

# PH METER

Model : PH-211



Your purchase of this PH METER marks a step forward for you into the field of precision measurement. Although this PH METER is a complex and delicate instrument, its durable structure will allow many years of use if proper operating techniques are developed. Please read the following instructions carefully and always keep this manual within easy reach.



## OPERATION MANUAL

## TABLE OF CONTENTS

1. FEATURES.....	1
2. SPECIFICATIONS.....	1
3. FRONT PANEL DESCRIPTIONS.....	3
3-1 Display.....	3
3-2 Power On/OFF Button.....	3
3-3 Hold Button.....	3
3-4 PH Electrode BNC Socket.....	3
3-5 Battery compartment/Cover.....	3
3-6 CAL. ( PH 7 ) Adjust VR.....	3
3-7 SLOPE ( PH 4/PH 10 ) Adjust VR.....	3
4. PH CALIBRATING PROCEDURE.....	4
4-1 Calibrating Consideration.....	4
4-2 Requiring Equipment for Calibration.....	4
4-3 Two Points Calibration.....	4
4-4 Single Point Calibration.....	5
5. MEASURING PROCEDURE.....	5
6. REPLACEMENT OF BATTERY.....	5
7. OPTIONAL ACCESSORIES.....	6

## 1. FEATURES

* Economical cost digital PH meter General purpose applications. Easy operation.
* Compact size, light weight.
* Available for wide applications, such as AQUARIUM, BEVERAGE, FISH HATCHERIES, FOOD PROCESSING, PHOTOGRAPHY, LABORATORY, QUALITY CONTROL, SCHOOL & COLLEGES, SWIMMING POOLS, WATER CONDITIONS.

## 2. SPECIFICATIONS

Display	13 mm ( 0.5" ) LCD, 3 1/2 digits.
Measurement Range	0 to 14 pH x 0.01 pH
Resolution	0.01 pH
Accuracy	0.07 PH ( PH5 - PH 9 ) 0.1 PH ( PH 4 - PH 10) 0.2 PH ( PH 1 - PH 3.9, PH 10.1 - PH 13) <i>* Main instrument only.</i>
Input Impedance	10 12ohms.
Temperature Compensation	Not necessary to make adjustment.
Sampling Time	Approx. 0.4 second.
Hold Function	To freeze the display reading value.

Operating Temperature	0℃ to 50℃ ( 32℉ to 122℉ )
Operating Humidity	Less than 80% RH.
Calibration Knob	External PH 4 ( slope adj.) & PH 7 (Cal. adj.).
Power Supply	006P DC 9V battery.
Power Consumption	Approx. 2.0 mA.
Dimension	135 x 60 x 33 mm, ( 5.3 x 2.4 x 1.3 inch ).
Weight	196 g/0.43 LB ( including battery ).
PH electrode (Optional)	Any connector PH Electrode with BNC connector.
Standard Accessories	Instruction Manual..... 1 PC.
Optional Accessories	PH electrode, Carrying case.

### **3. FRONT PANEL DESCRIPTION**

Fig. 1

- 3-1 Display
- 3-2 Power ON/OFF Button
- 3-3 Hold Button
- 3-4 PH Electrode BNC Socket
- 3-5 Battery compartment/Cover
- 3-6 CAL. ( PH 7 ) Adjust VR
- 3-7 SLOPE ( PH 4/PH 10 ) Adjust VR

## 4. PH CALIBRATING PROCEDURE

### ***4-1 Calibrating Consideration***

These PH meter already calibrated by mV signal that simulated from the ideal PH Electrode mV output base on 25 ℃ environment.

*However*

- a) An ideal electrode will produce 0 mV at PH 7.00, but most electrodes are slightly off.*
- b) The measuring environment temperature may not near 25 ℃ ( 15 to 35 ℃ ).*

It is necessary to make the following calibration procedures ( 4-3 or 4-4 ), if the user need to keep instrument combined electrode within high accuracy.

