pH MONITOR

Model : PH-321M



Your purchase of this pH monitor marks а step forward for you into the field of precision measurement. Although this pH monitor 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 CAL (Enter) button	3
3-3 ESC button	3
3-4 ▼ button	3
3-5 pH electrode BNC socket	3
3-6 DC 9V Input socket	3
3-7 Stick sponge fix position	3
3-8 Hanging hall	3
4. pH CALIBRATING PROCEDURE	4
4-1 Calibrating Consideration	4
4-2 Requiring Equipment for Calibration	4
4-3 Calibration procedures	4
4-4 Calibration clear	7
5. MEASURING PROCEDURE	8
6. OPTIONAL ACCESSORIES	9

1. FEATURES

*	Economical cost digital pH meter General purpose
	applications. Easy operation.
*	Back light LCD display.
*	Auto calibration.
*	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	LCD size : 31 mm x 31 mm
	LCD with back light, easy read.
Measurement	0 to 14 pH x 0.01 pH
Range	
Resolution	0.01 pH
Accuracy	0.07 pH (pH5 - pH 9)
	0.1 рН (рН 4 - рН 10)
	0.2 рН (рН 1 - рН 3.9,
	рН 10.1 - рН 13)
	* Main instrument only.
Input	10^12 ohms.
Impedance	
Temperature	Not necessary to make adjustment.
Compensation	
Sampling	Approx. 1 second.
Time	
Operating	0°C to 50°C (32°F to 122°F)
Temperature	
Operating	Less than 80% RH.
Humidity	

Calibration	Automatically, calibrated by front buttons
	* pH 7 calibration.
	* pH 4 calibration.
	* pH 10 calibration.
Power Supply	DC 9V via optional external adapter.
Power	Approx. 11 mA.
Consumption	
Dimension	89 x 57 x 31 mm,
	(3.5 x 2.2 x 1.2 inch)
Weight	117 g/0.26 LB.
pH electrode	Any connector pH Electrode with
(Optional)	BNC connector.
Standard	Instruction Manual 1 PC.
Accessories	Stick sponges 2 PCs
Optional	pH electrodes
Accessories	DC 9V adapter
	* Refer page 9. page 10.

3. FRONT PANEL DESCRIPTION







Fig. 1

3-1 Display

- 3-2 CAL (Enter) button
- 3-3 ESC button
- 3-4 ▼ button
- 3-5 pH electrode BNC socket
- 3-6 DC 9V Input socket
- 3-7 Stick sponge fix position
- 3-8 Hanging hall

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 $^\circ\!C$ environment. However due to

- 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 $^\circ$ (15 to 35 $^\circ$).

It is necessary to make the following 4-3 calibration procedures 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 Calibration procedures

pH 7.0 calibration

- 1) Rinse the electrode in distilled water completely.
- 2) Connect the pH Electrode to the "BNC Socket " (3-5, Fig. 1) and place electrode into standard buffer pH 7.00 solution (optional, For example PH-07)
- 3) Power on the instrument by plugging in the DC 9V adapter into the " DC 9V input socket " (3-6, Fig. 1)
- 4) Press " CAL button " (3-2 , Fig. 1) once , the display will show :



5) Press " ENTER button " (3-2, Fig. 1) once, the display will flashing several time, then show 7.00 (if show 6.99, 7.01 it is normal), now finish the pH 7.0 calibration procedures.

pH 4.0 calibration

- 1) Rinse the electrode in distilled water.
- 2) Connect the pH Electrode to the "BNC Socket " (3-5, Fig. 1) and place electrode into standard buffer pH 4.00 solution (optional, For example PH-04)
- 3) Power on the instrument by plugging in the DC 9V adapter into the " DC 9V input socket " (3-6, Fig. 1)
- 4) Press " CAL button " (3-2, Fig. 1) once, the display will show :



Press " $\mathbf{\nabla}$ button " (3-4, Fig. 1) once, the display will show :



Press " ENTER button " (3-2, Fig. 1) once, the display will flashing several time, then show 4.00 (or 4.00 ± 0.01), now finish the pH 4.0 calibration procedures.

pH 10.0 calibration

- 1) Rinse the electrode in distilled water.
- 2) Connect the pH Electrode to the "BNC Socket " (3-5, Fig. 1) and place electrode into standard buffer pH 10.0 solution.
- 3) Power on the instrument by plugging in the DC 9V adapter into the " DC 9V input socket " (3-6, Fig. 1)
- 4) Press " CAL button " (3-2, Fig. 1) once, the display will show :



Press " \blacksquare button " (3-4, Fig. 1) once a while with two times , the display will show :



Press " ENTER button " (3-2 , Fig. 1) once , the display will flashing several time, then show 10.00 (or 10.00 $\pm\,$ 0.01), now finish the pH 10.0 calibration procedures.

Calibration consideration

- During make the calibration if intend to exit the calibration procedures, then just press the " ESC button " (3-3, Fig. 1) will return to normal screen.
- * The calibration procedures should be executed two points calibration (pH 7, pH 4 or pH 7. pH 10) and start from the pH 7 at first, then pH 4 (or pH 10).

- * During the calibration, the circuit will sensing solution value automatically. If the buffer solution value already beyond 7 ± 2 pH. 4 ± 2 pH, 10 ± 2 pH, the LCD will show " Err ".
- * Rinse the electrode in distilled water before change the buffer solution.
- * Repeat above calibration procedures two times at least if possible.
- * Rinse the electrode in distilled water after execute the calibration procedures.

4-4 Calibration clear

During execute the calibration procedures, if happen some thing wrong (Display show Error information), then execute the following " Calibration clear " procedures will clear all the existing calibration data and return to the Default value.

However after execute the " Calibration clear ". then make the calibration again. if the Display still show the " Err " (error information), then the " Standard solution " or the pH electrode " may existing problem.

- 1) Power on the instrument by plugging in the DC 9V adapter into the " DC 9V input socket " (3-6, Fig. 1)
- 2) Press " CAL button " (3-2 , Fig. 1) once , the display will show :



Press " $\mathbf{\nabla}$ button " (3-4, Fig. 1) once a while with three times , the display will show :



Press " ENTER button " (3-2, Fig. 1) once, the display will show following screen once a while,



then return to normal screen and finish the "Calibration Clear procedures ".

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 " (3-5, Fig. 1).
- 2) Power on the instrument by plugging in the DC 9V adapter into the " DC 9V input socket " (3-6, Fig. 1)
- 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. 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).

BUFFER SOLUTION

Model : PH-07

pH 7.00 standard buffer solution.

BUFFER SOLUTION

Model : PH-04

pH 4.00 standard buffer solution.

DC 9V POWER ADAPTER Model : AP-9VA

* Input voltage : 100 to 240 ACV, 50/60 Hz.

* Output voltage : Regulation DC 9V/1 Amp. rating max.

* Output plug : round 2.5 mm dia. plug.

PLUG CONVERTER Model : AP-GTU

* Convert the input plug of AP-9VA. from the Germany type to USA type.

PLUG CONVERTER Model : AP-GTE

* Convert the input plug of AP-9VA. from the Germany type to UK (England) type.