard solution on the sensor
 - Bubbles on the surface of the sensor
 - Either the sensor and or reference junction is not covered with the sample.
 - Sensor not properly installed in the pH Meter
 - Sensor has reached the end of its service life
- Measurement cannot be made while the LCD is displaying the "CAL" symbol.
- Don't calibrate with a standard solution other than pH 7.0 or pH 4.0. This will lead to inaccurate measurements.
- When making measurements of tap water, rainwater, or other solution with extremely low ion concentration, note the following:
 - Rinse the sensor thoroughly before taking measurement.
 - Apply a few drops of the sample of solution to be measured. The pH value might be unstable when the sensor is simply immersed into the solution to be measured.
- In measurement of soil or other solid matter, make a slurry using **distilled water**.
- Don't scratch or apply excessive force to either the sensor or reference electrode.



- Don't immerse the **On/Off** or **CAL** buttons in water.
- Don't replace the batteries or the Reference Electrode when the pH meter is wet.
- Don't press the POWER or the CAL Switches with a pointed object.
- Don't use the pH Meter at temperatures out of the working range of 5°C-40°C (41°F-104°F). This will shorten the service life of the sensor will be shortened.
- The following substances will damage the sensor :
 - Organic Solvent (thinner, benzene, etc.)
 - Strong acid (pH 0-2)
 - Strong alkali (pH 12-14)
 - Surface active agents, alcohol, oil, adhesive and cement.
- Keep the sensor away from direct sunlight or other strong light during calibration and measurement.
- If the meter has not been used in several days, hydrate the sensor by immersing it in water for about five minutes before calibrating.
- White crystals on the sensor are not a symptom of trouble. Simply rinse the sensor before use.
- Although the meter is auto-temperature compensated, it is recommended that, as much as possible, the sample and meter be approximately the same temperature.
- Avoid extremes of temperature. Don't place the pH meter close to heaters or where the meter might be exposed to direct sunlight.
- Don't bend or drop the pH Meter.
- Standard solution is caustic acid. Wash the skin thoroughly with water if the standard solution comes in contact with skin.

WARRANTY

This product has been brought to you having passed severe quality control and inspections. Should any trouble occur during the course of normal use, the meter shall be repaired or replaced free of charge in accordance with the stipulations laid down herein. The term of this warranty shall be for one year from date of purchase. This warranty excludes batteries, sensor and accessories.

Warranty Stipulations:

1. The product shall be repaired or replaced free of charge should any trouble occur during the course of normal use if returned within the warranty period (one year from date of purchase). In which event, contact the dealer of purchase. Return the meter with proof of date of purchase.
2. Expenses shall be incurred in the following instances within the warranty period. (Costs such as postage shall be born by the customer)
 - a) When the date of purchase and store name is not written on the warranty.
 - b) When trouble or damage has been incurred due to misuse, abuse, and/or improper handling.
 - c) When the meter has been repaired, modified and dismantled by persons other than the designated agent or service shop.
 - d) In the event of changes in external appearance such as scratches or dirt caused during use or battery fluid leakage.
 - e) In the event of unsuitable movement, dropping or accidents such as fire, earthquakes, floods or a burglary.
 - f) When replacing consumables and accessories.
 - g) When cause of trouble lies not in the meter itself.
 - h) When this warranty is not shown and when necessary particulars have not been written in the warranty.

Our obligation under this warranty is to repair or replace the meter free of charge in accordance with the conditions laid down herein. Accordingly, this warranty doesn't limit your specific legal rights.

PRODUCT RETURN

If for any reason you are not satisfied, or the meter has failed and you need to return the product for service, you will need to contact Spectrum Technologies, Inc.

Before returning a failed unit, you must obtain a Returned Goods Authorization (RGA) number from Spectrum Technologies. You must ship the product(s), properly packaged against further damage, back to Spectrum Technologies (at your expense) with the RGA number marked clearly on the outside of the package. Spectrum Technologies is not responsible for any package that is returned without a valid RGA number, or for the loss of the package by any shipping company.

SERVICE AND SUPPORT

For technical service and support call your distributor or Spectrum Technologies, Inc.

When calling for technical support have a detailed explanation of the problem that you are experiencing. The more information you can provide the faster and easier a technical support person will be able to assist you.

For technical support call (800) 248-8873 or (815) 436-4440.

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