### ***4-2 Requiring Equipment for Calibration***

- 1) Combination PH Electrode ( optional ).
- 2) Two buffer solutions ( optional ) : PH 7.00 & PH 4.00 ( or PH 10.00 ).

### ***4-3 Two Points Calibration***

- 1) Connect the combination PH Electrode to the " BNC Socket " ( 3-4, Fig. 1 ) and place electrode into buffer PH 7.00 solution.
- 2) Power on the instrument by pushing the " Power ON/OFF Button " ( 3-2, Fig. 1 ).
- 3) Adjust " CAL. ( PH7 ) Adjust VR " ( 3-6, Fig. 1 ) until the display reading values same as 7.00 exactly.
- 4) Rinse the electrode in distilled water.
- 5) Place electrode into buffer PH 4.00 ( PH 10.00 ) solution. Adjust " SLOP(PH4/PH10) Adjust VR " ( 3-7, Fig. 1 ) until the display reading values same as 4.00 ( 10.00 ) exactly.
- 6) Repeat above 2) to 5) procedures two times at least.

#### **4-4 Single Point Calibration**

- 1) Connect the combination PH Electrode to the " BNC Socket " ( 3-4, Fig. 1 ) and place electrode into a standard buffer solution ( for example PH 7.00 or other larger values as possible ).
- 2) Power on the instrument by pushing the " Power ON/OFF button " ( 3-2, Fig. 1 ).
- 3) Adjust " CAL. ( PH7 ) Adjust VR " ( 3-6, Fig. 1 ) until the display reading values same as the values of above standard buffer solution exactly.

### **5. MEASURING PROCEDURE**

After the instrument and PH electrode are calibrated, then the unit is now ready for measuring.

- 1) Connect the combination PH Electrode to the " BNC socket " ( 3-4, Fig. 1 ).
- 2) Power on the instrument by using " Power ON/OFF Button ".
- 3) Place the electrode into the measured solution, then the instrument will display the PH value.
- 4) After make the measurement, please rinse the electrode in distilled water.

### **6. REPLACEMENT OF BATTERY**

- 1) When the left corner of LCD display show " , It is necessary to replace the battery. However, in-spec measurement may still be made for several hours after Low Battery Indicator appears before the instrument become inaccurate.
- 2) To replace the battery, remove the " Battery Cover " ( 3-5, Fig. 1 ) on the rear cabinet.
- 3) Take out the battery, install a new one ( 006P DC 9V ) and reinstall the battery cover again.

## 7. OPTIONAL ACCESSORIES

### **PH ELECTRODE**

#### **Model : PE-03**

General purpose pH electrode with BNC connector.

Range : 1 to 13 pH ( typical 0 to 14 pH ).

Epoxy body, Body size : 12 mm dia. x 160 mm.

Cable length : 1 meter.

### **PH ELECTRODE**

#### **Model : PE-11**

General purpose & high quality pH electrode with BNC connector.

Range : 1 to 13 pH ( typical 0 to 14 pH ).

Epoxy body, Body size : 9.5 mm dia. x 120 mm.

Cable length : 1 meter.

### **SPEAR TIP PH ELECTRODE**

#### **Model : PE-06HD**

The " Spear Tip pH electrode " is perfect for those pH measurements in applications where sample piercing is required. Meat, sausage and cheese are ideal applications. The electrode features a very durable glass measuring spear packaged in a rugged virtually unbreakable epoxy body.

Measuring Range : 1 to 13 pH ( typical 0 to 14 pH ).



<b>BUFFER SOLUTION</b>
------------------------

<b>Model : PH-07</b>
----------------------

PH 7.00 standard buffer solution.
-----------------------------------

<b>BUFFER SOLUTION</b>
------------------------

<b>Model : PH-04</b>
----------------------

PH 4.00 standard buffer solution.
-----------------------------------

<b>CARRYING CASE</b>
----------------------

<b>Model : CA-06</b>
----------------------

Hard carrying case.
---------------------

<b>CARRYING CASE</b>
----------------------

<b>Model : CA-05A</b>
-----------------------

Vinyl soft case.
------------------